THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

1. Define memory. Explain disorders of memory?

2. Discuss Maslow's hierarchy of need theory.

3. Describe the nature of Emotion in reflection to different theories.

4. Define nature of thinking and discuss steps of decision making

5. Discuss Emotional Quotient

6. Discuss Problem solving cycle

Q.2. Answer the following questions.   (3x10=30)

I. Define psycho physics. What are the methods of measurement in psychophysics?

II. Define perception. How do individual and cultural factors influence perception?

III. Compare and contrast the principles of operant and classical condition and describe the impact of classical conditioning on everyday life.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(10x3=30)**

1) Explain the role of neuropsychologist in diagnosing and managing neurological disorders?

2) What are the core characteristics of Clinical Psychology as a discipline?

3) What are key characteristics of a case control study?

4) Why is informed consent crucial in clinical research?

5) Explain the significance of strong communication skills in clinical psychology?

6) Discuss how clinical psychologist handle ethical dilemmas in practice?

7) Discuss the steps involved in conducting a comprehensive psychological assessment in clinical settings?

8) What is systematic desensitization, how is it used to treat anxiety disorder?

9) Explain the difference between primary and secondary reinforces with example?

10) Differentiate between covert assertion and covert sensitization by providing its rationale and procedure?

Q.2.   Answer the following questions.   **(3x10=30)**

1) Explain the evolution of psychology from philosophical roots to a modern science?

2) How are successive approximations used in shaping and how reinforcement schedule, influence shaping. Provide an example of shaping in teaching new skill?

3) What are the research designs describing in detail and their role in conducting a research?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

السؤال الأول: أجب عن الأسئلة الآتية بإيجاز (درج ذیل سوالات کے عربی میں مختصر جوابات دیجیے)   (6×5=30)

1. لخص خطبة عثمان بن عفان رضي الله عنه.

2. بين أهمية خطبة حجة الوداع في كلماتك.

3. اكتب ترجمة الإمام الغزالي بالإيجاز.

4. اكتب خمسة أسطر في ترجمة صاحب كليلة ودمنة.

5. اذكر الأغراض الشعرية التي أنشد فيها الحسان بن ثابت شعره.

6. لخص خطبة بن ساعدة الإيادي.

درج ذیل سوالات کے جوابات تحریر کریں۔   (3x10=30)

السؤال الثاني: ترجم الأبيات التالية إلى الأردية واشرحها مع ذكر قائلها (درج ذیل اجزا میں سے کسی ایک کا اردو میں ترجمہ و تشریح کریں۔ نیز شاعر کا نام بھی لکھیں)

وَمَا مَاتَ مِنَّا سَيِّدٌ حَتْفَ أَنْفِهِ   وَلَا طُلَّ مِنَّا حَيْثُ كَانَ قَتِيلٌ

تَسِيلُ عَلَى حَدِّ الظُّبَاتِ نُفُوسُنَا   وَلَيْسَتْ عَلَى غَيْرِ الظُّبَاتِ تَسِيلُ

او(ی)

فَدَتْ نَفْسِ وَمَا مَلَكَتْ يَمِينِي   فَوَارِسَ صَدَّقَتْ فِيهِمْ ظُنُونِي

فَوَارِسَ لَا يَمَلُّونَ المَنَايَا   إِذَا دَارَتْ رَحَى الحَرْبِ الزَّبُونِ

السؤال الثالث: اكتب مقالا حول أحد من العناوين التالية: (درج ذیل میں سے کسی ایک عنوان پر عربی میں نوٹ لکھیں)

(1) عمر بن الخطاب رضي الله عنه   (2) حسان بن ثابت رضي الله عنه   (3) كليلة ودمنة

السؤال الرابع: ترجم إحدى الخطبتين إلى الأردية واشرحها مع ذكر قائلها (درج ذیل میں سے کسی ایک خطبے کا اردو میں ترجمہ و تشریح کریں اور خطیب کا نام بھی لکھیں)

فليأخذ العبد من نفسه لنفسه ومن دنياه لآخرته ومن الشبيبة قبل الهرم ومن الحياة قبل الموت فوالذي نفس محمد بيده ما بعد الموت من مستعتب وما بعد الدنيا دار إلا الجنة أو النار

او(ی)

لا يَدَعُ قَوْمٌ الجِهَادَ فِي سَبِيلِ اللهِ إِلَّا ضَرَبَهُمُ اللهُ بِالذُّلِّ. وَلَا تَشِيعُ الفَاحِشَةُ فِي قَوْمٍ قَطُّ إِلَّا عَمَّهُمُ اللهُ بِالبَلَاءِ. أَطِيعُونِي مَا أَطَعْتُ اللهَ وَرَسُولَهُ، فَإِذَا عَصَيْتُ اللهَ وَرَسُولَهُ فَلَا طَاعَةَ لِي عَلَيْكُمْ. قُومُوا إِلَى صَلَاتِكُمْ يَرْحَمُكُمُ الله.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: **(6x5=30)**

1. Why people start a Small Business?

2. Explain Marketing Research by identifying its process.

3. Why is Franchising growing globally?

4. Describe any five important characteristics of successful entrepreneurs.

5. Explain the purposes of Business Plan.

6. Explain Product and Institutional Advertising.

Answer the following questions.   **(3x10=30)**

Q.2 Who is Entrepreneur? Differentiate between manager and entrepreneur.

Q.3 Describe the opportunities for small businesses in global marketing.

Q.4 What are the pros and cons of buying a Franchising Business?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (5x6=30)

a. Define financial development? Discuss in detail how can financial development influence the economy growth of Pakistan.
b. Why balance of payment is in deficit in Pakistan? How can Pakistan improve its balance of payments?
c. Explain the importance of industrial sector in Pakistan. What are the major causes of industrial backwardness in Pakistan? Suggest measures to correct it.
d. Critically examine the present situation of Pakistan industrial sector? How we can boost the flow of capital in the industrial sector.
e. What is green revolution, and how has it impacted the growth of the agriculture sector of Pakistan?

Answer the following questions.   (3x10=30)

Q2. "What is agriculture marketing? What are the problems of agriculture marketing in Pakistan? Discuss some important measures for its betterment particular measures taken by government of Pakistan.

Q3. Write an essay on the role of International Monetary Fund (IMF) in the economic development of Pakistan.

Q4. Critically examine the major socio-economic problems of Pakistan caused by COVID-19. Give suggestions to solves them.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Solve the following:**   **(5x6=30)**

(i)   If $y = \sin\sqrt{x} + \sqrt{\sin x}$ then find $\frac{dy}{dx}$.

(ii)   The revenue from selling x units of desks is $R(x) = 500\left(1 - \frac{1}{x^2}\right)$. Find the marginal revenue $R'(x)$ on selling x units of desks. Also find the marginal revenue $R'(x)$ on selling 12th desk.

(iii)   Solve the differential equation $\frac{dy}{dx} = \frac{y^2+1}{e^{-x}}$

(iv)   Find the area between the x-axis and the curve $y = x^3 + 3x^2$ from $x = -3$ to $x = 0$.

(v)   Find the first order partial derivative of $f(x,y) = (x+y)^2 + 1$.

Q.2.   **Solve the following:**   **(5x6=30)**

(a)   If $y = e^x \sin x$ then find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$. Also show that $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y = 0$.

(b)   If $x = a\cos\theta$, $y = a\sin\theta$ then first and second order derivatives w. r. t. x.

(c)   Evaluate the definite integrals $\int_1^2 (x^2 + 1)dx$ and $\int_0^{\frac{\pi}{6}} \cos^3 x\,dx$.

(d)   A random variable X has probability density function (p.d.f.)

$$f(x) = \begin{cases} kx(2-x), & \text{if } 0 \le x \le 2, \\ 0, & \text{if otherwise.} \end{cases}$$

    Find   (i) k (ii) $P(0 \le x \le 1)$ (iii) $P(1 \le x \le 2)$.

(e)   Use the method of least squares to find least squares linear regression line $y = ax + b$ for the data given below. Estimate the value of y when $x = 30$.

x	5	6	8	10	12	13	15	16	17
y	16	19	23	28	36	41	44	45	50

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (10x3=30)

i.   Explain what linear programming is.
ii.   Define the term slack with reference to linear programming.
iii.   Define Activity Based Costing.
iv.   What is a cost driver?
v.   What information does cost accounting provide?
vi.   What are the major differences between financial and managerial accounting?
vii.   Define opportunity cost.
viii.   Define relevant costs. Why are historical costs irrelevant?
ix.   What is CVP analysis?
x.   How break-even point is determined in a break-even chart?

Answer the following questions.   (3x10=30)

Q.2   Pak Company produced and sold 120,000 units during the year just ended at an average price of Rs. 30 per unit. Variable manufacturing costs were Rs. 12 per unit and variable marketing costs were Rs. 6 per unit sold. Fixed costs amounted to Rs. 270,000 for manufacturing and Rs. 100,000 for marketing. There was no year-end work in process inventory.

Required:

a. Compute break-even point in sales rupees for the year.
b. Compute the number of sales units required to earn a net income of Rs. 250,000 during the year.
c. Variable manufacturing costs are expected to increase by 10% in the coming year. Compute the firm's break-even point in sales rupees for the coming year.
d. If variable manufacturing costs do increase 10%. Compute the selling price that would yield the same contribution margin ratio in the coming year.

Q.3   Yaqoob manufactures communication satellites used in TV signal transmission. The firm currently purchases one component for its satellites from a European firm. Yaqoob's engineering team has found a way to use the company's own component part number A-200 instead of the European component. However, the Yaqoob component must be modified at a cost of Rs. 1,000 per part. The European part costs Rs. 16,900 per part. Yaqoob's part number A-200 costs Rs. 10,100 before it is modified. Yaqoob currently uses 10 of the European parts per year.

Required: Calculate the annual differential cost between Yaqoob's two production alternatives.

Q.4 Pak Limited has established the following standards for one of its product.

Direct Material	10 kg @ Rs. 3 per kg
Direct Labour	30 minutes @ Rs. 12 per hour

In the month of December 2024, Company purchased 265,000 kg of direct material at a cost of Rs. 760,000. The total wages for December were Rs. 166,667, 90% of which were for direct labour. Company manufactured 25,000 units during December, using 260,000 kg of direct material and 13,000 direct labour hours.

Required: Compute the following variances for December, indicating whether each variance is favourable or unfavourable.

    a. Direct material price variance
    b. Direct material quantity variance
    c. Direct labour rate variance
    d. Direct labour efficiency variance

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(15x2=30)**

I.   Why financial Analysis is of major concern to some people outside the company?
II.   Briefly mention the limitations of ratio analysis.
III.   Differentiate between horizontal and vertical analysis.
IV.   Which people are highly interested in liquidity ratio of a company.
V.   What is a common size financial statement analysis.
VI.   Which cash inflows are included in investing activities.
VII.   How does financial forecasting differ from budget forecasting?
VIII. What is solvency of a company? Which ratio is considered as safe margin of solvency.
IX.   Briefly explain Dupont Analysis?
X.   Differentiate between horizontal and vertical analysis.
XI.   If Net Sales is 120,000 and gross profit is 30,000, then calculate the Gross Profit (GP) ratio.
XII.   Which ratio is considered as safe margin of solvency?
XIII. Which documents are included in the term "financial statements"?
XIV.   What is the difference between debt and equity financing?
XV.   How does forecasting relate to planning?

Answer the following questions.   **(3x10=30)**

Q.No.2: Following is a summarized balance sheet of Indo (Pvt.) Ltd. as on 31.03.24

Particulars	Rs.	Particulars	Rs.
Equity shares of Rs. 10 each 10%	10,00,000	Fixed Assets	20,00,000
Pref. shares of Rs. 100 each	400,000	Investments	200,000
Reserves and Surplus	700,000	Closing Stock	200,000
15% Debentures	500,000	Sundry Debtors	460,000
Sundry Creditors	240,000	Bills Receivable	60,000
Bank Overdraft	160,000	Cash at Bank	60,000
		Preliminary expenses	20,000
	30,00,000		30,00,000

Summarized Profit and loss for the year ending on 31.03.24 is as under:

Sales (25% cash sales)	80,00,000
Less: Cost of sales	56,00,000
Gross Profit	24,00,000
Net Profit before interest and taxes 50%	900,000

Calculate the following ratios

1. Proprietary Ratio   2. Debt-Equity ratio   3. Debtors Ratio (assuming 365 days)

4. Return on Equity (ROE)

Q.No.3: Following are incomplete Trading & Profit & loss A/c and Balance sheet of intel.pk

Particular	Rs.	Particular	Rs.
Op. Stock	350,000	By Sales	?
Purchases	?	Closing Stock	?
Purchase return	87,000		
Gross profit	718,421		
	1,496,710		1,496,710

Profit & Loss A/c

Particular	Rs.	Particular	Rs.
Office Expense	370,000	Gross Profit	718421
Int. on Deb	30,000	Commission	?
Tax Provision	18,421		
Net Profit	350,000		
	?		?

Balance sheet

Particular	Rs.	Particular	Rs.
Paid Up Capital	500,000	Plant & Machinery	700,000
General Reserve	?	Stock	?
P&L a/c	?	Debtors	?
10% Debentures	?	Bank	62,500
Current liabilities	600,000	Other fixed assets	?
	?		?

Find out missing items with the help of other details as under:

a) Current ratio was 2:1
b) Closing stock is 25% of sales
c) Proposed Dividend was 40% of paid-up capital
d) Gross Profit ratio was 60%
e) Amount transfer to General reserve is same as proposed dividend
f) Balance of P&L is calculated 10% of proposed dividend
g) Commission income in 1/7 of net profit
h) Balance of general reserve is twice the current year transfer amount.

Q.No.4: Following is the balance sheet of Ramzan & Sons Company

Assets	2009	2008
Current assets	76,000	80,000
Property plant and equipment	99,000	90,000
Intangibles	25,000	40,000
Total Assets	200,000	210,000
Liabilities and stockholder's equity		
Current liabilities	40,800	48,000
Long term liabilities	143,000	150,000
Stockholder's equity	16,200	12,000
Total liabilities and stockholders' equity	200,000	210,000

Required:

a) Prepare a horizontal analysis of the balance sheet for Ramsey using 2008 as base.

b) Prepare a vertical analysis of the balance sheet data for Ramsey in columnar form for 2009.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.　Answer the following short questions:　　　　　　**(6x5=30)**

1. Explain sales management.
2. How can develop a product?
3. What is the importance of selling?
4. What is promotional mix?
5. Why sale a product is difficult?
6. What is retail selling?

Answer the following questions.　　　　　　**(3x10=30)**

Q.No.2. Explain the behavioral forces in selling.
Q.No.3. Explain the back ground of the selling.
Q.No.4. What is the role of promotional mix in growth of company?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: **(6x5=30)**

I.   What are open-ended questions, and why are they used?

II. What are the key characteristics of descriptive research?

III. Define the term 'data visualization.

IV. What is the impact of response bias on data collection in marketing research?

V.   What is a Marketing Research and information system?

VI. What is the role of a hypothesis in data analysis?.

Answer the following questions.   **(3x10=30)**

Q.No.2: Explain the steps involved in data analysis for marketing research, from data cleaning to reporting insights.

Q.No.3: Describe the process of conducting a descriptive research study. What steps must be taken to ensure validity and reliability?

Q.No.4: Discuss the role of mixed-method approaches (qualitative and quantitative) in marketing research.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. Role of HR metrics and analytics in strategic decision-making
2. Discuss strategies for building positive employee relations and resolving workplace conflicts.
3. Discuss the impact of artificial intelligence on the future of work.
4. What are the challenges and opportunities of remote work for HR?
5. How can HR contribute to organizational innovation?
6. How can HR help organizations adapt to rapid technological change?

Answer the following questions.   (3x10=30)

Q. 2. Discuss the factors that influence compensation decisions in organizations. Evaluate the impact of various compensation strategies on employee motivation and performance

Q.3. Evaluate the challenges and opportunities of managing a global workforce. Discuss the cultural, legal, and ethical considerations involved in international HR.

Q.4. Explain the concept of employee development and its importance in organizational success.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short note on the following: (6x5=30)

I. What is organizational development (OD), and why is it important for businesses?

II. Briefly explain the concept of planned change in organizational development.

III. Write a brief note open system theory.

IV. Write a short note on the role of communication in organizational change.

V. Explain the difference between primary and secondary data in the context of organizational analysis.

VI. What are the benefits of involving employees in decision-making processes?

Answer the following questions: (3x10=30)

Q2. Discuss the key steps involved in creating a positive organizational culture.

Q3. Compare Kurt Lewin's three-phase model of change (unfreeze, change, refreeze) with any other change management model.

Q4. Explain how performance management can help organisations achieve long-term goals with an example.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   What is particulate matter? Give its effects on the health.

ii.   Explain 'Sources and impacts of Mercury pollution'.

iii.   How plants can be used as bio-indicators for air pollutants?

iv.   What is difference between complete and incomplete combustion?

v.   Briefly discuss effects of any two organometallic compound present in the environment.

vi.   Give an account of Exhaust Emissions from Motor Vehicles

Answer the following questions.

Q2.   (a) Critically discuss various international Air Quality Programs   (06)

(b) What are impacts of Stratospheric Ozone?   (04)

Q.3.   Give a detailed account on Acid Rain, its formation, types and different sources. Discuss its effects on ecosystem in detail.   (10)

Q4.   Enlist Greenhouse gasses? Describe their role in Greenhouse effect, Global Warming and Climate changes. Give mitigation of Global Warming.   (10)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. EXTRA-NUCLEAR INHERITANCE
2. LETHAL MUTATION
3. PARTIAL DOMINANCE
4. ONCOGENES
5. REVERSE TRANSCRIPTION
6. GERMINAL MUTATION
7. LINKAGE
8. CROSSING OVER
9. GENE FREQUENCY
10. GENETIC CODE

Q.2.   Answer the following questions.   (3x10=30)

i.   Explain the mechanism of GENE REGULATION.

ii.   What do you understand by CONJUGATION in BACTERIA? Write about its significance.

iii.   Discuss POLYGENIC INHERITANCE with the help of example.

iv.   What do you understand by the term EPISTASIS? Explain the ratio of 15:1.

v.   What do you mean by MULTIPLE ALLELES? Give example.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Explain the following: (15x2=30)

1. β-RADIATIONS
2. BIOHAZARDS
3. THERAPEUTIC CLONING
4. GMOs
5. PATHOGEN
6. AIR-BORNE diseases
7. FILTER STERILIZATION
8. DRY HEAT STERILIZATION
9. TOXIN
10. MICROBIAL CELL CULTURE
11. PATENT issues regarding cloning
12. ENVIRONMENTAL LAW
13. RADIOACTIVE MATERIAL
14. BIOSAFETY
15. BIOETHICS

Q.2. Answer the following questions.   (5x6=30)

A. What are WATER BORN diseases?
B. Give a note on MICROBIOLAB SAFETY.
C. Describe AIR POLLUTANTS.
D. Explain disposal of HOSPITAL WASTES.
E. What is HEALTH and SAFETY with special reference to water?
F. Explain trade issues on GMOs.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the Following Short Questions: **(6x5=30)**

I.   Differentiate between C3 and C4 plants with examples.
II.   Draw the Citric acid cycle.
III.   Briefly explain phloem loading and unloading.
IV.   Discuss the factors affecting the stomatal movement.
V.   Write down the process of nitrogen fixation.
VI.   Write down the energetics of respiration in plants.

Q.2.   Answer the following questions.   **(3x10=30)**

1.   Explain in detail photophosphorylation and its mechanism.
2.   Explain the CO2 fixation cycle in plants.
3.   Explain in detail the Mitochondrial Electron Transport Chain and ATP synthesis.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(15x2=30)**

1. Define Cation Exchange Capacity.
2. What is nutrient pollution?
3. The farm has two different fertilizers in the barn (A large farm building used for storing grain, hay). One is K_2SO_4 and the other is KCl. The two fertilizers cost the same per ton, but we want to be conscious of costs by using the fertilizer with the highest percentage of potassium, since we won't have to apply as much. Which fertilizer should we use? Show your calculations.
   $K_2SO_4 = 158.25$ %K = $78.12/158.25 \times 100 = 49\%$ K
   $KCl = 74.55$ %K = $39.1/74.55 \times 100 = 52\%$ K
4. Why do plants die if they get too much fertilizer?
5. What is hydroponics?
6. Define lyotropic series.
7. What is water use efficiency?
8. Define ecotype.
9. Using water potential terminology, explain why: Over-fertilizing your lawn will cause the leaves wilt, to become dry and fall off.
10. Differentiate between essential and beneficial elements.
11. A farmer is trying to grow corn but has difficulty getting access to water for irrigation. Her region gets a lot of rain in the spring, so when she plants the seeds the soil is nice and moist, but no rain falls during the summer when the plants are growing. For the past few years, she has managed to grow tall, healthy looking plants, but although they flower, they set few seeds. What advice can you give this farmer to help her get a good grain harvest next year?
12. Which of the following nutrients would likely get flushed or leached out of the surface soil the fastest after a large rainstorm? What is its major reason?
13. If the upper, young leaves are showing a nutrient deficiency, which type of nutrient is most likely to be deficient in terms of its mobility?
14. Define critical nutrient range.
15. Give chemical composition of macro and micronutrients of Hoagland Nutrient Solution.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Describe the different adaptations in plants in response to phosphorus deficiency in soil
2. What are various forms of soil k? What factors affect the k availability along with various organic and inorganic k fertilizers?
3. Give a detailed account of physiology of symbiotic nitrogen fixation.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the Following Short Questions: (6x5=30)

  I.   Differentiate between environment and ecosystem.
  II.   What is greenhouse effect.
  III. list some pollutants found in marine ecosystem.
  IV.   What is source of radon gas.
  V.   Enlist some commonly used organic pesticides.
  VI.   Define pest.
  VII. Differentiate between BOD and COD.
  VIII. Differentiate between point and no-point source of pollution
  IX.   Define particulate matter with respect to air pollution
  X.   What are primary and secondary pollutants?
  XI.   What are sources of water pollution
  XII. What is the composition of acid rain
  XIII. Define global warming.
  XIV. Define ozone hole.
  XV.   Define agrochemicals.

Q.2.   Answer the following questions.   (3x10=30)

A. What is nature, origin, Impacts and control of ozone hole.

B. what are the sources and causes of air pollution and describe the methods of assessing air pollution and its impact on environment.

C. Write a detailed note on radiation pollution.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   **(6x5=30)**

i. How environmental agencies and councils differ with each other.

ii. What are Xenobiotic compounds? How can these compounds enter in our environment?

iii. Describe the process of sorption and its effect on Biodegradation.

iv. Define biocatalysts. How mutation in microbes affect the process of Biodegradation.

v. What is meant by Detoxification? Enlist mechanism involve in this process.

vi. Differentiate Bioaugmentation and Biopiling.

Answer the following questions.

Q.2. Define Bioremediation. Discuss different modern techniques for this process.

10 Marks

Q.3. Define Acclimation. Enlist factors affecting acclimation.   **(2+8) 10 Marks**

Q.4. How Biotechnology is used for metal and Radionuclide removal and recovery. **10 Marks**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(6x5=30)**

I.   Write a comprehensive essay on research methodology, discussing its definition, purpose, and significance in academic and professional research?

II.   What is the role of Descriptive Statistics and Inferential Statistics in Data Analysis and Interpretation?

III.   What is the use of "the Cite-While-You-Write" (CWYW) feature in Endnote software? Name any two other Software used for creating Bibliography.

IV.   Differentiate between Ideographic and Nomothetic approaches to educational research.

V.   Discuss the common challenges faced during synopsis writing. How can one effectively acknowledge and address the limitations of the study within the synopsis?

VI.   Give the importance of the editorial process in thesis writing. How does a rigorous editorial process ensure the academic quality and integrity of the thesis?

Q.2.   **Answer the following questions.**   **(3x10=30)**

I.   What is Research Design? What is the importance of statistical analysis in validating results?

II.   Write a detailed essay on the essential components of a brief synopsis. Highlight the role of elements in creating a comprehensive overview of the work.

III.   Discuss the concept of research ethics. Why is adherence to ethical principles critical in research? Illustrate with examples of ethical dilemmas commonly encountered in research.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (15x2=30)

i. Define Environment.
ii. Describe the principle of bioremediation process.
iii. Which microroganisms are most important in biodegradation process?
iv. How environmental factors effect biodegradation process?
v. Define Oligotrophs. How Oligotrophs affect process of Biodegradation?
vi. Differentiate bioventing and Biosparging.
vii. How mutation in microbes affect the process of Biodegradation.
viii. What is meant by Detoxification? Enlist mechanism involve in this process
ix. How activated sludge reactors can be useful for Bioremediation process?
x. Describe the limitations in the different process used for Bioremediation
xi. What is the effect of sorption in pollution control?
xii. Differentiate open bioreactor system with closed bioreactor system?
xiii. What is assisted phytoremediation?
xiv. What is bioremediation?
xv. Write down the basic requirements for microbial growth during Bioremediation.

Answer the following questions.

Q.2. Define Acclimation. Enlist factors affecting acclimation.   **(2+8) 10 Marks**

Q.3. Write in detail about the different ways of assisted phytoremediation **10 Marks**

Q.4. Heavy metals can be controlled by microbial treatment? **10 Marks**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(5x6=30)**

1. SODIC SOIL & SALINE SOIL
2. ALLUVIAL SOILS & COLLUVIAL SOILS
3. AUTECOLOGY & SYNECOLOGY
4. BENEFICIAL SYMBIONTS & HARMFUL SYMBIONTS
5. DENITRIFICATION & NITRIFICATION

Q.2.   Answer the following questions.   **(3x10=30)**

i.   What do you understand by SOIL MICROBIAL POPULATION. Discuss their advantages and disadvantages.

ii.   Describe the methods of reclamation for SALINE and WATER LOGGED soils.

iii.   Describe NITROGEN CYCLE in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(6x5=30)**

1. Describe the different methods of mushroom preservation.
2. Mushrooms have achieved a special place in our life. Justify it.
3. What is grain spawn? Write its advantages and disadvantages.
4. Briefly explain the history of mushroom cultivation.
5. Explain in detail the reproduction strategies of any Basidiomycota.
6. Differentiate between the followings
   - Spawn, spawning and spawn running
   - Spore cultures vs tissue cultures

    Answer the following questions.   **(3x10=30)**

1. Why Pakistan is not in top 10 countries of the world regarding mushroom cultivation and production?
2. Define spawn. Explain different types of techniques used for the production of spawn of *Volvariella* species.
3. Discuss the production status of *Agaricus* species in the world and Pakistan.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: Agriculture and Environmental Pollution
Course Code: BOT-SP-14

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

i.   What are the causes of air pollution?
ii.   What are the impacts of pesticides on agriculture?
iii.   Write a detailed note on ozone and its impacts on plants.
iv.   What is the difference between general and specific heavy metals?
v.   How does sewage sludge affect the productivity of agriculture?
vi.   What are different methods for assessing air pollution?

Q.2.   Answer the following questions.

1.   (a) Sources and impacts of methane.   (04 Marks)

   (b) Particulate matter.   (03 Marks)

   (c) Acid rain.   (03 Marks)

2.   (a) Discuss the causes of water pollution.   (05 Marks)

   (b) How the copper and zinc impact the plants as heavy metals?   (05 Marks)

3.   (a) Discuss the products of vegetation burning and how it impacts the environment.
                    (05 Marks)

   (b) Give the sources and impacts of air pollution.   (05 Marks)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1) Draw a diagram of theta mechanism of Plasmid replication.
2) Describe stable maintenance in plasmid and genes involved in it.
3) Describe type II restriction modification systems?
4) Discuss DNA Methylation as an epigenetic change.
5) Draw a diagram of "short patch Base excision" repair mechanism.
6) Describe Bacteriocine and toxin production.

Answer the following questions.   (3x10=30)

1) Differentiate between *Mar* and *Mcr* mechanism of restriction modification with examples.
2) Describe post replication repair mechanism and draw diagram.
3) Describe plasmid structure and plasmid born functions in bacteria.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1. GENETICALLY MODIFIED ORGANISMS & MUTANT ORGANISMS
2. α-RADIATIONS & β-RADIATIONS
3. WATER BORN Diseases & AIR BORN Diseases
4. BIOSAFETY & BIOETHICS
5. RADIOACTIVITY & CONTAMINATION
6. REPRODUCTIVE CLONING & THERAPEUTIC CLONING

Q.2.   Answer the following questions.   **(5x6=30)**

i. Write in detail about the HAZARDOUS effects caused by UV-RADIATIONS and X-RAYS.

ii. Describe various beneficial MICRO-ORGANISMS.

iii. What are the appropriate measures that should be taken care of regarding disposal of RADIOACTIVE materials from the laboratories?

iv. What are the various HAZARD groups of organisms?

v. Write a note on the beneficial use of RADIATIONS in the field of health.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (15x2=30)

1. How does increased CO_2 concentration affect photosynthesis in plants?

2. Define the potential impact of climate change on soil nutrient availability.

3. What are the physiological effects of ozone exposure on crop productivity?

4. Mention one trait that enhances heat tolerance in crops.

5. How does climate change disrupt plant-insect interactions?

6. What is the role of waterproofing crops in the context of climate adaptation?

7. State one physiological strategy for flooding survival in plants.

8. What is the role of microorganisms in oceanic global change?

9. How does polyploidy enhance cold climate adaptation in plants?

10. Name one evolutionary response to anthropogenic climate change.

11. What are stomatal adjustments in response to ozone exposure?

12. Mention one example of an ecological response to climate change.

13. State the importance of heat shock proteins in crop heat tolerance.

14. What is the significance of polyploidy in plant adaptation?

15. Highlight one physiological change in plants due to drought stress.

Q.2.   Answer the following questions.   (4x7.5=30)

1. Discuss the effects of rising atmospheric CO_2 on plant growth and productivity.

2. Explain the potential impact of climate change on nutrient availability and its consequences for crops.

3. Elaborate on effective flooding survival strategies adopted by plants.

4. Describe the evolutionary and ecological responses of plants to anthropogenic climate change.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(5x6=30)**

1. ACIDOPHILES & NEUTROPHILES
2. DENITRIFICATION & NITRIFICATION
3. ORGANOTROPHS & LITHOTROPHS
4. MESOPHILES & THERMOPHILES
5. FACULTATIVE ANAEROBES & OBLIGATE ANAEROBES

Q.2.   Answer the following questions.   **(3x10=30)**

1. Describe in detail MICROBIAL DETOXIFICATION of pollutants.
2. Write about the effect of various environmental factors on the growth of BACTERIA.
3. Write a note on ENVIRONMENTAL LAW and BIOSAFETY guide lines.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1) Discuss basic features of a Plasmids.

2) Explain the nomenclature of restriction enzymes. Provide at least two examples

3) Describe what are lysogenic phages?

4) Discuss strategies to identify/select recombinants.

5) What is the mechanism of Phange DNA transfer into bacterial cell.

6) Define the following terms:

   1) Epigenetic Change 2) Genomic DNA 3) Methylation 4) Restriction enzyme 5) Gene cloning

Q.2.   Answer the following questions.   **(3x10=30)**

1) Describe role of gene cloning in Agriculture.

2) Discuss the strategy to study the gene expression.

3) What are manipulative enzymes? Explain cutting and joining of DNA molecules.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

(15x2=30) السؤال الأول: أجب عن الأسئلة التالية باختصار:

1- كم قدحاً شرب أبو فهد من العرق؟   2- ماذا رأى أبو فهد تحت القنطرة؟   3- من هو كاتب "شمس صغيرة"؟

4- كيف كان الزقاق في الليل عندما رجع أبو فهد إليه؟   5- ماذا سمع أبو فهد عند وقت وفاته؟

6- لماذا يريد كاتب " مات أهلي " أن يكون ثمرة يانعة في وطنه ؟   7- أين كان الكاتب يسكن عندما كتب "مات أهلي"؟

8- من هو مؤلف "الوعد الحق" ؟   9- من كان عمار بن ياسر؟   10- من كاتب كتاب "العبرات"؟

11- ماذا ذبح أبو طلحة لرسول الله ؟   12- ماذا قال الأنصار للمهاجرين؟

13- ماذا كان رسول الله ﷺ يفعل إذا جاء الضيوف؟   14- إلى أين كان المسلم يذهب إذا أراد أن يتعلم الدين؟

15- ماذا قال رسول الله ﷺ عن إكرام الضيف ؟

(3x10=30) درج ذیل سوالات کے جوابات تحریر کریں۔

السؤال الثاني: اكتب ملخصا لقصة "اليتيم".

السؤال الثالث: اكتب ملخصا لقصة "المضيف الجائع".

السؤال الرابع: إقرأ فقرة تالية و أجب عن الأسئلة الواردة أدناها:

إن للذوق مراحل كمراحل الطريق، ودرجات كدرجات السلم. فهو يبدأ بإدراك الجمال الحسي: من صورة جميلة، ووجه جميل، وزهرة جميلة، وبستان جميل، ومنظر طبيعي جميل، ثم إذا أحسنت تربيته ارتقى إلى إدراك جمال المعاني: فهو يكره القبح في الضعة والذلة، ويعشق الجمال في الكرامة والعزة، وينفر من أن يظلم أو يُظلم، ويحب أن يعدل ويعدل معه، ثم إذا هو ارتقى في الذوق كره القبح في أمته، وأحب الجمال فيها، فهو ينفر من قبح البؤس والفقر والظلم فيها، وينشد جمال الرخاء والعدل في معاملتها، فيصعد به ذوقه إلى مستوى المصلحين. فالإصلاح المؤسس على العقل وحده لا يجدي، وإنما يجدي الإصلاح المؤسس على العقل والذوق جميعا.

الأسئلة: 1- من أين أخذت هذه العبارة ومن مؤلفها ؟ 2- اكتب بعض المظاهر للجمال الحسي 3- ماذا يحدث عندما يدرك الإنسان جمال المعاني؟ 4- متى يكره الإنسان القبح في أمته، ويحب الجمال فيها ؟ 5- ترجم هذه العبارات بالأردية:

(أ) فهو يكره القبح في الضعة والذلة.   (ب) فالإصلاح المؤسس على العقل وحده لا يجدي.   (ج) وينشد جمال الرخاء والعدل في معاملة أمته.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

(10x3=30)

السؤال الأول: أجب عن الأسئلة التالية بإيجاز.

1. عرّف علم البديع .

2. عرّف الإنشاء مع ذكر نوعيه.

3. عرّف السجع مع تقديم المثال .

4. عرّف المحسنات المعنوية واذكر أهمها.

5. عرّف الطباق والمقابلة. وضح بالأمثلة.

6. عرّف الفصاحة لغة واصطلاحًا.

7. كيف تتحقق فصاحة المفرد(الكلمة)

8. كيف تتحقق فصاحة الكلام؟

9. ماذا يراد بفصاحة المتكلم؟

10.   عرّف البلاغة لغة واصطلاحًا.

(2x15=30)

درج ذیل سوالات کے جوابات تحریر کریں۔

السؤال الثاني: عرّف الكناية واذكر أنواعه. وضّح إجابتك بالتمثيل.

السؤال الثالث: عرّف المجاز العقلي واذكر أهم علاقاته. وضّح إجابتك بالأمثلة.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

(6x5=30)

السؤال الأول: أجب عن الأسئلة التالية بإيجاز

1. ما هي أغراض الشعر الجاهلي؟
2. ماذا تعرف عن سيدنا حسان بن ثابت رضي الله عنه؟
3. أكتب بيتًا للجرير -الشاعر الاموي الشهير-
4. أكتب أسماء ثلاثة شعراء من عصر صدر الإسلام
5. ما هو مطلع معلقة زهير بن أبي سلمى؟
6. ماذا تعرف عن الشاعر الفرزدق؟

(3x10=30)

درج ذیل سوالات کے جوابات تحریر کریں۔

السؤال الثاني: اشرح البيتين التاليين باللغة العربية واكتب اسم شاعرهما

ومن هاب أسباب المنايا ينلنــــــه   وإن يرق أسباب السماء بسلم

ومن يجعل المعروف في غير أهله   يكن حمـــــده ذما عليه ويندم

السؤال الثالث: أكتب اسم شاعر البيتين التاليين واشرحهما باللغة العربية

ستبدي لك الأيام ما كنت جاهلا   ويأتيـك بالأخبـار مـن لـم تــزود

وظلم ذوي القربى أشد مضاضة   على المرء من وقع الحسام المهند

السؤال الرابع: اشرح البيتين التاليين باللغة العربية واكتب اسم شاعرهما

وإن صخرا لوالينا وسيدنا   وإن صخرا إذا نشتوا لنحار

حمال ألـــوية، هباط أودية   شهاد أندية، للجيش جـــرار

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر1:   نیچے دیئے گئے اجزاء کے مختصر جوابات عربی زبان میں لکھئے۔   (5x6=30)

1: هل يصحّ النقلُ من المراجع؟

2: ما هي طريقة الإحالة؟ اذكر/اذكري نموذجًا عمليًّا.

3. عرّف/عرّفي الهامش و بيّن/بيّني أهميّته؟

4: ما هي عناصر مقدمة البحث؟

5: اذكر/اذكري ستًّا من علامات الترقيم؟

تفصیلا جوابات عربی زبان میں لکھئے۔   (3x10=30)

Q.2: عرّف/عرّفي المخطوط، مع ذكر أهمية المخطوطات العربية، وما هي الأمور التي تشملها مقدمة التحقيق؟

Q.3: ماذا تعرف/تعرفين عن الاقتباس النصي و شروطه؟ اذكروا بالتفصيل.

Q.4: اذكر/اذكري مراحل إعداد خطة البحث مفصّلًا؟

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

(15x2=30)

السؤال الأول: أجب عن الأسئلة التالية بالاختصار.

1- اذكر الاسم الكامل لامرئ القيس؟

2- لماذا سمّيت المعلّقات بالمذهبات؟

3- متى وأين وُلِدَ عمرو بن كلثوم؟

4- ما هي الأغراض التي تناولها الشعراء الجاهليون في شعرهم؟

5- ماذا أعطى الرسول ﷺ كعب بن زهير كجائزةٍ له؟

6- ما سبب حزن الخنساء الشديد على أخيها صخر؟

7- بماذا نصح علي ﷺ الفرزدق حينما لقيه مع أبيه؟

8- اذكر أي شعر لحسان بن ثابت؟

9- اذكر سطرين عن قس بن ساعدة الأيادي الخطيب الشهير؟

10- متى ولد عمر بن أبي ربيعة؟

11- اذكر اسم النابغة الذبياني؟

12- لماذا لُقِّب الأخطل بهذا اللقب؟

13- هل عمرو بن معديكرب من أعلام النثر الجاهلي؟

14- من هو زياد بن أبيه؟

15- لمن قال الرسول ﷺ هذا القول: "اهجم ومعك روح القدس"؟

(3x10=30)

أجب عن الأسئلة التالية بالتفصيل.

السؤال الثاني: عرّف الأدب و ماذا تعرف عن تحديد العصور التاريخية.

السؤال الثالث: اكتب عن حياة امرئ القيس بالتفصيل.

السؤال الرابع: ماذا تعرف عن الأخطل وشعره؟

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

(6x5=30)

السُّؤال (1) أجب عن الأسئلة الآتية بإيجاز:

أ. اكتب تعريف "الشعر العربيّ"

ب. ما هي أركان التَّفاعيل؟

ج. ما هي القاعدة في الكتابة العروضية؟ وضّحها بالمثال

د. ما الفرق بين الصَّدر والعجز؟

هـ. عرِّف بـ "الوقص".

و. ما هي حركات القافية؟

السُّؤال (2) قطِّع البيت التالي واذكر اسم البحر مع بيان التغييرات العروضية الَّتي دخلته: **(10)**

وَإِذَا صَحَوْتُ فَمَا أُقَصِّرُ عَنْ نَدًى   *   وَكَما عَلِمْتِ شَمَائِلِيْ وَتَكَرُّمِيْ

السُّؤال (3) قطِّع البيت التالي واذكر اسم البحر مع بيان التغييرات العروضية الَّتي دخلته: **(10)**

لَا خَيْرَ فِيْمَنْ كَفَّ عَنَّا شَرَّهُ   *   إِنْ كَانَ لَا يُرْجَى لِيَوْمٍ خَيْرُهُ

السُّؤال (4) بيِّن حروف القافية وحركاتها بعد تحديد القافية في البيت التالي: **(10)**

وَمَنْ لَمْ يَذُدْ عَنْ حَوْضِهِ بِسِلاحِهِ   *   يُهَدَّمْ، وَمَنْ لَا يَظْلِمِ النَّاسَ يُظْلَمِ

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (5x6=30)

1. Define the survey method.

2. What is participant observation?

3. List two advantages of content analysis.

4. What is the difference between parametric and non-parametric tests?

5. Explain the term "descriptive statistics."

Q.2.   Answer the following questions.   (3x10=30)

1. Describe the process of conducting a case study with an example.

2. Explain the experimental method and its importance in research.

3. Discuss the techniques of data analysis in qualitative research

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Developments Communication/ Journalism
Course Code: BSCS-402

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

سوال نمبر1:   درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

1   Define Development support Communication.

1:    ترقیاتی حمایتی ابلاغ کی تعریف کریں۔

2   Discuss the sources of change.

2:    تبدیلی کے ذرائع بیان کریں۔

3   Explain the concept of campaign in your words.

3:    مہم کے تصور کی اپنی الفاظ میں وضاحت کریں۔

4   How lack of education and Training is a challenge for Development Communication in Pakistan

4:    تعلیم اور ٹریننگ کی کمی سے کس طرح سے پاکستان میں ترقیاتی ابلاغ کے لیے بڑا مسئلہ ہے

5   Discuss the process and goal of development in brief.

5:    ترقی کے عمل اور مقاصد کو مختصراً تحریر کریں۔

6   Differentiate the concept of development Journalism and Development Communication.

6:    ترقیاتی صحافت اور ترقیاتی ابلاغ میں فرق واضع کریں۔

Q.2.   Answer the following questions.   (3x10=30)

سوال نمبر2:   درج ذیل سوالات کے مفصل جوابات تحریر کریں۔

1   Why planning is important for a Development Communication Campaign? Discus in your words.

1:    ترقیاتی ابلاغی مہم کے لیے پلاننگ کیوں اہم ہے؟ اپنے الفاظ میں بیان کریں۔

2   Write a detail note on the challenges of Development Communication in Pakistan.

2:    پاکستان میں ترقیاتی ابلاغ کے چیلنجز پر مفصل نوٹ لکھیں۔

3   Define the concept of social change and explain it with examples.

3:    معاشرتی تبدیلی کی تعریف اور مثالوں سے وضاحت کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Write short note on the following: **(6x5=30)**

سوال نمبر:1۔   مندرجہ ذیل پر مختصر نوٹ لکھیں۔

i.   Describe shortly the code of ethics for media professionals.

i.   میڈیا سے منسلک افراد کے لئے ضابطہ اخلاق مختصر بیان کیجئے۔

ii.   To regulate electronic media in Pakistan, Describe shortly salient features of PEMRA ordinance.

ii.   پاکستان میں الیکٹرانک میڈیا کو ریگولیٹ کرنے کے لئے پیمرا آرڈیننس کی نمایاں خصوصیات مختصر اًبیان کریں۔

iii. Define shortly the laws for defamation in Pakistan.

iii. پاکستان میں ہتک عزت کے قوانین کی مختصر اًوضاحت کریں۔

iv.   Describe shortly the sources of ethics in Pakistan.

iv.   پاکستان میں اخلاقیات کے ذرائع کو مختصر اًبیان کریں۔

v.   Enlist the key features of copy right Act.

v.   کاپی رائٹ ایکٹ کی نمایاں خصوصیات لکھیں۔

vi.   Enlist five principles of ethical journalism.

vi.   صحافتی اخلاقیات کے پانچ اصول لکھیں۔

Q.2.   Answer the following questions.   **(2x15=30)**

سوال نمبر:2۔   درج ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

i.   How does government use censorship and regulation to control the media? Debate on it with perspective to Pakistan society.

i.   حکومت میڈیا کو کنٹرول کرنے کے لئے سنسر شپ اور ریگولیشن کا استعمال کیسے کرتی ہے؟ پاکستانی معاشرے کے تناظر میں اس پر بحث کریں۔

ii.   To regulate the press and imposed censorship, discuss in detail key features of The Pakistan Press and Publication Ordinance and its impact on press freedom.

ii.   پریس کو ریگولیٹ اور سنسر شپ کو مسلط کرنے کے لئے پاکستان پریس اینڈ پبلی کیشن آرڈیننس کی اہم خصوصیات اور آزادئ صحافت پر اس کے اثرات پر تفصیل سے بات کیجئے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1. Answer the following short questions: **(6x5=30)**

سوال نمبر۱:   درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

1. How can you arrange a radio discussion on "Increasing Population of Pakistan?"

آپ ''پاکستان میں بڑھتی ہوئی آبادی '' کے موضوع پر ایک ریڈیو مباحثے کا اہتمام کیسے کریں گے؟

2. Write a brief note on "News Presentation".

ریڈیو کی خبروں کو پیش کرنے کے حوالے سے ایک مختصر نوٹ تحریر کریں۔

3. What are the important steps to be taken for preparing an interview of Federal Information Minister for Radio?

آپ اپنے ریڈیو کے لئے وفاقی وزیر اطلاعات کا انٹرویو کرنے کے لئے کون کون سے اقدامات کریں گے؟

4. How radio news are different from news written for a newspaper?

ریڈیو کے لئے لکھی جانے والی خبریں اخباروں کی خبروں سے کیسے مختلف ہوتی ہیں؟

5. Describe various steps involved in editing of news for radio.

ریڈیو کی خبروں کی ایڈیٹنگ کے مختلف مراحل بیان کیجئے

6. Write a Note on Characteristics of radio news reader.

ریڈیو پر خبریں پڑھنے والے شخص میں کون کون سی خصوصیات ہونی چاہیں۔ اس بارے میں مختصر نوٹ لکھیں

Q.2. Answer the following questions.   **(3x10=30)**

سوال نمبر۲:   درج ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

1. How can you describe "Features of Radio News"?

آپ ریڈیو نیوز کی خصوصیات کو کیسے بیان کریں گے؟

2. What are the essential points to be kept in mind while preparing a radio news bulletin?

ریڈیو بلیٹن کی تیاری کے لئے کن باتوں کا دھیان میں رکھا جانا ضروری ہے۔

3. Describe various sources of news which you can use for preparing a radio story on "Flood Damages in Punjab"?

پنجاب میں سیلاب سے ہونے والے نقصانات کے حوالے سے ریڈیو کے لئے ایک نیوز سٹوری کی تیاری کے لئے آپ کون کون سے خبری ذرائع سے معلومات حاصل کریں گے؟

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions: (6x5=30)

سوال نمبر1:   درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

1. What is News Gate Keeing in News Channels?

1۔ نیوز چینلوں میں نیوز گیٹ کیپنگ سے کیا مراد ہے؟

2. What is As LIVE in News?

2۔ نیوز میں ایز لائیو سے کیا مراد ہے؟

3. What is the significance of Copy Editor?

3۔ کاپی ایڈیٹر کی اہمیت پر روشنی ڈالیں۔

4. What is the Tilt up & Tilt down?

4۔ ٹیلٹ اپ اور ٹیلٹ اپ شاٹس میں کیا فرق ہے؟

5. What is Run Down?

5۔ نیوز میں رن ڈاون سے کیا مراد ہے؟

6. What is Synchronization in TV News?

6۔ ٹی وی نیوز میں سنکرونائزیشن سے کیا مراد ہے؟

Q.2.   Answer the following questions.   (3x10=30)

سوال نمبر2:   درج ذیل سوالات کے جوابات تحریر کریں۔

1. What is News Package? What things must be kept in mind while producing a News Package?

1۔ نیوز پیکج سے کیا مراد ہے؟ نیوز پیکج کی تیاری میں کن باتوں کا خیال رکھا جاتا ہے؟

2. Why Interview is important in TV Channels? What are the various steps of conducting an interview?

2۔ ٹی وی چینلوں میں انٹرویوز کی کیا اہمیت ہے؟ انٹرویو کرنے کے لئے کن کن مراحل سے گزرنا پڑتا ہے؟

3. Define Media Ethics. Do you think our TV Channels follow Media Ethichs? Explain with Examples

3۔ میڈیا کے ضابطہ اخلاق سے کیا مراد ہے؟ کیا ہمارے ٹی وی چینلز میڈیا کے حوالے سے ضابطہ اخلاق پر عمل پیرا ہیں؟ مثالوں سے واضح کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1. Answer the following short questions: **(6x5=30)**

سوال نمبر:1۔ درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

1. Explain the importance of advertising to consumers.

صارفین کے لیے اشتہارات کی اہمیت کی وضاحت کریں۔

2. What are the key differences between advertising and public relations?

اشتہار سازی اور تعلقات عامہ کے درمیان اہم فرق کیا ہیں؟

3. What is media buying, and why is it important in advertising?

میڈیا خریدنا کیا ہے، اور اشتہار سازی میں یہ کیوں ضروری ہے۔

4. Briefly discuss some major disadvantages of advertising.

اشتہارات کے کچھ بڑے نقصانات پر مختصر اُبات کریں۔

5. Provide a brief overview of the various types of outdoor advertising.

آؤٹ ڈور ایڈورٹائزنگ کی مختلف اقسام کا ایک مختصر جائزہ فراہم کریں۔

6. In what ways does advertising influence the practice of journalism?

اشتہارات کس طرح صحافت پر اثر انداز ہوتے ہیں۔

Q.2. Answer the following questions.   **(3x10=30)**

سوال نمبر:2۔ درج ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

1. Define advertising and explain its five major functions with relevant examples.

اشتہار سازی کی تعریف کریں اور متعلقہ مثالوں کے ساتھ اس کے پانچ بڑے افعال کی وضاحت کریں۔

2. Provide a brief overview of the organizational structure of a typical advertising agency. Additionally, describe the functions and operations of the creative department.

ایک روایتی اشتہاری ایجنسی کے تنظیمی ڈھانچے کا مختصر جائزہ فراہم کریں۔ مزید بر آں، تخلیقی شعبہ کے افعال اور کاموں کی وضاحت کریں۔

3. Discuss in detail the key techniques and skills essential for becoming an effective advertising copywriter.

ایک مؤثر اشتہاری کاپی رائٹر بننے کے لیے ضروری کلیدی تکنیکوں اور مہارتوں پر تفصیل سے بحث کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions: (6x5=30)

سوال نمبر:1۔   مندرجہ ذیل سوالات کے مختصر جوابات لکھیں۔

1. Describe strategic communication in the context of PR.

تعلقات عامہ کے تناظر میں اسٹریٹجک مواصلات کی وضاحت کریں۔

2. What is a PR Pitch? Give your opinion.

پبلک ریلیشن پچ کیا ہے؟ اپنی رائے دیں۔

3. Describe Publics in Public Relations.

عوامی تعلقات میں پبلکس کی وضاحت کریں۔

4. State any three objectives of Public Relations.

تعلقات عامہ کے کوئی تین مقاصد بیان کریں۔

5. Enlist the important duties of a Public Relations officer.

پبلک ریلیشن آفیسر کے اہم فرائض کی فہرست بنائیں۔

6. Differentiate between Advertising and Public Relations.

اشتہارات اور تعلقات عامہ کے درمیان فرق کریں۔

Q.2.   Answer the following questions.   (3x10=30)

سوال نمبر:2۔   مندرجہ ذیل سوالات کے تفصیلی جوابات لکھیں۔

1) Discuss the benefits of Corporate Public Relations in the context of Pakistani society.

پاکستانی معاشرے کے تناظر میں کارپوریٹ پبلک ریلیشنز کے فوائد پر تبادلہ خیال کریں۔

2) Examine the role and importance of opinion leaders for successful Public Relations.

کامیاب تعلقات عامہ کے لیے رائے عامہ کے رہنماؤں کے کردار اور اہمیت کا جائزہ لیں۔

3) Explain the ways through which Public Relations can help boost sales of a business.

ان طریقوں کی وضاحت کریں جن کے ذریعے تعلقات عامہ کسی کاروبار کی فروخت کو بڑھانے میں مدد کر سکتے ہیں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(15x2=30)**

1. What is Environmental Management System?
2. How does acid rain affect building materials?
3. Give Temperature and Pressure variation in the Troposphere.
4. How can COD of waste water be measured?
5. Give the sources and sink of oxides of carbon in the atmosphere.
6. Discuss Radon as an indoor pollutant.
7. How can permanent hardness of water be measured?
8. What is meant by indoor air pollution?
9. Briefly explain environmental degradation and its effects on human health.
10. Justify that excess use of fertilizer is a threat to marine life.
11. Briefly explain tropopause and lapse rate.
12. How can industrial pollutants be minimized?
13. Discuss the impacts of modern life style on the environment.
14. Briefly explain smog and its effects on human beings.
15. What is meant by the term POLAR VERTEX?

      Answer the following questions.   **(3x10=30)**

Q. 2 (a) Give the mechanism of Green House and Enhanced Green Effect.
       (b) How do Heavy metals contribute to water pollution?

Q. 3 (a) Explain Activated Sludge process in detail.
       (b) Give various types of Environmental pollution.

Q. 4 (a) How Nitrogen circulates in the Environment.
       (b) What are pesticides? Give their classification and harmful effects.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(15x2=30)**

a) What is Thixotropy phenomenon .

b) What do you mean by critical micelle concentration (CMC)

c) What is homogeneous catalysis, write two examples?

d) Enzymes as catalysts are specific in nature, justify.

e) What is meant by adsorption isotherm?

f) Different between electrophoresis and electro osmosis.

g) Different between physical and chemical adsorption.

h) What is emulsification?

i) Write any two postulates of Langmuir adsorption isotherm.

j) What is the effect of surface area on adsorption.

k) Define autocatalysis.

l) Define enzyme catalysis with a suitable example.

m) What do you mean by colloidal dispersion.

n) How Tyndall effect is observed? What is emulsification?

o) Write two points of difference between colloid and sols.

Answer the following questions.   **(3x10=30)**

Q. No. 2

a) Discuss heterogeneous kinetics of single system reactions. Give examples.

Q. No. 3

a) Explain different electrical and optical properties of colloids.

Q. No. 4

a) Explain in detail Eiley Rideal mechanism.

b) Explain Michaelis-Menton mechanism for enzyme catalysis.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

(a) What is spectroscopy? Give classification of spectroscopies on the basis of special regions.

(b) What is fluorescence? Discuss the process of fluorescence on the basis of Jablonski's diagram.

(c) What is rotational spectroscopy? Discuss the factors affecting population of rotational energy level.

(d) What are thermodynamic properties of solution? Discuss briefly.

(e) Differentiate fluorescence and phosphorescence?

(f) Describe the solution formation process.

Answer the following questions.   (3x10=30)

Q. 2. What is harmonic oscillator? Derive the expression for its vibrational energy with the help of diagram.

Q. 3. Discuss quantum efficiency and its experimental determination.

Q. 4. Discuss the theoretical basis of Raoult's law.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (15x2=30)

(i)   Give two similarities between B and Si.
(ii)   How Dimethyl glyoxime helps in gravimetric analysis?
(iii)   What is Nitron? Give its use.
(iv)   Write two characteristics of chelates.
(v)   Write peculiar behavior of Nitrogen in group VA.
(vi)   What are the adsorption organic reagents.
(vii)   Why is buffer used in EDTA titrations? Give one example.
(viii) What is 3c-2e bond. Give one example.
(ix)   Justify BeO is amphoteric in nature.
(x)   Give two drawbacks of VSEPR theory?
(xi)   In which respect Carbon resembles with Phosphorus.
(xii)   How does stability of chelates depend upon metal ion?
(xiii) Which indicators are used in EDTA titrations?
(xiv) Draw the structure of $[Zn\text{-}EDTA]^{-2}$
(xv)   In which respect VBT differs from MOT.

Q.2.   Answer the following questions.   (3x10=30)

i.   Give correlation diagram (Walsh diagram) approach to determine the shape of triatomic molecule.

ii.   Give classification and methods for the detection of Chelates.

iii.   Discuss periodic anomalies of non-metals and post transition metals.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1. Explain the structure of a typical spinel oxide and give an example.
2. Discuss the trend in the acidity of oxides across a group using CO_2 and SiO_2 as examples.
3. Explain the role of molten salts in high-temperature reaction chemistry, with a specific example of their application.
4. Define the dielectric constant and describe its importance in solvent properties.
5. Define natural and artificial radioactivity and give one example of each.
6. Describe the relationship between the half-life period and the disintegration constant for a radioactive substance.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Provide a detailed analysis of the relationship between the structure of covalent oxides and their thermodynamic stability. Discuss how periodic trends and hybridization influence this stability.
2. Write the reaction of HF with SiO_2 and explain its significance in etching processes.
3. Explain the concept of radioactive decay for the disintegration of Uranium-238 to Thorium-234. Provide calculations to derive its half-life.

## THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

i.   Among the following which is stronger base and which is better nucleophile in an aqueous solution? Briefly justify your answer.

$$R\bar{O}, \quad R\bar{S}$$
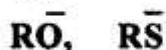
ii. Explain why the reaction of an alkyl halide with ammonia gives a low yield of primary amine.

iii. What is deuterium kinetic isotope effect? Explain with example.

iv. Would you expect acetate ion to be a more reactive nucleophile in an S_N2 reaction carried out in methanol or in dimethyl sulfoxide? Why?

v.   If 2-fluoropentane were to undergo an E1 reaction, would you expect the major product to be the one predicted by Zaitsev's rule? Explain.

vi. *cis*-1-Bromo-4-*tert*-butylcyclohexane and *trans*-1-bromo-4-*tert*-butylcyclohexane both react with sodium ethoxide in ethanol to give 4-*tert*-butylcyclohexene. Explain why the *cis* isomer reacts much more rapidly than the *trans* isomer.

Answer the following questions.

Q. No. 2.   Complete the following reactions and draw the mechanisms for all steps involved. If there is possibility of more than one product, indicate which product is major?

[4 x 6 = 24]
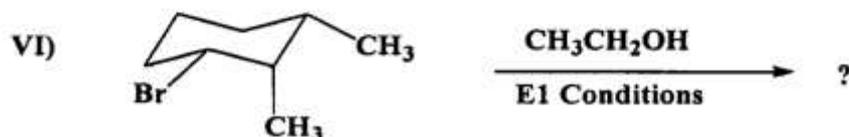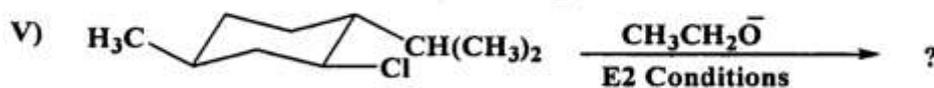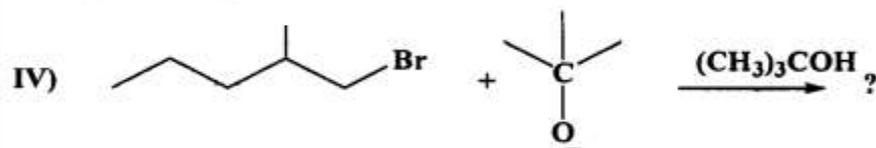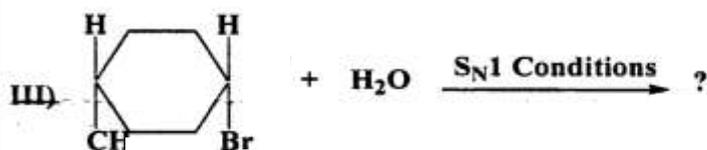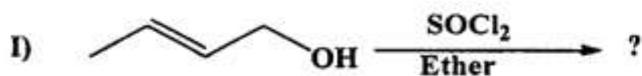
Q. No. 3.   How can you convert OH group into better leaving group? Explain two methods with mechanism.

[6]

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   In pyridinium oxide, the most favorable position towards attack of an electrophile as well as nucleophile is γ-carbon. How would you justify this statement?

ii.   Propose a suitable mechanism for the Hantzsch synthesis of pyridine ring.

iii.   Describe the role of furan as a diene in Diels Alder reaction with suitable examples.

iv.   The neighboring provides anchimaric assistance to a leaving group in a rearrangement reaction when needed? Explain with the help of examples.

v.   Draw the complete mechanism of Baeyer-Villiger rearrangement.

vi.   Propose a mechanism that shows why p-chlorotoluene reacts with sodium hydroxide at 350 °C to give a mixture of p-cresol and m-cresol.

Answer the following questions.

Q.2.   (1) How would you synthesize following using benzene. Write complete mechanism of each step involved.   **9**

I)   m-bromobenzene sulphonic acid   ii) o-bromonitrobenzene   iii) meta cresol

(2) Describe one method each for synthesis of pyrrole and pyridine?   **6**

Q.3. Complete the following reactions and draw their mechanisms?   (3 X 5 = 15)
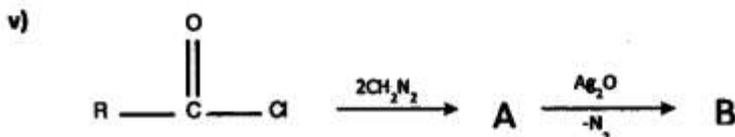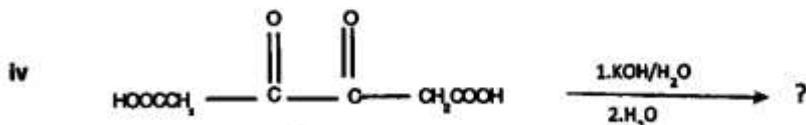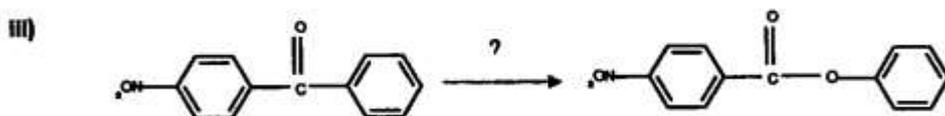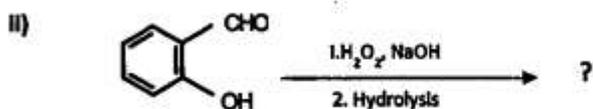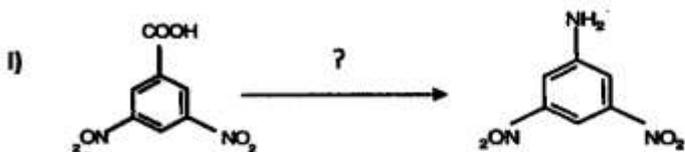
THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (15x2=30)

i.   Define Van Deemter Equation.
ii.   Define retention time. On what factor does it depend?
iii.   Differentiate between Normal phase chromatography and Reverse phase chromatography.
iv.   Differentiate between split mode injectors and splitless mode injectors.
v.   What is liquid junction potential in potentiometry?
vi.   Differentiate between primary and secondary reference electrode.
vii.   How is calomel electrode represented?
viii.   Define standard electrode potential.
ix.   What is thermocouple?
x.   Give two differences between DSC and DTA.
xi.   What is thermal analysis?
xii.   Define thermometric titration.
xiii.   What is pre column in HPLC?
xiv.   Why is derivatization required in HPLC?
xv.   What is reverse phase mode in HPLC?

Answer the following questions. (3x10=30)

Q: No. 2 (a) Derive Nernst Equation.

   (b) How pH is determined from glass electrode?

Q: No. 3 (a) Describe the characteristics of detectors in gas chromatography.

   (b) Describe the working of thermal conductivity detectors.

Q: No. 4 (a) Describe application of TDA curves.

   (b) How sample is introduced in HPLC?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (15x2=30)

1. Define the basic principle of Raman spectroscopy.
2. What is the necessary condition for IR spectroscopy?
3. Classify various regions in IR Spectrum.
4. How is Raman different from IR Spectroscopy?
5. Is CO_2 an IR active compound? Justify your answer.
6. What is the difference between Bathochromic and Hypsochromic effect?
7. What are Auxochromes? Give examples.
8. What is the effect of conjugation on absorption maximum of a compound?
9. Enlist the applications of Beer Lambert's Law.
10. What do we mean by deviation from the ideal behaviour of Beer Lambert's Law?
11. what is the range of UV radiation?
12. Outline the working principle of Plasma torch.
13. Enlist the applications of Fluorescence Spectroscopy.
14. What is Plasma?
15. Outline the basic principle of ICPES.

Answer the following questions.   (3x10=30)

Q2.
a) Describe the basic principle of IR Spectroscopy.
b) Discuss various modes of vibrations in IR spectroscopy.

Q3.
a) Discuss the interaction of electromagnetic radiations with matter
b) Discuss the working principle of photomultiplier tube?

Q4.
a) Discuss the principle of Atomic Fluorescence spectroscopy.
b) Discuss the instrumentation of Spectrofluorometer.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (15x2=30)

1. Explain the term isomerization.
2. What are the products of catalytic cracking?
3. Write any four fractions with carbon range obtained from fractional distillation.
4. What is octane number of fuel?
5. What is the significance of polymerization in crude oil processing?
6. Why non-fibrous materials are removed in paper manufacturing?
7. Which agriculture waste is used in paper manufacturing?
8. What is the role of beating process in paper manufacturing?
9. What is meant by delignification?
10. What are paper finishing operations?
11. What is the function of potash fertilizers?
12. What is meant by complete fertilizers?
13. Give two examples of micro and macro nutrients for soil.
14. What are natural organic fertilizers, give examples.
15. What is the difference between direct and indirect fertilizers?

Q.2.   Answer the following questions.   (6x5=30)

1. Explain refining process in petroleum industry; also write down its main products.
2. What is catalytic reforming and why it is used?
3. Compare Sulphate and Sulphite processes for paper manufacturing.
4. Discuss the environmental aspects of paper industry.
5. Write raw materials, chemical reactions in production of urea and its assimilation in soil.
6. What is the function of phosphatic fertilizers, also describe difference between calcium superphosphate and triple superphosphate?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(15x2=30)**

i.   Differentiate between Vat and Acid dyes.

ii.   How properties of steel are related to carbon content?

iii.   Give basic principle of Electroplating.

iv.   Differentiate between radiation filter and monochromator?

v.   Give names and formula of important ores of iron.

vi.   What is meant by passivity of iron?

vii.   What are Nitroso dyes?   Give one example.

viii.   Describe Flame Ionization Detector used in Gas Chromatography.

ix.   Why On-line analysis is important in Industry?

x.   What are the main constituents of Stainless Steel.

xi.   What is roughing in steel?

xii.   What are Reactive dyes. Give one example

xiii.   Give the working of Electron Capture Detector (ECD) in gas chromatography.

xiv.   What is Meant by Reverse phase HPLC?

xv.   What is Blue Shift in UV Spectrum?

Q.2.   Answer the following questions.   **(6x5=30)**

a)   What is the Principle of HPLC? Give its applications in Pharmaceutical Industry.

b)   Explain the classification of Analytical Techniques w.r.t. Automation

c)   Explain the process of dyeing of cotton in detail.

d)   Explain the working of Flame Photometer.

e)   Explain the manufacturing of steel by Bessemer Method.

f)   How Electroplating of Plastics are carried out

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (15x2=30)

i.   What are the metabolic disorders that are associated with the essential fatty acids?
ii.   Sketch the Uronic acid pathway.
iii.   Write about the hormones of Renal and intestine.
iv.   What is biological reduction and oxidation?
v.   What are Ketone bodies?
vi.   Write about the absorption of carbohydrates and lipids in the body.
vii.   What is oxytocin? Write its functions?
viii. What are prostaglandins? Where are prostaglandins released from?
ix.   What is lipolysis? Discuss.
x.   Write about the importance of ATP in the biological systems.
xi.   Name the hormones that are secreted from the pancreas and adrenal glands?
xii.   Draw pathway of Glycogenesis.
xiii. Enlist the names of thyroids and parathyroid hormones?
xiv.   Differentiate between the hormones and pheromones?
xv.   Is citric acid cycle amphoteric in nature? Justify your answer.

Q.2.   Answer the following questions.

1 (a): Write in detail about β-oxidation of fatty acids.	(7)
(b): What kind of hormones are secreted by the posterior lobe of the pituitary gland?	(3)
2 (a): Discuss the digestion absorption and transport of carbohydrates and lipids.	(7)
(b): Write about the regulation of carbohydrate metabolism.	(3)
3 (a): Write in detail about Hormonal Control Mechanism.	(7)
(b): Write in detail about the electron transport chain.	(3)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(10x3=30)**

1. Difference between SERUM & PLASMA.
2. Define and explain HAPTENS?
3. RIA is used for which purposes? Explain?
4. What are the deficiency symptoms of Vitamin E?
5. What is the difference between antigen and immunogen?
6. Write Symptoms of infection?
7. What is Ultra filtration?
8. Write General composition of Blood?
9. Explain Gaseous Transport?
10. Define Adjuvants?

Q.2.   Answer the following questions.   **(2x15=30)**

1. Define Inflammation? What do you understand by the inflammatory process? Explain

2. Write in detail the chemistry, metabolism, physiological functions and deficiency symptoms of Vitamin A?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   Briefly discuss the kinds of companies according to ownership & control?

ii.   Explain the contents of statutory report?

iii. What is the procedure to convert a public company into a private company?

iv.   How membership of a company can be acquired?

v.   Why there was a need to have corporate governance mechanisms?

vi.   How the registered office clause of MOA can be changed?

Q.2.   Answer the following questions.   (3x10=30)

i.   Discuss the procedure of voluntary winding up by creditors of a company?

ii.   Elaborate the functions and powers of SECP regarding the corporate sector?

iii. Explain the alteration and reduction of share capital of companies?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

I.   How to establish pay rates?
II.   Define employee's compensation.
III.   Define Performance appraisal.
IV.   Define job analysis.
V.   Write down methods of collecting job analysis information.
VI.   Define orientation.

Q.2.   Answer the following questions.   **(3x10=30)**

I.   Define interview, its usefulness and its types with in detail.
II.   Define training and its two methods (e.g. on the job training and off the job training)
III.   Define job information analysis, its uses and methods of collecting job analysis information.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

a) What is premature death? Explain various losses or costs associated with the risk of premature death.
b) What is enterprise risk? Explain the factors that give rise to financial risk.
c) What is pooling? Explain the usefulness of pooling in the insurance business.
d) What is premium? What are the three components of premiums charged by insurers?
e) What is a subrogation? List the purposes of subrogation.
f) What is rate making? List the factors considered by life insurance actuary for rate making.

Q.2. Answer the following questions.   (3x10=30)

(1). Define risk and illustrate with examples how risk is a burden on society (Government, commercial organizations, families, and individuals).

(2). What is risk management? Explain the various methods of risk retention with their advantages and disadvantages.

(3). Define reinsurance and explain various reasons for using it.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i. Why is Managerial Economics studied?

ii. Define income elasticity of demand and describe it for luxuries and necessities.

iii. What is the sign (normally) of the coefficient of elasticity of supply?

iv. Discuss any two methods of demand estimation.

v. What is the difference in short run and long run when we talk about Monopoly?

vi. Why is linear programming helpful in managerial economics?

Q.2.   Answer the following questions.   (3x10=30)

a. Define Managerial Economics and discuss its subject matter.

b. What is monopoly? Discuss how price and output are determined under monopoly. Use diagrams to explain your answer

c. What is meant by Capital Budgeting?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. What is the primary objective in process costing?
2. Job order and process costing procedures are used by different types of industries & discuss the procedure appropriate for each type.
3. What are the distinguishing characteristics of process cost procedures?
4. Why is the gross profit figure significant?
5. What causes changes in the gross profit?
6. Explain "product mix" or "sale mix."

Answer the following questions.   (2x15=30)

Q.2.

Abdul Hadi Pvt. Ltd. uses process costing system in its large-scale baking operations. The company manufactures a food item that goes through three departments prior to completion-the Mixing Department, Baking Department and Packaging Department. The company's accountant is went to Foreign visit. The company's management wants to acquire the services of you as a cost accounting expert to prepare cost of production report of its Baking Department. The following date relates to Baking Department for the month of January 2024:

Cost from Mixing Department	Rs 300000
Cost added by the department:	
Material	100000
Labour	80000
Factory overhead	70000

The following information was also obtained from Baking Department:

Units received	20000
Units transferred to Packaging Department	15000
Units still in process	3500
Loss units	1500

Units in process at the end of January, were 80% completed with respect to Material and 70% completed with respect to labour and factory overhead. The lost units were considered as normal.

Required:

Cost of Production Report for the month of January of Baking Department

Q.3.

Aslam and Company is drafting a budget on the basis of the following data:

Direct Material Rs. 50 per unit

Direct Labour Rs. 25 per unit

Variable FOH Expenses Rs.8 per unit

Fixed FOH Costs Rs. 60,000 per month

Normal output 10,000 units per month

Sales price Rs.130 per unit

Fixed Marketing and Administrative Expense Rs. 15,000

Variable Marketing and Administrative Expense Rs 4 per unit sold

In order to build up inventory in anticipation of an increase in demand which is expected later in the year.

There are 800 units of finished goods at the beginning of month.

Production and sales units are giving below.

Production (units)	Sales (units)
January 10500	10800

Required: (a) Prepare profit statements for January

    i)   On a marginal costing basis

    ii)   On a full absorption costing basis.

    iii)   An explanation of the difference in operating income under the two concepts.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: Corporate Finance (Finance Specialization)
Course Code: COMM-406

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

a) Vertical vs horizontal merger
b) Optimal capital structure
c) Non-diversifiable risk with examples
d) Desired payback period
e) Risk adjusted discount rate
f) Financial Lease vs operating lease

Answer the following questions.   **(3x10=30)**

Q.2   Star Manufacturing Company is attempting to choose the better of two mutually exclusive projects for expanding the firm's warehouse capacity. The relevant cash flows for the projects are shown in the following table:

	Project-A	Project-B
Initial Investment [CFo]	$(100000)	$(100000)
Years	**Cash Inflows**	
1	$38000	$55000
2	38000	48000
3	38000	33000
4	38000	31000
5	38000	28000

The firm's cost of capital is 14%. Calculate:

a)   Payback period, Net Present Value (NPV) and Internal Rate of Return (IRR) of both the projects.
b)   Which project would you finally select?

Q.3   Your firm's cost analysis supervisor supplies you with the following revenue and cost data:

Sales	$1000000
Variable costs	700000
Fixed operating costs	80000
Interest expenses	25000
Preferred dividend	28000

Income tax rate is 25%.

a)   Calculate the firm's degree of operating, financial and combined leverages?
b)   Determine the total amount of sales if the firm wants to double its EBIT

Q.4   Assume a company has earnings available to common stockholders $10 million. Its target debt to equity ratio is **40%**. Determine the amount of dividends paid, and dividend payout ratio by using residual theory of dividends when new investment opportunities are in the size range of:

a) $28 million
b) $22 million
c) $14 million
d) $12 million
e) $ 5 million

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Consumer Behavior (Marketing Specialization)
Course Code: COMM-407

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   (15x2=30)

i.   What is meant by personality?

ii.   Define the term Self Image. How does it impact consumer decision making?

iii.   Consumer behavior is influenced by various cultural factors. Elaborate.

iv.   Discuss some of the important Government initiatives to protect consumers.

v.   What is Consumerism?

vi.   Explain the role of family influences on consumer behavior.

vii.   Explain the role of personal influence on consumer behavior.

viii.   Define Consumer Satisfaction.

ix.   What is the relationship between Consumer Satisfaction and Repeat Purchase?

x.   What do you understand by the term social class?

xi.   Define opinion leaders.

xii.   What is Customer Retention?

xiii.   What is Consumer Behavior?

xiv.   Differentiate between Relationship marketing and Database marketing.

xv.   Explain the concept of Group dynamics.

Q.2. **Answer the following questions.**   (3x10=30)

i.   What are various elements of learning? Describe theories of learning in detail.

ii.   Analyze the relationship between motivation and consumer buying behavior. Which factors are necessary for consumer buying behavior process?

iii.   How buying patterns and purchase decisions may vary by age, gender and stage of life. Explain with examples.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. Differentiate 'project manager' and 'sponsor' with examples?

2. Differentiate "charter document" and "scope statement" with examples?

3. Explain 'closing' phase of Project Management Life Cycle in short?

4. What is the purpose to make "Work Breakdown Structure (WBS)"? Explain with example?

5. Differentiate 'crashing' and "fast tracking"?

6. Differentiate "Quality Assurance" and "Quality Control" by taking an examples?

Answer the following questions.   (3x10=30)

1. Explain "triple constraints" in details?

2. Explain the inputs, tools and techniques, and outputs of "project quality management"?

3. In short, explain followings with examples:

   a. Controlled Centralized Team Structure

   b. Controlled decentralized Team Structure

   c. Democratic decentralized Team Structure

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (10x3=30)

1) Write a command to create a default Temporary Table space.
2) Create Spfile from init FILE.
3) Differentiate between immediate constraints and deferred constraints
4) Create a role of teacher and assign it any two object privileges and assign to Sir Imran and farhan.**(Commands only).**
5) Explain, what process is in charge of writing data to the online redo logs.
6) What are SPFILE.
7) Explain structure of binary file.
8) Which process is associated to back ground process recovery?
9) Which process in responsible for data loading in data base buffer cache in oracle 9i?
10) Explain primary background process responsible for the instance recovery.

Q.2.   Answer the following questions.

1) Mr. Imran is working as DBA in ABC (Pvt) Ltd. He has successfully updated the payroll database today (31 Jan 2008). Unfortunately, some other user has dropped the tablespace containing the important salary tables at 11:15 PM. Write down steps and commands which will be implemented by Mr. Imran to recover the important tables. **(Marks 10)**

2) Mr. Sami is making the online backup of "File1"and suddenly, power failure occurs. Write down the steps and commands required to be implemented by Mr. Sami at next startup with reasoning.   **(Marks 05)**

3) Draw sever diagram and label it properly. **(Marks 05)**

4) what is the purpose of Locally Managed Tablespaces. Create one Locally manage Tablespace. **(Marks 05)**

5) Explain row IDs. **(Marks 05)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(5x6=30)**

1. List and explain three key principles of information security.

2. What are the differences between denial-of-service (DoS) and distributed denial-of-service (DDoS) attacks?

3. Explain the role of firewalls in network security.

4. What are the primary objectives of penetration testing?

5. Briefly describe the significance of digital certificates in online transactions.

Q.2.   **Answer the following questions.**   **(3x10=30)**

1. Analyze the common threats to server-side web applications and propose measures to mitigate them.

2. Evaluate the impact of cloud computing on cybersecurity and discuss methods to address associated risks.

3. Explain the process of securing data during transmission using cryptographic protocols like HTTPS and SSH.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

i.   Define Marginal Land?
ii.   Define the concept of Marketed Surplus?
iii.   Define Form Mechanization?
iv.   Green Revolution?
v.   Define Land Tenure System?
vi.   Define Economic rent?

Answer the following questions.   **(3x10=30)**

Q.2.   Critically analyze the Transition of Agri. Forming from Subsistence forming to Diversified forming?

Q.3.   Discuss the Price-Supply Responses in backward agriculture Sector of Pakistan?

Q.4.   Discuss the Lewis model in detail?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: Money, Banking & Financial Institutions
Course Code: ECON-317

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

i. What kind of risks are associated with over-the-counter market (OTC).

ii. How an investor gets a return in treasury bills when there is no stipulated rate of return?

iii. Discuss debt servicing with reference to Pakistan. Use hypothetical examples.

iv. What market signal is floated when a company goes towards debt financing. Explain with example.

v. Draw the desired financial structure of the less developing countries like Pakistan.

vi. How does behavioral finance differ from efficient market hypothesis. Give arguments.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Discuss reasons and implications of financial crisis suffered by Pakistani financial markets in 2008.

2. Discuss different dividend growth models of common stocks.

3. Discuss the rise and fall of Enron implosion in emerging markets.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   (6x5=30)

i. What are the costs of going to work?

ii. Define elasticity of labor demand and discuss its determinants.

iii. Explain the concepts of added worker and discourage worker effects.

iv. How does competitive labor market attain equilibrium? Explain with graph.

v. Discuss the reasons for wage inequality.

vi. What is trade union? Why do they exist?

Answer the following questions.   (3x10=30)

Q. 2 Discuss the short run demand curve for labor and explain why is it downward sloping.

Q. 3 Define Monopsonistic Labor Market and show how the imposition of minimum wage could affect the equilibrium wages and employment in this market.

Q. 4 What is Signaling Model? Show how education can signal the worker's innate ability in the labor market.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   What are the primary factors influencing consumer behavior in an Islamic economy?

ii.   What are the core principles of the communist economic system?

iii.   What is the role of property rights in the Islamic economic system?

iv.   Explain Sadaqah (Voluntary Charity).

v.   What are the main objectives of economic planning in a country?

vi.   What are the key differences between privatization and liberalization?

Answer the following questions.   (3x10=30)

Q2.   How does the Islamic economic system differ from capitalist and socialist systems?

Q3.   What role does competition play in a capitalist economy, and how does it influence firms' strategies for profit maximization and cost minimization?

Q4.   Compare and contrast the characteristics of capitalism, socialism, and communism as economic systems.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

1. Explain the concept of breakeven analysis and its significance in production decision-making.
2. What does Learning curve postulate?
3. Explain the factors that affect the price elasticity of demand.
4. In what manners Monopolistic competition is different from Perfect competition and Monopoly?
5. How does price elasticity help "Engro Foods" to increase its total revenues?
6. How can you differentiate Economic Profit and accounting profit?

Answer the following questions.

Q. No. 2 A. Mr. Jawad gives lessons for **Rs.1000** an hour. One day, he spends 10 hours planting vegetables, **Rs.5,000** worth of seeds and shed for kitchen gardening.
A). What opportunity cost has he incurred? What cost would his accountant measure?
B). If kitchen garden yields **Rs.10,000** worth of vegetables, does Jawad earn an accounting profit? Does he earn an economic profit? and how much? **(05 + 05 = 10)**

Q. No. 3
A). Consider a movie theater which offered $2 off the $12 regular price of reserved seats and sales increase from 3200 to 4000 tickets per week. Draw a simple linear demand curve. **(05)**

B). Use the following information to calculate the price elasticity of demand for hotel rooms:
if $P = \$70$, $Q^d = 5000$ &
if $P = \$90$, $Q^d = 3000$ **(05)**

Q. No. 4 Explain how price and output is determined in perfectly competitive market. **(10)**

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: Introduction to Political Economy
Course Code: ECON-329

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1 Define the concept of political economy?

2 Why it is important to study political economy?

3 What is principal- agent theory?

4 What do you understand by "the dilemma of the commons"?

5 Write down the seven pillars of good governance?

6 Define the concept of economic development?

Q.2.   Answer the following questions.   (3x10=30)

1 How people calculate cost and benefits, explain with simple assumptions

2 Why Pakistan's economy is called the elitist economy?

3 What are the emerging economic and political issues in Pakistan?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(15x2=30)**

1. Explain traditional agricultural farming?
2. Define Quasi Rent?
3. Explain green revolution?
4. Causes of malnutrition explain?
5. Tenant's status in Pakistan Explain?
6. Explain agriculture adequacy?
7. Convergent oscilliation explain?
8. Marketable surplus and marketed surplus?
9. Explain agricultural project planning?
10. Explain important strategy for agri-development?
11. Describe water loggin and salinity?
12. Explain farm mechanization.
13. Redistribution effect of agriculture technology?
14. Classification of agriculture technology explain?
15. What are the main crops of Pakistan?

Q.2.   Answer the following questions.   **(3x10=30)**

1. Discuss Jorganson model of dual economy and critically evaluate.
2. Define agriculture technology explain its importance with reference to Pakistan?
3. How agricultural sector is helpful for the development of industrial sector?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: **(6x5=30)**

i. Explain the role of employee engagement in fostering a learning culture within an organization.

ii. Compare autocratic and democratic management styles in the context of HRD.

iii. Discuss how mentorship programs contribute to employee retention.

iv. Outline the role of HRD in facilitating cultural integration post-merger.

v. Describe the advantages of cross-cultural training in global organizations.

vi. Analyze the influence of ethical leadership on HR development practices.

Q.2. Answer the following questions.   **(3x10=30)**

i. Examine the impact of executive coaching on organizational adaptability.

ii. Discuss how mediation techniques are employed in HRD for conflict resolution.

iii. Evaluate the role of succession planning in talent management.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: Money Banking and Financial Institutions
Course Code: ECON-332

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1. How does changes in monetary policy affect stock prices?

2. Identify and define four types of credit market instruments.

3. How can fluctuations in currency exchange rate affect our country's economy?

4. How does monetary policy affect stock prices?

5. What are the tools to manage credit risk?

6. What are the salient features of a bond? Please identify which bond have higher risk premium, a corporate bond with a Moody's 'CCC' rating or a corporate bond with a Moody's 'BBB' rating? Why?

Q.2.   Answer the following questions.   **(3x10=30)**

1. Explain the role of World Bank in the economy of Pakistan over the last 25 years

2. What are the factors that affect a country's exchange rate in short run and long run?

3. What are the major functions of State Bank of Pakistan? Explain its regulatory functions in detail.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Economic Principles, Strategies and Techniques of Marketing
Course Code: ECON-333

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:** **(6x5=30)**

1: What do you understand by the term Target Market and Niche Market? Explain it with example.

2: Define consumer market. What are the four major factors that influence consumer buying behavior.

3: What do you understand by the term Competitive Advantage? How organizations can achieve Competitive Advantage?

4: Define marketing enviromnrt. Discuss few internal and external factors influencing marketing environment.

5: What is BCG matrix? Why companies use BCG matrix. Explain briefly.

Q.2. **Answer the following questions.** **(3x10=30)**

1: What is the difference between price Skimming and price Penetration? Explain them with examples.

2: What are the main forces identified by Micheal Porter to analyze the competitiveness and profitability of an industry?

3: What do you understand by the term information system(MIS)? Explain the process of developing marketing information system

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(6x5=30)**

i. What is the Demographic Transition Theory?
ii. Explain the effects of population growth on natural resources and ecosystems.
iii. How does population density affect environmental sustainability?
iv. Explain the impact of immigration on native employment and wages.
v. Define "Life Expectancy" and discuss its importance in evaluating population health.
vi. What is urbanization, and how is it measured?

Answer the following questions.   **(3x10=30)**

Q2. How does migration flows influence labor markets in both sending and receiving countries?

Q3. Identify and discuss the key challenges faced by developing countries in implementing effective population policies.

Q4. Discuss the Demographic Transition Theory, outlining its stages and their implications for economic development.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   (6x5=30)

       Answer the following questions.   (3x10=30)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(6x5=30)**

Answer the following questions.   **(3x10=30)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   Define public finance and explain its importance in the economy.

ii.   Explain the concept of elasticity of demand and its relevance to taxation.

iii.   Explain the concept of market failure.

iv.   Discuss the main objectives of Pakistan's federal budget 2024 - 2025?

v.   What is the role of government in income redistribution?

vi.   What is cost-benefit analysis in public investment?

Answer the following questions.   (3x10=30)

i.   Explain the concept of public goods and their characteristics. Discuss the problems of providing public goods.

ii.   Analyze the role of fiscal policy in economic stabilization.

iii.   Explain the various principles of taxation with suitable examples.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   Food price inflation in Pakistan

ii. Highlight the major economic policies in the era of 1960s.

iii. Critically review Social Action Plan (SAP) in Pakistan

iv. What is rescheduling of debt and what are its impacts?

v.   What are sources of growth? Explain

vi. Analyze different Government measures to reduce unemployment in Pakistan.

Q.2.   Answer the following questions.   (3x10=30)

1. Discuss income and expenditure approaches of poverty measurement.

2. Explain the concept of land reforms and discuss the important features of land reforms made by Government of Pakistan.

3. Briefly discuss the role of small-scale industries in economic development of Pakistan

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

i	What are the key challenges currently hindering agricultural growth in developing Countries?
ii	Differentiate between global warming and climate change.
iii	What is the central argument of the Prebisch-Singer hypothesis?
vi	Explain relative factor endowments and international specialization
v	Why Recipient Countries Accept Aid?
vi.	What are the main causes of payments deficits in developing countries?

Q.2.   Answer the following questions.   **(3x10=30)**

a). Evaluate the effectiveness of classic IMF stabilization policies in resolving macroeconomic instability. What criticisms have been raised against these policies?

b). Discuss the challenges and opportunities for women in agriculture, focusing on their contributions to agrarian and household economies.

c). What developed countries can do for the improvement of global environment? Elucidate.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Briefly explain the following.   **(6x5=30)**

1 Hydrogen energy.

2. Electricity pricing issues.

3. Nuclear energy issues and prospects.

4. Cartel models of global energy markets.

5. Public goods and common property resources.

6. Sustainable energy options and criteria for comparison.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Define energy; what are the energy problems and issues in Pakistan. Suggest short and long run solution of this issue.

2. Explain the relationship of the electricity production technologies and electricity production cost trade-off.

3. What is CPEC? Explain its benefits and challenges for Pakistan and china.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   (6x5=30)

i.   Rules of profit and loss sharing in Modarabah.
ii.   The Islamic Financial Services Board and its objectives
iii.   Ijara (Rent) and its use in the Islamic banking system
iv.   What are the financial instruments offered by the Islamic banking system?
v.   Distinction between trade and riba (interest)
vi.   Why did Islam proscribe interest?

Answer the following questions.   (3x10=30)

Q. 2. Elaborate on the Islamic Code of Conduct related to business ethics.

Q. 3. What is Ijara (Rent) in Islamic economics and its use in the Islamic banking system

Q. 4. Bai Salam is the Islamic mode of financing. What are the justifications of it in Shariah and opinions of Islamic schools of thought about it?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Project Appraisal and Investment Analysis
Course Code: ECON-426

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

I.   An energy project imports turbines worth $300,000. The OER is PKR 330 per USD, and the FX premium is 15%. What is the total PKR cost?

II.   A manufacturing project imports machinery worth $600,000. The OER is PKR 325 per USD, and the SCF is 0.78. Calculate the adjusted cost in PKR.

III.   A public housing initiative costs $700,000. The government funds 80%, and the rest is financed by a loan at a 5% interest rate for 8 years. Calculate the total interest payable.

IV.   A farming initiative has domestic costs of $550,000 and generates foreign exchange earnings of $650,000. Determine the DRC.

V.   A highway project costs $1,000,000 and is expected to reduce transportation costs by $1,500,000 over 10 years. Assess its cost-to-benefit ratio.

VI.   A solar farm costs $800,000 and is developed over 3 years. Outline how the government can capitalize the costs.

Answer the following questions.

Q. 2. Find the Net Present Value (NPV) of the stream of costs and benefits, if the discount rate is 12%.   (10)

Year	Costs	Benefits
1	10	0
2	9	0
3	8	0
4	1	30
5	2	23

Q. 3. Find the Benefit to Cost Ratio (BCR) of the stream of costs and benefits in **Q. 2.**, if the discount rate is 12%.   (10)

Q. 4. Find the Internal Rate of Return (IRR) of the stream of costs and benefits in **Q. 2.**   (10)

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Environmental and Natural Resource Economics
Course Code: ECON-427

Roll No. ....

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

I. What is natural resource economics?

II. What are renewable and non-renewable resources?

III. Define the concept of externality.

IV. What is the economic significance of biodiversity?

V. What are factors mitigating resource scarcity?

VI. What are environmental policy instruments?

Q.2.   Answer the following questions.   **(3x10=30)**

1. Discuss the trans-boundary environmental issues in relation to global pollution?

2. Discuss the three steps involved in the risk analysis of environmental quality?

3. Draw and discuss the environmental Kuznets's curve in the context of fossil fuels.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1. What is the 'Forward Exchange Market', and how does it help businesses mitigate the risks of foreign exchange fluctuations?
2. Explain the significance of the 'Effective Exchange Rate' and how it is different from the nominal exchange rate.
3. What is the role of Speculators in the foreign exchange market, and how do their actions impact currency stability?
4. Define 'Interest Rate Parity' and discuss its relationship to exchange rate determination.
5. What does the 'Optimum Quantity of Reserves' refer to, and why is it important for a nation's financial stability?
6. Explain how a country's balance of payments can be affected by changes in interest rates and exchange rates.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Discuss the causes and consequences of disequilibria in the balance of payments. What corrective measures can be taken by a country facing a BOP crisis?
2. Evaluate the impact of exchange rate instability on international trade. How do fluctuations in foreign exchange rates affect trade flows and economic growth?
3. Analyze the factors contributing to capital movements in international finance. Discuss the relationship between risk, return, and the role of international financial institutions in managing these flows.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(6x5=30)**

  i.   Differentiate between Absolute poverty and Relative poverty?

  ii.   Define vicious circle of poverty?

  iii. What is the Sen Capability approach?

  iv. Define Multidimensional Index of Poverty?

  v.   Define Gini Coefficient of income inequality?

  vi. Define the concept of poverty profile?

Q.2.   **Answer the following questions.**   **(3x10=30)**

  (i) Elaborate how The Atkinson Index and Generalized Entropy (GE) measures provide information about income inequality of a country?

  (ii) Explain the social and economic determinants of poverty?

  (iii) Define Pro-poor growth? Explain the Challenges to Implement Pro-poor Growth?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1. Explain the concept of entropy in the context of the laws of thermodynamics.
2. What is meant by discounted cash flow analysis? How is it relevant to energy economics?
3. Define public goods and common property resources with respect to energy markets.
4. What are the conditions necessary for a sustainable global energy system?
5. Outline the differences between competitive market valuation and social valuation in energy pricing.
6. Discuss the role of clean fossil fuel technologies in addressing carbon emissions.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Describe the significance of energy conservation policies and demand-side management in addressing energy challenges.
2. Analyze the relationship between energy, economic activity, and growth. Use examples to support your argument.
3. Discuss the key features of Pakistan's energy policy and its alignment with global sustainable energy initiatives.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

i. Differentiate between Participatory and Non-participatory modes of Islamic finance.

ii. What are the key Conditions of parallel Salam?

iii. Explain Sukuk Bonds and its significance.

iv. Differentiate between Shirkat-ul Milk and Shirkat-ul Aqad.

v. Application of Salam and Istisna in modern Islamic Banking.

vi. Explain the term "takaful" and its significance.

Q.2. Answer the following questions.   (3x10=30)

i. What are the rights and duties of parties involved in Ijara Financing? Further, critically discuss the role of arbitrator in case of conflict between the parties in Ijara business.

ii. What are the contemporary issues Islamic banks facing in Pakistan? How can State Bank of Pakistan help to promote Islamic banking in Pakistan? Discuss in detail.

iii. In Pakistan, Islamic banks use KIBOR i.e. an interest-based benchmark to determine profit sharing ratios. In this context, how these banks can be said to be Islamic when they base conventional benchmark?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   What were the economic impacts of the Great Depression worldwide?

ii.   What were the key characteristics of the first global economy?

iii.   What were the causes of the Russian Revolution of 1905?

iv.   How did Islamic financial innovations, such as credit systems, impact the global economy?

v.   What is the concept of "Big Push" industrialization?

vi.   What factors led to the eventual decline of the Song Dynasty (Sung Miracle)?

Q.2.   Answer the following questions.   (3x10=30)

1.   How did the Islamic Golden Age contribute to global economic activity during the medieval period?

2.   What were the key technological innovations of the Second Industrial Revolution, and how did they impact global industries?

3.   How did the rise of socialist and anarchist movements challenge the economic and political order dominated by monopoly capitalism?

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Paper: General Equilibrium and Welfare Economics
Course Code: ECON-437

Roll No. ....

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (5x6=30)

i What is the difference between equity and efficiency?
ii Differentiate Pareto optimality criterion of social welfare?
iii What is the difference between first and second fundamental theorems of welfare economics?
vi Explain the concept of externalities?
v Write a note on utility possibility curve?

Q.2. Answer the following questions. (3x10=30)

1. What is the graphical Representation of the Path to General Equilibrium in Goods Market?

2. Discuss the conditions necessary for efficiency?

3. a) Explain the Theory of the Second Best.

   b) Explain why goods will not be distributed efficiently among consumers if the Marginal Rate of Transformation (MRT) is not equal to the consumers' Marginal Rate of Substitution (MRS). (5+5)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(15x2=30)**

i.   Differentiate between **Large Scale maps** and **Small Scale maps**.
ii.   Highlight essential elements or parts of a map.
iii.   Briefly explain **Arial Photography**.
iv.   Explain the term "**conventional signs**".
v.   Name different instruments used in the **Plain Table Survey**.
vi.   Define the term "**Cartography**".
vii.   Elaborate **map projection** and its main types.
viii. How many furlongs are in a mile?
ix.   Explain two uses of averages (mean, median, mode) in daily life.
x.   Differentiate between **Radius** and **Diameter** of Earth.
xi.   Briefly explain **cylindrical projection**.
xii.   Draw conventional signs   A) **River**   B) **Village**.
xiii. Define **Linear Scale**.
xiv.   What do you mean by **Graticule**?
xv.   Explain the term **Contour**.

Answer the following questions.   **(3x10=30)**

Q 2. What do you mean by a **map?** Tabulate different types of maps and briefly explain any five of them.

Q 3. Define **distribution** maps and explain the **shading method** and **Dot method** in detail.

Q 4. Explain in detail the different **statistical diagrams** used in geography

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1. Write short answers, not more than four or five lines. (6x5=30)

سوال نمبر ۱: مختصر جوابات تحریر کیجئے۔ جوابات چار یا پانچ سطروں سے زیادہ نہ ہوں

1. What was the Pakistan scheme propounded by Ch. Rahmat Ali?

چوہدری رحمت علی کی پاکستان کی سکیم کیا تھی؟

2. Where did Round Table conferences conducted and what was their purpose?

گول میز کانفرنس کہاں پر ہوئیں اور ان کا مقصد کیا تھا؟

3. What do you know about the Poona Pact?

پونا پیکٹ کے بارے میں آپ کیا جانتے ہیں؟

4. Who was Dr. Ambedkar?

ڈاکٹر امبیڈکر کون تھے؟

5. Write down a note on the Indian Act of 1935?

1935ء کے قانون ہند کے بارے میں مختصر أبتایئے؟

6. In how many provinces Congress was able to form its governments. How did they established their ministries?

کانگریسی راج کتنے صوبوں میں قائم ہوا اور کیسے قائم ہوا؟

Q.2. Answer the following questions. (2x15=30)

سوال نمبر:2۔ مندرجہ ذیل سوالات کے جوابات تحریر کریں۔

1. What was Cabinet Mission Plan? Describe its three main points?

کابینہ مشن کا منصوبہ کیا تھا تھا اس کے تین اہم نکات بیان کریں

2. Who started Quite India Movement? What kind of influences it created on British India?

ہندوستان چھوڑ دو تحریک کس جماعت نے چلائی اور اس کے ہندوستان کی سیاست پر کیا اثرات مرتب ہوئے

3. Assess the role of Liaquat Ali Khan in Making of Pakistan?

قیام پاکستان میں لیاقت علی خان کے کردار کا جائزہ لیں

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

<div dir="rtl">اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔</div>

Q.1. Answer the following short questions.   (6x5=30)

<div dir="rtl">سوال نمبر:1۔   مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔</div>

1. Explain Separate Electorate system.

   <div dir="rtl">جداگانہ انتخاب سے کیا مراد ہے؟</div>

2. What is meant EBDO? Explain

   <div dir="rtl">ایبڈو سے کیا مراد ہے؟</div>

3. Write any four causes for the failure of 1962 Constitution.

   <div dir="rtl">۱۹۶۲ کے آئین کی ناکامی کی کوئی سی چار وجوہات بیان کریں۔</div>

4. what are the duties of speaker of National Assembly of Pakistan?

   <div dir="rtl">پاکستان کی قومی اسمبلی کے سپیکر کے فرائض بیان کریں۔</div>

5. Write a brief note about Islamic ideological Council of Pakistan.

   <div dir="rtl">اسلامی نظریاتی کونسل پاکستان پر مختصر نوٹ لکھیں۔</div>

6. How the President of Pakistan can be removed from his post.

   <div dir="rtl">صدر پاکستان کو عہدے سے کس طرح ہٹایا جاتا ہے؟</div>

Q.2. Answer the following questions.   (3x10=30)

<div dir="rtl">سوال نمبر:2۔   مندرجہ ذیل سوالات کے جوابات تحریر کریں۔</div>

1. What were the causes of delay in making the first Constitution 1956 of Pakistan?

   <div dir="rtl">پاکستان کے پہلے آئین ۱۹۵۶ میں تاخیر کی وجوہات بیان کریں۔</div>

2. Discuss in detail the powers and functions of provincial Chief Minister under 1973 Constitution of Pakistan.

   <div dir="rtl">۱۹۷۳ کے آئین کے تحت صوبائی وزیر اعلیٰ کے اختیارات اور فرائض کو زیر بحث لائیں۔</div>

3. Explain the structure and functions of National Assembly of Pakistan.

   <div dir="rtl">پاکستان کی قومی اسمبلی کا ڈھانچہ اور فرائض کی تفصیل لکھیں۔</div>

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

1. Define Research. What do you mean by Pure and Applied Research?
2. Why Concepts are called the building blocks of theory?
3. Scientific method and its application to Sociology.
4. What is research design? Describe various research designs used in Sociology.
5. What are the advantages and limitations of Questionnaire?
6. What are the steps involved in Experimental Research?

Q.2. Answer the following questions.   (3x10=30)

1. Describe the steps involved in conducting a research study. What are the main challenges that researchers may face at each stage of the research process?
2. Discuss the concept of sampling in social research. What are the different types of sampling techniques that researchers can use, and what are the advantages and disadvantages of each?
3. Discuss some of the limitations of social research. What are some of the factors that can impact the validity and reliability of research findings, and how can researchers address these limitations?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر:1۔ ‎ ‎ ‎ درج ذیل سوالات کے مختصر جوابات تحریر کریں۔ ‎ ‎ ‎ (6x5=30)

(الف): مجاز مرسل پر نوٹ لکھیں اور ایک شعری مثال بھی دیں۔

(ب): صنعت تجنیس تام کی وضاحت کریں اور دو شعری مثالیں بھی لکھیں۔

(ج): ادبی اصطلاح تغزل پر نوٹ لکھیں۔

(ہ): ادبی اصطلاح رمزیت و ایمائیت کی وضاحت کریں۔

(د): تنقیدی اصطلاح حقیقت نگاری پر نوٹ لکھیں۔

(و): درج ذیل شعر کی تقطیع کیجیے اور بحر کا نام بھی لکھیں۔

کل چودھویں کی رات تھی شب بھر رہا چرچا ترا

کچھ نے کہا یہ چاند ہے کچھ نے کہا چہرا ترا

سوال نمبر:2۔ ‎ ‎ ‎ درج ذیل سوالات کے تفصیلی جوابات تحریر کریں۔ ‎ ‎ ‎ (3x10=30)

(الف): فورٹ ولیم کالج کی ادبی خدمات پر تفصیلی نوٹ لکھیں۔

(ب): " غالب بحیثیت شاعر" کے عنوان سے مضمون تحریر کریں۔

(ج): میر و سودا کے عہد کو اردو شاعری کا عہد زریں کیوں کہا جاتا ہے ؟

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions.   (6x5=30)

سوال نمبر:1۔   مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔

i. Give a brief overview of the third period of compilation of Hadith.

(الف) تدوینِ حدیث کے تیسرے دور کا مختصر جائزہ لیں۔

ii. Write one verse and one Hadith in Arabic or translation on the authority of Hadith.

(ب) حجّیتِ حدیث پر ایک آیت اور ایک حدیث کا عربی متن یا ترجمہ لکھیں۔

iii. Briefly describe the factors behind the rise of the Muslim Ummah.

(ج) ملتِ اسلامیہ کے عروج کے اسباب مختصر اپیش کریں۔

iv. Write a short note on Fiqh Maliki.

(د) فقہ مالکی پر مختصر نوٹ لکھیں۔

v. Write the names of two Muslim scientists related to chemistry and the names of their books (one of each scientist).

(ہ) علم کیمیا سے متعلق دو مسلم سائنسدانوں کے نام اور ان کی ایک ایک کتاب کے نام لکھیں۔

vi. Write the description of Sahib Qaduri's definition of Shaheed.

(و) صاحب قدوری نے شہید کی جو تعریف کی ہے اس کی تفصیل لکھیں۔

Q.2.   Answer the following questions.   (3x10=30)

سوال نمبر:2۔   مندرجہ ذیل سوالات کے جوابات تحریر کریں۔

i. Discuss in detail the authority and importance of hadith.

(الف) حدیث کی حجّیت و اہمیت پر مفصل بحث کریں۔

ii. Write the causes, effects and consequences of the decline of Millat e Islamia.

(ب) ملت اسلامیہ کے زوال کے اسباب، اثرات اور نتائج تحریر کریں۔

iii. Translate and explain the given Fiqh passage.

(ج) درج ذیل فقہی عبارت کا ترجمہ و تشریح کریں۔

ويسجد للسهو ومن سهن عن القعدة الأخيرة فقام إلى الخامسة رجع إلى القعدة ما

لم يسجد وألغى الخامسة ويسجد للسهو وإن قيد الخامسة بسجدة بطل فرضه

وتحولت صلاته نفلا وكان عليه أن يضم إليها ركعة سادسة

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. Describe School as an Organizational System
2. Differentiate between Administration and Management,
3. Discuss the role of Teacher as Leader
4. Enlist the Barriers to Communication
5. Give the types of registered used in a school for mentaining the school record
6. What is the significance of Playground in a school?

Q.2.   Answer the following questions.   (3x10=30)

1. Explain the concept of School as a System (Input, Output, Process)
2. Write a detailed note on school Building regarding Design, Construction and Maintenance.
3. Write a note on Managing School Library,

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Technical Writing and Presentation Skills
Course Code: EDE-327

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following: (6x5=30)

1) Define technical writing and why undergraduates should study it?

2) How is power point presentation different form oral presentation?

3) which traits make technical writing effective?

4) Why technical writer needs to consider his audience?

5) What are newsletters?

6) Briefly describe the two most important components of technical writing.

Q.2.   Write long answers to the following: (3x10=30)

1) Why mechanics are more important than punctuation in technical writing? Explain this with the help of examples.

2) Give a detailed overview of the traits of technical writing.

3) Explain the pros and cons of technical writing

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Seventh Semester – Fall 2024
Paper: Data Science   Course Code: EI-334

Roll No. ....

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.   **(5x6=30)**

1. Write a lambda function in Python to filter out all the even numbers from the following list:

numbers = [10, 15, 20, 25, 30, 35, 40]

2. You are given a CSV file named 'data.csv' containing two columns: 'Name' and 'Age'. Write a Python script to:

1. Read the file using the csv module.

2. Calculate the average age of all individuals.

3. Print the names of individuals whose age is greater than the average.

3. Explain the purpose of the Pandas DataFrame and Series data structures in data analysis. Why are they considered central to data manipulation and cleaning?

4. Explain the difference between descriptive statistics and inferential statistics with an example for each.

5. You are provided a dataset of 2D points as follows:

points = [[1, 2], [1, 4], [1, 0], [10, 2], [10, 4], [10, 0]]

1. Perform k-means clustering on this dataset.

2. Find and write the cluster centers.

Answer the following questions.   **(3x10=30)**

Q.2. Consider the two DataFrames given as following:

DataFrame 1: Employees

EmpID	Name	Department
101	Akram	IT
102	Fazal	HR
103	Rabia	Marketing

DataFrame 2: Salaries

EmpID	Salary
101	50000
102	45000
103	52000

Write a Python script to:

1. Merge the two DataFrames on EmpID.

2. Group the merged DataFrame by the Department column and calculate the total salary for each department.

3. Create a pivot table to display the average salary per department.

Q.3. You are provided with a dataset containing two columns: YearsExperience and Salary. Your task is to write a Python Program that:

1. Splits the dataset into training (80%) and testing (20%) sets.

2. Trains a Linear Regression model using the scikit-learn library on the training set.

3. Evaluates the model's performance using mean squared error (MSE) on the testing set.

Q.4. You are provided a dataset containing features HoursStudied and ClassParticipation, and a target variable Pass where:

- Pass = 1 (indicates the student passed)
- Pass = 0 (indicates the student failed)

The dataset is as follows:

HoursStudied	ClassParticipation	Pass
2	20	0
3	40	0
4	50	1
5	60	1
6	80	1
7	90	1

1. Train a Logistic Regression classifier using scikit-learn.

2. Predict whether a student who studied for 4.5 hours and participated in 55% of classes would pass or fail.

3. Evaluate the model's accuracy using the training data.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: 20th Century British Literature Poetry & Drama
Course Code: ENG-401

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (3x5=15)

1 Why does not Lucky revolt against Pozzo's authority?

2 What is a scare-crow mentioned in "Sailing to Byzantium"?

3 What is the significance of Mrs. Rafi's theatre in the play *The Sea*?

Q.2.   Answer the following questions: (3x15=45)

1.   Write a detailed critical analysis of Ted Hughes's poem The Wodow.

2.   What is the relationship between language and politics in Mountain language?

3.   "The Waste Land" is a complex poem filled with literary allusions and multiple themes. Illustrate.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(3x5=15)**

I.   How does Virginia Woolf use stream of consciousness in *A Haunted House* to explore memory?

II.   What incident in *A Passage to India* reflects cultural misunderstanding?

III.   Critically comment on Edward Said's views regarding Western perceptions of non-Western cultures in *Introduction to Culture and Imperialism*.

Q.2.   **Answer the following questions.**   **(3x15=45)**

I.   How does *The Portrait of the Artist as a Young Man* explore the conflict between identity and society using symbolism?

II.   Analyze the psychological effects of imperialism in *Shooting an Elephant* for both the colonized and colonizers.

III.   Compare and contrast how *Heart of Darkness* and *In the National Gallery* explore the themes of power and human perception in their respective settings.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   (3x5=15)

1. "The Death of a Toad" is about human responsibility towards non-humans. Discuss?

2. What is the message of "Mending Walls"?

3. What are the characteristics of Dee in "Everyday Use"?

Q.2.   **Answer the following questions:**   (3x15=45)

1. "The Story of a Good Little Boy" is a critique on societal norms and expectations. Elucidate.

2. How *Jazz* reflects the concerns of Afro-American community in America?

3. Willy's tragic end is the failure to realize the American dream. Discuss the statement.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (3x5=15)

1. What is the significance of having a child narrator in Bapsi Sidwa's novel *Ice Candy Man*?

2. Discuss the fusion of cultures in Maki Kureshi's poem "Christmas Letter to my Sister".

3. Explain how friendship and families are affected in times of conflict as depicted by Shamsie in *Burnt Shadows*.

Q.2.   Answer the following questions. (3x15=45)

1. Examine the themes of Gender and Class in Arundhati Roy's *The God of Small Things*.

2. Discuss the view of humanity and coexistence presented in Zulfiqar Ghose's poem *Attack on Sialkot*.

3. Kamila Shamsie's novel *Burnt Shadows* examines love and loss in times of war and family and friendship in times of conflict.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: **(3x5=15)**

I. What is Grounded theory research?
II. What is meant by Ethical consideration in research?
III. What is a research problem and why is it important?

Q.2. Answer the following questions. **(3x15=45)**

i. Write a note on the various aspects of Qualitative method of Research.
ii. Describe the importance of Ethics in Research.
iii. What is Questionnaire? Analyze the different kinds of Questionnaires and their suitability for research,

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.No.1.   **Answer the following short questions:**   (3x5=15)

1. **Identify the subject, verb, object, and complement in the sentence:** *The teacher gave the students homework yesterday.*
2. **Differentiate between a subject and a complement in a clause.** Provide examples.
3. **Explain the role of adverbials in a sentence.** How do they contribute to meaning?

Answer the following questions: (3x15=45)

Q.No.2.   **Explain the functions of the different clause elements (subject, verb, object, complement, adverbial) in a sentence.** Illustrate your answer with detailed examples from English Language.

Q.No.3.   **Discuss the differences between subordination and coordination in English grammar.** How do these structures contribute to sentence complexity? Provide examples to illustrate your points.

Q.No.4.   **Explain the distinction between tense and aspect in English grammar.** Use examples to illustrate how simple, perfect, progressive, and perfect-progressive aspects are formed and used.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.   (3x5=15)

a. What is 'direct' method of English Language Teaching? (5)

b. How is 'Schema theory' helpful in building proficient reading skills? (5)

c. Write two benefits of teaching language through literature. (5)

Q.2. Answer the following questions.   (3x15=45)

1. Design a lesson plan for Grade 6 students of Pakistan's public sector schools for teaching listening speaking skills.

2. Why is feedback an important component of teaching Writing Skills? Discuss the techniques of giving appropriate feedback to the students that can improve their use of grammar and vocabulary.

3. Why is 'Communicative Language Teaching' important in the field of ELT? How can it improve the communicative competence of Pakistani Student?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q. 1.   Answer the following short questions.   (3x5=15)

1. How language influences our perceptions of gender differences?
2. What are the most common differences among Men and Women talk?
3. What are the different linguistic perspectives of Men's talk?

Q.2.   Answer the following questions.   (3x15=45)

1. Gender is a factor in the choice of different phonological variants. Describe with special reference to formality, politeness and agreement.
2. What are the differences between grammar, vocabulary and sentence construction used by women and those used by men?
3. "Numerous observers have described women's speech as being different from that of men, there is a bias" Either refute or support this comment by Wardhaugh.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q. 1.   Answer the following short questions.   **(3x5=15)**

1. "Language brings its culture with it" Discuss in the light of role of language and culture in the formation of identity.
2. What is the concept of linguistic imposition?
3. How does the problem of linguistic inequality influence the process of learning?

Q.2.   Answer the following questions.   **(3x15=45)**

1. Write a detailed note on The Activities of Language Planning.
2. Which language planning policies are adopted by Pakistan? and why?
3. Summarize your opinion on Language and ethnic politics in Pakistan.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Introduction to Research Methods in Applied Linguistics
Course Code: ENG-415

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(3x5=15)**

i.   Describe the difference between Experimental and Non-experimental research designs in applied linguistics. Provide an example for each.

ii. What is meant by "Purposive Sampling"?

iii. What is the significance of "Documents / Archives" as a tool of data collection?

Q.2.   Answer the following questions.   **(3x15=45)**

1. Write a comprehensive note on "Interviewing" as a prominent data collection method.

2. Explain the procedure of collecting, documenting, and citing the "Review of Literature". What purpose does it serve in a research project? Also comment on its significance.

3. What is the difference between Transcription and Transliteration? Discuss the scenarios in which both these tools can be used within research.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Entomology (Morphology Physiology of Insect)
Course Code: ES-44

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(15x2=30)**

i.	What are silk glands?
ii.	What is ovoviviparity?
iii.	What is hemimetabolus larvae?
iv.	Differentiate between decticous and Adecticous pupae?
v.	What are Mycetomes?
vi.	Enlist 2 functions of Tentorium?
vii.	What are aggregation pheromones?
viii.	What is stridulation?
ix.	What are claspers?
x.	What is suboesophageal ganglion?
xi.	What are tympanal organs?
xii.	Differentiate between ocelli and compound eyes
xiii.	What are tracheal gills?
xiv.	What is coxa?
xv.	Differentiate between elytra and hemielytra?

Answer the following questions.   **(3x10=30)**

I). Write a detailed note on Exocrine glands of Insects?

II). Write a detailed note on Chemoreception in insects?

III). Describe different methods of sound production in insects?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   Skin of fishes

ii. Plant origin fish feed ingredients

iii. Kidney in freshwater fishes

iv. Role of Water quality in fish health

v.   Semi-intensive culture

vi. Erythrocytes and leukocytes

Answer the following questions.   (3x10=30)

Q.2   Write a detailed note on digestion and absorption in fishes.

Q.3   Discuss Gills in fishes with suitable sketches

Q.4   Give a comprehensive note on induced breeding in fishes.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

i.   Describe scope of microbiology.

ii.   Describe structure and chemical composition of bacterial cell wall.

iii.   Give classification of animal viruses.

iv.   Describe various types of bacteriological media.

v.   Give importance of various methods for the estimation of bacterial growth.

vi.   Enlist and briefly describe colonial characteristics to identify bacteria.

Q.2.   Answer the following questions.   (3x10=30)

i.   Describe in detail the morphology and fine structure of bacteria.

ii.   Give biological and economic importance of microalgae.

iii.   Describe different methods for the estimation of bacterial growth.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(15x2=30)**

I- Briefly explain the location of Pakistan.

II- Write names of different types of soils found in Pakistan.

III- Identify different means of irrigation used in Pakistan.

IV- Divide Pakistan into different physiographic regions.

V- Name any five glaciers found in Gilgit Baltistan.

VI- What do you know about tropical throns forest or Rukh in Pakistan?

VII- Briefly explain summer monsoon in Pakistan.

VIII- Highlight cottage and small-scale industries in Pakistan.

IX- Write the names of some principal road networks in Pakistan.

X- Make a list of main Imports in Pakistan.

XI- Elaborate climatic region Subtropical coastland.

XII- Which are the main seasonal rivers of Balochistan province?

XIII- Highlight important gas fields of Pakistan.

XIV- Briefly explain Indus Water Treaty.

XV- Write divisional Administrative distribution of Sindh and KPK.

Q.2.   **Answer the following questions.**   **(3x10=30)**

i) Write a comprehensive note on the distribution of population in Pakistan.

ii) Give a detailed account on cotton cultivation in Pakistan with reference to its production, yield and acreage.

iii) Discuss in detail (Metallic+ non-metallic)minerals found in different areas of Pakistan.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Give short answers of the following:**   **(15x2=30)**

1. Who is the founder of political geography?
2. Define the territorial sea.
3. Define the concept of boundaries.
4. Define the subsequent boundaries.
5. Define power and its classification.
6. What is meant by core area ?
7. Write any two functions of townships.
8. What is meant by Rimland?
9. Explain social Darwinism.
10. What is meant by divided state?
11. Explain Nationalism.
12. Who said "Man is a Political Animal"? Write in short about its theme.
13. Explain the Religion as centripetal force of a state.
14. Write any two functions of capital area.
15. What is meant by NATO?

Q.2.   **Answer the following questions.**   **(3x10=30)**

1. Discuss in detail the Ideological and cultural factors influencing the foreign relations of China.
2. Explain in detail the factors that affect external relation of a state.
3. Discuss the hierarchy of political areas and it significance with the reference to Pakistan.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: (15x2=30)

i.   Identify three significant factors responsible for North America's climatic diversity.
ii.   Write the names of Four states in the US situated along the Great Lakes.
iii.   Write downs the names of main rivers of North America.
iv.   Identify the Agricultural Belts of North America.
v.   Define the significance of the Great Lakes for the Continent.
vi.   What is meant by the term "Slave trade" in the context of North America?
vii.   Identify two main regions in the USA famous for coal production.
viii.   Describe the location and setting of the New England region.
ix.   Briefly define the significance of the Cotton Textile industry in North America.
x.   Identify three important Natural Oil producing areas in North America.
xi.   Describe the Physical settings of California State.
xii.   Define the physical settings of the Canadian Shield.
xiii.   Briefly define the Tropical Maritimes air masses in North America.
xiv.   Describe how the Native Americans arrived in North America?
xv.   Identify the main forest regions of North America?

Q.2.   Answer the following questions.   (3x10=30)

i.   Divide North America into physiographic regions and explain the physical setting of the Appalachian Mountains.
ii.   Why Tennessee Valley Authority (TVA) was formed. Highlight its significance for the people and economy of the USA.
iii.   Write a comprehensive note on the Iron and Steel industry of North America.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

I.   What is the current importance of the Arc GIS suite?

II. Write names of the open data sources to get satellite data for mapping?

III. Why are false colour composites valuable for remote sensing applications?

IV. How does GPS play a role in survey mapping with the help of Arc GIS?

V.   What are some typical applications of thermal infrared imagery in geospatial analysis?

VI. Compare and contrast raster and vector data types.

Q.2.   Answer the following questions.   (3x10=30)

1. Discuss the common applications in GIS and RS data integration.

2. What is meant by digitisation in GIS, and why is it essential?

3. Why are false colour composites valuable for remote sensing applications?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: (6x5=30)

I.   Briefly describe various vantage points in aerial photography.

II.   Define along-track scanning in remote sensing systems.

III.   Briefly describe some weather remote sensing satellites.

IV.   Write the range of the infrared spectrum in the electromagnetic spectrum.

V.   Briefly describe thermal remote sensing and write some examples.

VI.   What do spectral reflectance curves represent?

Q.2.   Answer the following questions.   (3x10=30)

Note: Attempt all questions. Illustrate your answers with the help of diagrams.

1.   Explain the concept of energy interaction with different materials in remote sensing.

2.   Explain the interpretation of thermal infrared images and their significance in different fields.

3.   Write Short notes on any TWO of the following:
        A. Quick bird
        B. Applications of remote sensing in wildlife.
        C. Image Enhancement
        D. SAR

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Define following terms:**   **(6x5=30)**

1. Write down the definition of development.
2. What are the merits and demerits of colonialism?
3. Define UN women's decade.
4. Discuss the key agents of globalization
5. Define equity approach.
6. How gender can be integrated in peace process?

Q.2.   **Answer the following questions.**   **(3x10=30)**

1. Briefly discuss the Moser's gender planning framework.
2. Write down the theoretical underpinnings of WID with reference to Modernization theory.
3. Write a comprehensive note on the UN Women conferences.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Write short note on the following:**   (6x5=30)

1. Gender Equality in Education
2. Higher Education
3. Education and Population Growth
4. Adult literacy
5. Importance of vocational education for women
6. Education goals in fifth development plan

Q.2. **Answer the following questions.**   (3x10=30)

1: "Our Primary Curriculum is gender biased". Stretch your argument with examples.

2: Analyze and present a gender review of educational policies of last 20 years of Pakistan.

3: Do you believe in gender differences in cognition, why and why not?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Define the following terms: **(4x7.5=30)**

1. Transit Walk
2. Output
3. Gender and Planning
4. Evaluation

Q.2.   Answer the following questions.   **(3x10=30)**

1. Briefly discuss the activity and result based gender sensitive budget of your project.
2. Provide detailed planning of your project through logical framework.
3. Write down the problem identification and analysis tools.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.　Answer the following questions.　　　　　　　　**(6x5=30)**

i.　What is the primary purpose of statistical testing in SPSS?

ii.　What types of statistical analyses can be performed using SPSS?

iii.　Discuss the process and importance of correlational analysis in research.

iv.　Explain how a researcher can detect missing values and analyze their pattern in a data file.

v.　Explain the process of changing a string variable to a numeric variable in SPSS.

vi.　What challenges do researchers face in achieving high validity?

Q.2.　Answer the following questions.　　　　　　　　**(3x10=30)**

i.　Distinguish between validity and reliability.

ii.　What are Type-I and Type-II errors? Explain their effect size and how a researcher can statistically compare groups using various techniques.

iii.　Describe the essential steps involved in planning and designing a study.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   (6x5=30)

I.   Explain the Urbanization?
II. Explain the Urban Sociology?
III. Write a note on difference between industrial and preindustrial cities?
IV. How over urbanization is different from urban decline?
V.   Write a short note on how first cities appeared?
VI. What is the impact of globalization on development?

Q.2.   Answer the following questions.   (3x10=30)

I.   What are the causes of urbanization in Pakistan? How urbanization causes governance challenges in Pakistan?
II. Define Globalization and describe WAD approach of development.
III. Highlight the problems causes of urbanization in Pakistan? And according to you how these problems are solved?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Define the following terms.   **(5x6=30)**

1. Enlist the social factors of crime

2. Write down the difference between sin and crime

3. Enlist the gender discriminatory cultural practices with reference to Pakistan.

4. Define feminist criminology.

5. Write down the issues of criminal justice system in Pakistan.

Q.2. Answer the following questions.   **(3x10=30)**

1. Identify the implementation issues with reference to women desks established at police stations in major districts of Pakistan.

2. Discuss the issues and solutions to gender discriminatory cultural practices with reference to Pakistan

3. Highlight the role of different stakeholders' including law and justice to combat gender-based violence as a crime in Pakistan.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: United States after Second World War
Course Code: HIS-401

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: **(5x6=30)**

سوال نمبر1:   مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔

i. Condoleezza Rice

i ۔ کونڈ الیزا رائیس

ii. CTBT

ii۔ سی ٹی بی ٹی

iii. Vietnam War

iii۔ ویت نام کی جنگ

iv. Policy of Containment

iv۔ کنٹینمنٹ کی پالیسی

v. Sues Canal Crisis

v۔ نہری بحران کا مقدمہ

Answer the following questions.   **(2x15=30)**

مندرجہ ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

Q. No. 2. Discuss the role of Henry Kissinger in shaping the foreign policy of the USA.

سوال نمبر2۔ امریکہ کی خارجہ پالیسی کے حوالے سے ہنری کسنجر کے کردار پر بحث کریں۔

Q. No. 3. Discuss the salient features of cold war and the role of America in it.

سوال نمبر3۔ سرد جنگ کے نمایاں خدوخال اور امریکہ کے اس میں کردار پر بحث کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: (6x5=30)

سوال نمبر 1:   مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔

A. Impacts of Umayyads' Rule In Central Asia
B. Tamerlane's Military Campaigns
C. Causes of the Fall of Khwarazm Shahi Dynasty
D. Contributions of the "Jadids Movement" in Central Asia
E. Soviet Union's Policy Towards Central Asia
F. Anglo-Russian Rivalry of the 19th Century in Central Asia

- وسطی ایشیا پر اموی اقتدار کے اثرات
- امیر تیمور کی فوجی مہمات
- خوارزم شاہی سلطنت کے زوال کے اسباب
- وسطی ایشیا میں تحریک جدیدیت کی خدمات
- سوویت یونین کی وسطی ایشیا کے لیے پالیسی
- انیسویں صدی میں برطانیہ اور روس کے مابین چپقلش

Q.2.   Answer the following questions. (2x15=30)

سوال نمبر 2:   مندرجہ ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

A. Critically evaluate the Causes of the Russian Expansion in Central Asia in the 19th Century.
B. Highlight and Discuss the Significance of the Central Asian States for South Asian Countries.

- انیسویں صدی میں روس کے وسطی ایشیا میں پھیلاؤ کے اسباب کا تنقیدی جائزہ لیجیے۔
- جنوبی ایشیا کے ممالک کے لیے وسطی ایشیا کی ریاستوں کی اہمیت اجاگر کرتے ہوئے بحث کیجیے۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: History of Ottoman Empire (1288-1924)
Course Code: HIS-403

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: **(6x5=30)**

i.   Who were the Ottomans?
ii.   The Tanzimat Era
iii.   The Anglo-Ottoman Convention of 1838
iv.   The battle of Ankra, 1402
v.   Causes of the Balkan Wars
vi.   Bayezid I

Answer the following questions.   **(2x15=30)**

Q.2. Write a detailed essay on the services and contributions of Suleman the Magnificent. Explain what made his period the golden period of the Ottoman Empire.

Q.3. Critically evaluate the causes and consequences of the Ottoman conquest of Constantinople.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Roll No. ....

Paper: State & Society in Medieval India (1206-1707)
Course Code: HIS-404

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: (6x5=30)

سوال نمبر1:   مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔

i. Discuss the duties, functions and position of Sultan under Delhi Sultanate.

i۔   عہد سلاطین میں سلطان کے فرائض اور اختیارات پر بحث کریں۔

ii. Discuss the sources of Income under Mughals.

ii۔   مغل عہد کے مختلف ذرائع آمدنی کا جائزہ لیں۔

iii. Write a note on Army under Sultanate.

iii۔   سلاطین دہلی کے فوجی نظام پر ایک نوٹ تحریر کریں۔

iv. Write in detailed on the merits and demerits of Mansabdari system during Mughal region.

iv۔   مغلیہ عہد میں منصب داری نظام کی خوبیوں اور خامیوں پر روشنی ڈالیں۔

v. Describe the composition of the Diwan under the Great Mughals.

v۔   عظیم مغلوں کے دیوان اعلی کو بیان کریں۔

vi. Write a note of paintings of Great Mughal's.

vi۔   عہد مغلیہ کے آرٹ پر نوٹ لکھیں۔

Answer the following questions.   (2x15=30)

مندرجہ ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

Q. No. 2. Discuss the administration of justice under Sultanate.

سوال نمبر2۔   سلطنت کے تحت انصاف کے انتظام پر بحث کریں

Q. No. 3. Write a detailed note on the cultural development under Mughals.

سوال نمبر3۔   مغلوں کے دور میں ثقافتی ترقی پر تفصیلی نوٹ تحریر کریں۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Common Sports Injuries, Treatent & Rehabil. (Maj.6)
Course Code: HPE-401

Roll No. ....

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Explain the following terms.   **(5x6=30)**

(a) Laser therapy

(b) Dislocation of joints

(c) Overuse injuries

(d) Upper limb Injuries

(e) Groin injury

Answer the following questions.   **(3x10=30)**

Q no 2 Write 10 points to clearly identify that warm-up is very important?

Q no 3 Define injury? Why rehabilitation has a great importance in sports?

Q no 4 Explain in detail "Factures & Dislocation of joints" and also write down its treatments?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   (6x5=30)

I.   Coronary Heart disease and Obesity
II.   Hyponatrimia
III. Effects of Heart disease on Athletic performance in old age
IV.   Oxygen consumption and Heart Rate
V.   Muscle Fiber Types and it's relation to Exercise
VI.   Biochemistry of Muscle Fibers

Q.2.   Answer the following questions.   (3x10=30)

I.   Briefly explain the Mechanism of Nerve Impulse and nourishment in muscles?
II.   Write a detailed note on Endocrine changes due exercise?
III. Write a detailed note on Injuries due to hot weather?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.   (6x5=30)

i.   Olympic Revenue
ii. Golden triangle
iii. Difference between Needs and Want
iv. A short note on OBS
v.   Digital Media
vi. Sports Journals

Q.2. Answer the following questions.   (3x10=30)

i.   Define Media? Describe categories of print media.
ii. What is sports journalism? Specify careers in sports journalism.
iii. Write a detailed note on Sports Photography.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(6x5=30)**

1. Define the nature of the coaching profession and its significance in modern sports.
2. Explain the importance of skill development in athletes and the role of a coach in this process.
3. What are the main components of a coaching style? Provide examples of different coaching styles.
4. Describe the importance of technical training in enhancing an athlete's performance.
5. Discuss the concept and importance of the off-season training phase in a periodized training plan.
6. Explain the need and importance of health-related fitness for overall athletic performance.

Q.2.   Answer the following questions.   **(3x10=30)**

1. Discuss the methods of transfer of learning in sports, providing examples of positive and negative transfer.
2. Explain the ethical responsibilities of a coach in guiding athletes and fostering a healthy sports culture.
3. Prepare a detailed training plan for athletics, including physical, mental, technical, and tactical aspects.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(6x5=30)**

i.   Define Research Design?

ii.   Explain Signifance of the Study?

iii   Define Type-I Error and Type-II Error with Reference to Sampling?

iv   Define Quantitative and Qualitative Research?

V   Highlight the Basics Tools of Data Collection?

Vi   Define Validity and Reliability?

Q.2.   Answer the following questions.   **(3x10=30)**

i.   What is Research? Discuss in detail the Basic Steps of Selecting a Suitable Research Problem.

ii.   Write down a detail Note on Test as Data Collection Tools?

iii   Select a Topic of Your Own Choice and Develop a Mini Proposal on It?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(6x5=30)**

1. What is a "green card" in field hockey and what it's penalty?

    Or

    What is the penalty card in basketball? Explain it.

2. How many timeouts are there in basketball?

    Or

    Can you shoot from anywhere in hockey? Explain it.

3. What is not allowed in basketball?

    Or

    what duration is in field hockey game?

4. What are the 3 main basketball positions?

    Or

    Write the basic techniques which are used in field hockey. Explain.

5. How you get penalty corner in field hockey?

    Or

    Explain double dribbling in basketball?

6. What is the limit on numbers of substitutions per game in hockey?

    Or

    What is sudden dead in hockey?

Q.2.   Answer the following questions.   **(3x10=30)**

1. What are the five types of passes in basketball?

    Or

    What are "penalty Cards" in field hockey and what are their penalties? Discussed all cards.

2. Draw the court of basketball and mark the main positions.

    Or

    Draw the court of field hockey and mark the main positions.

3. What are the 5 violations in basketball?

    Or

    What procedure shall be used when a game is tied at the end of final match in field hockey?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر 1: درج ذیل سوالات کے مختصر جوابات تحریر کریں۔ **(6x5=30)**

i. ادیان عالم سے کیا مراد ہے تبلیغی اور غیر تبلیغی ادیان کی وضاحت کریں۔

ii. تری مورتی اور تری پتاکا سے کیا مراد ہے ان کی وضاحت کریں۔

iii. بدھ مت کی مقبولیت کے پانچ اسباب تحریر کریں۔

iv. کنفیوشس ازم کے پانچ مشہور روابطے کون کون سے ہیں ان کی وضاحت کریں۔

v. بھکشو کسے کہا جاتا ہے بھکشو کے بارے میں اصول وضابطے تحریر کریں۔

vi. زرتشت کے حالات زندگی تحریر کریں۔

سوال نمبر 2: درج ذیل سوالات کے مفصل جوابات تحریر کریں۔ **(3x10=30)**

i. تقابل ادیان سے کیا مراد ہے؟ تقابل ادیان کی اہمیت و افادیت تحریر کریں۔

ii. گوتم بدھ کے حالات زندگی اور ان کی اہم تعلیمات تحریر کریں۔

iii. ہندو مت کا آغاز وار تقا کب ہوا؟ اور ہندو ویدوں کا تعارف بیان کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر 1:   درج ذیل سوالات کے مختصر جوابات دیجئے۔   (6x5=30)

1۔ معیشت اور اخلاق کا باہمی تعلق واضح کریں۔

2۔ معاشیات کی مختلف اقسام لکھیں۔

3۔ اسلامی معیشت پر لکھی جانے والی پانچ کتب کے نام لکھیں۔

4۔ غیر مسلم مفکرین کے ہاں معیشت کی مختلف تعریفیں لکھیں۔

5۔ زمین کی مختلف اقسام کے نام لکھیں۔

6۔ عشر اور عشور کا فرق واضح کریں۔

درج ذیل سوالات کے تفصیلی جوابات دیجئے۔   (3x10=30)

سوال نمبر 2۔ معاشیات کے لادینی اور اسلامی تصورات کا موازنہ کریں۔

سوال نمبر 3۔ حصول دولت اور صرف دولت کے ممنوع ذرائع کی وضاحت کریں۔

سوال نمبر 4۔ اسلامی معیشت کے بنیادی تصورات لکھیں۔

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اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر1: درج ذیل سوالات کے مختصر جوابات تحریر کریں۔ **(10x3=30)**

۱۔ مفسر کے لیے ضروری شرائط میں سے چار کو بیان کیجیے۔

۲۔ امثال القرآن سے کیا مراد ہے؟ مثالوں سے وضاحت کیجیے۔

۳۔ خانوادہ شاہ ولی اللہ کی تفسیر کے میدان میں تراجم قرآن اور تفاسیر قرآن کے نام لکھیے۔

۴۔ فقہی یا احکامی تفاسیر سے کیا مراد ہے؟ اس رجحان کی ایک نمائندہ تفسیر کا نام مع مولف لکھیے۔

۵۔ عہد صحابہ کے تفسیری خصائص بیان کیجیے۔

۶۔ الفوز الکبیر کی روشنی میں علم المخاصمہ کی مختصر وضاحت کیجیے۔

۷۔ تفسیر الکشاف از محمود الزمخشری کا انداز تفسیر اجمالاً اور مختصراً بیان کیجیے۔

8۔ علم اقسام القرآن کی وضاحت کیجیے۔

9۔ نسخ فی القرآن اور تخصیص مفہوم میں کیا فرق ہے؟

10۔ اسلوب بدیع القرآن سے کیا مراد ہے؟

سوال نمبر2: درج ذیل سوالات کے مفصل جوابات تحریر کریں۔ **(3x10=30)**

I۔ تفسیر اور تاویل کا تعارف اور ان کے درمیان فرق کی وضاحت کیجیے۔

II۔ اسباب نزول سے کیا مراد ہے؟ علم تفسیر میں اس کی اہمیت اور علماء کے اختلاف کو مختصر بیان کیجیے۔

III۔ تفسیر القرآن العظیم از ابن کثیر کی خصوصیات بیان کیجیے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر1: درج ذیل سوالات کے مختصر جوابات تحریر کریں۔ (6x5=30)

1. تحقیق کا معنی و مفہوم دو ماہرین کی روشنی میں واضح کیجیے۔
2. اسلامی و مغربی اصول تحقیق میں بنیادی فرق کے دو نقاط مدلل کیجیے۔
3. ثانوی اور بنیادی ماخذ میں فرق مع ایک مثال کے بیان کیجیے۔
4. دستاویزی تحقیق کا مفہوم کیجیے۔ نیز اس کی اقسام تحریر کیجیے۔
5. مخطوط سے کیا مراد ہے؟ نیز تحقیق میں اس کی ضرورت و اہمیت مختصر لکھیے۔
6. "حتمہ"، "اقتباس" اور حواشی کی وضاحت کیجیے۔

سوال نمبر2: درج ذیل سوالات کے مفصل جوابات تحریر کریں۔ (3x10=30)

1: محقق کے علمی و اخلاقی اوصاف پر تفصیلًا بحث کیجیے۔
2: قرآن و حدیث کی روشنی میں اصول تحقیق پر روشنی ڈالیے۔
3: تحقیقی مقالہ کا عنوان منتخب کیجیے۔ نیز منتخب عنوان پر اصول تحقیق کے تقاضوں کے مطابق فرضی خاکہ تحقیق تیار کیجیے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(5x6=30)**

I.   What kind of network management protocols are available, explain it in detail.

II.   Explain the topologies of the network.

III.   Explain the available hardware & software firewall for secure communication.

IV.   What are the advantages of using UDP over TCP, discuss it.

V.   What is the role of the router in a computer network, Explain in detail.

Q.2.   Answer the following questions.   **(3x10=30)**

I.   What is subnetting, and How, & when do we use it, Explain it with an example.

II.   Share your approach to IP address planning. How do you ensure efficient utilization of IP address space while leaving room for future growth?

III.   Explain in detail CSMA Protocol in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1) What is object relational mapping?
2) What is session bean?
3) What are deployment descriptors?
4) Define local interface with an example.
5) What is Ejb jar file?
6) What is java RMI-IIOP?

Q.2.   Answer the following questions.   **(2x15=30)**

1) What is entity bean? Write any two features of entity bean.
2) What is bean class? How we deploy the bean?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

1) Write a complete procedure with commands to recover a Table accidently drop an hour ago.

2) Explain working of DB block with the setting of freespace and used space parameters.

3) Differentiate between immediate constraints and deferred constraints

4) What are the advantages of Locally managed tablespaces, Write a command to create a Locally managed tablespace?

5) Write Shutdown options of database with table.

6) What is the difference between Direct export and conventional export when using export utility?

Q.2.   Answer the following questions.   **(5x6=30)**

1) Mr. Arshad is working as DBA in ABC (Pvt) Ltd. He has successfully updated the payroll database today (31 Jan 2008). Unfortunately, some other user has dropped the tablespace containing a salary table have the important information at 11:15 PM. Write down steps and commands which will be implemented by Mr. Nazir to recover the important tables.

2) Explain Recovery Procedure.

3) Create a role name U1 and assign it one system privilege and one object privilege and the assign U1 to user Imran. **(commands only)**

4) Draw and Differentiate between extended Bitmap Index and B-Index.

5) Explain six different type of segments in database.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. Differentiate 'project' and 'operation' with examples?
2. Explain three characteristics of a "project manager"?
3. List the processes of planning phase?
4. List the heads of charter document?
5. Explain the concept of "resource balancing"?
6. Define 'risk' with example?

Q.2.   Answer the following questions.   (3x10=30)

1. Explain the complete process of "project selection"?
2. Explain the inputs, tools and techniques, and outputs of "project human resource management"?
3. Explain the following concepts with examples:
   a. Triple constraints
   b. Schedule Compression
   c. Risk severity

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: **(6x5=30)**

.1   Prove that $2 . \omega \neq \omega . 2$, where ω is the ordinal number of set of positive integers.

.2   A partition of a positive integer m is a set of positive integers whose sum is m. A partition P_1 precedes a partition P_2 if the integers in P_1 can be added to obtain the integers in P_2. Draw the Hasse diagram of the set of all partitions of $m = 5$ with order given above.

.3   Prove that $\aleph_0 c = c$.

.4   Let A be a finite set and B be a denumerable set then prove that $A \cup B$ is denumerable set.

.5   Prove that a well-ordered set cannot be similar to any of its initial segments.

.6   Suppose A is an infinite set and D is a denumerable subset of A. Show that $A \backslash D \approx A$.

Q.2.   Solve the following: **(5x6=30)**

1   Prove that every element in a well-ordered set A has a unique immediate successor except the last element.

2   State and prove Schroeder Bernstein theorem.

3   Prove that for cardinal numbers α, β and γ, $(\alpha\beta)^\gamma = \alpha^\gamma \beta^\gamma$.

4   Let A be an ordered set, and for each $a \in A$, let $p(a)$ denote the set of predecessors of a, i.e., $p(a) = \{x : x \leq a\}$ (called the predecessor set of a). Let $p(A)$ denote the collection of all predecessor sets of the elements in A ordered by set inclusion. Prove that A and $p(A)$ are order isomorphic.

5   Prove that $[0,1]$ is non-denumerable.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: **(6x5=30)**

(i)   Define Linear, Non-linear and Quasi-linear partial differential equation with one example for each.

(ii)   Solve $y(y+z)dx + z(x+z)dy + y(y-x)dz = 0$.

(iv)   Solve $(D_x^3 - 3D_y D_x + D_x + 1)z = e^{2x+3y}$.

(v)   Show that the one-dimensional wave equation $\dfrac{\partial^2 u}{\partial t^2} - c^2 \dfrac{\partial^2 u}{\partial x^2} = 0$ is hyperbolic, find an equivalent canonical form, and then obtain the general solution.

(vi)   Find product solutions of $\dfrac{\partial^2 u}{\partial x^2} + \dfrac{\partial^2 u}{\partial y^2} = 0$.

Solve the following: **(3x10=30)**

Q.2   Find the temperature distribution $u(x,t)$ in the bar of "L", whose ends are kept at zero temperature, and whose initial temperature is $u(x,0) = f(x) = U_0$.

Q.3   Find d'Alembert's solution of $\dfrac{\partial^2 u}{\partial x^2} = \dfrac{1}{c^2} \dfrac{\partial^2 u}{\partial t^2} - \cos t$.

Q.4   Solve the IVP-BVP

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = \frac{1}{c^2} \frac{\partial^2 u}{\partial t^2}, \qquad 0 < x < a,\ 0 < y < b,\ t > 0$$

$$u(x,0,t) = 0,\ u(x,b,t) = 0, \qquad 0 < x < a,\ t > 0$$
$$u(0,y,t) = 0,\ u(a,y,t) = 0, \qquad 0 < y < b,\ t > 0$$
$$u(x,y,0) = f(x,y), \qquad 0 < x < a,\ 0 < y < b$$
$$u_t(x,y,0) = g(x,y), \qquad 0 < x < a,\ 0 < y < b$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: (6x5=30)

(i).   What is the ill –conditioned linear system? Explain with example.

(ii).   Evaluate $\Delta \tan^{-1} x$.

(iii).   Find the dominant Eigen value and Eigen vector of $A= \begin{bmatrix} 5 & 3 \\ 4 & 8 \end{bmatrix}$

(iv).   Derive the Gauss's Forward Interpolation formula.

(v).   The amount A of a substance remaining in a reacting system after an interval of time t in a certain chemical experiment is given by following data. Find the value of A at $t = 37$

t	35	45	55	65
A	31	14	20	40

(vi).   Solve the following system of equations by Crout's method.

$$x_1 + 3x_2 + 8x_3 = 4$$
$$x_1 + 4x_2 + 3x_3 = -2$$
$$X_1 + 3x_2 + 4x_3 = 1$$

Solve the following:

Q.2. Solve the following system of equations by the Factorization method.   (10)

$$10x + y + 2z = 13$$
$$3x + 10y + z = 14$$
$$2x + 3y + 10z = 15$$

Q.3 a). Derive Error term for Langrange's Interpolation formula.

b) Show that $\Delta \nabla = \nabla \Delta = \Delta - \nabla = \delta^2$ (6+4)

Q.4. Find a real root of $x^3 + x - 1 = 0$ by fixed point iteration method.   (10)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: **(6x5=30)**

(i)	Prove that If A and B are independent events in a sample space S, then A and $\bar{B}$ are also independent.
(ii)	The probability that three men hit a target are respectively 1/6, 1/4, and 1/3. Each shoots once at the target. Find the probability that exactly one of them hits the target?
(iii)	Find Mean and variance of Beta distribution of first kind?
(iv)	The joint density function of the continuous random variables X and Y is $$f(x,y) = \begin{cases} \frac{2}{7}(2x + 5y); & 0 \le x \le 1,\ 0 \le y \le 1 \\ 0 & \text{elsewhere} \end{cases}$$ then find the marginal distributions of X and Y.
(v)	For what value of A, the Continuous random variable X, has the probability density function, $$f(x) = \begin{cases} Ax(x - 1), & 0 \le x \le 4 \\ 0, & \text{else where} \end{cases}, \qquad \text{Also find } p(x \ge 2)$$
(vi)	Find the moment generating function of Poisson distribution.

     Solve the following: **(3x10=30)**

Q.2	State and prove Baye's theorem.
Q.3	To avoid detection at customs, a traveler places 8 narcotics tablets in a bottle containing 10 vitamin pills that are similar in appearance. If the customs official selects 3 of the tablets at random for analysis, what is the probability that the traveler will be arrested for illegal possession of narcotics?
Q.4	Prove that in a normal distribution all odd order moments about mean are all zero, but all even order moments are related as $\mu_{2n} = (2n - 1)(2n - 3)....5.3.1\sigma^{2n}$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Solve the following:**   **(6x5=30)**

(i)   What is a compiler?

(ii)   Write the Fortran expression corresponding to each of the following logical statements

       (a) $0 < r < 2$ and $x \geq 7$

       (b) C is less than each of x,y,z.

(iii)   Find out the errors, if any, in the following statements. Also write its correct form.

       (a) If $(w >= c)$

               then $y = x + y$

               else $y = y - x$

      EndIf

       (b) If $(a > b)$ then

             If $(c > d)$ then

                 $y = z$

             else

                 $y = y - z$

      EndIf

(iv)   Pick incorrect constants or identifier from the following

       (i) 7.78,235   (ii) 965432   (iii) 78/87   (iv) Roll-No

(v)   Write a Fortran 90 expression corresponding to each mathematical expression

       (i) $\dfrac{e^x - \ln x \; \sin^{-1} x}{|x - \tan |x||}$ (ii) $T + r\left(\alpha + \dfrac{\beta(\gamma + n)}{m+n}\right)$

      Solve the following: **(3x10=30)**

Q2.   (a)   Write the differences between subroutine subprogram and function subprogram.

       (b)   Given a 4 digit number representing a year. Write a program to find out whether it is a leap year.

Q3.   Given a set of n integers, evolve a program which will find

            (i) The total number of even integers in the set

            (ii) The total number of odd integers in the set

            (iii) The sum of all even integers

            (iv) The sum of all odd integers

            Structure the program using subroutines.

Q4.   Write a program to find the roots of a quadratic equation.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Solve the following:**   **(5x6=30)**

Q.2.   **Solve the following:**   **(5x6=30)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: **(6x5=30)**

1. If R is a division ring then show that the Centre $Z(R)$ of R is a field.
2. If A and B are two ideals of R then $A + B$ is an ideal of R, containing both A and B.
3. If $f : R \rightarrow \acute{R}$ be an onto homomorphism, then $\acute{R}$ is isomorphic to a quotient ring of R. In fact, $\acute{R} \approx \dfrac{R}{Ker\ f}$.
4. Show that $\dfrac{Z_3[x]}{I}$ where $I = <\ x^2 + x + 1\ >$ is not an integral domain.
5. Provide an example of integral domain, which is not unique factorization domain (UFD).
6. Prove that the ideal $< x >$ of $Z[x]$ is a prime ideal but not maximal.

Q.2.   Solve the following: **(3x10=30)**

1. Prove that every finite integral domain R is field.

2. Find the smallest subring of Q that contains the number $\dfrac{1}{3}$.

3. Find all Zero divisors of Z_{24}.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following: **(6x5=30)**

(I)	Find the all prime number p such that $17p + 1$ is a square.
(II)	Show that if $a^3 \mid b^2$ then $a \mid b$. Dose $a^2 \mid b^3$ imply $a \mid b$.
(III)	Prove that for each value of a, the congruence $a^9 \equiv a \pmod{30}$ exists.
(IV)	If $n = 45689$, then find $\tau(n), \varphi(n), \sigma(n)$ and $\omega(n)$.
(V)	Prove that the Mobius μ-function is a multiplicative.
(VI)	Find all solutions in integers of $15x + 7y = 210$.

Solve the following: **(5x6=30)**

Q2	Solve the system of linear congruence's $x \equiv 1 \pmod 5$, $x \equiv 3 \pmod 7$, $x \equiv 5 \pmod 8$.
Q3	Show that an integer $n > 1$ has a primitive root if and only if $n = 2, 4, p^k$, or $2p^k$, where p is an odd prime.
Q4	Show that the quadratic congruence $x^2 + 1 \equiv 0 \pmod p$, where p is an odd prime, has a solution if and only if $p \equiv 1 \pmod 4$.
Q5	Determine all the primitive roots of the primes $p = 11$, 19, and 23.
Q6	State and prove Wilson's theorem.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Solve the following:**   **(6x5=30)**

1. Explain the wave-particle duality using double slit experiment.

2. Show that the de Broglie wavelength of an electron with kinetic energy E (eV) is $\lambda_p = \frac{0.29 \times 10^{-8}}{\sqrt{E}}$ cm. (Plank's constant$=4.13599 \times 10^{-15}$eV/Hz, $m_p = 938.272 MeV/c^2$)

3. Define one dimensional Energy operator. Find the eigenvalues and eigenfunctions of the Energy operator for a free particle case.

4. Explain the operator and measurement postulates of quantum mechanics.

5. Define momentum operator. Show that the momentum operator is Hermitian.

6. Discuss the nature of eigenvalues and eigenfunctions of Parity operators.

Q.2. **Solve the following:**   **(3x10=30)**

1. Normalise the given quantum state $\psi\rangle$. Also, find $\langle x \rangle$ and $\langle p \rangle$.

$$\psi\rangle = A \exp\left(\frac{-(x-3)^2}{4a^2} \right) \exp\left(\frac{i5x}{\hbar} \right)$$

2. Derive Equation of Continuity for the quantum mechanical system of unbound state.

3. Show that the for Hermitian operator $\hat{A}$,

   - $\langle A \rangle$ is real number.
   - $\langle A^2 \rangle$ is always non-negative real number.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: **(6x5=30)**

i.   Use the dual simplex method to solve the maximization problem with objective function $z = -2x_1 - x_3$ subject to $x_1 + x_2 - x_3 \geq 5$, $x_1 - 2x_2 + 4x_3 \geq 8$, $x_1 \geq 0$, $x_2 \geq 0$, $x_3 \geq 0$.

ii.   Develop the corresponding transshipment model for the following network.
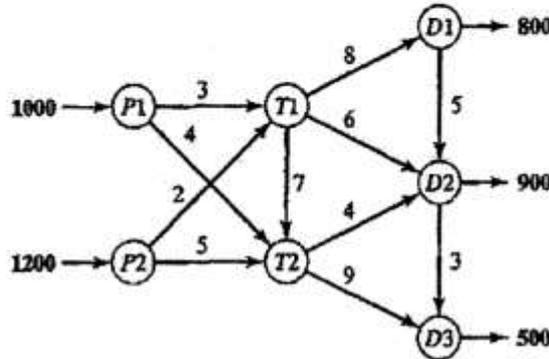
iii.   Write a note on unboundedness as a special case of the simplex method.

iv.   Write the rules for defining the dual of a primal problem.

v.   Use the Vogel's method to find the basic feasible solution to the transportation problem given below.

20	11	3	6	5
5	9	10	2	10
18	7	4	1	15
3	3	12	12	

vi.   Discuss the role of sensitivity analysis in linear programming problems.

Q.2.   Solve the following: **(3x10=30)**

i.   Solve the transportation problem given above in Q. 1 (v) by the method of multipliers.

ii.   Solve the following assignment problem.

Machine	Job 1	Job 2	Job 3	Job 4
1	14	5	8	7
2	2	12	6	5
3	7	8	3	9
4	2	4	6	10

iii.   Use the Big-M method to solve the following LP model.

Minimize $z = 2y_1 + 3y_2$ subject to the following constraints

$$\frac{1}{2}y_1 + \frac{1}{4}y_2 \leq 4, \quad y_1 + 3y_2 \geq 20, \quad y_1 + y_2 = 10, \quad y_1 \geq 0, y_2 \geq 0.$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Solve the following:**   **(5x6=30)**

1. Show that rotation is distance preserving.

2. Consider $y = f(x) = \cos x$ over $[0, 1.2]$, use any three nodes to construct a quadratic interpolation polynomial $P_2(x)$.

3. Find the least-squares parabola for the four points (-3, 3), (0, 1), (2, 1) and (4, 3).

4. Determine the image of the line $y = 2x$ under the affine transformation
$$t(x) = \begin{bmatrix} 4 & 1 \\ 2 & 1 \end{bmatrix} x + \begin{bmatrix} 2 \\ -1 \end{bmatrix}, \quad x \in \Re^2.$$

5. Prove that an affine transformations map ellipses to ellipses, parabolas to parabolas, and hyperbolas to hyperbolas.

Q.2.   **Solve the following:**   **(3x10=30)**

1. Prove that the set of Euclidean transformation in R^2 forms a group under the binary operation of composition of transformations.

2. Estimate the value of f(22) and f(42) from the following data

x	20	25	30	35	40	45
f(x)	354	332	291	260	231	204

Using Newton's interpolation formulae.

3. For the given set of data, find the least-squares curve for $f(x) = C \, x \, e^{-Ax}$ using data linearization method.

x_k	y_k
1	0.6
2	1.9
3	4.3
4	7.6
5	12.6

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Solve the following:**   **(6x5=30)**

(i)   Define Newton's law of viscosity and explain it briefly.

(ii)   Explain material derivative. Derive the expression for material derivative in cylindrical form.

(iii)   Derive the following equation: $\dfrac{D\vec{V}}{Dt} = \vec{F} - \dfrac{1}{\rho}\nabla p$.

(iv)   What is two dimensional vortex? Calculate velocity field for an irrotational vortex.

(v)   The velocity components for a certain two dimensional incompressible fluid flow are: $u = 2xy$, $v = a^2 + x^2 - y^2$. Determine the corresponding stream function and the velocity potential if possuble.

(vi)   Derive the equation of motion under impulsive forces in cartesian form.

     Solve the following: **(3x10=30)**

Q. 2   Prove that the kinetic energy of irrotational motion of an incompressible fluid occupying a simply connected region is less than the kinetic energy of any other motion of the fluid having the same normal velocity on the boundary.

Q. 3   Derive the equation of continuity in cartesian coordinates for incompressible fluid. Convert the same in cylindrical coordinates.

Q. 4   The velocity components of a two dimensional fluid flow are given by

$$u = 3x + y, \qquad v = 2x - 3y.$$

Calculate the circulation around the circle $(x - 1)^2 + (y - 6)^2 = 4$.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

a) Explain Born-Oppenheimer approximation briefly.

b) Write down main assumptions of classical free-electron theory.

c) Explain what is meant by the following terms in solid state physics: (i) one electron approximation ii) Bloch electron and iii) Bloch wave-functions.

d) Write down some successes of nearly free electron (NFE) model. Which physical phenomenon's are explained on the basis of NFE model that a free electron theory could not explain?

e) Explain under what conditions the consideration of electron effective mass becomes important? Also, discuss briefly; how does effective mass of electron effect the band structure (E-k) diagram?

f) Explain Hartree-Fock approximation. How it applies to many particles system (N-particles) in selecting wave-functions in order to fulfil the Pauli principle?

Answer the following questions.   (3x10=30)

Q. 2 Explain nearly free electron model and discuss the formation of energy band gaps in solids on the basis of this model.

Q. 3 Explain orthogonalized plane-wave (OPW) method in detail. What are the limitations on wave-functions of core states and basis functions? How it explains the concept of band structures in solids?

Q. 4 Explain linear combination of atomic orbitals (LCAO) method to calculate energy band structure of solids.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

I. Briefly explain the terms (a) White dwarfs (b) Galaxy formation.
II. Describe the spectral properties of stars.
III. What is Hubble's law and derive its equation in terms of Hubble's constant.
IV. Explain the concept of a supernova and its significance in the universe.
V. Describe the formation process of a star in a concise manner.
VI. What is the surface temperature of a star that emits radiation with a peak of intensity at a wavelength of 1.04×10^{-7} m?

Answer the following questions.   **(3x10=30)**

Q2: Describe the life cycle of a typical star, from birth to death.

Q3: Discuss the origins and evolution of the universe, from the Big Bang to the present day

Q4: Explain the physics of black hole formation and evolution, including the role of gravity, relativity, and accretion. Describe the different types of black holes (stellar-mass, supermassive, and intermediate-mass) and their observational signatures.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

(i)- Define electric susceptibility and dielectric constant. Establish a relation between them. Also define dielectric strength.

(ii)- What are the equations of Poisson's and Laplace? Write these equations in different coordinate systems.

(iii)- Derive the equation of continuity in form,

$$\nabla \cdot \vec{J} + \frac{\partial \rho}{\partial t} = 0$$

Also discuss its physical significance.

(iv)- What is meant by magnetic scalar potential? Explain.

(v)- If current density J in a wire of cross-section with radius R is proportional to distance from axis. Find total current in the wire.

(vi)- State Gauss's law and develop its differential and integral forms.

Answer the following questions.

Q. 2:-What is method of images? Using method of images, find the potential due to a point charge q in the vicinity of conducting sphere.   (10)

Q. 3: (a)-Find the expression $\rho = \rho_0 e^{-t/t_c}$ for case of electrostatic equilibrium of a conductor, where ρ & t_c are volume charge density and relaxation time respectively. Also define relaxation time.   (06 + 04)

(b)-Explain Biot-Savart law and write its differential form. With the help of this law, prove that isolated magnetic poles do not exist *i.e.* $div\vec{B} = 0$.

Q. 4: (a)-Derive an expression for potential and electric field at an external point due to polarized dielectric medium.   (06 + 04)

(b)-State Gauss's law in dielectrics and hence define displacement vector.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(15x2=30)**

I.   Define spin angular momentum in Quantum mechanics.
II.   For which systems do we use WKB approximation?
III.   What is exchange degeneracy?
IV.   What is the differential cross section? Write its physical interpretation in scattering reference.
V.   What is the difference between a symmetric and antisymmetric wave function?
VI.   Define exchange operator. What are its eigen values?
VII.   What are Creation and Annihilation operators? Discuss their properties.
VIII. Write the general expression for wavefunction of three identical fermions and show that the wavefunction vanishes if two fermions are in the same state.
IX.   What is the difference between The Schrodinger picture & Heisenberg picture of Quantum mechanics?
X.   Write down the expression of the operators for spin angular momentum in matrix form.
XI.   What is symmetrization postulate?
XII.   Show that exchange operator is a constant of motion.
XIII. Write down equation of motion in Heisenberg Picture.
XIV.   What is Born approximation?
XV.   What is Fermi Golden Rule?

Answer the following questions.   **(3x10=30)**

Q.2. Explain in detail the steps used for Variational Method.

Q.3. Derive equation of motion in Interaction Picture.

Q.4. Discuss in detail The Partial Wave Analysis.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: (15x2=30)

(i) Does the nuclear force has a non-central component?

(ii) Can a nucleus have a multipole moment with odd parity? If not, why?

(iii) Why do large nuclei has greater number of neutrons than protons?

(iv) Why nuclear binding energy is a linear function of the mass number of a nucleus?

(v) Do we need to use relativistic quantum mechanics to study the motion of nucleons inside a nucleus? If not, why?

(vi) Draw nuclear density distribution.

(vii) How does the angular momentum of α particles affect the potential barrier for them?

(viii) How would you get the range of the nuclear force?

(ix) What is the level width of a nuclear state?

(x) What is the evidence that parity is violated in β decay?

(xi) What is the underlying reason for the nonzero spin magnetic dipole moment of a neutron?

(xii) What is pairing energy?

(xiii) Why does a deuteron have no bound excited state?

(xiv) When can a nucleus decay through, both, β^+ and β^- processes?

(xv) Give the selection rules for γ decay.

Q.2.   Answer the following questions.

1.   (a) Use the semi-empirical mass formula to get the number of protons that would lead to two nuclei with the minimum mass for a nucleus with even number of nucleons. [05]

(b) The nuclei $^{11}_{5}B$(m=11.009305 u) and $^{11}_{6}C$(m=11.011432 u)are said to be pair of mirror nuclei. If the nuclear forces are charge independent, their total binding energy should only differ by the coulomb energy because of different number of protons. Calculate the radius for the nuclei assuming charge independence. [05]

2. (a) Assume that nuclear force between two nucleons can be approximated by a potential well of depth V_0. What is expected scattering angle for n-p scattering when energy of the incident particles is 100 MeV? Explain the backward scattering peak in a n-p scattering experiment. [06]

(b) Deutron has a small positive electrical quadrupole moment. What would be the shape of deuteron? What would you conclude about the nature of nuclear force from this information? [04]

3. (a) Use the Fermi Golden Rule to derive the β-emission rate in the allowed approximation. How does the resultant expression explain the observed β-particle spectrum? [06]

(b) Why in high Z atoms, e^- capture is more probable than β^+ decay? Explain, both, qualitatively and quantitatively. [04]

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THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

(i) Describe the Quark model. Discuss the concepts of quark confinement, asymptotic freedom and color hypothesis.

(ii) Write down the equations for β^-−decay and decay of π^-. Draw their corresponding Feynman diagrams. Check the conservation of charge, baryon number and lepton number at each vertex.

(iii) What are strangeness changing weak interactions? Give their examples. Explain how the theory of weak interactions was modified to take into account such type of interactions?

(iv) Consider a point in space whose position vector is $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$. Rotate the coordinate system along z axis by an angle θ. Write down the relations between rotated and un-rotated coordinates.

(v) Define and differentiate between parity, C-parity and G-parity operations with the help of examples. Determine the corresponding eigen values of these operators.

(vi) What is the origin of lepton number and strangeness number? How are these quantum numbers assigned to leptons and hadrons? Also discuss their corresponding conservation laws.

Answer the following questions.   **(3x10=30)**

Question 2: $(6 + 4 = 10)$

(a): Describe the phenomena of vacuum polarization in QED and QCD. Discuss how the vacuum polarization implies the variation of coupling of electromagnetic (α_e) and strong interaction (α_s) with distance of the interacting particles?

(b): Define Eightfold Way. Use this theory to organise 8 lightest spin-0 mesons.

Question 3: $(5 + 5 = 10)$

(a): Show that the state vector of $p\bar{p}$ system in a state of definite orbital angular momentum, l is an eigen state of charge-conjugation operator. What is it's corresponding eigen value?

(b): What is isospin symmetry? Using Isospin symmetry find the relative decay rates of the following processes:

$$\Xi^{*0} \rightarrow \Xi^0 + \pi^0$$
$$\Xi^{*0} \rightarrow \Xi^- + \pi^+$$

Question 4: $(6 + 4 = 10)$

(a): Show that four Maxwell's equations can be expressed in the following form (in natural units)

$$\Box^2 A^\mu - \partial^\mu(\partial_\nu A^\nu) = J^\mu,$$

where A^μ and J^μ are 4-vector potential and 4-vector current density, respectively.

(b): What are Gauge transformations? Show that the field equation obtained in part (a) remains invariant under gauge transformations.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: **(6x5=30)**

(i) What are Lorentz transformations (LT)? Write them in 4 vector notation. Also differentiate between proper and improper LT with the help of their corresponding examples.

(ii) Explain how Klein Gordon equation (KGE) is different from Schroedinger wave equation? Using the Klein Gordon equation derive the corresponding expressions for the probability and current density.

(iii) Describe how Dirac Hole theory and Feynman-Stuckelberg interpretation try to explain the negative energy solutions?

(iv) Derive the adjoint form of Dirac equation.

(v) Draw all possible time ordering diagrams for double scattering of an e^- from a fixed potential. Explain the diagrams with the interpretation of a single-particle (e^-) wave function.

(vi) Modify Dirac equation for zero-mass fermions.

Answer the following questions.

Question 2:   (10)

Solve the Dirac equation for the following cases:

(i) for a particle at rest $(\mathbf{p} = \mathbf{0})$

(ii) for a moving particle $(\mathbf{p} \neq \mathbf{0})$

Interpret all the four solutions. Also explain how the normalization of spinors is done and which normalization constant is taken.

Question 3: $(5 + 5 = 10)$

(a): Using the non-relativistic perturbation theory show that the transition amplitude T_{fi} is given by

$$T_{fi} = -i \int dx^4 \phi_f^*(x) V(x) \phi_i(x)$$

where $\phi_i(x)$ and $\phi_f(x)$ are initial and final states of the system and $V(x)$ is the interaction potential.

(b): Use the expression of the transition amplitude, T_{fi}, as given in part (a) to derive Fermi's Golden rule.

Question 4: $(7 + 3 = 10)$

(a): Define five Dirac bilinears. How many components do they have? Show that the object $\bar{\psi}\gamma^\mu\gamma^5\psi$ is an axial-vector under proper Lorentz transformations and space-inversion.

(b): Show that $(\sigma^{\mu\nu})^\dagger = \gamma^0 \sigma^{\mu\nu} \gamma^0$.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: (6x5=30)

1. Express Pauli-Z gate using Hadamard and NOT gates only.

2. Define Hadamard Basis and write down the projective measurement operators with respect to Hadamard Basis.

3. Explain the difference between separable quantum states and entangled states. Also provide at least one example of each case.

4. Define mixed and pure quantum states. Show that for pure quantum state defined by the density matrix ρ, $tr(\rho^2) = 1$.

5. Find the Schmidt decomposition of the state $|\psi\rangle = \frac{1}{2} (|00\rangle - |01\rangle - |10\rangle + |11\rangle)$.

6. Define von-Neumann entropy. Find the von-Neuman entropy of the pure state $\psi = \frac{|0\rangle + |1\rangle}{2}$.

Q.2.   Answer the following questions.   (3x10=30)

1. Derive Bell's inequality for maximally entangled states and explain its implications in contrast to classical argument.

2. Explain how Quantum Entanglement can be used as resource for quantum teleportation.

3. Show that

   - von Neumann entropy is invariant with respect to change of basis.
   - von Neumann entropy is concave.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(6x5=30)**

a) Discuss in general the energy spectrum of diatomic molecules. Explain how it differs for homopolar and heteropolar molecules.

b) For a quantum particle, write three basic conditions for quantum mechanical tunneling of a particle through the barrier.

c) What causes the Casimir force? Explain briefly. Also write the assumption followed to derive formula to calculate Casimir force between two conducting parallel plates spaced one micrometer apart.

d) What is fractional Hall effect? Explain briefly how it differs from quantum Hall effect.

e) What is meant by quantization of LC circuit? Explain briefly. For LC circuit, use canonical quantization to write classical Hamiltonian in quantum formalism. Also, write canonical commutation relation of flux and charge.

f) Explain the term lasing threshold. Discuss briefly how lasing threshold condition is achieved in laser medium?

Answer the following questions.

Q. 2   Solve Schrödinger wave equation for a one dimensional periodic potential and discuss how it leads to formation of bands in crystalline solids.   **(10)**

Q. 3   What is field effect transistor (FET)? Draw schematic diagram of FET and single electron transistor (SET). For both FET and SET, obtain formula to calculate voltage gain V_g.   **(10)**

Q. 4   In a steady state where two emission rates (*spontaneous and stimulated*) balance the rate of absorption, derive Einstein coefficient relation in laser.   **(10)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (15x2=30)

    i. What essential criterion defines a material as a 'nanomaterial'?

    ii. How have nanomaterials revolutionized the electronics industry?

    iii. Provide examples of materials representing different dimensional structures.

    iv. Why do nanoparticles exhibit a high number of reactive sites?

    v. What are nanocomposites?

    vi. List some solution-based techniques commonly used for the synthesis of nanomaterials.

    vii. What hazardous effects can nanomaterials have?

    viii. How do top-down and bottom-up methods differ in synthesizing nanomaterials?

    ix. What are the key differences between photolithography and electron beam lithography?

    x. Which techniques are commonly used to study the morphology of nanomaterials?

    xi. How does an XRD spectrum provide insights into the crystallinity of a material?

    xii. Define bandgap.

    xiii. Give four examples of Nano-devices.

    xiv. How does the size of nanoparticles relate to their band gap?

    xv. What is the application of FTIR spectroscopy?

Q.2. Answer the following questions.

    i. (a) Explain in detail the physical and chemical properties exhibited by nanomaterials. **(5)**

       (b) What are nano-sensors, and how do they function to detect environmental species? Discuss the mechanisms behind their sensing capabilities and the different types of nano-sensors. **(5)**

    ii. (a) What is the solvo-thermal process? Explain the synthesis procedure and the main factors affecting the morphology of nanomaterials. **(5)**

       (b) Explain the sputtering technique for thin film deposition. Discuss its working principle, types, and key applications. **(5)**

    iii. (a) What is UV-Vis spectroscopy, and how is it used to determine the band gap of a material? Explain with the relevant plot(s) and formulae. **(5)**

       (b) How do an X-ray Diffraction spectrum and *(hkl)* values help determine interplanar spacing *(d)*, lattice constants *(a,b,c)*, unit cell volume *(V)*, and crystallite size *(D)* in a cubic crystal system? **(5)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. Design NAND Gate as Universal gate.

2. Design 16 to 4 line encoder circuit with help of truth table.

3. Draw Advanced architecture of computer system.

4. Write a short note on RAM Family.

5. Design 16 to 1 line multiplexer.

6. How a basic register works? How Serial in serial out shift register works?

Q.2.   Answer the following questions.   (3x10=30)

1. Design RS, D, JK ,T and Master Slave Flip Flops by using NAND gate only.

2. Design MOD-12 synchronous counter and draw its timing diagram.

3. Differentiate between PLA and GAL devices in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Give short answers of the following:**   **(6x5=30)**

a) Show that $U = - \tau^2 \frac{\partial}{\partial \tau} (\frac{F}{\tau})$, where F being the Helmholtz free energy.

b) Explain briefly the following properties of entropy on the basis of statistical concept:

     (i) Exact differential   (ii) Additive property.

c) Show that rotational degree of freedom is active on 10K.

d) State the Stephen Boltzmann law and show that total energy of photons gas per unit volume is directly proportional to fourth power of absolute temperature.

e) What is meant by the term ENSEMBLE? Differentiate between canonical and grand canonical ensemble.

f) Show that the orbit of a simple harmonic oscillator in phase space is an ellipse.

     Answer the following questions.

Q.2

a) Explain the basic conditions of equilibrium for a closed system. Discuss only the mechanical equilibrium and show that it leads to mechanical definition of a quantity 'μ' called chemical potential. Also explain the chemical potential 'μ' in your own words.   **(10)**

Q.3

a) What is Bose–Einstein Condensation? Under what conditions it is formed?

b) Show that the value of Bose-Einstein Distribution cannot be negative. Also explain it graphically.   **(6+4)**

Q.4

a) State the principle of equipartition of energy. Also derive the formula for specific heat of a system possessing 'f' degree of freedom on the basis of this principle.

b) Show that according to Dulong-Petit law C_v 3R.   **(7+3)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (15x2=30)

i. What are the principal sources of the magnetic moment of a free atom?
ii. Define magnetization and magnetic susceptibility.
iii. Describe the phenomenon of diamagnetism and write the relation for Larmor diamagnetic susceptibility.
iv. Explain the origin of paramagnetism in materials.
v. Why does the ground state of helium exhibit zero spin and zero orbital moment?
vi. How does the Pauli susceptibility of conduction electrons differ from the susceptibility of paramagnetic ions or atoms as given by Curie's law?
vii. Describe the phenomenon of superconductivity and how it could be achieved in metals.
viii. Why do superconductors exhibit negative magnetic susceptibility?
ix. Describe the vortex state of a type-II superconductor.
x. Draw the experimental curve for free energy as a function of temperature for the metal in both its superconducting and normal states.
xi. Explain the concept of the Cooper pair in the context of superconductivity.
xii. What is the Josephson effect?
xiii. Define polarizability.
xiv. What are ferroelectric crystals?
xv. What are quantum dots?

Q.2. Answer the following questions.

i. (a) How does the BCS theory explain the phenomenon of superconductivity and what are its fundamental mechanisms and principles?   (6)

(b) Consider a Josephson Junction and a DC voltage V applied across the junction. Derive an expression for the superconducting current J across the junction which oscillates with frequency $\omega = \frac{2eV}{\hbar}$.   (4)

ii. (a) Describe electronic polarizability and its static form using Classical theory. Additionally, explain the frequency dependence of electronic polarizability by employing a harmonic oscillator model.   (6)

(b) Explain the concept of a local field acting on an atomic dipole. What contributions are taken into account to calculate the total local electric field?   (4)

iii.(a) Considering the behavior of conduction electrons in an external magnetic field and the influence of Fermi-Dirac statistics and the Pauli exclusion principle, derive the expression for magnetization and Pauli paramagnetic susceptibility for free electron gas.   (10)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   **(10x3=30)**

a) Define magnetic induction and magnetization. Establish a mathematical relation (valid in SI units) relating magnetic induction and magnetization.

b) Define relative magnetic permeability and establish its relation with magnetic susceptibility.

c) Plot a magnetic susceptibility versus temperature behavior of diamagnets.

d) Define Curie temperature T_C and Neel temperature T_N.

e) What is the value T_C for Ni, Fe and Co?

f) What is meant by uniaxial materials? Among, Ni, Fe and Co which one is a uniaxial material?

g) Why in Fe and Ni, easy and hard directions of magnetization are opposite to each other?

h) What is nuclear magnetic resonance (NMR) effect? Write two applications of NMR effect.

i) For N spins interacting with each other, write down a mathematical relation to calculate exchange energy. Also, write condition on exchange integral for ferromagnetism to occur?

j) Explain magneto-static anisotropy and write at least two origins of this anisotropy.

Answer the following questions.

Q.2 For thermally excited magnons at a given temperature T, derive an expression to calculate fractional change in magnetization.   **(10)**

Q.3 Considering the nearest neighbor interactions only between antiferromagnetic spins separated by distance "a", derive a dispersion relation for spin-wave propagating in antiferromagnetic lattice.   **(10)**

Q.4 Show that the energy of a spin-wave is quantized.   **(10)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.　Answer the following short questions:　　　(6x5=30)

1. What is the concept of distance shielding in protecting against radiation exposure?
2. Evaluate the role of the Compton effect in medical physics.
3. Define diagnostic X-rays in the context of medical imaging.
4. Assess the use of MRI and its contrast agents, and demonstrate why MRI is superior to CT.
5. Explain photoelectric absorption, detailing all steps involved in this fundamental process.
6. How can you distinguish between ionization and excitation? Explain with an emphasis on specific ionization to support your answer.

Q.2.　Answer the following questions.　　　(3x10=30)

1. How can neutrons be categorized based on energy distribution? Provide your answer with an energy equation at a given temperature to support your classification.
2. What is meant by beta rays? Explain the distinction between negative beta decay and positive beta decay. How are beta rays utilized in medical physics?
3. How would you evaluate PET/CT scanning? Support your answer by discussing its benefits, risks, common uses, and limitations.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions.   (6x5=30)

سوال نمبرا: درج ذیل سوالات کے مختصر جوابات دیجئے۔

1.   Define comparative studies.

١.   تقابلی مطالعہ کی وضاحت کریں۔

2.   What is meant by scientific research.

٢.   سائنسی تحقیق سے کیا مراد ہے۔

3.   Define concept.

٣.   تصور کی وضاحت کریں۔

4.   Define research design.

٤.   تحقیقی ڈیزائن کی وضاحت کریں۔

5.   What is Sampling.

٥.   (سمپلنگ) نمونے کیا ہوتے ہیں۔

6.   Define Proposal.

٦.   پروپوزل کی وضاحت کریں۔

Q.2.   Answer the following questions.   (3x10=30)

سوال نمبر ٢:   درج ذیل سوالات کے جامع جواب دیجئے۔

1.   Write a note on Behavioral research.

١.   رویہ جاتی تحقیق پر نوٹ لکھیں۔

2.   Discuss some important steps of research process.

٢.   تحقیق کے عمل کے مختلف مراحل تحریر کریں

3.   Discuss some important somces of data collection.

٣.   تحقیق میں ڈیٹا جمع کرنے کے اہم زرائع بیان کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions:**   **(5x6=30)**

1. Define Foreign Policy and outline its tools.
2. How does geography shape Foreign Policy?
3. What is the role of international organizations in Foreign Policy?
4. Discuss the strengths of States in formulation of Foreign Policies.
5. What are the major determinants of Foreign Policy shifts after 9/11?

Q.2.   **Answer the following questions.**   **(2x15=30)**

1. Critically analyze the relationship between international politics and the formulation of Foreign Policy.
2. Evaluate the structural and procedural differences in Foreign Policy formulation between developed and developing countries.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   (6x5=30)

i. What is meant by International Law?

ii. Define Municipal Law.

iii. Individuals as a subject of International Law.

iv. Define De-Jure Recognition.

v. Define Territorial Sovereignty.

vi. What is meant by Contiguous Zones?

Q.2. **Answer the following questions.**   (3x10=30)

i. Write down the sources of International Law.

ii. Define State as International Actor of International Law.

iii. Define State Succession and its effects.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   (6x5=30)

1. Define foreign Policy.

2. What are the objectives of Pakistan foreign policy?

3. When and why did Pakistan become the member of SEATO?

4. What is the Durand Line.

5. What are the strong factors for a strong foreign policy?

6. Whose abbreviation is CENTO and NAM?

Q.2. **Answer the following questions.**   (3x10=30)

1. Write a detailed note on the determinants of Pakistan's foreign policy.

2. Discuss the causes which led to Pakistan's alignment with West.

3. Elaborate Pakistan 's foreign policy towards USA after 9/11 incident.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions: (6x5=30)

سوال نمبر 1:   درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

i.   Discuss any evolution of modern Diplomacy?

i.   جدید سفارت کاری کا ارتقاء بیان کریں۔

ii.   Describe Summit Diplomacy?

ii.   سربراہی سفارت کاری کیا ہوتی ہے؟

iii.   Explain briefly the immunities of Diplomacy?

iii.   سفارت کاروں کے حقوق کی وضاحت کریں۔

iv.   What are the major characteristics of Islamic Diplomacy?

iv.   اسلامی سفارت کاری کی اہم خصوصیات لکھیں۔

v.   Define environmental diplomacy.

v.   ماحولیاتی سفارت کاری کی وضاحت کریں۔

vi.   What is the difference between an ambassador and a special envoy?

vi.   سفارت کار اور خصوصی ایلچی میں کیا فرق ہوتا ہے؟

Q.2.   Answer the following questions.   (3x10=30)

سوال نمبر 2:   درج ذیل سوالات کے تفصیلی جوابات دیجئے۔

i.   Explain backdoor diplomacy and why it is used?

i.   پچھلے دروازے کی سفارت کاری کیا ہوتی ہے اور کیوں استعمال ہوتی ہے؟

ii.   Write a note on Economic Diplomacy?

ii.   معاشی سفارت کاری پر نوٹ لکھیں۔

iii.   Who is an attache and what are his duties?

iii.   اتاشی کون ہوتا ہے؟ اس کی کیا ڈیوٹیاں / فرائض ہوتے ہیں؟

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions: **(6x5=30)**

سوال نمبر1:   درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

i.   What is meant by Détente?

i.   دبتانت سے کیا مراد ہے؟

ii.   Explain the USA Foreign Policy during Cold War.

ii.   سرد جنگ میں امریکہ کی خارجہ پالیسی بیان کریں؟

iii.   What is Terrorism?

iii.   دہشت گردی سے کیا مراد ہے؟

iv.   Write a short note on Sues Canal Crises 1956.

iv.   1956 میں سوئز کینال بحران کیا تھا؟

v.   What is North Atlantic Treaty?

v.   شمالی اٹلانٹک معاہدہ کیا ہے؟

vi.   Explain the Iran Nuclear Program.

vi.   ایران کے جوہری پروگرام پر نوٹ لکھیں۔

Q.2.   Answer the following questions.   **(3x10=30)**

سوال نمبر2:   درج ذیل سوالات کے جوابات تحریر کریں۔

i.   Discuss determinants of UK Foreign Policy.

i.   برطانیہ کی خارجہ پالیسی کے اہم عوامل پر تفصیل سے بحث کریں۔

ii.   Explain in detail Non-Alignment Movement.

ii.   غیر وابستہ تحریک پر تفصیلاً نوٹ لکھیں۔

iii.   Explain the causes of failure of USA in Vietnam.

iii.   ویتنام میں امریکہ کی ناکامی کی وجوہات بیان کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (6x5=30)

1. Nominal, Ordinal and Scale Data
2. Rules for Variable Name in SPSS
3. Advantages and Disadvantages of Web Survey
4. Techniques to get data into SPSS
5. Discrete and Continuous Variables
6. Measure of Dispersion and its Types

Q.2.   Answer the following questions.   (2x15=30)

1. What is descriptive Statistics? Explain the presentation of descriptive analysis if data is a) normally distributed and b) skewed?
2. What are the different Statistical Procedures of SPSS? Write a detailed note on the suitability of the procedures according to different Samples.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Explain the following with examples:**   **(5x6=30)**

a) Online Identity
b) Online Deception
c) Advantages and disadvantages of Internet
d) Exploiting virtual Communities
e) Online Communities

Q.2. **Answer the following questions.**   **(2x15=30)**

a) What is a Virtual Community? Define the Characteristics of virtual communities.
b) What is Virtual Communication and marketing? Explain in detail the art of hosting good conversations online.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Conflict and Alternative Dispute Resolution
Course Code: SOC-404

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(5x6=30)**

a. What is negotiation
b. What are functions of mediation
c. What are advantages of alternative dispute resolution
d. What are disadvantages of alternative dispute resolution
e. In mediation how important is the listening skills

Q.2.   Answer the following questions.   **(3x10=30)**

A. Discuss in detail the role of Mediator
B. What is Negotiation discuss in detail
C. What are the substantive areas of law where Arbitration can be applied

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(6x5=30)**

   I.   What do you know about the efficient estimator?

   II.   How do you explain the joint sufficiency?

   III.   Define the best asymptotically normal estimators (BAN)

   IV.   State draw backs of factorization theorem

   V.   Define complete statistics and complete parameter families

   VI.   State Rao-Blackwell Theorem

Q.2.   Answer the following questions.   **(3x10=30)**

   I.   State and prove Cramer- Rao inequality for minimum variance of an estimator.

   II.   Let $t = x_1 + x_2 + x_3$, $k = x_1 + 2x_2 + x_3$, be two statistics where x_1 follow Bernoulli distribution, check whether or not "t" and "k" are sufficient buy sing conditional probability approach

   III.   For the two parameters of Gamma distribution with p.d.f

$$F(x) = \frac{x^{\alpha-1}}{\alpha . \beta^\alpha} e^{\frac{-x}{\beta}} \qquad 0 < X < \alpha$$

IF X is known , then show that β^x is equal to $\frac{x}{\alpha}$ *is M.V.B.E* parameter of unknown parameter β

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Answer the following short questions:**   **(6x5=30)**

a) Major data type used in econometric.

b) Find the covariance between the $\hat{\beta}_0$ and $\hat{\beta}_1$ in simple linear regression model.

c) What are the economic meanings of "zero restrictions" on the parameter of model?

d) Justify the inclusion of error term in econometric model.

e) Find mean and variance of estimated variance of the disturbance term for SLRModel.

f) Methodology of econometric research.

Answer the following questions.   **(3x10=30)**

Q.2. Find means and variances of stepwise regression estimates. Also find covariance between these estimates.

Q.3. Prove that in multiple linear regression, the linear combination of least square estimators is BLUE of its corresponding linear function of parameters.

Q.4. A product function model is specified as;
$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i$$
Where Y_i = log output, X_{2i} = log labor input, X_{3i} = log capital input.

The data refer to a sample of 23 firms and observations are measured as deviation from the sample means.

$$\sum x_{2i}^2 = 12, \sum x_{2i} x_{3i} = 8, \sum x_{3i}^2 = 12, \sum x_{2i} y_i = 10, \sum x_{3i} y_i = 8, \sum y_i^2 = 10$$

a) Estimate β_2 and β_3, their standard errors and R^2.

b) Test the hypothesis that $\beta_2 + \beta_3 = 1$.

c) Suppose that you wish to impose a priori restriction that $\beta_2 + \beta_3 = 1$. What is the least squares estimate of β_2 and its S.E? what is the value of R^2 in this case. Compare the results obtained in (a) and comment.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: 　　　　　　(6x5=30)

(i) Write advantages and disadvantages of open ended questions.

(ii) Explain the meaning of research. Write the main objectives of research.

(iii) What is test of validity? Differentiate between content validity and criterion-related validity.

(iv) What is descriptive research? Write its goals.

(v) Explain non-response error and its sources. What methods would you suggest to control such type of error?

(vi) What is pretesting of a questionnaire? What are the aims of the pretesting of a questionnaire?

Answer the following questions. 　　　　　　　(3x10=30)

Q.2 What is the meaning of measurement in research? What difference does it make whether we measure in terms of a nominal, ordinal, interval or ratio scale? Explain by giving examples.

Q.3 What is review of literature? Explain the objectives, need and functions of review of literature.

Q.4 What is the importance of research report? Describe, in brief, the major sections involved in writing a research report.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: (5x6=30)

a)   Discuss the duality between moving average and auto-regressive process.

b)   Write a note on stationary time series? Why it is important to transform a non-stationary time series into stationary time series?

c)   Define mixed ARMA(p,q) process also comment on the stationarity and invertibility of ARMA (p,q) process.

d)   Write briefly about secular trend and irregular variations in time series.

e)   Discuss autocorrelation and partial autocorrelation.

   Answer the following questions.   (3x10=30)

Q.2. The following table shows the number of bags (in hundreds) of fertilizer sold by a certain dealer. Compute the indices of seasonal variation by the ratio-to-trend method by fitting a least square straight line trend to the observed time series data.

Year	Quarters			
	1	II	III	IV
2001	72	98	79	106
2002	79	122	101	143
2003	94	141	128	160
2004	125	143	135	187

Q.3. Prove that for a stationary time series Corr (X_t, X_{t-1}) = Corr (X_t, X_{t+1})

Q.4. Find auto correlation for AR(1) process given below at lag 1,2 and 3.

$$X_t = Z_t + 0.9 X_{t-1}$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(5x6=30)**

i.   Entering variable and Leaving variable
ii.   Phases of solving a problem using Operational Research.
iii. Objective function.
iv.   Model in Operational Research
v.   Unbounded and infeasible solution

Answer the following questions.

Q2. Each unit of food X costs Rs 25 and contains 2 units of protein and 4 units of   **(10)**
iron while each unit of food Y costs Rs 30 and contains 3 units of protein and 2
units of iron. Each animal must receive daily at least 12 units of protein and 16
units of iron. How many units of each food should be fed to each animal to meet
their protein and iron requirements with the smallest possible cost.

Q3. Solve the following problem using the graphical method.   **(2x5=10)**

    (i)   Maximize $Z = 3x_1 + 2x_2$

    Subject to

$$2x_1 + x_2 \le 100$$
$$x_1 + x_2 \le 80$$
$$x_1 \le 40$$
$$x_1 . x_2 \ge 0$$

    (ii)   Minimize $Z = 3X_1 + 8X_2$

    Subject to

$$X_1 + 2X_2 \ge 30$$
$$2X_1 + X_2 \le 6$$
$$X_1 \le 10$$
$$X_1, X_2 \ge 0$$

Q4. Use Simplex method to solve the following problems. Provide the tables for all   **(2x5=10)**
iteration.

    (i)   Maximize $Z = 2X_1 - 4X_2 + 5X_3 + 6X_4$

        Subject to

$$X_1 + 4X_2 - 2X_3 + 8X_4 \le 2$$
$$X_1 + 2X_2 + 3X_3 + 4X_4 \le 1$$
$$X_1, X_2, X_3, X_4 \ge 0$$

    (ii)   Minimize $Z = 4x_1 + x_2$

        Subject to

$$3x_1 + x_2 = 3$$
$$4x_1 + 3X_2 \le 3$$
$$x_1 + 2x_2 \ge 4$$
$$x_1, x_2 \ge 0$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions: **(5x6=30)**

i.   Differentiate among the different types of categorical variables with the help of examples.
ii.   Discuss the applications and limitations of chi-square distribution.
iii. What is the purpose of Kendall's Tau-b test? Explain its testing procedure.
iv.   Define the Fisher's Exact Test. When is it appropriate to use this test instead of the chi-square test?
v.   A random sample of 30 adults was classified according to gender and the number of hours they watch television during a week. Use phi-coefficient to measure the degree of association between the two attributes.

Classes	Male	Female
More than 25 hours	9	5
Less than or equals to 25 hours	7	9

Answer the following questions.   **(3x10=30)**

Q.2   A bakery observes the number of customers arriving at their store every hour for a week. Fit an appropriate distribution to the given data and test the hypothesis of goodness-of-fit.

No. of Customers	0	1	2	3	4	5	6	More than 6
Frequency	13	30	45	42	25	10	4	0

Q.3   The following contingency table displays the count of people experiencing joint pain before and after a certain treatment, and those who don't experience the pain before and after the treatment. Apply McNemar's test explore whether the treatment worked or not. Interpret your findings.

Experienced Pain Before Treatment	Experienced Pain After Treatment	
	Yes	No
Yes	101	121
No	160	33

Q.4   A public health study investigates whether consuming sugary drinks is associated with an increased risk of obesity. Researchers collected data from 500 participants and classified them into two groups based on their sugary drink consumption. Group A (Consumes sugary drinks regularly): 150 participants, 90 of whom are obese. Group B (Does not consume sugary drinks regularly): 350 participants, 70 of whom are obese.

a.   Calculate the Relative Risk (RR) of obesity for individuals who consume sugary drinks regularly compared to those who do not.
b.   Calculate the Odds Ratio (OR) for obesity between the two groups.
c.   Discuss the interpretation of both RR and OR in the context of the association between sugary drink consumption and obesity.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

Q.1.   Answer the following short questions.   **(6x5=30)**

سوال نمبر ۱:   درج ذیل سوالات کے مختصر جوابات دیجئے۔

1) What does term, 'Language' mean? Defining its lexical meanings too, write comprehensive definition of "Linguistics".

۱) زبان کی لغوی اور اصطلاحی تعریف رقم کرتے ہوئے اس کے سائنسی مطالعے''لسانیات'' کی جامع تعریف درج کیجیے۔

2) Define "Historical Linguistics", and also describe it briefly.

۲) ''تاریخی لسانیات'' کی تعریف اور تعارف مختصراً بیان کیجیے۔

3) Write a short note on "Panani" , and his book "Astadhayayi".

۳) ''پاننی'' اور اس کی اہم تصنیف،''اشٹ ادھیائی'' پر مختصر نوٹ لکھیے۔

4) Breifly describe "Vedic Sanskrit".

۴) ''ویدک سنسکرت'' کو مختصراً بیان کیجیے۔

5) Write a short note on Mir Aman Dehlavi's ideology regarding the beggining of Urdu language.

۵) اردو زبان کی ابتدا کے حوالے سے میر امن دہلوی کا نظریہ رقم کیجیے۔

6) Describe briefly 'Punjab, as the origin of Urdu language'.

۶) ''پنجاب بہ حیثیت مولدِ اردو زبان''، سرسری وضاحت پیش کیجیے۔

Q.2.   Answer the following questions.   **(3x10=30)**

سوال نمبر ۲:   درج ذیل سوالات کے جامع جواب دیجئے۔

1) What does "Descriptive Linguistics" mean? Explain in detail,"Phonemics".

۱) ''تجزیاتی لسانیات'' سے کیا مراد ہے؟اس کے اہم شعبے''فونیمیات'' کا تفصیلی مطالعہ پیش کیجیے۔

2) Define "Prakrit", and write a detailed note on its multiple dialects.

۲) ''پراکرت'' کی تعریف بیان کیجیے۔ نیز مختلف علاقوں میں رائج پراکرتوں کا تفصیلی جائزہ پیش کیجیے۔

3) According to Dr. Shaukat Sabzwari's ideological vission, explain Urdu as Aryan language.

۳) ''اردو آریائی الاصل زبان ہے''، ڈاکٹر شوکت سبزواری کے بیانات کے روشنی میں تفصیلی وضاحت پیش کیجیے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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سوال نمبر:1۔   درج ذیل سوالات کے مختصر جوابات لکھیں۔   (6x5=30)

۱۔ ادبی تحقیق کی اقسام بتائیں؟

۲۔ تحقیقی کام کا خاکہ کیسے بنایا جاتا ہے؟

۳۔ بنیادی مآخذ پر نوٹ لکھیں؟

۴۔ کتابیات سے کیا مراد ہے؟ اختصار سے لکھیں۔

۵۔ تحقیق کے لیے مواد کی فراہمی کیسے ممکن بنائی جاتی ہے؟

۶۔ تدوین میں بنیادی نسخے کا انتخاب کیسے کیا جاتا ہے؟

سوال نمبر:2۔   درج ذیل سوالات کے تفصیلی جوابات لکھیں۔   (3x10=30)

۱۔ رشید حسن خان نے تدوین کے حوالے سے کیا کام کیا؟

۲۔ امتیاز علی عرشی نے تحقیق کے حوالے سے کیا سرمایہ چھوڑا؟

۳۔ تحقیقی مراحل پر تفصیلی نوٹ لکھیں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کو مہیا کی گئی جوابی کاپی پر حل کریں۔

سوال نمبر:1۔　　درج ذیل سوالات کے مختصر جوابات تحریر کریں۔　　(6x5=30)

i. تانیثیت، بدیسری ثقافتی تناظر کو چیلنج کرتی ہے، دلائل سے ثابت کیجیے۔

ii. عالمی تانیثی تحریک کا تاریخی جائزہ پیش کریں۔

iii. ادب کے تانیثی مطالعے کے اہم نکات کی وضاحت کیجیے۔

iv. پاکستان کی اہم تانیثی شاعرات کا تعارف پیش کریں۔

v. تانیثیت کی چار لہروں (Four Waves) کا تعارف پیش کریں۔

vi. عصمت چغتائی کے کسی افسانے کا تانیثی جائزہ لیں۔

سوال نمبر:2۔　　درج ذیل سوالات کے تفصیلی جوابات تحریر کریں۔　　(3x10=30)

i. کاروانِ وجود، جدید صنعتی سماج میں عورت کے کردار کو پیش کرتا ہے، تجزیہ کیجیے۔

ii. فہمیدہ ریاض کی شاعری کے تانیثی پہلو مثالوں کی مدد سے نمایاں کیجیے۔

iii. کشور ناہید کی شاعری کا تانیثی حیثیت کی روشنی میں جائزہ کیجیے۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2024

Paper: Urdu Adab Kay Muntakhib Komi-o-Byno-ul-Aqwami Marakaz
Course Code: Urdu-410

Roll No. ....

Time: 3 Hrs.   Marks: 60

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سوال نمبر1۔   درج ذیل سوالات کے مختصر جوابات تحریر کریں۔   (6x5=30)

1: شعبہ تصنیف و تالیف جامعہ کراچی کب قائم ہوا؟ اور اس میں کن علوم و فنون کی مجالس قائم کی گئیں ؟

2: انجمن حمایت اسلام لاہور کی ادبی خدمات کا جائزہ لیں۔ ؟

3: وفاقی گورنمنٹ اردو سائنس کالج کراچی کے قیام کا مقصد کیا تھا؟ اور ایم-اے کی سطح پر کن علوم کی تدریس کی جاتی تھی؟

4: مغربی علوم کو اردو میں فروغ دینے کے لیے کون سی سوسائٹی قائم کی گئی یہ سوسائٹی کس نے اور کب قائم کی؟

5: امریکہ میں بابائے اردو کسے کہا جاتا ہے؟ اور کن وجوہات کی بنا پر کہا جاتا ہے؟

6: مصر میں سب سے پہلا اردو اخبار کب اور کس شہر سے جاری ہوا؟ اور کس نے جاری کیا؟

سوال نمبر2۔ مندرجہ ذیل سوالات کے جوابات تحریر کریں۔   (3x10=30)

1: مصر میں اردو زبان کی تدریس کا مفصل جائزہ لیں۔

2- اردو زبان و ادب کے فروغ میں لاہور کے کوئی سے دو مراکز کا کردار بیان کریں۔

3- حلقہ ارباب ذوق سے منسلک اردو کے نامور نثر نگاروں کی ادبی خدمات کا مختصر جائزہ لیں۔

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Q.1.   Write short and precise answers of following questions: (15x2=30)

i.   — What is UNINOMIAL NOMENCLATURE? Give an example
ii.   Define SIBLING SPECIES?
iii.   Describe the contribution of systematics to biology.
iv.   What is FAUNAL WORK?
v.   Differentiate between MONOPHYLY and POLYPHYLY.
vi.   Describe INDENTED KEY.
vii.   Differentiate between TAXONOMY and NOMENCLATURE.
viii.   What is FIRST-REVISER PRINCIPLE?
ix.   Differentiate between LECTOTYPE AND PARALECTOTYPE.
x.   What is ATLAS in taxonomy?
xi.   Describe problems of TYPOLOGICAL species concept.
xii.   Give examples of PHYLETICALLY CORRELATED characters.
xiii.   Differentiate JUNIOR AND SENIOR HOMONYM.
xiv.   What is meant by TYPE GENUS?
xv.   What are the reasons of INTRAPOPULATION VARIATIONS?

Answer the following questions.   (3x10=30)

Q 2. Discuss the pros and cons of CLADISTIC CLASSIFICATION.

Q 3. Discuss DIFFERENT MODES OF SPECIATION.

Q 4. Describe SUBSPECIES AND SUPERSPECIES CONCEPTS. Also describe the limitations of these concepts?

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Q.1.   Answers the following short questions: (6x5=30)

i. Classify each as nominal-level, ordinal-level, interval- level, or ratio-level measurement.
   a. Pages in the 25 best-selling mystery novels.
   b. Rankings of golfers in a tournament.
   c. Temperatures inside 10 pizza ovens.
   d. Weights of selected cell phones.
   e. Salaries of the coaches in the NFL.

ii. Give the boundaries of each.
   a. 32 minutes
   b. 0.48 millimeter
   c. 6.2 inches
   d. 19 pounds
   e. 12.1 quarts

iii. The number of stories in the 13 tallest buildings for two different cities is listed below. Which set of data is more variable?
   Houston: 75, 71, 64, 56, 53, 55, 47, 55, 52, 50, 50, 50, 47
   Pittsburgh: 64, 54, 40, 32, 46, 44, 42, 41, 40, 40, 34, 32, 30

iv. Explain Briefly Infograph and Pedigree Chart.

V. In 2004, 57.2% of all enrolled college students were female. Choose one enrolled student at random. What is the probability that the student was male?

vi. State the null and alternative hypotheses for each conjecture.
   a. A researcher thinks that if expectant mothers use vitamin pills, the birth weight of the babies will increase. The average birth weight of the population is 8.6 pounds.
   b. An engineer hypothesizes that the mean number of defects can be decreased in a manufacturing process of compact disks by using robots instead of humans for certain tasks. The mean number of defective disks per 1000 is 18.

Answer the following questions.   (3x10=30)

Q No. 2: A researcher claims that the average cost of men's athletic shoes is less than $80. He selects a random sample of 36 pairs of shoes from a catalog and finds the following costs (in dollars). (The costs have been rounded to the nearest dollar.) Is there enough evidence to support the researcher's claim at α 0.10? Assume δ 19.2. (10)

Q No. 3: A hospital administrator believes that the standard deviation of the number of people using outpatient surgery per day is greater than 8. A random sample of 15 days is selected. The data are shown. At α 0.10, is there enough evidence to support the administrator's claim? Assume the variable is normally distributed. (10)

25   30   5   15   18
42   16   9   10   12
12   38   8   14   27

Q No. 4: Is age factor related with heathy snack choice for following 300 students data, Test claim at α level of 0.05. (10).

Grade level	Matric	Inter	Degree
Healthy snack	31	43	51
Unhealthy snack	69	57	49

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Q.1.   Define the following Terms: (6x5=30)

1. Unaltered fossils

2. Mineralization

3. Jurassic Mammals

4. Deinotherium

5. Dhok Pathan Formation

6. Pleistocene epoch

Q.2.   Write comprehensive notes on the following: (3x10=30)

a.   Geological Time Scale

b.   Evolutionary History of HORSES

c.   Radiocarbon Dating

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Q.1.   Define the following Terms: **(6x5=30)**

i.   Genetic Code

ii.   Chromosomes and Chromatin

iii.   Structure of Nucleotide

iv.   Factors involved in Translation

v.   Enhancers

vi.   tRNA structure

Answer the following questions: **(3x10=30)**

Q.2   Define Mutagens. Give a comprehensive account on the types of mutations.

Q.3   Enlist the types of enzymes for RNA Transcription in Eukaryotes. Write a comprehensive note on structure of gene and mRNA transcription in Eukaryotes.

Q4.   Explain the process of transcription of 5S RNA.

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Q.1.   Answer the following short questions: (6x5=30)

i. Define the followings:

a). Swarm   b) Sire   c) Zoonosis d) Apiary e) Broods

ii. Write a brief note on the history of sericulture?

iii. Explain different application of Lac?

iv. Write down history of pearl culture and it various types.

v. What are the different modes of entry of parasites?

vi. Write down classification of chicken?

Answer the following questions.   (3x10=30)

Q.2. Illustrate and explain the life cycle of lac insect.

Q.3. Write a brief note on morphology of *Entamoeba histolytica*. What are its different stages. Also explain its life cycle.

Q.4. Define apiculture. Write a detailed on methods of bee keeping and its economic importance.

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Q.1.   Write short notes on the following: **(6x5=30)**

1. Biological control of Mosquitoes
2. Onchocerciasis
3. Plague
4. Leishmaniasis
5. Control of bedbugs
6. Medical importance of cockroaches

Q.2.   Answer the following questions.   **(3x10=30)**

1. Describe morphology of black fly?
2. Give a detailed account of Life cycle of a flea?
3. Give control measures of House fly and stable fly?

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Q.1.   Answer the following short questions: (6x5=30)

I.   Differentiate prokaryotes from eukaryotes.
II.   How do algae differ from bacteria and fungi? Give economic importance of algae.
III. What are nosocomial infections? Enlist their causative agents.
IV.   Briefly describe microbial pure-culturing techniques.
V.   Give nutritional types of microorganisms.
VI.   Briefly describe the following:
   a. Mycoplasmas
   b. Methanogens
   c. Halophiles
   d. Thermophiles

Q.2.   Answer the following questions.   (3x10=30)

I.   Describe major industrial applications of microbes.
II.   Describe in detail the chemical control of microbes.
III. Discuss water-borne infections caused by bacterial pathogens.

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Q.1.   Answer the following short questions: (6x5=30)

i.   Hot sterilization and cold sterilization

ii.   Control of microorganism using halogens and phenol

iii.   Diphtheria toxin

iv.   Characteristics of exotoxins and endotoxins

v.   Laboratory testing for detection of coliform group in water

vi.   Microbial spoilage of food

Answer the following questions.   (3x10=30)

Q.2   Write a detailed note on role of antibiotics in inhibition of protein synthesis in bacteria.

Q.3   Discuss a detail note on wastewater treatment processes.

Q.4   Write a comprehensive note on antibodies.

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Q.1.   Answer the following short questions: (6x5=30)

i.   Scale reading

ii.   Method of compiling bibliography

iii. Sex determination in fishes

iv.   Preparation of impressions

v.   Apply ANOVA on fisheries data

vi.   Difference between bibliography and references

Answer the following questions.   (3x10=30)

Q. 2   Give a comprehensive note on techniques of fish tagging and recovery.

Q. 3   Write a detailed description on forms for recording data in fisheries surveys

Q. 4   Discuss about the length weight relationship of fish species. Support your answer with suitable sketches.

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Q.1.   Answer the following short questions: **(6x5=30)**

i.   Fish feeding

ii.   Environmental Biology of Reproduction

iii.   Fish and their environments

iv.   Sources of water pollution

v.   Fish Behaviour

vi.   Environmental issues for fishes

Answer the following questions.   **(3x10=30)**

Q. 2   Write about osmoregulation and ion balance in freshwater fishes.

Q. 3   Describe various steps for waste management.

Q. 4   Write a comprehensive note on fish growth.