THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. How can a person's self-efficacy be linked with well-being?

2. What are the neurological aspects of Positive Emotion?

3. How can forgiveness of self and others be associated with one's Mental Health?

4. Briefly explain the Gallup themes of talent.

5. What is positive aging? Briefly describe.

6. Explain Emotion-Focused Coping Strategy. What is the adaptive potential of emotion-focused coping?

7. Differentiate between Religiosity and Spirituality.

8. What is "Positive school culture"? How it can bring well-being into schools.

9. What is the significance of Seligman's presidential address at APA (1998) in the history of positive psychology?

10. Who proposed the theory of Flow? Briefly describe the theory.

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

1. Elaborate on the role of positive emotions in wellbeing and physical health and the Broaden and Build theory of positive emotions.

2. What are Character Strengths? Explain "Values in Action Inventory of Strength (VIA-IS)". What is its utility in research areas of Positive Psychology?

3. Write about dimensions and determinants of Well-being.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. How has the concept of peace evolved, and what are the key components of a peaceful society?

2. What is the impact of social media on the spread of hate and prejudice, and how can social media platforms be used to promote tolerance and understanding?

3. What is the relationship between childhood trauma and the development of aggressive behavior, and how can this be addressed through therapy and intervention?

4. What are the key factors contributing to the development of aggressive behavior in individuals, and how can these factors be addressed?

5. What are the limitations of focusing solely on negative peace in conflict resolution, and how can positive peace approaches be integrated into peacebuilding efforts to address the root causes of conflict?

6. What are the key factors that influence the effectiveness of different conflict resolution strategies (e.g., negotiation, mediation, arbitration), and how can these factors be considered when selecting a conflict resolution approach?

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

1. What are the key challenges and limitations of applying peace psychology principles in real-world settings, and how can these challenges be addressed?

2. How can emotional intelligence be taught and developed in children and adolescents to prevent the development of aggressive behavior?

3. How can peace education and community-based initiatives be designed and implemented to prevent violence, promote tolerance, and foster a culture of peace in societies affected by conflict?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) Explain how humor is utilized in REBT to diffuse rigid thinking?

2) Define proselytizing and referenting with procedure and examples?

3) Write steps of cognitive restructuring in CBT?

4) Explain use of rational coping statements with examples in anxiety and depression clients?

5) What are negative automatic thoughts, intermediate beliefs and core beliefs in CBT?

6) Discuss how relaxation techniques complement cognitive interventions in CBT?

7) Explain the philosophical underpinnings of REBT and Their relevance to emotional health?

8) What is behavioral experiment in CBT? Explain rationale and procedure with example?

9) What is reframing in REBT, and how does it help individuals view situations?

10) Discuss the role of Rational Emotive Imagery in building emotional resilience?

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

1) Discuss the concept of automatic thoughts in CBT and their impact in emotions and behaviors?

2) Analyze the fundamental principles of REBT, particularly the ABCDE model? How does this framework challenge and replace irrational beliefs?

3) Compare and contrast REBT with other Cognitive and Behavioral Therapies such as Cognitive Behavior Therapy (CBT) and Behavior Therapy. What unique contributions does REBT make to the field?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچے کو علیحدہ سے مہیا کی گئی جوابی کاپی پر حل کریں

(10x3=30)

السؤال الأول: أجب عن الأسئلة التالية بإيجاز.

1. اذكر مثالًا للنهي.

2. اذكر مثالًا للنداء.

3. اذكر مثالًا للاستعارة الأصلية.

4. عرّف التشبيه المرسل.

5. عرّف التشبيه المؤكد.

6. اذكر مثالًا للاستعارة التبعية.

7. اذكر مثالًا للاستعارة التصريحية.

8. عرّف التشبيه المفصل.

9. عرّف التشبيه الضمني.

10. اذكر مثالًا للاستعارة المكنية.

(15)

السؤال الثاني: عرّف التشبيه واذكر أركانه. وضّح إجابتك بالأمثلة.

(15)

السؤال الثالث: عرّف الإنشاء واذكر أهم أغراضه. وضّح إجابتك بالأمثلة.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Regression
2. Null and Alternative Hypothesis
3. Coefficient of Determination
4. Contingency Table
5. ANOVA
6. Bootstrap Method

Answer the following Questions.   (3x10=30)

Q.2.

Using the provided data below, fit a simple linear regression line to predict Y based on X. What is the equation of the regression line?

a) After fitting the regression line to the data, what is the predicted value of Y when X equals 8?

b) Calculate the coefficient of determination (R-squared) for the fitted regression line. What does this value indicate about the goodness of fit of the regression model to the data?

X	3	6	9	12	15
Y	10	20	30	40	50

Q.3.

Using the below data, conduct a Simple One Way ANOVA to determine if there is a significant difference in the mean scores among the three groups (Group A, Group B, and Group C).

State the null and alternative hypotheses and provide the conclusion based on the ANOVA results.

Group A	15	12	14	13	16
Group B	18	16	19	17	20
Group C	20	19	21	22	23

Q.4.

A company is interested in estimating the average monthly sales of a product. They take a random sample of 50 sales records and find that the sample mean monthly sales is $10,000 with a standard deviation of $2,000. Calculate a 95% confidence interval for the population mean monthly sales.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is E-Marketplace and give one example?
2. What are the different constraints in the progress of e-commerce in Pakistan?
3. What is a landing page and why do we need it?
4. What is the Difference between ASP & HTML?
5. What are two important advantages of using HTML in web Designing
6. What is Content marketing?

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

1. Define E-commerce? And discuss its impact on entire business world and predict likely future direction of ecommerce in Pakistan?
2. Define internet security? In E-commerce how site can be secure? What measures can be taken in this regard? Explain
3. Define online payment system? Describe the main causes of e-commerce failure in Pakistan with examples.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Describe the role of the State Bank of Pakistan in regulating the financial system.
2. What are the benefits of a well-developed financial system?
3. Explain the concept of credit risk management in commercial banks.
4. Describe the role of investment banks in the financial system.
5. Explain the concept of credit rating agencies in Pakistan.
6. Describe the role of the Securities and Exchange Commission of Pakistan.

Answer the following questions.   (3x10=30)

Q.No.2: Describe the structure and functions of the State Bank of Pakistan.

Q.No.3: Discuss the special management concerns for commercial banks in Pakistan.

Q.No.4: Explain the concept of financial planning and budgeting for financial institutions.

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – Spring 2025
Roll No. ....

Paper: Financial Management (Advanced)   Course Code: BBA-413   Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1.   What is derivatives market?

2.   What is crypto currency?

3.   Differentiate between technical solvency and bankruptcy?

4.   What is operating leverage?

5.   What is target dividend payout ratio?

6.   What factors influence the dividend policy of the firm?

7.   What is congeneric merger?

8.   Differentiate between cash conversion cycle and operating cycle?

9.   What is revolving credit agreement?

10.   What are the two major sources of spontaneous short term financing of a firm?

11.   How might a company bond rating influence capital structure decision?

12.   How does a chattel mortgage differ from conditional sales contract with respect to asset financing?

13.   Define operating cycle?

14.   What is meant by simulation and leverage buyout?

15.   Define ratio of exchange in market price with formula?

Answer the following Questions.   (3x10=30)

Q.2

Lewis Enterprises is considering relaxing its credit standard to increase its currently sagging sales. As a result of the proposed relaxation, sales are expected to increase by 10% from 10,000 to 11,000 units during the coming years, the average collection period is expected to increase from 1% to 3% of sale. The firm's required return on equal-risk investment is 25%. Evaluate the proposed relaxation, and make a recommendation to the firm. (Note: Assume a 365-day year).

Q.3

Company A is planning to acquire Company B. The following information is provided:

Details	Company A	Company B
Market value of Equity	Rs.50,000,000	Rs. 20,000,000
Net income	Rs. 6,000,000	Rs. 2,500,000

The merger will result in annual synergy benefit of Rs. 1,000,000. The cost of capital for both companies is 10%.

1) Calculate the post-merger EPS for the combined entity.
2) Determine the maximum price Company A should pay for Company B to ensure the merger is beneficial to its shareholders

Q.4

Morgan Stanley holds stock in company X and company Y. Consider the accompanying simplified balance sheets for these companies.

Assets	Amounts $	Liabilities & Stockholders' Equity	Amount $

Morgan Stanley

Assets	Amounts $	Liabilities & Stockholders' Equity	Amount $
Common stock holding		Long-term debt	40,000
Company X	40,000	Preferred stock	25,000
Company Y	60,000	Common stock equity	35,000
Total	100,000	Total	100,000

Company X

Assets	Amounts $	Liabilities & Stockholders' Equity	Amount $
		Current liability	100,000
Current assets	100,000	Long-term debt	200,000
Fixed assets	400,000	Common stock equity	200,000
Total	500,000	Total	500,000

Company Y

Assets	Amounts $	Liabilities & Stockholders' Equity	Amount $
		Current Liability	100,000
Current assets	180,000	Long-term debt	500,000
Fixed assets	720,000	Common stock equity	300,000
Total	900,000	Total	900,000

a. What percentage of the total assets controlled by Morgan Stanley does its common stock equity represents?
b. If another company owns 15% of the common stock Morgan Stanley and, by virtue of this fact, has voting control, what percentage of the total assets controlled does the outside company's equity represents?
c. How does a holding company effectively provide a great deal of control for a small dollar investment?
d. Answer parts a and b in the light of the following additional facts.

1) Company X's fixed assets consist of $20,000 of common stock in company A. This level of ownership provides voting control.
2) Company C, which has total assets of $400,000, has voting control of company B, which has $50,000 of total assets.
3) Company Y's fixed assets consists of $60,000 of stock in both company E and company F. In both cases, this level of ownership gives it voting control. Company E and F have total assets of $300,000 and $400,000 respectively.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   What is Resident Company?

ii.   What is difference between Special Tax Year and Normal Tax Year?

iii.   What is difference between Revenue expenditure and Capital receipt?

iv.   Define term Turnover

v.   What is Accumulated Profit?

   Answer the following Questions.   (2x15=30)

i.   Mr. Aslam is a Government employee who receives Basic salary Rs.200,000 per month with Adhoc relief Rs.180,000. He got remuneration for examination (gross) Rs. 25,000. Disposal of moveable property held for personal use Rs. 125,000. Gain on sale of shares of public company Rs. 50,000 (holding period less than 12 months). Cash on loan from bother to buy property Rs 275000. Deduction of tax at source has already been made by the employer during the year amounting Rs. 750,000 from his monthly salary. He received Dividend Rs. 20,000.

Required: You are requested to compute: taxable income and tax liability.

ii.   Following information has been extracted from the records of Mr Akbar Faheem, a registered manufacturer; **calculate his tax liability for the month of August 2023:**

Taxable supplies to unregistered distributor Rs. 20,00,000

Exempt supplies to registered persons Rs.18,00,000

Zero rated suppliers Rs.14,00,000

Taxable purchases from unregistered persons Rs. 17,00,000

Purchase of electrical and sanitary fitting Rs.600,000

(55% used in factory building and 45 % used in office building)

Purchase fixed assets from registered person Rs.13,00,000

(used for exempt as well as zero rated supplies)

The rates of tax for individual salaried persons for the Tax Year 2023 will be as under

S.No.	Taxable Income	Rate of Tax
1	Where taxable income does not exceed Rs. 600,000	0 %
2	Where taxable income exceeds Rs. 600,000 but does not exceed Rs. 12,00,000	2.5 % of the amount exceeding Rs. 600,000
3	Where taxable income exceeds Rs. 12,00,000 but does not exceed Rs. 24,00,000	Rs. 15,000+ 12.5% of the amount exceeding Rs. 12,00,000
4	Where taxable income exceeds Rs. 24,00,000 but does not exceed Rs. 36,00,000	Rs. 165,000+ 20% of the amount exceeding Rs. 24,00,000
5	Where taxable income exceeds Rs. 3600,000 but does not exceed Rs. 60,00,000	Rs. 405,000+ 25% of the amount exceeding Rs. 36,00,000
6	Where taxable income exceeds Rs. 60,00,000 but does not exceed Rs. 1,20,00,000	Rs. 1005,000+ 32.5% of the amount exceeding Rs. 60,00,000
7	Where taxable income exceeds Rs. 1,20,00,000	Rs. 2955,000+ 35% of the amount exceeding Rs. 1,20,00,000

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Explain consumer behavior
2. How can motivate the consumer?
3. What is the importance of advertising?
4. What is consumer perception?
5. What is campaign planning?
6. What is different between newspaper and media advertisement?

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

Q.No.2. What is advertisement? Explain the process of advertisement.

Q.No.3. What are the objectives of advertisement?

Q.No.4. What is the role of advertising in influencing consumer perception?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Define the concept of consumer decision-making.

II.   What are the stages of the consumer buying process?

III.   What is the role of motivation in consumer behavior?

IV.   What are the types of consumer needs?

V.   What is meant by 'perception' in consumer behavior?

VI.   What is the difference between attitudes and beliefs in consumer behavior?

Answer the following questions.   (3x10=30)

Q.No.2: Explain the importance of affective responses in advertising. How do marketers use emotional appeals to influence consumer perceptions and behaviors?

Q.No.3: Discuss how consumer behavior influences the design and execution of marketing strategies. Use real-world examples to illustrate your points.

Q.No.4: Explain the importance of analyzing the competitive environment in formulating marketing strategies. How can a SWOT analysis help in this process?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   What are duties of employers?

II.   Difference between conciliation and arbitration.

III.   What are the legal and ethical boundaries employers must follow when trying to remain union-free?

IV.   What are the common sources of conflict between unions and management?

V.   What are the key components of a positive employee-employer relationship?

VI.   Briefly explain the functions of labor court

Answer the following questions.   (3x10=30)

Q2: How does leadership style influence the likelihood of unionization within an organization?

Q3: How can effective conflict resolution practices strengthen employee relations in the workplace?

Q4: What strategies can management use to negotiate fairly with unions while protecting the organization's operational interests?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   What is the significance of cross-cultural training in global HRD?
II.   What is the role of technology in HRD?
III. Define Apprenticeship training.
IV.   What is Succession planning.
V.   What is the primary role of HRD professionals in training administration?
VI.   Explain On-the-job training.

Answer the following questions.   (3x10=30)

Q.No.2: Discuss the Cognitive theory. Also Explain how learning from training can be applied in the workplace?

Q.No.3: How can HRD professionals ensure that traditional methods still provide value in today's digital and fast-paced work environment? Discussed.

Q.No.4: What are the key components of Human Resource Development functions, and how are they aligned with the organization's overall goals?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are RETROVIRUSES?
2. Why MICROBES can be used for sewage treatment?
3. Name four steps of waste water treatment.
4. What do you mean by SECONDARY METABOLITES?
5. What is DENITRIFICATION?
6. Differentiate between BROWN and WHITE ROT.
7. Differentiate between the STATIONARY and DECLINE phase of bacterial growth curve.
8. Name four chambers of Ruminant's stomach.
9. Describe the structure of a BACTERIOPHAGE. Draw diagram also.
10. Write about the function of NITROGENASE enzyme.

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

i.   What do you understand by the term BIOLOGICAL CONTROL. Discuss
ii. Explain the importance of microbes in beverage industry with the help of some examples.
iii. Why MICROBES are considered as cell factories? Discuss.
iv. Discuss the human disease TUBERCULOSIS with emphasis on the symptoms and causal organism
v.   Write about the importance of ENZYMES in food industry.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) Describe bacteriophage as tool for biotechnology.

2) What is the role of restriction enzyme in Recombinant DNA technology?

3) Describe siRNAs and their role in gene regulation.

4) Describe spontaneous mutation?

5) Discuss site specific recombination?

6) What are transposons?

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

1) Describe a detailed procedure of *gene gun* DNA recombinant technology.

2) Discuss the role of biotechnology in crop improvement in plants?

3) Explain what is *lac operon* and how its genes are regulated.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Paper: Water Pollution, its Management and Control
Course Code: BOT-411

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.   Give some properties of polluted water.
ii.   Define eutrophication.
iii. Give some sources of zinc and copper?
iv.   What are the sources of nutrients in polluted water?
v.   Give some prominent effects of water pollution.
vi.   Give some prominent sources of cadmium in water.
vii. What is difference between aerobic and anaerobic treatments?
viii. What is the nature of arsenic and chromium?
ix.   How the pesticides cause water pollution?
x.   Distinguish between organic and inorganic pollutants?
xi.   What is the chemical treatment of water?
xii. What are some major concerns of mercury in water?
xiii. Define thermal pollution of water.
xiv. Give some sources of manganese in water.
xv.   Define oil pollution.

Answer the following questions.

Q.2.	(a) Discuss the sources of water pollution.	(05 Marks)
	(b) Write a note on origin of organic pollutants.	(05 Marks)
Q.3.	(a) Describe the bioaccumulation and degradation of pesticides.	(05 Marks)
	(b) Compare the primary, secondary and tertiary treatments of water.	(05 Marks)
Q.4.	Write a note on following	
	(a) Water pollution control.	(03 Marks)
	(b) Effects of eutrophication and its control.	(04 Marks)
	(c) Waste water management.	(03 Marks)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is the mode of transmission of potato virus Y? How it can be managed?

2. How does bacterial blight spread? What environmental conditions favor bacterial blight development in cereals and grasses?

3. Describe symptoms and disease cycle of root knot disease in vegetables.

4. What are smut fungi? Differentiate *Ustilago, Urocystis* and *Thekaphora* in detail.

5. What are powdery mildews? Draw and label different types of chasmothecia of *Phyllactinia, Microsphaera, Uncinula* and *Erysiphe*.

6. What are the early signs of apple scab disease? Describe the casual organism and disease cycle of Apple scab.

Answer the following questions.

Q.No. 2: (a). What factors contribute to the occurrence of a plant disease? Discuss in detail.(05)

(b). Draw and describe life cycle of Rust fungi.   (05)

Q. No. 3: Describe symptoms, disease cycle and control strategies of Tobacco mosaic virus disease   (10)

Q. No. 4: What are some specific molecular techniques used for plant pathogen detection? What are the main advantages of molecular techniques over traditional methods?   (10)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are the main challenges in managing Earth's resources?
2. How do food systems impact land and water resources?
3. Explain the importance of oceans in the Earth's system.
4. What are the key causes of poor air quality?
5. How can we manage the planet's metabolism for sustainability?
6. Describe the importance of carbon cycle.
7. What is the significance of land-ocean interactions in terms of Earth's climate system?
8. How has our understanding of global biogeochemistry improved over time?
9. Why it is important to understand the Earth's metabolic system?
10. How do land-ocean interactions shape the global environment?
11. What are regional-global linkages?
12. Describe how the climate system affects life on Earth.
13. What are the consequences of land use changes on ecosystems?
14. How does air quality relate to global biogeochemical processes?
15. How do observing the Earth system can help to predict the future?

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

1. Explain the interconnections between the climate system and biodiversity in maintaining Earth's sustainability.

2. Elaborate how land use changes contribute to the challenges of global biogeochemical cycles and suggest mitigation strategies.

3. Discuss the role of technology in managing planetary metabolism and achieving global sustainability.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. How can soil fertility be evaluated effectively? Discuss two methods.
2. Explain the importance of nitrogen (N) in plant growth.
3. What are trace elements, and why are they critical to plant health?
4. Discuss the impact of gypsum on soil structure.
5. What are the advantages of using fertilizers in agriculture?
6. Identify three major deficiency symptoms of potassium in plants.

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

1. Investigate the effects of poor soil management practices on nutrient availability and plant growth, addressing solutions through effective fertilizer use and liming.
2. Explain the significance of calcium (Ca), magnesium (Mg), and sulfur (S) in plant health and how they interact with other nutrients in the soil.
3. Discuss the importance of efficient water usage in agriculture, particularly in relation to nutrient uptake and fertilizer application.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Explain the following.   **(10x3=30)**

1. STREPTOCOCCI
2. CHEMOTROPHS
3. CONJUGANTS
4. PROPHAGE
5. LOG PHASE OF BACTERIA
6. PHASE CONTRAST MICROSCOPY
7. LIGHT MICROSCOPY
8. MINIMAL MEDIA
9. GRAM POSITIVE BACTERIA
10. BACTERIOPHAGE

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

i.   Explain various methods of GENETIC transfer in BACTERIA.
ii. Describe PURE CULTURE TECHNIQUES.
iii. Write about the effect of VIRUSES on plant metabolism.
iv. Write a detailed note about the basis of classification in BACTERIA.
v.   Discuss various symptoms of the VIRUS INFECTED plants.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Name a phytohormone that breaks seed dormancy.
2. What are receptor proteins in hormone signalling?
3. What is the significance of water's cohesive property?
4. How does transpiration pull facilitate water movement?
5. Define aquaporin and their roles.
6. Why does root pressure occur mostly at night?
7. Describe the importance of plasmodesmata in transport?
8. What is the role of secondary active transport in nutrient uptake?
9. What is a symporter and how does it function?
10. What is meant by proton motive force?
11. What is the structural difference between PSI and PSII?
12. In which form phytochrome absorb far-red light?
13. Differentiate between long day plants and short day plants.
14. Which flowering gene is activated during long-day conditions?
15. How does low temperature treatment trigger flowering?

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

1. Discuss the synthesis, transport, and mode of action of gibberellins with examples of their physiological effects.

2. Explain the soil-plant-atmosphere continuum and describe the driving forces that facilitate continuous water movement.

3. Describe in detail the structure and roles of aquaporins and membrane pumps in solute and water transport in plants.

4. Explain the ABC model of floral development and also discuss the role of circadian rhythms in the control of flowering.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Differentiate between organic and inorganic pollutants?

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.   How mutation in microbes affect the process of Biodegradation.

v.   How soil can be remediated by lower animals?

vi.   Differentiate Bioaugmentation and Biopiling.

Answer the following questions.   (3x10=30)

Q.2. Define half-life of a chemical substance. How pesticides affect the aquatic ecosystem?

Q.3. What is a success story of bioremediation? Write a bioremediation success story at global level. (2+8)

Q.4. what is meant by assisted phytoremediation? Write its types in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) Briefly explain the Disadvantages of Mass selection Method
2) What is combining ability in genetics and its types?
3) List the techniques for asexual propagation in horticultural crops an Grafting.
4) What are factors that lead to the deviation from Mendelian Laws?
5) What is budding. How we can perform T-Budding?
6) Define the following terms:
   1) Root Stock 2) Grafting 3) Scion 4) Mass selection 5) Pest

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

1. Discuss the history of plant Breeding and its progression.
2. Describe detailed procedure of Pedigree method of crop selection.
3. Describe the protocol to establish Turf grass and its maintenance.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

   i.   NITRIFICATION
  ii.   PARENT MATERIAL
 iii.   ECOLOGICAL INDICATORS
  iv.   ALLUVIAL SOILS
   v.   HARMFUL SYMBIONTS
  vi.   SALINITY
 vii.   HOMEOSTASIS
viii.   SODIC SOIL
  ix.   ECOLOGICAL NICHE
   x.   SYNECOLOGY

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

1. What is RHIZOSPHERE? What are the advantages of soil microorganisms present in the rhizosphere?

2. What are the harmful effects of salinity on agricultural lands?

3. Describe CARBON CYCLE in detail.

4. How soil MICROBES interact with plants?

5. Write down the role of MICROBES in carbon transformation.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is meant by soil dispersion?
2. How does waterlogging impact root anatomy?
3. What is osmotic stress in plants?
4. Which ion primarily contributes to sodicity?
5. Define SAR.
6. What should be the ideal level of pH for irrigation water?
7. What is meant by hydraulic conductivity?
8. Define reclamation.
9. What is halophyte?
10. How do roots respond to excess salts?
11. Define phytoremediation.
12. What is meant by soil dispersion?
13. How does exchangeable sodium reduce soil porosity?
14. Mention one ecological solution to combat water logging.
15. What is the use of farmyard manure in soil reclamation?

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

1. Describe the different types of salt-affected soils with examples.

2. Write in detail about chemical and biological approaches to reclaim saline soils.

3. Discuss the effect of water logging on plant metabolism and productivity.

4. Explain the characteristics and mangement of drainage water.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. What is the most common chemical in pesticides?

ii. What is green house effect? Name greenhouse gases?

iii. Write anthropogenic sources of heavy metals in a lake?

iv. What is SVI?

v. Can a cow be a pest? Justify by explaining pest?

VI. How heavy metal can be defined?

Vii. Why COD is always high as compared to BOD?

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 is composition of a acid rain?

Xii. How lead is harmful of organisms?

Xiii. What is itai-itai disease?

Xiv. Define smog?

Xv. What is IPM?

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

A. Write a note on pesticides use and impacts on environment?

B. what are the sources and causes of air pollution and describe the methods of Assessing Air Pollution and its impact on Agriculture

C. How Cd, Cu, Zn and Cr are harmful for plants and living organisms?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) List Theta Plasmid replication and draw diagram.
2) What are the genes involved in stable maintenance?
3) What are restriction modification systems?
4) Describe DNA Methylation as an epigenetic change.
5) Describe plasmid involvement in Host Metabolism.
6) Describe the type of lesions repaired by Base excision repair mechanism.

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

1) Describe Mar and Mcr mechanism of restriction modification with examples.
2) Describe Base excision repair mechanism.
3) Describe classification of repairable mechanism.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. BIOHAZARDS
2. THERAPEUTIC CLONING
3. AIR-BORNE diseases
4. FILTER STERILIZATION
5. DRY HEAT STERILIZATION
6. β-RADIATIONS
7. MICROBIAL CELL CULTURE
8. ENVIRONMENTAL LAW
9. RADIOACTIVE MATERIAL
10. BIOSAFETY

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

1. Write a note on the beneficial use of RADIATIONS in the field of health.
2. Discuss about the role of GENETIC MODIFICATION SAFETY COMMITTEE.
3. Write about the causal organisms, symptoms and precautionary measures of some diseases caused by BACTERIA.
4. What are the appropriate measures that should be taken care of regarding disposal of RADIOACTIVE materials from the laboratories?
5. Write about the risk assessment in genetic manipulation regarding GMO's.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) Draw a diagram of Ti Plasmid and discuss the disease it causes.

2) Describe size and copy number od plasmids?

3) Discuss characteristics of an ideal plasmid with one example

4) What are endonuclease enzymes? Discuss blunt and sticky ends produced by them.

5) Define the following terms:

   1) Episome 2) Recombinant DNA 3) Cosmids 4) Ligase enzyme 5) Exons

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

1. Describe role of gene cloning in Medicine.

2. Discuss the strategy to study the gene expression.

3. Explain stepwise procedure to extract total cell DNA.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)   درج ذیل سوالات کے مختصر جواب تحریر کریں۔

السؤال الأول: أجب عن الأسئلة التالية بإيجاز

1- ماذا تعرف عن الشاعر العباسي "أبي العلا المعري"؟

2- من نظم قصيدة "صناجة العرب"؟

3- ما المراد بالعصر الحديث؟

4- اكتب بيتين من أبيات أحمد شوقي؟

5- اكتب عن أغراض الشعر في العصر الحديث.

6- ماذا تعرف عن خليل مردم بك.

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

السؤال الثاني: اشرح البيتين التاليين باللغة العربية واكتب اسم شاعرهما.

صـلاة اللـه خالقنـا حنـوط   على الوجه المكفّن بالجمال

على المدفون قبل التُرب صوئا   وقَبل اللحد في كرم الخلال

السؤال الثالث: اشرح البيتين التاليين باللغة العربية واكتب اسم شاعرهما.

تُعيّرنـا أنـا قليلٌ عديدنـا   فقلتُ لها إن الكـــرام قليل

وما قَلَّ من كانت بقاياه مثلنا   شباب تسامى للعلا وكهول

السؤال الرابع: اشرح البيتين التاليين باللغة العربية واكتب اسم شاعرهما.

محمـد سيـد الكونين والثقلين   والفريقين من عرب وَ من عجم

هو الحبيب الذي تُرجى شفاعته   لكلّ هولٍ من الأهوال مقتحم

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)   درج ذیل سوالات کے مختصر جواب تحریر کریں۔

السؤال الأول: أجب عن الأسئلة التالية بالاختصار.

1. متى و أين ولد أحمد شوقي؟

2. على كم باب يشتمل ديوان الحماسة؟

3. ماذا تعرف عن معتقدات المتنبي؟

4. اذكر آراء المعري الفلسفية موجزاً.

5. ما المراد بالرواية؟

6. ماذا تعرف عن عبدالله الفيصل؟

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

السؤال الثاني: اكتبْ عن حياة البُحتري وآثاره.

السؤال الثالث: ماذا تعرف عن محمود سامي البارودي؟ اكتب مفصّلاً.

السؤال الرابع: اكتبْ عن الجاحظ بالتفصيل.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچہ کومہیا کی گئی جوابی کا پی پر حل کریں۔

درج ذیل سوالات کے مختصر جواب تحریر کریں۔ (15x2=30)

السؤال الأول: ترجم/ترجمي الجمل التالية إلى الإنجليزية:

3–العاقل من اتّعظ بغيره	2–الصيت الحسن خير من المال المجموع	1–الحماس بلا معرفة نور بلا ضياء
6–الابن سر أبيه	5–الإيمان يزحزح الجبل	4–القناعة كنز لا يفنى
9– الخبز القفار خير من لا شيء	8 – الحسود لا يسود	7 –الاتحاد قوة
11–ربّ كلمة جلبت نقمة، وربّ كلمة جلبت نعمة		10–الجار قبل الدار
13–الإسكافي حاف والحائك عريان		12–الأعمال خير من الأقوال
15– إنَّ الطيور على أشكالها تقع		14– اتق شرَّ من أحسنت إليه

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

السؤال الثاني: ترجم/ترجمي الفقرة التالية إلى العربية :

Life in the past was simple. Human beings made most of their needs themselves. They produced their food themselves. They grew vegetables in their garden. They could buy healthy foods at the shops. They visited their relatives and friends more often. Most of their foods were natural. For example: bread wasn't as white as today, but it was more delicious and healthy. Vegetables and fruit were more delicious than today. What about today? Everything has changed. Even the villagers do not grow their fruit and vegetables. They prefer to buy their needs at the markets instead of growing them in their gardens. Everybody is used to easiness. You can see all new devices in their homes such as refrigerator, vacuum cleaner, washing machine. Some villagers left their villages and came to big cities. Also, today vegetables and fruit aren't as delicious as in the past, so what can we do? Nothing, because the population has increased. I think it will increase much in the future. How can so many people get enough healthy food? If we want to be healthy, we should try to eat vegetables and fruit in their right time and season.

السؤال الثالث: ترجم/ترجمي الفقرة التالية إلى العربية:

Muhammad Iqbal was a famous poet, philosopher, and thinker from Pakistan, born on November 9, 1877. He is known as the "National Poet of Pakistan" because his poetry inspired people to work towards independence. He also loved writing poems for children and believed they were the future leaders. Iqbal was a talented poet who wrote beautiful poems, especially for children. He loved to tell stories through his verses, and he taught everyone to be kind and helpful. He even wrote a special book called "Bang-e-Dra" with a section just for poems for children. He was always concerned about the thoughts, ideas and condition of Muslims everywhere, but specially Indian Muslims who were under British Rule and threatened by the Hindu ruling population. Iqbal believed strongly in Two Nation theory that Muslims and Hindus were two separate nations and should be allowed to live separately. He put forward this idea again in his famous Allahabad Address to the Muslim League, in 1930, and preached this in his poems and lectures. He was very popular amongst the Muslim masses too.

السؤال الرابع: ترجم/ترجمي الفقرة التالية إلى الإنجليزية:

هل فكرت يومًا في حياة الأنهار؟ الأنهار لا تعود أبدًا، بل تتقدم دائمًا إلى الأمام، متناسية الماضي. أنت أيضًا ركز على المستقبل . الأنهار تصنع طريقها بنفسها، ولكن إذا واجهت عائقًا كبيرًا، فإنها ببساطة تغير اتجاهها وتتبع مسارات جديدة. القتال والمجادلة والإصرار على مواجهة الصعوبات والعقبات هو في الحقيقة إهدار للوقت. لا يمكنك عبور النهر دون أن تبتل. بنفس الطريقة، عليك أن تعيش الحياة بكل ما فيها من فرح وحزن، بشجاعة وإصرار. الأنهار لا تحتاج إلى دفع، فهي تتحرك إلى الأمام من تلقاء نفسها . اعمل على تحقيق أهدافك دون الاعتماد على الآخرين . حيث يكون النهر أعمق، يكون الهدوء والسكينة أكبر. الأشخاص الحكماء والعقلاء أيضًا يتمتعون بالهدوء والسكينة.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

درج ذیل سوالات کے مختصر جواب تحریر کریں۔   (15x2=30)

السّؤال (1)

1. اذكر فرعين أساسيين لـ "اللسانيات"؟

2. ما الفرق بين اللغة والكلام؟

3. ما الهدف الأساسي من دراسة اللسانيات النظرية؟

4. ما هو مفهوم اللسانيات المقارنة؟

5. أعط مثالًا على دراسة تقابلية بين العربية وأي لغة أجنبية أخرى.

6. عرّف اللسانيات الاجتماعية.

7. اذكر مثالًا على ظاهرة لغوية تهتم بها اللسانيات النفسية.

8. اذكر تطبيقين عمليين للسانيات الحاسوبية.

9. ما مفهوم اللسانيات الأجناسية؟

10. أعط مثالًا عن تطبيق عملي للسانيات التربوية في التعليم.

11. ما الفرق بين الصوت (Phone) والفونيم (Phoneme)؟

12. ما هي أقسام الصوتيات؟

13. ما الفرق بين المورفيم الحرّ والمورفيم المقيّد؟

14. أعط مثالًا واحدًا على جملة بسيطة وحدّد عناصرها النحوية.

15. عرّف علم الدلالة.

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

السّؤال (2)   اكتب مقالًا على صفات الأصوات العربية.

السّؤال (3)   اكتب بالتفصيل حول أصول بناء الكلمة العربية.

السّؤال (4)   ما هي الميزات الدلالية في اللغة العربية، أكتبها عن بالتفصيل.

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 جواب تحریر کریں۔

i.   Private ownership allows for a greater chance of serving the public interest. Describe shortly.

الف)   نجی ملکیت عوامی مفاد کی خدمت کے زیادہ مواقع فراہم کرتی ہے۔ مختصر بیان کریں۔

ii.   Discuss the functions of media management.

ب)   میڈیا مینجمنٹ کے فنکشنز / افعال پر بحث کریں۔

iii.   Differentiate between public and private ownership with perspective to Pakistani Society.

ج)   پاکستانی معاشرے کے تناظر میں سرکاری اور نجی ملکیت میں فرق کریں۔

iv.   Describe shortly media conglomerates in Pakistan along with examples.

د)   پاکستان میں میڈیا گروپس کو مثالوں کے ساتھ مختصر بیان کریں۔

v.   Enlist five differences between mass media and social media.

ہ)   ماس میڈیا اور سوشل میڈیا کے درمیان پانچ فرق لکھیں۔

vi.   Enlist four types of media in marketing along with examples.

و)   مارکیٹنگ میں میڈیا کی چار اقسام مثالوں کے ساتھ لکھیں۔

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

سوال نمبر2:   درج ذیل سوالات کے تفصیلی جواب تحریر کریں۔

i.   Debate on importance of marketing of media products along with examples with perspective in Pakistani Society.

الف)   پاکستانی معاشرے کے تناظر میں میڈیا مصنوعات کی مارکیٹنگ کی اہمیت پر مثالوں کے ساتھ بحث کریں۔

ii.   Define media personnel. Discuss the types and functions of media personnel.

ب)   میڈیا اہلکار کی تعریف کریں۔ میڈیا اہلکاروں کی اقسام اور افعال پر تبادلہ خیال کریں۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Paper: **Specialized Journalism**
Course Code: **BSCS-414-E (v) Gender & Media**

Roll No. ....

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچے 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.   Define Gendered Communication.

i.   صنفی مواصلات کی وضاحت کریں۔

ii.   Differentiate between sex and gender.

ii.   جنس اور صنف کے درمیان فرق بیان کریں۔

iii.   What is Self?

iii.   خودی کیا ہے؟

iv.   Explain gender equality.

iv.   صنفی مساوات کی وضاحت کریں۔

v.   Write down the definition of Gender Identity.

v.   صنفی شناخت کی تعریف لکھیں۔

vi.   What is meant by socialization?

vi.   سوشلائزیشن سے کیا مراد ہے؟

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

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

i.   Elaborate the concept of Post-Feminism.

i.   پوسٹ فیمینزم کے تصور کو واضح کریں۔

ii.   Analyze gender depiction in films.

ii.   قومی اور بین الاقوامی سطح پر صنفی مسائل کو حساس بنانے میں این جی اوز کے کردار پر تبادلہ خیال کریں۔

iii.   How Pakistani dramas portray women and what can be done to make it better?

iii.   پاکستانی ڈرامے خواتین کو کس طرح پیش کرتے ہیں اور اسے بہتر بنانے کے لئے کیا کیا جاسکتا ہے؟

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Specialized Journalism
Course Code: BSCS-414 H (viii) Media in SAARC Countries

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 نمبر 1:   مختصر جوابات تحریر کریں۔

1- Discuss the Failures of SAARC.

1-   سارک کی ناکامیاں بیان کریں۔

2- Write down the history of SAARC in your Words.

2-   سارک کی ہسٹری اپنے الفاظ میں تحریر کریں ۔

3- Describe the Role of Media in Regional Conflicts.

3-   خطے کے تنازعات میں میڈیا کے کردار پر روشنی ڈالیں۔

4- Discuss the effects of Modern Media on Traditional Media in SAARC Member Countries.

4-   سارک ممالک میں جدید میڈیا کے روایتی میڈیا پر اثرات پر نوٹ لکھیں۔

5- How Freedom of Press can be ensure in the Region.

5-   خطے میں پریس کی آزادی کو کس طرح سے یقینی بنایا جا سکتا ہے۔

6- What is the major issue of the SAARC Member Countries and How Media can play a Positive role the Solution.

6-   سارک ممبر ممالک کا بڑا مسئلہ کیا ہے اور میڈیا کس طرح اس کے حل میں کتنا کردار ادا کر سکتا ہے۔

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

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

1- Write a detail note on the role of Electronic Media in SAARC.

1-   سارک ممالک میں الیکٹرانک میڈیا کے کردار پر تفصیلی نوٹ لکھیں۔

2- Media is a Powerful tool in reconciliation, Justify the statement.

2-   میڈیا مفاہمت کے لیے ایک طاقتور آلہ ہے بیان کو ثابت کریں۔

3- Briefly discuss the Media Prospects in Afghanistan and role of SAARC in it.

3-   افغانستان میں میڈیا کے امکانات اور اس میں سارک کے کردار پر روشنی ڈالیں۔

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 جواب تحریر کریں۔

i.   Define the key features of Danish School System?

الف) دانش سکول سسٹم کی اہم خصوصیات بیان کریں۔

ii.   What are the main objectives of TEVTA?

ب) TEVTA کے اہم مقاصد کیا ہیں؟

iii.   Shortly define news structures.

ج) خبر کے ڈھانچے کی مختصر اوضاحت کریں۔

iv.   Write a short note on "Free & Compulsory Education Act 2014".

د) پنجاب فری اینڈ کمپلسری ایجوکیشن ایکٹ 2014ء پر مختصر نوٹ لکھیں۔

v.   Write down the interview techniques.

ہ) انٹرویو کے اسلوب بیان کریں۔

vi.   What are the main wings of HED?

و) HED کے اہم شعبہ جات کون کون سے ہیں؟

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

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

i.   What are the key functions of TEVTA? How it contribute to the improvement of Technical Education & Vocational Training? Discuss.

الف) TEVTA کے اہم افعال کی وضاحت کریں۔ یہ تکنیکی تعلیم اور پیشہ ورانہ تربیت کو بہتر بنانے میں کیسے معاون ہے؟ تفصیلاً بیان کریں۔

ii.   Describe the organizational structure of HED, also explain the role of Planning & Development Wings of HED?

ب) ہائیر ایجوکیشن ڈیپارٹمنٹ HED کے تنظیمی ڈھانچے کی وضاحت کریں۔ الغرض HED کے منصوبہ سازی اور ترقی ونگ کے کردار پر روشنی ڈالیں۔

iii.   Explain major beats of reporting along with the sources?

ج) رپورٹنگ کی مختلف بیٹ اور ان سے متعلقہ ذرائع تفصیلاً بیان کریں۔

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: درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

</div>

i.   What are the essential components required to setup a radio studio?

<div dir="rtl">

(الف) ریڈیو اسٹوڈیو قائم کرنے کے لئے کن کن چیزوں کی ضرورت ہے؟

</div>

ii.   Briefly explain the different kinds of microphones used in radio broadcasting and their specific applications.

<div dir="rtl">

(ب)   ریڈیو براڈ کاسٹنگ میں استعمال ہونے والے مختلف قسم کے مائیکروفونز اور ان کی مخصوص ایپلی کیشنز کی مختصر وضاحت کریں۔

</div>

iii.   What are the primary duties of a radio producer during program production?

<div dir="rtl">

(ج)   پروگرام کی تیاری کے دوران ریڈیو پروڈیوسر کے بنیادی فرائض کیا ہیں؟

</div>

iv.   Define public service broadcasting and its significance in the context of radio.

<div dir="rtl">

(د)   ریڈیو کے تناظر میں پبلک سروس براڈ کاسٹنگ اور اس کی اہمیت کی وضاحت کریں۔

</div>

v.   Explain the concept of outdoor broadcasting and its challenges for radio stations.

<div dir="rtl">

(و)   بیرونی نشریات کے تصور اور ریڈیو اسٹیشنوں کے لئے اس کے چیلنجز کی وضاحت کریں۔

</div>

vi.   What are the current trends in FM radio broadcasting in Pakistan?

<div dir="rtl">

(ز)   پاکستان میں ایف ایم ریڈیو کی نشریات کے موجودہ رجحانات کیا ہیں؟

</div>

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

<div dir="rtl">

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

</div>

i.   Explain the process of program planning and budgeting in a radio station. Discuss the key steps involved, the challenges faced, and the role of the radio producer in ensuring a well-executed plan.

<div dir="rtl">

(الف) ریڈیو اسٹیشن میں پروگرام کی منصوبہ بندی اور بجٹ بنانے کے عمل کی وضاحت کریں۔ اس میں شامل کلیدی اقدامات، درپیش چیلنجز اور اچھی طرح سے انجام پانے والے منصوبے کو یقینی بنانے میں ریڈیو پروڈیوسر کے کردار پر تبادلہ خیال کریں۔

</div>

ii.   Analyze the role of FM radio in Pakistan's public and private sectors. Discuss its evolution, the differences in objectives between public and private broadcasters, and its impact on the audience.

<div dir="rtl">

(ب)   پاکستان کے سرکاری اور نجی شعبوں میں ایف ایم کے کردار کا تجزیہ کریں۔ اس کے ارتقاء سرکاری اور نجی نشریاتی اداروں کے درمیان مقاصد میں فرق، اور سامعین پر اس کے اثرات پر تبادلہ خیال کریں۔

</div>

iii.   Discuss the production of various radio programs, including talks, discussions features, documentaries, and children's programs. Highlight the unique challenges and techniques associated with each format.

<div dir="rtl">

(ج)   مختلف ریڈیو پروگراموں کی تیاری پر تبادلہ خیال کریں، جن میں مذاکرے، مباحثے، فیچرز، دستاویزی فلمیں، اور بچوں کے پروگرام شامل ہیں۔ ہر فارمیٹ سے وابستہ منفرد چیلنجز اور تکنیکوں کو نمایاں کریں۔

</div>

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:   مندرجہ ذیل سوالات کے مختصر جوابات لکھیں۔

1. Discuss about Montage?
2. Compare Fade in/out and Dissolve in videos.
3. Explain the importance of production stage and list down the process involved in production stage?
4. Define Chroma key and virtual set.
5. Write a brief note on Scriptwriter?
6. Explain white balance and its importance in detail?

1- مونٹاج کو بیان کریں۔

2-- ویڈیو میں فیڈ اِن اور فیڈ آؤٹ اور ڈزولو کا موازنہ کریں۔

3-- پروڈکشن اور اس میں شامل مراحل کی اہمیت کو بیان کر یں۔

4-- کروما اور ورچوئل سیٹ کو بیان کریں۔

5-سکرپٹ رائٹر پر مفصل نوٹ لکھیں۔

6-- وائٹ بیلنس اور اس کی اہمیت کو تفصیل سے بیان کریں۔

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

سوال نمبر2:   مندرجہ ذیل سوالات کے جوابات تحریر لکھیں۔

1. What are the basic shot sizes? Explain their characteristics and uses in video?
2. What are the roles and responsibilities of production personnel in a video production?
3. Distinguish and importance of drama and feature films?

1-- ویڈیو بنانے کے بنیادی شاٹس کون کون سے ہیں ان کو لکھیں اور ویڈیو میں ان کی اہمیت کو بیان کریں۔

2-- ویڈیو پروڈکشن بنانے کے مراحل میں کون کون لوگ شامل ہوتے ہیں اور ان کی کیا ذمہ داری اور کردار ہوتا ہے؟

3-- ڈرامہ اور فیچر فلم میں تفریق کریں اور ان کی اہمیت کو بیان کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

i.   Creative

الف)   تخلیق

ii.   Spots

ب)   جگہیں

iii.   Social advertising

ج)   سماجی اشتہار بازی

iv.   Publicity

د)   تشہیر

v.   IMC

ہ)   IMC

vi.   Direct mail advertising

و)   براہِ راست اشتہار بازی / ڈائریکٹ میل ایڈورٹائزنگ

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

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

i.   What is secondary research, briefly discuss how we use it in advertising research in effective decision- making.

الف)   ثانوی تحقیق کیا ہے؟ ہم کیسے پُر اثر فیصلہ سازی میں اشتہار بازی کی تحقیق کو استعمال کرتے ہیں۔ جامع انداز میں بیان کریں۔

ii.   What is advertising? Discuss in detail various types of advertising.

ب)   اشتہار بازی کیا ہے؟ اس کی اقسام پر تفصیلی بیان لکھیں۔

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: مختصر جوابات تحریر کریں۔

1. What is the difference between advertising and Public Relations?

الف) اشتہارات اور تعلقات عامہ میں کیا فرق ہے؟

2. What is a handout?

ب) ہینڈ آؤٹ کیا ہے؟

3. Why is crisis communication important?

ج) بحرانی مواصلات کیوں اہم ہے؟

4. Differentiate between marketing research and media research.

د) مارکیٹنگ ریسرچ اور میڈیا ریسرچ کے درمیان فرق کریں۔

5. What are the steps involved in designing a Public Relations strategy?

ہ) تعلقات عامہ کی حکمت عملی وضع کرنے میں کون سے اقدامات شامل ہیں؟

6. How are press conferences an effective tool of Public Relations?

و) پریس کانفرنسیں تعلقات عامہ کا ایک مؤثر ذریعہ کیسے ہیں؟

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

سوال نمبر2: مندرجہ ذیل سوالات کے جوابات تحریر کیجیے۔

1) Discuss the benefits of using sponsorships in Public Relations.

الف) تعلقات عامہ میں اسپانسرشپ کے استعمال کے فوائد پر تبادلہ خیال کریں۔

2) What are Public Relations related special events and describe their importance.

ب) تعلقات عامہ سے متعلق خصوصی تقریبات کیا ہیں اور ان کی اہمیت کو بیان کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are PCBs?
2. What is composition of soil air?
3. What is WIND erosion?
4. What type of pollutants can be analyzed by AAS?
5. What are mycotoxins?
6. How availability of Phosphorous is affected by soil pH?
7. What are pesticides?
8. Enlist micronutrients essential for plant growth.
9. Mention any two principles of green chemistry.
10. What are primary macronutrients?
11. What is principle of UV-Vis spectroscopy.
12. What do you know about "HUMUS"?
13. How clay is involved in nutrient holding capacity of soil?
14. What is Tailing in mining of ores?
15. Which type of information can be collected by IR spectroscopy for environmental monitoring?

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

1. What is Soil Air? Elaborate the difference between Soil Air and Atmospheric Air.
2. How INDUSTRIES are contributing in soil pollution?
3. Describe the principle and application of HPLC for environmental monitoring.
4. How pH of soil affects the availability of plant nutrients? Explain with examples.
5. What are POPs? How they are polluting environment?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(a) Differentiate fission and fusion.

(b) What is nuclear disintegration? Give its various types.

(c) What is nucleus stability? Enlist the factors affecting the nucleus stability.

(d) Discuss orientation wedge theory of emulsion type.

(e) Describe the science of wetting process.

(f) What is osmosis? Describe the osmometric method for molar mass determination.

Answer the following questions.   (3x10=30)

Q. 2. What are radioactive tracers? Give their applications in chemistry.

Q. 3. Discuss the methods of preparation of emulsions in detail.

Q. 4. Discuss semi-permeable membrane to describe the process of osmosis.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I   Explain the difference between singlet and triplet states.

II   Why is Rayleigh scattering more intense for shorter wavelengths of light?

III   What is the principle of vapor phase osmometry?

IV   What is the significance of the Mark-Houwink equation?

V   Which information about CO_2 molecules is obtained from Raman Spectroscopy?

VI   Define condensation polymerization with an example.

VII   What are the selection rules for rotational Raman transitions in linear molecules?

VIII   Explain the difference between Stokes and anti-Stokes lines in a Raman spectrum.

IX   What is the role of polarizability in Raman Spectroscopy?

X   Write two differences between addition and condensation polymerization.

XI   Why does conjugation shift λmax to a longer wavelength?

XII   What is the basic principle of Raman Spectroscopy?

XIII   What is the molar extinction coefficient in Lambert-Beers law? Write its unit.

XIV   What is meant by the number average and weight average degree of polymerization?

XV   What is meant by $n-\pi^*$ transitions?

Answer the following questions.

Q.2   (a)   What are the common techniques used to determine the molecular weight and molecular weight distribution of polymers?   (5)

      (b)   How the molecular mass of polymers can be determined by Osmometry.   (5)

Q.3   (a)   Explain the basis on which Polymers are classified.   (5)

      (b)   Explain why $\sigma-\sigma$ transitions require higher energy compared to other types of electronic transitions.   (5)

Q.4   (a)   What is Raman scattering, and how does it differ from Rayleigh scattering?   (5)

      (b)   How do the moments of inertia of symmetric top molecules influence the spacing of lines in their rotational Raman spectra?   (5)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Define lattice energy and give its significance.
ii. What different types of fuels are used to obtain a range of flame temperatures in spectroscopy?
iii. Which carbonate will be more stable and why: $BaCO_3$ or $MgCO_3$?
iv. Give structure and few properties of tetraborane.
v. Give two industrial applications of Atomic Absorption Spectroscopy.
vi. What makes silicones important for industry?
vii. How are phosphazene polymers formed?
viii. What is clay?
ix. What are the roles of Flame and Plasma in emission spectroscopy?
x. Draw a labelled diagram of Plasma Torch.
xi. What is mica?
xii. What type of detectors are used in atomic spectroscopy?
xiii. What are the criteria of spontaneity of reaction?
xiv. Why is the lattice energy of NaCl lower than MgO?
xv. What are metasilicates?

Q.2.   Give adequate answer to the following questions.   (5x6=30)

i. Explain clinical applications of Atomic Emission Spectroscopy.
ii. Explain halogen exchange reactions with examples.
iii. Explain the construction and working of a Hollow Cathode Lamp.
iv. Describe cage compounds of phosphorus
v. Discuss inorganic polymers as conductors

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(i) What the difference between organometallic and coordination compounds?
(ii) What are de-insertion reactions? Give one example.
(iii) Differentiate between Mb and Hb.
(iv) Write SN_2 mechanism in octahedral complexes.
(v) What is the role of Ni and Cu in living things?
(vi) What are Siderophores?
(vii) Give two examples of n- 3 allylic organometallic compounds .
(viii) What are the energy sources for life on earth?
(ix) Give the mathematical relationship between activation energy and rate constant?
(x) What is Cobaltocene? Give its preparation?
(xi) What is Porphyrine ring? How is it formed?
(xii) What is the structure of chlorophylls?
(xiii) What is trans effect in complexes?
(xiv) What are labile complexes? Give one example.
(xv) Explain Wacker process?

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

(a) Explain the preparation methods of organometallic compounds.
(b) Explain electron transfer mechanism by inner and outer sphere exchange reactions.
(c) What is the role of nitrogenase enzyme in nitrogen fixation? How it occurs in vivo and in vitro?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) From which class of natural products the lycopene and β-carotene belongs. How many isoprene units present in? Can you detect a similarity in the way in which squalene, lycopene, and β-carotene are biosynthesized?
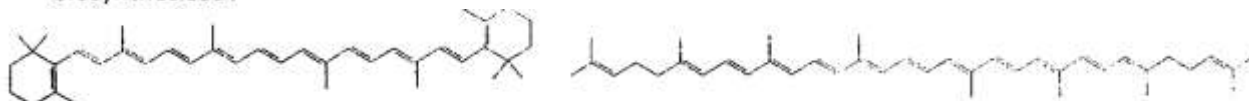
b) Calculate the *m/z* value for the molecular ion of each of the following compounds. Explain why the nitrogen rule holds. State the rule in terms of a molecular ion with an even-numbered mass.
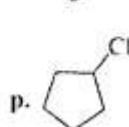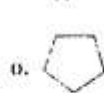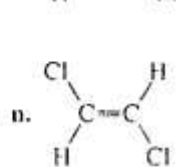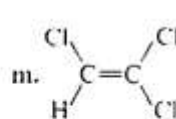
1. $\diagup\!\!\diagdown\!\!\diagup\!\!\diagdown$ NH₂   2. H₂N $\diagup\!\!\diagdown\!\!\diagup$ NH₂

c) What are the general methods of isolation of natural products from the terrestrial plants?

d) How many signals would you expect to see in the ^{1}H-NMR spectrum of each of the five compounds with molecular formula C_6H_{14}?

e) Draw an isomer of dichlorocyclopropane that gives an ^{1}H NMR spectrum
   i.   With one signal.   ii.   with two signals.   iii.   with three signals.

f) What would distinguish the mass spectrum of 2,2-dimethylpropane from the mass spectra of pentane and 2-methylbutane?

Answer the following questions.

Q. No.2 (a).   How many signals would you expect to find in the PMR and CMR spectrum of each of the following compounds? What would be the chemical shift values, multiplicity and relative area of each signal?   **(15)**

a. $BrCH_2CH_2CH_2CH_2Br$
b. $CH_3OCH_2CH_2CH_2Br$
c. $O\!=\!\bigcirc\!=\!O$

d. $CH_3\overset{\overset{\displaystyle CH_3}{|}}{C}CH_2CH_3$ with Br below
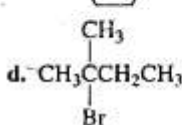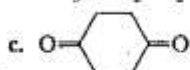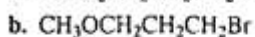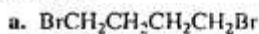
e. $CH_3\overset{\overset{\displaystyle O}{||}}{C}CH_2\overset{\overset{\displaystyle O}{||}}{C}OCH_4$

f. $\overset{H}{\underset{H}{}}C\!=\!C\overset{}{\underset{Cl}{}}$

g. $CH_3CH_2OCH_2CH_3$
h. $CH_3CH_2OCH_2Cl$
i. $CH_3CHCHCl_2$ with Cl below
j. oxetane square with O
k. $CH_3CH\overset{\overset{\displaystyle O}{||}}{C}H$ with CH_3 below
l. $CH_3OCH_2CH_2CH_2OCH_3$

m. $\overset{Cl}{\underset{H}{}}C\!=\!C\overset{Cl}{\underset{Cl}{}}$

n. $\overset{Cl}{\underset{H}{}}C\!=\!C\overset{H}{\underset{Cl}{}}$

o. cyclopentane
p. chlorocyclopentane
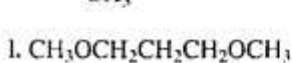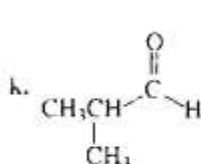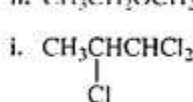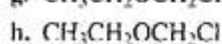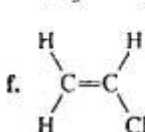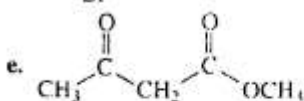
Q. No.2 (b).   What fragments are expected as a result of McLafferty rearrangement in the following compounds?   **(05)**
   i)   5- Methyl hexanal   ii)   4-Methyl-2-pentanone   iii)   2-Butylcyclohexanone
   iv)   Butyl 2,2-dimethylpropanoate   v)   2-Ethylhexanoic acid.

Q. No.3.   Write a short notes on the following compounds.   **(10)**
   i.   piperine   ii. Nicotine   iii. Cocaine   iv.   Morphine   v).   Quinine

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

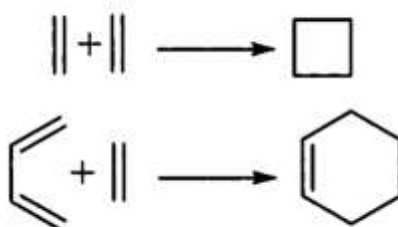**Q.1.   Answer the following short questions.   (6x5=30)**

i.   Write two methods for the protection and deprotection of carbonyl group in chemical reaction.

ii.   What are 1,3 dipolar cycloaddition reactions? Give two examples.

iii.   What is phase transfer catalysis? Describe how quaternary ammonium salts act as phase transfer catalyst?

iv.   What is solid phase synthesis? Give one example with complete procedure.

v.   Briefly explain the structure and reactivity of singlet nitrene and triplet nitrene?

vi.   Explain the chemical utility of phosphorus ylides.

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

A)   By using energy level correlation diagram how can you explain that thermal electrocyclic reactions involving 4n electrons proceed in a conrotatory fashion while photochemical electrocyclic reactions involving 4n electrons proceed in a disrotatory fashion?

B)   Which of the following reactions will proceed thermally and which will undergo photochemically? Explain your answer by using frontier molecular orbital (FMO) approach.

C)   Explain Merrifield Solid-Phase Peptide Synthesis. Describe all steps involved.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   What is stripping voltammetry?

ii.   Define specific and molar conductance.

iii.   Why does specific conduction decrease with dilution?

iv.   What is the basic principle of Amperometery?

v.   Distinguish between Faradaic and non- Faradaic current.

vi.   What is difference between normal pulse and differential pulse voltammetry?

vii.   Give difference between equivalent conductance and specific conductance.

viii.   What do you mean by diffusion current in voltammetry?

ix.   Give the changes in conductance in the precipitation titration of $AgNO_3$ and LiCl.

x.   Give difference between spark and arc sources.

xi.   Describe the migration as a mode of mass transport in voltammetry.

xii.   What are the advantages of DME?

xiii.   What is cell constant? How is it measured?

xiv.   Draw a schematic diagram of a DC arc.

xv.   What is *Ilkovic* equation?

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

a) Discuss quantitative applications of voltammetry

b) Discuss the effects of applied potential and mass transport on Faradaic current.

c) Describe the factors affecting the conductance of solution.

d) Write down the advantages of automation process.

e) Discuss anodic stripping voltammetry.

f) Give merits and demerits of amperometry.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are the characteristics of a laser beam?
2. Why is four-level laser system better than the three-level laser system?
3. Differentiate between spontaneous and stimulated emission.
4. Which system cannot produce a population inversion?
5. Compare the life time of metastable state in comparison to the excited state?
6. How is the scale of chemical shift values formulated in NMR Spectroscopy?
7. What is the cause of spin-spin coupling in NMR?
8. What are different modes of relaxation in NMR spectroscopy?
9. Give some examples of atoms which have NMR active nucleus.
10. What is spin-flipping in NMR Spectroscopy?
11. Which species are detected by the mass spectrometer?
12. What is the difference between the base peak and the molecular ion peak?
13. How can specific ions be separated by the quadrupole mass analyzer?
14. Can negative ions be produced by bombardment process in mass spectrometry?
15. What is Nitrogen rule in mass spectrometry?

Answer the following questions.   (3x10=30)

Q2

a) Describe the construction and working of a dye laser.
b) How can Population inversion be achieved in Laser?

Q3

a) Describe the instrumentation of NMR spectrophotometer.
b) Discuss the basic principle of NMR spectroscopy.

Q4

a) Compare Electron Impact with Chemical Ionization in mass spectrometry.
b) Outline the working principle of mass spectrometry with the help of diagram.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(i) Enlist major industrial chemicals produced from ethylene.

(ii) Write down different problems and diseases caused by the tanning industries to human.

(iii) Define nitration and write down possible product obtain from nitration of propane.

(iv) Write down the raw materials used for polyester and write down the equation for polyester.

(v) Differentiate between simple and mixed triglycerides with one example of each.

(vi) Give reactions for the conversion of methane to acetylene.

(vii) Name different 'BEAMHOUSE OPERATIONS' involved in the manufacturing of leather.

(viii) Describe the reasons of fat spoilage.

(ix) Write down the major and minor components of fats and oil.

(x) Differentiate between the essential oils and vegetable oils.

(xi) Give reactions for the conversion of methane to acetylene.

(xii) What are the major uses of carbon black?

(xiii) Shortly describe the process for the production of ethylene from naphtha.

(xiv) Define mercerization and briefly describe its importance in textile finishing

(xv) Enlist the raw material of Dacron, also give the reaction of its formation.

Answer the following questions.

Q No. 02 (a) Give brief description of 'CHROME TANNING' process in the manufacturing of leather. (6)

(b) What are the major pollutants of leather industry and how are these treated? (4)

Q No. 03 (a) Describe different steps involved in the extraction of 'COTTON SEED OIL'. (5)

(b) Write a concise note on the 'HYDROGENATION' of vegetable oils. (5)

Q No. 04 (a) Describe different steps involved in converting the fibre to the finished (dyed) fabrics. (7)

(b) Define fibre and comment that all fibres are not textile fibres. (3)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.	How the products obtained during Low Temperature Coking and High Temperature Coking are different.
ii.	Why Coking of Coal is important?
iii.	Why gaseous fuels are more preferred over solid fuels?
iv.	Give Classification of Polymers
v.	Give significance of hydrogenated glucose syrups.
vi.	Breifly describe the manufacturing of polyethylene.
vii.	What do you mean by Molding of plastics?
viii.	Give brief composition of Natural Gas
ix.	Why addition polymerization is also called Free Radical Polymerization?
x.	Give significance of Polyblends in Industry.
xi.	What is Extrusion Molding?
xii.	Give role of using Multiple Effect Evaporator in Sugar Industry.
xiii.	What are Homopolymers? Give one example.
xiv.	Give the Construction of Mill used in juice extraction.
xv.	What are the by-products of Sugar Industry?

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

i.	Explain Blow Molding and Injection Molding.
ii.	Explain the Diffusion process of Juice extraction from Sugar Beet.
iii.	How Coal chemicals are recovered from Coal gas?
iv.	How sucrose is recovered from Molasses?
v.	Explain the mechanism of Step Growth Polymerization by using Suitable example.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Write the causes of gout disease

ii. Draw the Urea cycle

iii. What is Saccharine material?

iv. Enlist the uses of fungi in the industry

v. Draw the structures of pyrimidine bases

vi. Write uses of bacteria in the preservation of meat

vii. What is the role of the microbe in vinegar production?

viii. Which disorder is associated with serum urate levels and why?

ix. Why is the urea cycle important in nitrogen metabolism?

x. What is the significance of creatinine and how is it eliminated from the body?

xi. Write down the names of industries utilizing the prokaryotes

xii. Write the functions of zinc and calcium in the body

xiii. Which kind of microorganism is involved in ethyl alcohol production?

xiv. What is meant by the fate of oxaloacetate?

xv. Write the salient features of Transamination

Q.2. **Answer the following questions.**

1   (a) Describe the functions of purine-based nucleotides in human and write down their biosynthesis from Inosine monophosphate (IMP)? (2+4)

(b) Discuss the absorption of sodium in the intestine from food and its function kidney (4)

2   (a) Evaluate the significance of microbial biotechnology in food industries to sustain the quality of food (6)

(b) Explain the process of protein digestion and absorption in the human body (4)

3   (a) Describe the synthesis and splicing of RNA in the gene expression (6)

(b) Write down the diseases associated with deficiencies of Calcium and iodine (4)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Write general composition of Blood?
2. Draw structure of Porphyrin?
3. What is the difference between Plasma and Serum?
4. Write down the composition Urine?
5. Write down the Importance of CSF?
6. What do you understand by Coagulant agents of blood?
7. Draw structure of Liver?
8. Define Pheromones?
9. Write down the function of parathyroid hormones?
10. Differentiate between extracellular and intracellular fluid?
11. Name some disorders of Endocrine system?
12. Write down the detoxification function of kidney?
13. Write down function of adrenal gland?
14. Write down the biosynthesis of hemoglobin?
15. What is mechanism action of pituitary gland?

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

1. Briefly describe the detoxification function of Liver?
2. Describe mechanism of action of Thyroid Hormones?
3. Describe in detail the composition of CSF and Blood plasma?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Define Bandwidth
2. Floating ads
3. TCP/IP
4. Web site defacement
5. Regional ISPs
6. Botnet

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

a) Define encryption and decryption. How does Private Key encryption works? Draw diagram to explain the answer.

b) Discuss eight key elements of a successful business model.

c) Explain various advertising methods used on the web. Also discuss advantages and limitations of these methods.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

    i.   What is bid and ask spread in foreign exchange rate.

    ii.   Explain any five merits of globalization

    iii.   What do you know about pegged exchange rate system?

    iv.   What is meant international stock market

    v.   Discuss globalization of technology

    vi.   Why international money market is needed in a country

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

    i.   What are the entry modes in a foreign market? Explain with pros and cons

    ii.   What do you know about FDI? Explain why firms choose FDI and how it benefits the home country.

    iii.   Discuss factors that influence the exchange rate.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a. Restructuring and Reengineering

b. Lean production

c. Process Design

d. Product and Process Layout

e. What is screening in product design?

Answer the following questions.   (3x10=30)

Q.2   Create a weighted index with options of 3 three cities that you consider suitable to open a Rice Mill.

Q.3   Discuss in detail the different steps/stages/phases involved in a product design.

Q.4   Discuss which process layouts are appropriate for different volume-variety combinations.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Define opportunity cost a with practical example.

ii.   Distinguish risk and uncertainty.

iii.   What is meant by break-even point?

iv.   Distinguish cost and expense.

v.   What do you mean by a flexible budget?

vi.   Define Throughput Accounting.

vii.   What is meant by contribution?

viii.   What is the role of variance analysis in decision making?

ix.   Distinguish cost and management accounting.

x.   What is meant by budgetary control?

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

i. The following information relates to B's ordering activity during control period 2.

Budget

Output	10,000 units
Activity level	2,000 orders
Total cost of activity	$90,000

Actual

Output	10,500 units
Activity level	1,800 orders
Total cost of activity	$84,000

Required

Required:

Calculate the overhead expenditure and efficiency variances relating to the ordering activity.

ii. ER makes and sells two products X and Y. Data for production and sales each month are as follows:

	Product X	Product Y
Sales Demand	4000 units	8000 units
Direct Material cost per unit	$20	$10
Direct labor Hours per unit	0.1 hour	0.2 hour
Direct labour Cost	$2	$4

Production overheads are $500,000 each month. These are absorbed on a direct labor hours basis. An analysis of overhead costs suggests that there are four main activities that cause overhead expenditure.

Activity	Total Cost $	Cost Driver	Total No.	Product X	Product Y
Batch set up	100,000	No. of set ups	20	10	10
Order handling	200,000	No. of orders	40	24	16
Machining	120,000	Machine Hours	15,000	6,000	9,000
Quality Control	80,000	No. of Checks	32	18	14

Required:

Calculate the full production costs for product X and Y using:

a) Traditional absorption costing
b) Activity Based Costing

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short notes on the following.   (5x6=30)

a) What do you mean by strategic planning

b) What are an organization's internal "strengths"

c) Differentiate between corporate strategy and functional strategy.

d) Define strategic fit

e) What is a strategic business unit (SBU)?

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

a)   Discuss the BCG Matrix and its application in business portfolio analysis.

b)   How do corporate social responsibility (CSR) and ethics influence strategic decisions?

c)   Assess the impact of innovation and technology on corporate strategy.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Paper: Investment Analysis & Management (Finance Specialization)
Course Code: COMM-414

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)**

a) Efficient market hypothesis (EMH)
b) Technical analysis vs fundamental analysis
c) Nominal return vs real return?
d) Differentiate between stock dividend and stock split.
e) Speculative stock vs penny stock
f) Stock market index

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

Q.2   Differentiate between future contract and forward contract. Explain marked to market principle in future contract.

Q.3   Consider Nike call and put purchased on October 20. Exercise price of call is $33.5 and for the put $35.40. Option price of call is $2.15 and for the put $2.54. Calculate the payoff and gain/loss for each of the following October 20 possible closing prices on both contracts:

$15 $25 $30 $32 $35 $40 $45 $50

Q.4   Calculate the expected return and expected risk (standard deviation) of Good luck Corporation for 2025, given the following information:

Possible returns	Probabilities
0.02	0.15
0.06	0.20
0.11	0.30
0.16	0.30
0.18	0.05

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Paper: International Marketing (Marketing Specialization)
Course Code: COMM-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.   (6x5=30)

i.   Elements of Culture
ii. Gender Biasness in International Business
iii. Business Ethics
iv. Internet as growing opportunity in global business
v.   Big Emerging Markets
vi. Corporate Social Responsibility in Global market

Answer the following questions.   (3x10=30)

Q2: Discuss how management style becomes a hurdle for international marketing

Q3: Write down in detail the business plan and marketing strategies to enter the global market.

Q4: Define international marketing channels. Also discuss the factors that infleucne the selection of international marketing channels.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Define virtualization. How does it benefit modern IT infrastructure?
2. Differentiate between Type 1 and Type 2 hypervisors with examples.
3. What is the role of Virtual Machine Monitor (VMM)?
4. Explain the concept of cloud computing in relation to virtualization.
5. What are the common services provided by cloud service providers?
6. Describe the importance of virtual storage systems in data centers.

Answer the following questions.   (3x10=30)

Question#2.

Explain the architecture of a virtual system. Describe the components and how they interact.

Question#3.

Discuss various types of virtualization (e.g., server, storageand network) with real-world applications.

Question#4.

Evaluate the security challenges in virtual systems and suggest best practices for securing them.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Discuss any five features of Capitalism.

ii. Discuss the basic economic values of Islam.

iii. Differentiate between competitive and monopoly capitalism.

iv. What are the major features of a welfare state?

v. Explain distribution of income under Islamic economic system.

vi. What are different types of Communism?

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

Q. 2 Explain the working of capitalist economic system and highlight its merits and demerits.

Q. 3 Explain the concepts of Privatization and Liberalization. Moreover, critically evaluate the policy of Privatization and Liberalization followed in Pakistan during 1990's and 2000's.

Q. 4 Analyze how command, market and mixed economic systems answer the three basic economic questions (what to produce, how to produce, and for whom to produce).

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Roll of GATT in international trade.

2. Product Cycle.

3. Absolute poverty vs. Relative poverty.

4. Saving and Investment and Golden Rules.

5. Growth and income inequality in the world.

6. Revealed Comparative Advantage and Competitiveness.

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

1. Differentiate between debt burden and debt servicing. Suggest policies to combat debt problem in Pakistan.

2. Define poverty and measurement of Poverty line. Differentiate between absolute and relative Poverty. Make a comprehensive comparison between Income and Expenditure Approach.

3. Compare and contrast between Mrs. John Robinson's Model and Model of steady growth.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Green revolution in Pakistan.

2. Issues in agriculture in Pakistan.

3. Characteristics of land lordship in Pakistan.

4. Simple Supply response model.

5. Ecological disequilibrium.

6. Agricultural project planning.

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

1. Critically evaluate The Contra-Malthusian Model.

2. Explain in detail the importance and problem of agriculture sector highlighting food safety issues for the developing countries like Pakistan.

3. Make a comprehensive Synthesis of Population and Food Supply Theories.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is labor economics? Why is it important to study?

2. Define labor force participation rate with an example.

3. What is the difference between wage and non-wage benefits? Give one example of each.

4. Why do people join trade unions?

5. Why education is important for getting a good job.

6. What do you understand by the term "reservation wage"?

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

i) Explain the main causes of unemployment in Pakistan. Give at least three reasons.

ii) What is labor market discrimination? Explain with examples.

iii) Explain Elasticity of Labor Demand and its Determinants in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   How does capitalism address the issue of consumer choice?

ii.   What role does the state play in a communist system?

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

iv.   Explain Sadaqah (Voluntary Charity).

v.   Discuss salient features of Pakistan economy.

vi.   Differentiate between private and public property and production.

Answer the following questions.   (3x10=30)

i.   What are the fundamental principles of Islamic Economics, and how do they differ from those of conventional economic systems?

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

iii.   Discuss the achievements and failures of communism / socialism in USSR (Russia).

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is meant by the price decimation? Write down the conditions of price decimation.
2. How does price elasticity help "KB bus service" to increase its total revenues?
3. Give a comprehensive definition and graphical presentation of Law of diminishing marginal product.
4. Explain the concept of linear regression analysis in demand estimation.
5. Given a Utility function, $U = f(X, Y)$, Prove that $MRS_{X,Y} = MU_X/MU_Y$
6. Explain the payback period method of capital budgeting.

Answer the following questions.

Q.No. 2

Suppose that the production function of a firm is $Q = 100K^{0.5} L^{0.5}$ and $K = 100, P = \$1$, $w = \$30$ and $r = \$40$. Determine the quantity of labor that firm should hire in order to maximize profit. What is the maximum profit of the firm.**(10)**

Q. No. 3

A. In what way can it be said that capital budgeting is nothing more that the application of theory of the firm to investment project.   **(05)**

B. Write down different criteria to select an investment project. Support with numerical examples.   **(05)**

Q.No. 4

Distinguish between a demand function and a demand curve. What is the difference betweena change in the quantity demanded and a shift in the demand curve?**(10)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1.   What is subsistence farming?
2.   Assumptions of Ricardian Theory of rent?
3.   What is Farm Mechanization?
4.   Define classical Model of population?
5.   Explain some important strategies for agri development?
6.   Explain concept of Food Security?
7.   List important agricultural inputs?
8.   Explain concept of land Reforms?
9.   Explain Redistribution effect of Agri Technology?
10. Explain impact of agri on environment?
11. What are the causes of Malnutrian in Pakistan?
12. Discuss Tenancy under un-certainty?
13. What is Dual Economy?
14. Present status of Green Revolution in Pakistan.
15. Explain Marginal land?

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

1.   Explain Fei-Ranis Model of a Dual Economy.

2.   Discuss role of Agriculture Sector in Economic Development of country by considering its role as factor contribution and foreign exchange contribution.

3.   What are the main issues in agri sector of Pakistan suggest Govt. measures and policies to remove them.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is employee engagement? How does it contribute to HRD?

2. Define directive and participative management styles with examples.

3. How can career development programs help employees stay longer in a company?

4. Mention key HRD strategies used during organizational changes.

5. Why is diversity training important in the workplace?

6. Explain the impact of ethical behavior on HRD initiatives.

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

1. How does leadership training help in career development?

2. Discuss two effective methods of resolving workplace conflicts.

3. What is talent management, and how does it benefit organizations?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. What is the role of financial institutions in financial markets.

ii. Discuss the implications of debt equity ratio.

iii. Compare and contrast the expected returns on domestic and foreign assets.

iv. What do you understand by interest rate risks. Explain with example.

v. Differentiate between sterilized and unsterilized interventions using relevant examples.

vi. Briefly discuss quantity theory of money with its assumptions.

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

1. Discuss role and functions of SMEDA in the growth of short and medium level organizations of Pakistan.

2. Discuss different dividend growth models of common stocks.

3. Discuss in detail the implications of financial regulations on economic growth.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

   i.   What are the key components of mortality and how are they measured?

   ii.   Explain the concept of age-stratification theory.

   iii. Describe Lujo Brentano's theory of population.

   iv.   How does sex composition influence demographic trends?

   v.   Briefly explain the demographic trends of urbanization in Pakistan.

   vi.   Briefly describe Emile Durkheim's perspective on population.

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

1.   Discuss the Marxist perspective on population and its implications for development.

2.   Analyze the relationship between population growth and urbanization in the context of Pakistan.

3.   Discuss the causes and social consequences of migration trends in Pakistan.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers to the following concepts.   (5x6=30)

  i.   Offer curve

  ii.   Absolute advantage

  iii.   Marginal rate of substitution

  iv.   Production frontier with constant cost

  v.   Mercantilists approach towards international trade

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

  i.   Explain rate of effective protection with the help of example.

  ii.   Explain with the help of graphs how exports subsidies affect consumers.

  iii.   Explain how countries get advantage from trade under increasing costs.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Project Appraisal and Investment Analysis
Course Code: ECON-409 A

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. A telecommunication project in Pakistan requires importing network equipment worth $800,000. The official exchange rate (OER) is PKR 275 per USD, and the foreign exchange premium (FX premium) is 5%.

II. A hydroelectric power project in Pakistan requires importing turbines worth $400,000. The official exchange rate (OER) is PKR 280 per USD, and the Standard Conversion Factor (SCF) is 0.80.

III. A government is financing an education project. The total cost of the project is $600,000. The government contributes 65% of the total cost, and the remaining amount is financed through a loan from an international financial institution at an interest rate of 7% per year for 2 years. What is the total interest the government will pay on the loan over 2 years?

IV. A fishery project is being considered to generate foreign exchange through the export of fish. The domestic costs of production are $150,000, while the foreign exchange earnings from fish exports are $180,000. What is the Domestic Resource Cost (DRC) for this project?

V. A government is financing a project to build new roads in rural areas. The project costs $450,000, and it will benefit 3,000 local residents by improving transportation. How would you evaluate the cost-effectiveness of this road construction project?

VI. A government is investing in a new road network to improve transportation. The total cost of the project is $2,000,000, and it will be funded over 20 years. What is the concept of capitalization in this road network project?

Answer the following questions.   (3x10=30)

Q. 2. Find the Net Present Value (NPV) of the stream of costs and benefits, if the discount rate is 15%.

Year	Costs	Benefits
1	10	0
2	11	0
3	20	0
4	3	30
5	2	41

Q. 3. Find the Net-Benefit Investment Ratio (NKR) of the stream of costs and benefits in Q. 2., if the discount rate is 15%.

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

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Environmental and Natural Resource Economics
Course Code: ECON-410

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 is the pecuniary externality?

II. What is sustainability in the context of environment?

III. What are factors mitigating resource scarcity?

IV. What are renewable and non-renewable resources?

V. What are environmental policy instruments?

VI. What is the economic significance of biodiversity?

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

1. What is trans-boundary environmental issue in relation to global pollution?

2. Draw and discuss the environmental Kuznet's curve in the context of fossil fuels.

3. What is the difference between marginal abatement costs and marginal damage cost. How can we achieve the socially efficient level of emission. Explain this with help of a diagram?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Why we study Economic History.

ii. Motivations behind colonial expansion in Asia

iii. The Latin American revolutions

iv. Nationalist thought and indigenous response.

v. First industrial revolution

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

Q.2. Elucidate the Golden Age of Islam and the reasons of downfall.

Q.3. Explain and critically review the current global economy and lessons from economic history.

Q.4. Explain and critically review the Russian political and economic development

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Define economic growth, carefully explaining why your particular definition is the appropriate one?

ii. Explain the Malthusian Theory of Population?

iii. What does it mean to have diminishing returns to capital?

iv. What is meant by convergence in the Solow model?

v. How does openness to trade affect productivity?

vi. What is the difference between autarky and openness?

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

Q2. The level of development of a country is often measured by its per capita national output, using common measures such as gross national product (GNP) or gross domestic product (GDP). How accurately do such published measures of output represent the average level of human welfare in an economy? In other words, how closely is measured national output correlated with the true level of human welfare?

Q3. Explain the Kuznets Hypothesis. What does it suggest about the relationship between economic development and income inequality? Is the hypothesis still valid today?

Q4. To what extent can cultural traits explain differences in economic growth among countries with similar physical and human capital endowments?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Discuss criterion of good econometric model.

ii.   Under what situations, simultaneous equations can be estimated with the help of OLS?

iii.   Why we need ARMA models in empirical works?

iv.   Why use of statistical software is important for a researcher?

v.   Discuss the strategies for writing an effective conclusion.

vi.   What are the potential uses of statistical software?

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

Q.2   What is VAR model? Why we need this model? Is VAR substitute of ARIMA?

Q.3   Discuss steps to estimate demand and supply function in Eviews/SPSS or statistical software of your own choice.

Q.4   Discuss the purpose of project appraisal. What are the methods to estimate simultaneous equation models?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Write short answers to the following questions.**   **(5x6=30)**

i. Factor endowments
ii. Export subsidies
iii. Voluntary trade restrains
iv. Production Frontier
v. Marginal Rate of substitution

Q.2. **Write detailed answers to the following questions.**   **(3x10=30)**

i. Explain the effect of import quota on consumer, producer and government revenues with the help of example.
ii. Discuss through offer curve that how equilibrium relative prices are set in general equilibrium analysis.
iii. Explain with the help of example and graph that how exports subsidies are used as non-tariff barrier to the domestic market by developing and developed countries.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following questions.   (6x5=30)

i.   How do social norms affect economic outcomes?

ii.   What is the role of contracts in institutional economics?

iii.   Discuss the foundational principles of institutional economics?

iv.   What is the Coase Theorem?

v.   How does private property affect resource allocation?

vi.   What is the new institutional theory of the firm?

Write detailed answers to the following questions.   (3x10=30)

Q2.   Evaluate how the new institutional theory of the firm incorporates social, legal, and cultural institutions into the understanding of firm behavior.?

Q3.   How do secure property rights influence incentives for innovation, entrepreneurship, and wealth creation?

Q4.   Discuss the role of the Russian government in regulating key sectors of the economy such as energy, natural resources, banking, and telecommunications?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

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

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 is the pecuniary externality?

II. What is sustainability in the context of environment?

III. What are factors mitigating resource scarcity?

IV. What are renewable and non-renewable resources?

V. What are environmental policy instruments?

VI. What is the economic significance of biodiversity?

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

1. **What are the three main steps in environmental risk analysis?**
Describe the three key steps involved in analyzing risks to environmental quality. Explain each step with examples to show how risks are identified, assessed, and managed.

2. **What is the Environmental Kuznets Curve (EKC)?**
Draw the Environmental Kuznets Curve and explain how it relates to pollution caused by the use of fossil fuels. Describe the stages and what the curve implies about economic growth and environmental impact.

3. **What is the difference between marginal abatement costs and marginal damage cost.** How can we achieve the socially efficient level of emission. Explain this with help of a diagram?

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 'Spot Exchange Rate' and how is it determined?
2. Define the term 'Capital Flow' in the context of international finance and explain its significance.
3. How do forward exchange markets function, and what role do they play in hedging foreign exchange risk?
4. What is the difference between 'Speculators', 'Hedgers', and 'Traders' in the foreign exchange market?
5. Explain the concept of 'Interest Arbitrage' and its effect on exchange rates.
6. What is the role of Special Drawing Rights (SDRs) in the IMF and how do they contribute to global liquidity?

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

1. Discuss the dynamic theory of interest and exchange rate, focusing on how interest rates affect exchange rate fluctuations in international finance.
2. Explain the different methods of exchange rate determination. Compare and contrast the 'Supply and Demand' approach with the 'Monetary Model'.
3. Analyze the implications of exchange rate instability on the balance of payments of a country. How can a government respond to such instability to restore equilibrium?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Write short answers to the following questions.**   **(6x5=30)**

i. How does globalization affect local productive structures?

ii. How can public policies stimulate regional demand?

iii. What is meant by territorial competitiveness?

iv. How do factor endowments influence regional development?

v. What is the core idea of endogenous growth theory?

vi. How does geography relate to factor endowment?

Write detailed answers to the following questions.   **(3x10=30)**

Q2. What is regional economics, and how does it differ from general economics and urban economics in terms of focus and methodology?

Q3. What is the relationship between accessibility and commuting behavior, and how does it affect labor market efficiency and household well-being?

Q4. Examine how the concept of increasing returns to scale is connected to territorial competitiveness and cumulative growth. Why do some regions grow faster than others over time?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Define Poverty Gap Index and how it is measured?

ii.   Elaborate the relationship between poverty and well-being?

iii.   Define the concept of poverty profile?

iv.   Explain The FGT (Foster-Greer-Thorbecke) class of measures and its merits?

v.   Discuss the issues in choosing an absolute poverty line?

vi.   Discuss the concept of vicious circle of poverty?

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

(i) Discuss the causes of poverty in Pakistan? Also elaborate the government strategies for poverty reduction in Pakistan?

(ii) Explain the impacts and limitations of Pro-poor Growth?

(iii) What is the Generalized Entropy Measure? Define the properties of Generalized Entropy Measure?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. What is meant by the term "Riba"?
- ii. Differentiate between Mudarabah and Musharkah.
- iii. Differentiate between Participatory and Non-participatory modes of Islamic finance.
- iv. What are the key Conditions of parallel Salam?
- v. Explain Wakalah (Agency) and its significance.
- vi. Explain the term "Takaful" and its significance.

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

1. What are the key elements of Islamic Contracts? Further, explain the various types of contracts relevant to the framework of Islamic banking and finance in detail.

2. What are the challenges faced by Islamic banks in Pakistan? How can State Bank of Pakistan help to promote Islamic banking in Pakistan? Discuss in detail.

3. 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?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

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

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. Explain General equilibrium briefly?
2. What is production possibilities curve and what is its slope?
3. Differentiate between equity and efficiency?
4. Discus Pareto optimality criterion of social welfare?
5. What is Edgeworth Box?
6. What is Marginal rate of Transformation (MRT)?

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

1. Explain in detail Walrasian Equilibrium?
2. Discus the main implication of the first theorem of welfare economics?
3. Using an Edgeworth box, illustrate and explain the concept of Pareto efficiency?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following questions.   (6x5=30)

i.   What is health economics?

ii.   What is opportunity cost in health economics?

iii.   How is health care demand different from the demand for other goods?

iv.   How does having insurance change a person's health care behavior?

v.   What is meant by the "supply of health care"?

vi.   What are examples of public third-party payers?

Write detailed answers to the following questions.   (2x15=30)

Q2. Define innovation in health care and explain how it can contribute to both improving quality of care and controlling costs. Provide examples of successful innovations?

Q3. Define the demand for health care. What are the key factors that influence an individual's demand for health services? Illustrate your answer with examples?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Briefly discuss the concept of comparative education.

ii. Write a short note on the role of Quaid-e-Azam Academy for Educational Development (QAED) in promoting teacher education.

iii. What is the administrative structure of education at district level in Punjab?

iv. Write any four objectives of Pakistani educational system.

v. Briefly discuss the importance of quality education.

vi. Write a note on admission procedure at Higher Education Level.

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

i. Give details of the scientific method of comparative education.

ii. Write a comprehensive note on the education system of India.

iii. Compare the facilities and financial aspects of public and private systems of education of Pakistan.

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) Write the position of Muslim League in election 1937.

1937 کے الیکشن میں مسلم لیگ کی حیثیت تحریر کیجیے۔

(ii) What is the importance of Allahabad address of 1930?

خطبہ الٰہ آباد کی کیا اہمیت ہے؟

(iii) Write the main features of the "white paper" issued after the Round Table Conference.

گول میز کانفرنس کے انعقاد کے بعد جاری ہونے والے قرطاس ابیض کے اہم نکات تحریر کیجیے۔

(iv) What were the objectives of the Cabinet Mission?

کابینہ مشن کے مقاصد کیا تھے۔

(v) Write few lines about Lard Mountbatten.

لارڈ ماونٹ بیٹن کے بارے میں چند سطریں تحریر کریں۔

(vi) Write the main features of Lahore Resolution of 1940.

1940 میں ہونے والی قرار داد لاہور کے اہم نکات لکھیں۔

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

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

1. Describe the main characteristics of the Act of 1935.

1935 کے ایکٹ کے نمایاں خد و خال کا جائزہ لیں۔

2. Write a comprehensive essay on the political development during 1942-1947 regarding Muslims of the Sub-Continent?

(1942-47) کے دوران برصغیر کے مسلمانوں کی سیاسی جدوجہد کا احاطہ کرتے ہوئے ایک جامع مضمون تحریر کیجیے۔

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۔

1. Discus role of Sir Syed Ahmad Khan in the development of Two Nation Theory.

1- دو قومی نظریہ کی تشکیل میں سر سید احمد خان کا کردار بیان کریں۔

2. Write the important points of the Objective resolutions 1949.

2- قرار دادِ مقاصد 1949ء کے اہم نکات تحریر کریں۔

3. Write briefly about the First Constituent Assembly of Pakistan.

3- پاکستان کی پہلی آئین ساز اسمبلی کے متعلق مختصر تحریر کریں۔

4. Write any four characteristics of 1956 Constitution of Pakistan.

4- 1956 کے آئین کی چار خصوصیات تحریر کریں۔

5. Discuss the functions of Speaker of National Assembly.

5- قومی اسمبلی کے سپیکر کے فرائض بیان کریں۔

6. Write a Short note on 8th Constitutional Amendment.

6- 8 ویں آئینی ترمیم کے متعلق مختصراً تحریر کریں۔

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

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

1. Explain the reasons for the failure of 1962 constitution of Pakistan.

1- 1962ء کے آئین کی ناکامی کے اسباب بیان کریں۔

2. Write the main characteristics of the 1973 Constitution of Pakistan.

2- 1973 کے آئین کی بنیادی خصوصیات تحریر کریں۔

3. Discuss the composition and powers of Supreme Court of Pakistan.

3- پاکستان کی سپریم کورٹ کی تشکیل اور اختیارات پر بحث کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچے کو علیحدہ سے مہیا کی گئی جوابی کاپی پر حل کریں

سوال نمبر1: مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔   (6X5=30)

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

(ب): تنقیدی اصطلاح خیال آفرینی پر نوٹ لکھیں۔

(ج): صنعت تضاد کی وضاحت کریں اور دو شعری مثالیں بھی لکھیں۔

(د): درج ذیل شعر کی تقطیع کریں اور بحر کا نام بھی لکھیں:

درد دل کے واسطے پیدا کیا انسان کو

ورنہ طاعت کے لیے کچھ کم نہ تھے کروبیاں

(ہ): ادبی اصطلاح سہل ممتنع کی وضاحت کریں اور ایک شعری مثال بھی تحریر کریں۔

(و): بحر رجز مثمن (سالم) کی تعریف لکھیں اور اس کے ارکان تحریر کریں۔

سوال نمبر2: مندرجہ ذیل سوالات کے تفصیلی جواب تحریر کیجیے۔   (3X10=30)

(الف): فورٹ ولیم کالج کے مصنفین کی نگارشات کا جائزہ لیں۔

(ب): سرسید اور ان کے رفقاء کے نثری اسلوب پر بحث کریں۔

(ج): میر و سودا کے عہد کی شاعری پر نوٹ لکھیں

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 جواب تحریر کریں۔

i. Give a brief introduction of how many periods of hadith editing there are.

(الف) تدوینِ حدیث کے کتنے ادوار ہیں، مختصر تعارف کروائیں۔

ii. Six rights of a believer over another believer have been described in the Hadith. Write their details.

(ب) حدیث میں ایک مومن کے دوسرے مومن پر چھے حقوق بیان ہوئے ہیں، ان کی تفصیل لکھیں۔

iii. Write the description of Sahib Qaduri's definition of Hadith.

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

iv. Write a brief introduction of the famous Muslim botanist Ibn al-Baytar.

(د) مشہور مسلم ماہرِ نباتات ابن البیطار کا مختصر تعارف تحریر کریں۔

v. Write the conditions for valid Friday prayer.

(ہ) نمازِ جمعہ کے صحیح ہونے کی شرائط لکھیں۔

vi. Briefly describe the reasons of arise of the nation of Islam.

(و) ملتِ اسلامیہ کے عروج کے اسباب مختصر اًپیش کریں۔

Q.2.   Write down the detailed answers of the following questions.   (3x10=30)

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

i. Discuss in detail the objections of hadith deniers and their answers.

(الف) منکرینِ حدیث کے اعتراضات اور ان کے جوابات پر مفصل بحث کریں۔

ii. Write in detail the need and importance if Ijtihad in modern times.

ب) عصرِ حاضر میں اجتہاد کی ضرورت واہمیت تفصیلاً تحریر کریں۔

iii. Translate and explain the given Fiqh passage.

ج) درج ذیل فقہی عبارت کا ترجمہ و تشریح کریں۔

ویسجد للسهو ومن سها 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. Briefly describe the convoy effect in operating systems and its impact on system performance.
2. Explain bitrate and baud rate in data communication, and highlight the key differences between the two.
3. Briefly describe the conditions necessary for a deadlock to occur in an operating system.
4. Describe the concept of context switching in process scheduling and its effect on system performance.
5. Describe the differences between twisted pair, coaxial cables, and optical fiber as transmission media, and discuss the advantages and disadvantages of each.
6. Compare the advantages and disadvantages of the star topology and the bus topology.

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

1. Solve the following question using banker's algorithm?

	ALLOCATION				MAX				AVAILABLE			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	1	0	0	0	5	1	3	1	4	2	2
P1	1	0	0	0	1	2	5	2				
P2	1	0	5	2	2	0	5	2				
P3	0	1	3	1	0	2	5	2				
P4	0	0	1	2	0	3	5	3				

     I.   What is the content of the need matrix?
     II.   Is the system in a safe state?

2. Find the average waiting time using the Shortest Remaining time method Assume non preemptive scheduling?

Process	Arrival Time	Burst Time
P1	0	8
P2	2	4
P3	4	2
P4	5	4

3. Describe the OSI Model, explaining the purpose of each of its seven layers, with a particular focus on the functions of the Session Layer

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Educational Guide. & Counseling in Elementary Schools
Course Code: EDE-325

Time: 3 Hrs.   Marks: 60

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 جواب تحریر کریں۔

1:   Define guidance and counseling? Describe the importance and purpose of guidance and counseling.

رہنمائی اور مشاورت کی تعریف کریں؟ رہنمائی اور مشاورت کی اہمیت اور مقصد بیان کریں۔

2:   Describe Cumulative Record Card (CRC). Elaborate its nature and purpose. Write down the advantages of Cumulative Record Card (CRC).

جامع ریکارڈ کارڈ کی وضاحت کریں۔ اس کی نوعیت اور مقصد پر تفصیل سے روشنی ڈالیں۔ جامع ریکارڈ کارڈ کے فوائد لکھیں۔

3:   What is your understanding of the types of evaluation in guidance and counseling? Discuss in detail with examples.

رہنمائی اور مشاورت میں تشخیص کی اقسام کے بارے میں آپ کا کیا فہم ہے؟ تفصیل سے وضاحت کریں اور مثالیں پیش کریں۔

4:   In the context of guidance services, write a brief note on program evaluation.

رہنمائی خدمات کے تناظر میں، پروگرام کی تشخیص پر ایک مختصر نوٹ لکھیں۔

5:   How can we develop active listening skills among students? Explain with examples. Write down the benefits of active listening.

ہم طلباء میں فعال سننے کی مہارت کیسے پیدا کر سکتے ہیں؟ مثالوں کے ساتھ وضاحت کریں۔ فعال سننے کے فوائد تحریر کریں۔

6:   Briefly describe principles of guidance.

رہنمائی کے اصولوں کو مختصراً بیان کریں۔

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

درج ذیل سوالات کے تفصیلاً جوابات تحریر کریں۔

1:   In view of guidance services, write a detailed note on Orientation and Testing Services separately.

رہنمائی کی خدمات کے تناظر میں، تعارفی خدمات اور ٹیسٹنگ خدمات پر الگ الگ تفصیلی نوٹ لکھیں۔

2:   List down the members of counseling team. Explain the role of each member in detail.

مشاورت کی ٹیم کے اراکین کی فہرست بنائیں۔ ہر رکن کے کردار کو مختصراً بیان کریں۔

3:   What do you know about counseling techniques? Discuss different techniques of counseling. In your opinion, which one is the most effective technique? Give rationale of your choice.

آپ مشاورت کی تکنیکوں کے بارے میں کیا جانتے ہیں؟ مختلف تکنیکوں پر بحث کریں۔ آپ کی رائے میں سب سے مؤثر تکنیک کون سی ہے؟ اپنی ترجیح کی وجوہات بیان کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Differentiate 'precision' and 'accuracy' with examples?

2. Differentiate "proactive approach" and "reactive approach" with examples?

3. Differentiate 'stub' and 'driver' with examples?

4. Enlist the characteristics of a good tester?

5. Explain the concept of "regression testing" with example?

6. Explain the concept of "test case" by taking an example?

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

1. Explain the phases of "software configuration management" in details by taking examples?

2. Draw and explain the flow chart of "Software Inspection"?

3. Explain "Software Testing techniques" with an examples?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   (3x5=15)

(a) How does Brecht depict the effects of war on individuals, particularly the lower classes in *Mother Courage and her Children*? What message does this convey about the nature of war?

(b) Explain how Jean Paul Sartre's novel *Nausea* is a specimen text to reflect upon the existentialist ethos of the 20ᵗʰ century West?

(c) Explore how Hermann Hesse connects the act of creation with personal sacrifice, pain, or suffering. How does this relationship inform the poet's view of his purpose?

Q.2.   Answer the following questions.   (3x15=45)

(a) Explain in detail the importance of August Strindberg's preface of his play *Miss Julie*. Both the drama itself and its preface are notable in the history of theater. The preface is, as critic Michael Robinson claims, "the single most important manifesto of naturalism in the theatre." Explain how is it so?

(b) What is the significance of Chantal's character and death in *The Balcony* by Jean Genet?

(c) The concept of mental illness is central to "Ward No. 6." How does Chekhov challenge the conventional ideas of sanity and madness in his portrayal of the characters?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   (3x5=15)

i.   What is Iqbal pleading Muslims in the poem *The Mosque of Cordoba?*

ii.   Why and how Shireen struggles as an immigrant in *Sweet Rice* by Ameer Hussein?

iii.   What is theme of the poem Jinnah's Typewriter by Shadab Zeest Hashmi?

Q.2.   Answer the following questions.   (3x15=45)

i.   Illustrate using textual references how "Twilight in Delhi" deals with the dying culture and civilization of Muslim India.

ii.   What are the characteristic features of style of Sara Suleri in Meatless Days?

iii.   Write a detailed note on the narrative style of Tahira Naqvi's *Attar of Roses?*

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(3x5=15)**

a) What is "Reflective teaching"?
b) What is a lesson plan and why is it important?
c) What are the salient features of school level teaching -learning of English in Pakistan?

Q.2.   Answer the following questions.   **(3x15=45)**

I.   Write a detailed note on reflective teaching. Discuss "reflective journals" and "peer observation".
II.   Write a detailed note on the teaching-learning strategies for English in Pakistani Higher Education.
III.   How beneficial is "Peer Observation" for the professional development of the teachers? In what way do you think it can help Pakistan's school teachers?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   (3x5=15)

1. Which factors determine the choice of language?
2. How has Linguistic Imperialism affected the education system of Pakistan?
3. Briefly explain World Englishes.

Q.2.   Answer the following questions.   (3x15=45)

1. Discuss the importance and place of language in Education system in detail.
2. How has the globalization of English affected the teaching practices in the world? Elaborate.
3. What are the threats to minority languages? What steps can be taken for the maintenance of minority languages?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Answer the following short questions.**   (3x5=15)

i) What is "Style-shifting"? Explain with examples.

ii) Define "Speech Accommodation" with the help of suitable examples.

iii) What is "Bilingualism"? Explain with examples.

Q.2.   **Answer the following questions.**   (3x15=45)

i) Write a detailed note on language choice in multilingual communities.

ii) Discuss the factors affecting language use in a multicultural environment.

iii) Explain the language acquisition process in a bilingual environment in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1: Write a short note on live fish feed and its importance in aquaculture.

2: How birds are considered a major fish enemies? Mention their methods of control.

3: Write a short note on the objectives of aquaculture?

4: Write scientific names of the following fish species.

　　i.　　Rahu
　　ii.　　Sole
　　iii.　Pangasius
　　iv.　Rainbow trout
　　v.　　Grass carp
　　vi.　Tilapia

5: Briefly discuss the most common bacterial diseases in fish. Describe their causes, symptoms, and preventive measures.

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

1: Discuss in detail the hormonal induced breeding in Chinese carps and explain its various steps.

2: Compare and contrast extensive, semi-intensive, and intensive fish culture systems. What are the advantages and disadvantages of each method in terms of productivity and cost?

3: What do you know about artificial fish feed? Explain various types of artificial fish feed and fish feeding methods.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Give short essay on the following.   (6x5=30)

i.   Human therapy

ii.   Monoclonal antibodies

iii. Hot sterilization and cold sterilization

iv.   General scheme for detection of microorganism of food

v.   Inhibition of cell wall synthesis in microbes

vi.   Control of microorganism using gases

Answer the following questions.   (3x10=30)

Q.2   Write a detailed note on Cholera and Botulinum toxin.

Q.3   Discuss a detail note on Complementary system.

Q.4   Write a comprehensive note on types of hypersensitivity.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) Define natality and mortality in terms of population dynamics.
2) What is chemical signaling in mammals also explain types of chemical signaling in mammals.
3) Differentiate the terms home range and territoriality.
4) Write about Stenophagy and Europhagy
5) Differentiate between ovoviviparity and viviparity.
6) What is Aestivation and h Hibernation.

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

1) Write a detailed note on mammalian adaptations.
2) Explain the concept of biogeography of mammals of Pakistan.

USE SEPARATE ANSWER BOOK FOR EACH PART

BIBLE FOR CHRISTIAN STUDENTS

SECTION—I (20 marks)

Q1 Write Short answers of the following questions (25 words)   مندرجہ ذیل سوالات کے مختصر جواب تحریر کریں (الفاظ ۲۵ سے زیادہ نہ ہوں)

1. What does "Song of Songs" mean?   "غزل الغزلات" کا کیا مطلب ہے؟
2. What is the significance of the garden in Song of Songs?   غزل الغزلات میں باغ کی کیا اہمیت ہے؟
3. Who is the Shulamite woman?   شولمیت عورت کون ہے؟
4. How is wisdom described in Proverbs 3:15?   امثال 3:15 میں حکمت کو کیسے بیان کیا گیا ہے؟
5. What happens to the righteous according to Proverbs 10:25?   امثال 10:25 کے مطابق راستبازوں کے ساتھ کیا ہوتا ہے؟
6. What does Proverbs say about laziness?   امثال کی کتاب سستی کے بارے میں کیا کہتی ہے؟
7. According to James, what can the tongue do?   یعقوب کے مطابق، زبان کیا کر سکتی ہے؟
8. How does James describe worldly wisdom?   یعقوب دنیاوی حکمت کو کیسے بیان کرتا ہے؟
9. Who wrote the majority of the New Testament letters?   نئے عہد نامے کے زیادہ تر خطوط کس نے لکھے؟
10. Which city was the first major center of Christianity outside Jerusalem?   یروشلم سے باہر مسیحیت کا پہلا بڑا مرکز کون سا شہر تھا؟

SECTION—II (10+10=20 Marks)

Attempt any two questions from the following: (300)words each.   کوئی سے دو سوالات کے جواب تحریر کریں: کم از کم 300 الفاظ پر مشتمل جواب تحریر کریں

Q 2 How does the Song of Songs portray the sacredness of marriage?   غزل الغزلات کی کتاب شادی کے تقدس کو کیسے پیش کرتی ہے؟

Q 3 What was the significance of the First Council of Nicaea in the development of Christian doctrine, and what were the main theological issues addressed?   مسیحی نظریے کی ترقی میں نقایہ کی پہلی کونسل کی کیا اہمیت تھی، اور کون سے اہم مذہبی مسائل پر توجہ دی گئی؟

Q 4 How do the Epistle of James and the Sermon on the Mount emphasize the importance of righteousness in Christian life?   یعقوب کا خط اور پہاڑی واعظ کس طرح مسیحی زندگی میں راستبازی کی اہمیت پر زور دیتے ہیں؟

Q 5 What is the role of humility in Christian life according to the Epistle of James?   یعقوب کے خط کے مطابق مسیحی زندگی میں عاجزی کا کیا کردار ہے؟

SECTION—III (10+10=20 Marks)

Attempt any two questions from the following: **Q9 is compulsory.**   کوئی سے دو سوالات کے جواب تحریر کریں: سوال نمبر 9 لازمی ہے۔

Q 6 How does the Greek subjunctive mood function in conditional sentences?   شرطیہ جملوں میں یونانی مفعالی صیغہ کیسے کام کرتا ہے؟

Q 7 How do Greek participles function, and how are they used in relation to main verbs?   یونانی صفت فعلی کس طرح کام کرتے ہیں، اور وہ مرکزی فعل کے سلسلے میں کیسے استعمال ہوتے ہیں؟

Q 8 How does the Greek infinitive function in sentences?   جملے میں یونانی فعل مصدر کیسے کام کرتا ہے؟

Q 9 Exegetically explain the following verse: (any one)   مندرجہ ذیل آیت کی تفسیری وضاحت کریں۔ (کوئی ایک)

1. Εἰ δέ τις ὑμῶν λείπεται σοφίας, αἰτείτω παρὰ τοῦ διδόντος θεοῦ πᾶσιν ἁπλῶς καὶ μὴ ὀνειδίζοντος καὶ δοθήσεται αὐτῷ. (Jas 1:5)

2. Μακάριος ἀνὴρ ὃς ὑπομένει πειρασμόν, ὅτι δόκιμος γενόμενος λήμψεται τὸν στέφανον τῆς ζωῆς ὃν ἐπηγγείλατο τοῖς ἀγαπῶσιν αὐτόν. (Jas 1:12)

SECTION – I (10X2=20)

سوال نمبر1:   مندرجہ ذیل سوالات کے مختصر جوابات لکھیں۔

1. ہندو دھرم میں برہما جی، وشنو جی اور مہیش جی کو کس نام سے جانا جاتا ہے؟
2. ارجن کے رتھ پر کون کون سوار تھے؟
3. بھیشم جی کو کیا وردان ملا تھا؟
4. دریودھن کو کیا وردان ملا تھا؟
5. کرن کو کیا وردان ملا تھا؟
6. یدھشٹر کون تھے؟
7. گاندھاری کون تھی؟
8. شکنی کس کے ماما تھے؟
9. ارجن کون تھے؟
10. کرکشیتر کیا ہے؟

SECTION – II (2X10=20)

کوئی سے دو سوالات کے جوابات لکھیں۔

Q2. شکنی نے پانڈوؤں کے خلاف کیا چال چلی؟

Q3. کرن کا ماہابھارت میں کیا کردار ہے؟

Q4. پانڈوؤں نے کیا داؤ پر لگایا تھا؟

Q5. پانڈو کتنے تھے؟ اور ان کے نام بتائیں۔

SECTION – III (2X10=20)

کوئی سے دو سوالات کے جوابات لکھیں جبکہ سوال نمبر9 لازمی ہے۔

Q.6 گاندھاری کو کیا وردان ملا تھا؟

Q.7 بھگوت گیتا کے کتنے ابواب ہیں؟ اور ان کے نام لکھیں

Q.8 سنجے نے ماہابھارت میں کیا کردار ادا کیا تھا؟

Q.9 مندرجہ ذیل ہندی الفاظ کا اردو میں ترجمہ کریں

کیش   سورسریشٹ   دھنی   جیشٹ   ودھو

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Explain the philosophical view of ethics?
2. Shortly explain the types of software houses in Pakistan?
3. Explain the typical structure of a software house?
4. What are the types of "computer contracts"? Explain any two?
5. What are the main "health and safety measures" at work?
6. Explain shortly 'hacking'?

Answer the following questions.   (3x10=30)

1. Give an overview of the IEEE Code of Ethics in details?
2. Give an overview of ACM/IEEE Software Engineering Code of Ethics and Professional Practice in details?
3. Explain the main characteristics of 'professionalism'?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) What is a feasibility report?

b) What is the purpose of using summaries and abstracts in business documents?

c) Differentiate between exposition and argumentation.

d) What are the common types of business letters?

e) Define plagiarism and explain how it can be avoided in technical writing.

f) What are glossaries and bibliography in reports?

Answer the following questions.   (3x10=30)

Q.2. Write a job application letter in response to the following ad:
- Manager needed
- Bachelor in business administration
- 5 years of Experience
- Good communication and Computer skills.

Q.3. Explain briefly the different kinds of reports?

Q.4. Write a detailed note on electronic Communication and its role in business communication?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Define Spatial Analysis and briefly discuss the Spatial Analysis Techniques.

II.   What is Visualization and discusses Visualization Strategies?

III.   What is Symbolization and write Common Symbolization Techniques?

IV.   Describe Social and Ethical Issues in Spatial Data Visualization.

V.   Elaborate in detail on the Map Design Techniques.

VI.   Write down the major applications of Digital Cartography.

Answer the following questions.   (3x10=30)

Q.2. Discuss the significance of spatial resolution in digital image processing and its impact on the quality of spatial analysis results.

Q.3. Write a detailed note on Visualization and its processes.

Q.4. Evaluate the impact of map elements on design decisions.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) What is desertification, and what are some causes of this process?

2) Name Two common sources of Air pollution and explain their impact on human health.

3) Define Anthropogenic disaster and provide and example of one that has occurred in recent year.

4) Why is deforestation a significant concern and what are some consequences of deforestation?

5) Explain the concept of Population growth and discuss one positive and one negative impact of rapid growth.

6) How is a quasi-natural disaster different from other disasters, and name a recent example of one?

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

1. Explain how natural hazards are classified and give examples for each type.

2. How does global warming impact the environment and what are some simple actions individuals can take to help reduce it?

3. Why is sustainable urban management important for cities, and how can cities adopt sustainable practices to boost their resilience to natural disaster.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Briefly describe the significance of Urban Ecology.

ii.   Explain two causes and two impacts of increasing grey infrastructure in cities.

iii. Describe the importance of Biodiversity and Conservation in urban areas.

iv.   Define the term Solid Waste Management and describe any two methods used for it.

v.   Briefly discuss the strategies that can be adopted to monitor Land-use land-cover in urban areas.

vi.   What is meant by Cultural and Ecological Indicators? Briefly describe two Cultural and Ecological indicators each.

Answer the following questions.   (3x10=30)

Q. 2   Define the term Urban Environment and discuss the components of Urban Environment.

Q. 3   Discuss the major sources of pollution in Urban areas. Also, suggest three measures to reduce urban pollution in cities.

Q. 4   Explain the importance and benefits of urban green spaces (UGS) in the expanding urban centres.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

i. King Faisal

i۔ شاہ فیصل

ii. Discovery of oil in Saudi Arabia

ii۔ سعودی عرب میں تیل کی دریافت

iii. Suez Canal Crisis

iii۔ نہر سویز کا بحران

iv. Raza Shah Pehlvi

iv۔ رضا شاہ پہلوی

v. Franco-Syrian Treaty of 1936

v۔ 1936 کا فرانس شام معاہدہ

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

سوال نمبر 2: درج ذیل سوالات کے جوابات دیں۔

i.　Write a note on Arab League.

i۔ عرب لیگ پر نوٹ لکھیں۔

ii.　Discuss Gamal Abdul Naser's domestic and foreign policies.

ii۔ جمال عبدالناصر کی داخلی و خارجی پالیسیوں کا جائزہ لیں۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Paper: Muslim Contribution to Arts, Science and Architecture
Course Code: HIS-406

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)

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

i. Make a list of known Muslim painters.

i۔ نامور مسلمان نقاش کی فہرست تیار کریں۔

ii. Muslim started new trends in medicine, Narrate.

ii۔ مسلمانوں نے طب میں نئے اصول متعارف کروائے۔ بیان کریں

iii. Who were the best Muslim astronomers?

iii۔ مشہور مسلمان ماہر فلکیات کون تھے؟

iv. Muslim were best Chemist. Comment.

iv۔ مسلمان بہترین کیمسٹ تھے بحث کریں۔

v. Discuss the few Muslim Musicians.

v۔ چند مسلمان موسیقاروں پر بحث کریں۔

Answer the following questions.   (2x15=30)

درج ذیل سوالات کے جوابات دیں۔

Q. No. 2. What was the Muslim concept of science amongst the Muslim? Discuss.

سوال نمبر 2۔ مسلمانوں میں سائنس کا مسلم تصور کیا ہے؟ بحث کریں۔

Q. No. 3. Write a detailed note on the Muslim architecture.

سوال نمبر 3۔ مسلمان فن تعمیرات پر نوٹ لکھیں۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Pakistan's Economy - An Historical Survey
Course Code: HIS-407

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 was the impact of Import Substitution Policy on industrialization in Pakistan between 1947 to 1971?

ii.   What is the role of National Finance Commission in fiscal federalism in Pakistan?

iii.   How Ayub Khan's economic policy resulted in income disparity across different regions and social groups in Pakistan?

iv.   What were the five key features of Green Revolution?

v.   What are the main factors behind the chronic issue of fiscal deficit in Pakistan?

vi.   What is meant by political economy?

Answer the following questions.   (2x15=30)

Q.2. Write a detailed critical essay on Bhutto's nationalization policy highlighting its impact on Pakistan's economy during 1970s and beyond.

Q.3. What is meant by fiscal deficit? What are the main factors behind the chronic issue of fiscal deficit in Pakistan?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

i. Discuss social system

i۔ معاشرتی نظام پر بحث کریں۔

ii. Define the concept of culture.

ii۔ ثقافت کا تصور بیان کریں۔

iii. What is culture relativism.

iii۔ ثقافتی رشتے داری کیا ہے۔

iv. Narrate traditionalism.

iv۔ روایت پسندی کیا ہے۔

v. Briefly discuss the culture of Punjab.

v۔ پنجاب کی ثقافت پر بحث کریں۔

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

درج ذیل سوالات کے جوابات دیں۔

Q. No. 2. Briefly define the political institution in Pakistan.

سوال نمبر 2۔ پاکستان میں سیاسی ادارے کی مختصر وضاحت کریں۔

Q. No. 3. What are the causes of cultural dis integration in Pakistan? Discuss

سوال نمبر 3۔ پاکستان میں ثقافت کے ٹکراو کی وجوہات کیا ہیں؟ بحث کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

i. Industrial Revolution

i۔ صنعتی انقلاب

ii. Seven Year War

ii۔ سات سالہ جنگ

iii. George III

iii۔ جارج سوئم

iv. French Revolution 1789

iv۔ انقلاب فرانس 1789

v. Reform Act of 1832

v۔ 1832 کا ریفارم ایکٹ

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

سوال نمبر 2:   درج ذیل سوالات کے جوابات دیں۔

i. Write a note on era of Queen Anne.

i۔ ملکہ این کے عہد پر نوٹ لکھیں۔

ii. Write a note on Liberal Party.

ii۔ لبرل پارٹی پر نوٹ لکھیں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1- Define Sports Medicine

2. What do you mean by Cryotherapy?

3. Write the importance of first aid in Sports.

4- Write Cardiac reserve Capacity

5 - What are the Principles of Rehabilitation?

6 - Differentiate between Isometrics and isokinetic exercises.

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

1. Discuss:

(i) Lungs ventilation during rest and Exercise.

(ii) Change in lungs diffusion during muscular Activities

2 - What is the role of Physical Educators and coaches in the prevention of Sports injures

3. Define Doping. Write down the effects of doping on athlete

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Curriculum Development in Physical Education (Major 9)
Course Code: HPE-412

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. Explain the Responsibilities of Curriculum Coordination Committee

2. Explain how we can Measuring Progress in Elementary School?

3. Explain Co-education Planning in Physical Education Curriculum?

4. What is Flexible Scheduling?

5. Define Measurement and Evaluation?

6. Define Curriculum Design?

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

1. Explain in your own words the Factors Effecting Physical Education Curriculum?

2. Explain in detail Curriculum Opinion and Task in Curriculum Planning?

3. What is Curriculum Development? Being a Physical Education Teacher, how you develop Curriculum for the Students of Primary School Level?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Adopted Physical Education (Major 10)
Course Code: HPE-413

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.   Highlight the Concept of Special Population with Reference to Dark Age?

ii. Define Special Population and Its Classification?

iii Define Mental Retardation and Its Category?

iv   Define Partial Sighted and Blind?

V   Define Mild and Moderate Physical Disability?

Vi   Explain Factors Affecting Adjustment?

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

i.   Define Physical Education? Also Explain the Concepts of Special Population in our Society.

ii. Explain Preparation and Protocol for Paralympics?

iii Define Teaching? Also write down the Methods of Teaching with Special Reference to Special Population?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Translate the following verses into Urdu or English Language. (5x4=20)

سوال نمبر1: مندرجہ ذیل آیات مبارکہ کا اردو/انگریزی میں ترجمہ کریں۔

1. وَ الطُّوْرِ وَ كِتٰبٍ مَّسْطُوْرٍ فِیْ رَقٍّ مَّنْشُوْرٍ وَّ الْبَیْتِ الْمَعْمُوْرِ۔

2. اَلرَّحْمٰنُ عَلَّمَ الْقُرْاٰنَ خَلَقَ الْاِنْسَانَ عَلَّمَهُ الْبَیَانَ الشَّمْسُ وَ الْقَمَرُ بِحُسْبَانٍ۔

3. قَدْ سَمِعَ اللهُ قَوْلَ الَّتِیْ تُجَادِلُكَ فِیْ زَوْجِهَا وَ تَشْتَكِیْ اِلَی اللهِ وَ اللهُ یَسْمَعُ تَحَاوُرَكُمَاۤ اِنَّ اللهَ سَمِیْعٌ بَصِیْرٌ۔

4. سَبَّحَ لِلهِ مَا فِی السَّمٰوٰتِ وَ مَا فِی الْاَرْضِ وَ هُوَ الْعَزِیْزُ الْحَكِیْمُ یٰۤاَیُّهَا الَّذِیْنَ اٰمَنُوْا لِمَ تَقُوْلُوْنَ مَا لَا تَفْعَلُوْنَ۔

5. یُسَبِّحُ لِلهِ مَا فِی السَّمٰوٰتِ وَ مَا فِی الْاَرْضِ لَهُ الْمُلْكُ وَ لَهُ الْحَمْدُ وَ هُوَ عَلٰی كُلِّ شَیْءٍ قَدِیْرٌ۔

سوال نمبر2: ''رسول'' کے ساتھ ضمائر متصل لگائیں اور ان کے معانی بتائیں۔ (10)

Use attached pronouns with "رسول" and give their meanings.

معانی	الفاظ	معانی	الفاظ
	رسولُ+كُمْ		رسولُ+هُ
	رسولُ+كِ		رسولُ+هُمْ
	رسولُ+كُنَّ		رسولُ+هَا
	رسولُ+ي		رسولُ+هُنَّ
	رسولُ+نَا		رسولُ+ك

سوال نمبر3: مندرجہ ذیل الفاظ کا اردو/انگریزی میں ترجمہ کریں۔ (10)

Write the meanings of the following Qur'anic words.

معانی	الفاظ	معانی	الفاظ
	لَحْمٌ		الْجِبَالُ
	مَجْنُوْنٌ		الْمُتَّقِیْنَ
	حُطَامًا		زَوْج
	الرَّحِیْمُ		ذُرِّیَّة
	الْجَحِیْمُ		فَاكِهَة

سوال نمبر4: مندرجہ ذیل الفاظ کی مد دسے واحد کی جمع لکھیں۔ (10)

Write the plural with the given words.

أنهار، أراضی، بيوت، آيات، أمثال، أحاديث، ابناء، آباء، مجرمين، كواكب، بطون، أصحاب، صادقين، مواقع، نجوم، مطهرون، صدور، رجال، أزواج، ظلمات

جمع	واحد	جمع	واحد	جمع	واحد	جمع	واحد
	صادق		نجم		مجرم		مثل
	آية		أب		نهر		رجل
	ابن		حديث		أرض		بيت
	مطهر		صاحب		صدر		ظلمة
	موقع		بطن		كوكب		زوج

سوال نمبر5: آیات کو اُن کے ترجمے سے لکیر کے ذریعے ملائیں۔ (10)

Match the verses with lines to the translation.

ترجمہ	آیات
وہاں پر وہ نہ کوئی بے ہودہ بات سنیں گے، اور نہ کوئی جھوٹی بات۔	1. عَمَّ يَتَسَآءَلُوْنَ عَنِ النَّبَإِ الْعَظِيْمِ۔
یہ (کافر) لوگ کہتے ہیں کہ: "کیا ہم پہلی والی حالت پر لوٹا دیئے جائیں گے؟	2. وَّ سُيِّرَتِ الْجِبَالُ فَكَانَتْ سَرَابًا۔
اور اس کی رات کو اندھیری بنایا ہے، اور اس کے دن کی دھوپ باہر نکال دی ہے۔	3. لَا يَسْمَعُوْنَ فِيْهَا لَغْوًا وَّ لَا كِذَّابًا۔
اور پہاڑوں کو چلایا جائے گا تو وہ ریت کے سراب کی شکل اختیار کر لیں گے۔	4. يَقُوْلُوْنَ ءَاِنَّا لَمَرْدُوْدُوْنَ فِي الْحَافِرَةِ۔
یہ (کافر) لوگ کس چیز کے بارے میں سوالات کر رہے ہیں۔ اس زبردست واقعے کے بارے میں۔	5. وَ اَغْطَشَ لَيْلَهَا وَ اَخْرَجَ ضُحٰهَا۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچے کو علیحدہ سے مہیا کی گئی جوابی کاپی پر حل کریں

سوال نمبر 1: مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔   (6X5=30)

1. علوم القرآن کی تعریف اور اہمیت بیان کریں۔

2. تفسیر کے مصادر عہد نبوی اور عہد صحابہ میں کیا تھے؟ مختصر بیان کریں۔

3. عہد تابعین میں تفسیر کے مصادر کون سے تھے؟ مختصر بیان کریں۔

4. تفسیر بالماثور کا مفہوم لکھیں، نیز تین مشہور کتب تفسیر بالماثور کے نام تحریر کریں۔

5. التفسیر الاشاری کی تعریف لکھیں، نیز دو مشہور کتب التفسیر الاشاری کے نام لکھیں۔

6. مجدد دین کی تلبیسات کا مختصر تعارف پیش کریں۔

سوال نمبر 2: درج ذیل سوالات کے تفصیلی جوابات تحریر کریں۔   (3X10=30)

1. تفسیر اور تاویل کی تعریف کے ساتھ ان کے درمیان فرق بھی واضح کریں۔ نیز ان دونوں کے تفسیری ادب میں کردار پر مفصل نوٹ تحریر کریں۔

2. تفسیر بالماثور اور تفسیر بالرأی کے مناہج کا تقابلی جائزہ پیش کریں۔ نیز تفسیر بالرأی المحمود والمذموم کے نمایاں تفسیری کاموں پر سیر حاصل بحث کریں۔

3. الدخیل فی التفسیر کی تعریف اور اقسام بیان کریں۔ نیز مفسرین اور محدثین کے لیے اس علم کی ضرورت واہمیت بیان کرتے ہوئے اسرائیلیات، احادیث موضوعہ، اور شطحات صوفیاء کے اثرات کا تنقیدی جائزہ پیش کریں۔

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<div dir="rtl">

اس پرچے کو علیحدہ سے مہیا کی گئی جوابی کاپی پر حل کریں

</div>

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

<div dir="rtl">

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

</div>

1. Write down the types of Shirakat with examples.

<div dir="rtl">

١.   شرکت کی اقسام مع امثلہ تحریر کریں۔

</div>

2. In which items or transactions is Mudarabah prohibited?

<div dir="rtl">

٢.   مضاربت کن اشیاء اور معاملات میں جائز نہیں ہے۔

</div>

3. What is the ruling if the capital in Mudarabah is lost?

<div dir="rtl">

٣.   اگر مضاربت کا مال ضائع ہو جائے تو اس کا حکم کیا ہو گا۔

</div>

4. What is meant by Shirakat Wujuh? Give examples.

<div dir="rtl">

٤.   شرکت وجوہ سے کیا مراد ہے مثال دیں۔

</div>

5. What are the essential conditions for the validity of a sale (Bai')?

<div dir="rtl">

٥.   بیع کے صحیح ہونے کی بنیادی شرائط کیا ہیں۔

</div>

6. Write a Quranic verse related to the permissibility of sales with translation.

<div dir="rtl">

٦.   بیع کے جواز پر قرآنی آیت مع ترجمہ لکھیں۔

</div>

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

<div dir="rtl">

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

</div>

1. Explain in detail the types of permissible Shirakat with examples.

<div dir="rtl">

١.   شرکت کے جواز کی اقسام مع امثلہ تفصیلا بیان کریں۔

</div>

2. Discuss the conditions of Mudarabah in detail, including juristic opinions.

<div dir="rtl">

٢.   مضاربت کی شرائط بیان کرتے ہوئے فقہاء کی آراء کا تفصیلی جائزہ پیش کریں۔

</div>

3. Add diacritical marks (I'rab) to the following text and translate it:

<div dir="rtl">

٣.   مندرجہ ذیل عبارت پر اعراب لگا کر ترجمہ لکھیں:

والکلام فی الاقالۃ فی مواضع، فی بیان رکن الاقالۃ، وفی بیان ماھیۃ الاقالۃ، وفی بیان شرائط صحۃ الاقالۃ، وفی بیان حکم الاقالۃ أما فھو رکنھا فھو الایجاب من أحد العاقدین والقبول من الآخر، فإذا وجد الایجاب من أحدھما والقبول من الآخر بلفظ یدل علیہ فقد تم الرکن، لکن الکلام فی صیغۃ اللفظ الذی ینعقد بہ الرکن فنقول: لا خلاف أنہ ینعقد بلفظین یعبر بھما عن الماضی بأن یقول أحدھما: أقلت، والآخر: قبلت أو رضیت أو ھویت ونحو ذلک، وھل ینعقد بلفظین یعبر بأحدھما عن الماضی وبالآخر عن المستقبل بأن قال أحدھما الصاحبہ: أقلنی، فیقول: أقلتک، أو قال لہ: جئتک لتقیلنی، فقال: أقلت، قال: قال أبوحنیفۃ وأبویوسف رحمھما اللہ: ینعقد کما فی النکاح، وقال محمد: لاینعقد إلا بلفظین یعبر بھما عن الماضی کما فی البیع.

</div>

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچے کو علیحدہ سے مہیا کی گئی جوابی کا پی پر حل کریں

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

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

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

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

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

اس پرچے کو علیحدہ سے مہیا کی گئی جوابی کاپی پر حل کریں

(6x5=30)   سوال نمبر1:   درج ذیل سوالات کے مختصر جوابات درکار ہیں۔

1۔ مارشل اور آدم سمتھ نے معاشیات کی کیا تعریف کی ہے وضاحت کریں۔

2۔ عشر اور عشور کا فرق واضح کریں۔

3۔ مال غنیمت اور مال فے کا فرق لکھیں۔

4۔ مضاربت کے چند اصول لکھیں۔

5۔ تفاوت دولت سے کیا مراد ہے قرآن مجید کی روشنی میں وضاحت کریں۔

6۔ انفاق فی سبیل اللہ سے کیا مراد ہے اسکی فضیلت بیان کریں۔

(3x10=30)   درج ذیل سوالات کے تفصیلی جوابات لکھیں۔

سوال نمبر2۔ معاشیات اور اقتصادیات میں کیا فرق ہے معاشیات کا نفس مضمون کیا ہے انسانی زندگی میں معیشت کی اہمیت لکھیں۔

سوال نمبر3۔ زمین کی اقسام کی وضاحت کریں نیز اسلامی نقطہ نظر میں زرعی پیداوار پر ٹیکس کا کیا تصور ہے وضاحت کریں۔

سوال نمبر4۔ محنت کی عظمت قرآن و سنت میں واضح کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Explain the concept of public and private keys in cryptography.
II.   What is the purpose of a certificate authority (CA) in secure communications?
III. Explain the Symmetric encryption techniques Substitution and Transposition in detail.
IV.   What is a DoS (Denial of Service) attack, and how can it affect a network?
V.   Explain the role of hardware and software-based security solutions to protect a network.

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

I.
How do software updates and patch management contribute to network security? Discuss the importance of regularly updating systems to fix vulnerabilities and protect against exploits.

II.
What is social engineering, and how does it pose a threat to network security? Discuss basic techniques used by attackers and preventive measures like employee training and awareness programs.

III.
What is the importance of security logs and auditing in a network? Explain how basic log management can help in detecting unauthorized access and maintaining accountability.

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

1. Define 'quality' with example?

2. Differentiate 'accuracy' and 'precision' with examples?

3. Differentiate 'testing' and 'debugging' with examples?

4. Define and explain "test case"?

5. Differentiate "black box testing" and "white box testing" with examples?

6. Differentiate "walk through" and "buddy checking" with examples?

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

1. Explain" software testing life cycle" in details by taking examples?

2. Explain "testing strategy" in details?

3. Why "integration testing" is conducted? Explain its types with examples?

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

1) Distinguish between Normal Profit and Abnormal Profit that organizations obtain in a market.
2) Explain the effect of <u>Increasing Population</u> and <u>Increased Income</u> on the <u>demand for clothes</u>. with the help of a graph.
3) Explain the state of an economy along the downward movement of the Business Cycle.
4) Calculate the <u>Gross Domestic Product</u>, if consumption =3500, Aggregate Investments=2740, Government Expenditures=4500, Exports=760 and Imports=340.
5) Calculate <u>income elasticity of demand</u>, if the percent change in income is 35% and the percent change in quantity demanded is 105%.

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

i.
Define elasticity and explain its uses. Calculate the Price Elasticity of Demand of commodity X if,

Price of X (in Rupees)	Quantity Demanded of X (in Kgs)
35	2500
45	1500

ii.
Define Fiscal Policy objectives and Explain the role of Fiscal Policy tools in controlling Inflation in an economy.

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

i. Show that if A is the set of rational numbers between 0 and 1 and $\{I_n\}$ finite collection of open intervals that $A \subseteq \cup_n I_n$ then $\sum_n L(I_n) \geq 1$.

ii. Define Algebra of sets and $\sigma -$ algebra of sets. Is Algebra of sets a ring of sets. Justify your claim.

iii. Show that for any set A and $\epsilon > 0$ there is an open set O such that $A \subseteq O$ and $m^*(O) < m^*(A) + \epsilon$.

iv. Show that Every Borel set is measurable.

v. Show that sine function is measurable.

vi. Show that Lebesgue outer measure is countable subadditive.

     Solve the following.   **(3x10=30)**

Q. No. 2   Show that a Step function f with measurable domain is measurable.

Q. No. 3   Define the term *almost everywhere* (a.e). Let f be a measurable function with $f = g$ a.e on D. Show that g is also measurable.

Q. No. 4   Show that if f is measurable then $\{x \in R : f(x) = \alpha\}$ is measurable for $\alpha \epsilon R$. Does the converse hold. Justify your claim.

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Q.1.   Solve the following.   (6x5=30)

(i) Find the solution of following differential equation by using perturbation technique. $\frac{dy}{dt} = -y, y(0) = 1$
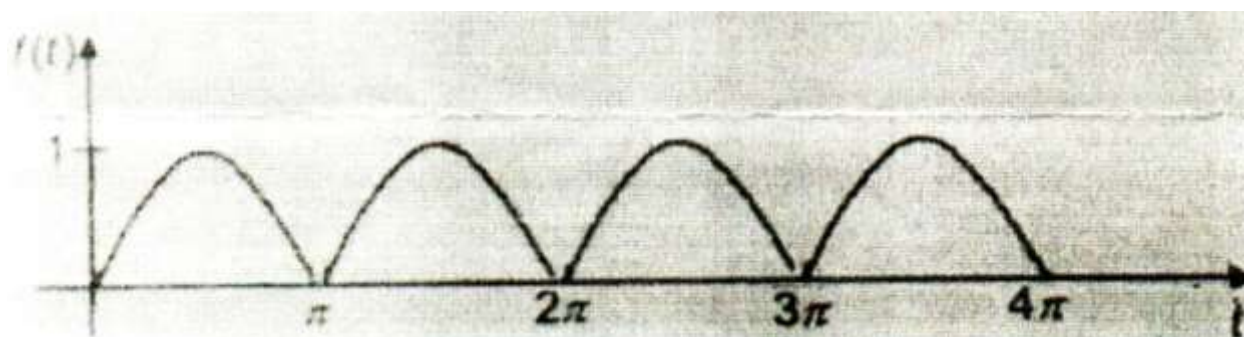
(ii) Construct Green's function, associated with B.V.P.
$$y'' + \lambda y = 0 \quad y'(0) = 0, \ y(1) = 0$$

(iii) Evaluate $\mathcal{L}\{(t-1)^3 e^{t-1} u(t-1)\}$.

(iv) Find Fourier sine transform of $f''(x)$.

(v) Find extremal for The Problem where $I = \int_0^1 (y^2 + y'^2)dx, y(1) = 1$

(vi) Find Laplace transform of the following periodic function.

Solve the following.   (3x10=30)

Q. 02 Find the Fourier Transform of the expression
$$\nabla^2 u = u_{xx} + u_{yy} + u_{zz}$$

Q. 03 Find eigen values and eigen function of functional
$$I = \int_0^3 \left((2x+3)^2 y'^2 - y^2 \right) dx$$

subject to end point condition $y(0) = 0, y(3) = 0$ with Side condition $\int_0^3 y^2(x)dx = 1$.

Q. 04 Solve $y'' - 9y' + 20y = 1 \ y(0) = 0, y'(0) = 1$ by using Laplace transformation.

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

(i). Derive the composite form of Simpson's one-third rule of numerical integration.

(ii). Solve the difference equation.

$$y_{k+3} + 6y_{k+2} + 11y_{k+1} + 6y_k = 0$$

(iii). Apply Taylor's series method of order two to find the value of $y(1.2), y(1.4)$ correct to two decimal places

$$\frac{dy}{dx} = xy^3 \; ; y(1) = 1 , h = 0.2$$

(iv). Find $y'(0)$ from the following table.

x	0	1	2	3	4	5
y	6	18	25	47	56	60

(v). Evaluate $\int_0^{0.4} f(x)dx$, from the following data using Trapezoidal rule of numerical integration.

x	0	0.1	0.2	0.3	0.4
f(x)	0	15	55	90	160

Solve the following.   **(3x10=30)**

Q.2) Compute the integral $\int_0^{\pi/2} \sqrt{1 - 0.162\sin^2\phi} \; d\phi$ by Weddle's rule (take $n=12$).

Q.3) Solve the differential equation $y' = 3\,t\,y^2 \; ; y(0) = 1$ using Runge-Kutta method of order 4 by taking $h = 0.2 \; ; 0 \leq t \leq 0.4$.

Q.4) Solve the difference equation.

$$y_{k+2} - 4y_{k+1} + 4y_k = 4^k + 2^k + 16$$

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

(i)	If the probability density of X is given by $f(x) = \begin{cases} 2x(1-x), & 0 < x < 1 \\ 0, & otherwise \end{cases}$, then find the probability density of $Y = X^3$.
(ii)	Write the partitioning and additive properties for Chi. Square distribution.
(iii)	If $\sum(y - \bar{y})^2 = 646$ and $\sum(\hat{y} - \bar{y})^2 = 619.14$ find coefficient of determination.
(iv)	Show that correlation coefficient is independent of Origin and scale.
(v)	If λ, μ are the deviations of the random variable X and Y from their respective means. Then show that : $r = 1 - \frac{1}{2N}\sum\left(\frac{\lambda_1}{\sigma_x} - \frac{\mu_1}{\sigma_y}\right)^x$
(vi)	Write down the properties of least square regression line.

Solve the following.   **(3x10=30)**

Q.2	Derive the probability density function of F-distribution.
Q.3	If X has the standard normal distribution, find the probability density of X^2.
Q.4	Prove that Chi-square distribution tends to Normal Distribution as the number of degrees of freedom 'n' approaches to infinity.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following.

(i)	Write a command in Mathematica to find the conjugate of complex number $41 - 60i$.	(3)
(ii)	Write a command in Mathematica to take the union of three sets where $A = \{i, j, k\}$, $B = \{r, l, f\}$, $C = \{p, l, n\}$.	(4)
(iii)	Write a command in Mathematica to find the highest power of z in the expression $2 + 9z + 9z^2 + 6z^3 + 7z^8 + 8z^5$.	(1)
(iv)	Write a command in Mathematica to Evaluate $\int\int (6x^2 + 15xy)dydx$.	(4)
(v)	Write a command in Mathematica to cancel common factors between numerator and denominator of the expression $\frac{(x^2-1)}{x+1}$.	(4)
(vi)	Write a command in Mathematica to solve $x^5 - 4x^4 - 6x^3 + 3x^2 - 2 = 0$.	(3)
(vii)	Write a command in Mathematics to draw the graph of $\cos xy + \csc x^2$, with $0 \le x \le 3$, $-4 \le y \le 4$.	(4)
(viii)	Write a command in Mathematics to solve the differential equation $\frac{dy}{dx} = 2 - x$.	(4)

Solve the following.   **(3x10=30)**

Q2.	Write a program to solve the following nonlinear equation using Bisection method $x^4 - 3x^3 + 2x^2 - 10 = 0$.	(8)
Q3.	Write a program for the solution of IVP $\frac{dy}{dx} = \frac{y-x}{y+x}$, using modified Euler's method at $x = 1.2$ with $y(0) = 1$ taking $h = 0.2$.	(8)
Q4.	Write a program to evaluate the integral $\int_2^8 \frac{dx}{x^4+1}$, using Boole's rule for $n = 12$.	(7)
Q5.	The following data gives corresponding values of pressure and specific volume of super heated steam 	P	5	15	21	35	46	 	V	12	16.5	11	9.1	27	 Write a program to find V when P=17, using Newton's divided difference interpolation formula.	(7)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following.   (6x5=30)

i)   Define derived series and central series and construct these for Q_8.

ii)   Prove that S_3 and S_4 are solvable but for $n \geq 5$ S_n is not solvable.

iii)   Let $G = G_0 \supset G_1 \supset ... \supset G_k = E$ be a normal series for G. Then prove that $G_i \supseteq \gamma_i(G)$, where $\gamma_i(G)$ is ith term of lower central series.

iv)   Write a note on general linear group and special linear group.

v)   Prove that the order of every non-identity element of free group is infinite.

vi)   Let G be a nilpotent group and H be a subgroup of prime index in G. Then prove that H is normal in G.

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

i)   Prove that a finite group G is nilpotent if and only if G is the direct product of its Sylow p-subgroups.

ii)   Let G be a nilpotent group and H be a proper subgroup of G. Then prove that $H \subset N_G(H)$.

iii)   Prove that a group G is solvable if and only if normal subgroup N of G and factor group $\frac{G}{N}$ is solvable

iv)   Prove that the Frattini subgroup of a finite group is nilpotent.

v)   Prove that direct product of finite number of solvable groups is solvable.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following.   (6x5=30)

(i)   Let R be a ring, M and N be R-modules then $\phi : M \to N$ defined by $\phi(x) = 0_N, \forall x \in M$ is module homomorphism.

(ii)   Show that every finitely generated R-module is homomorphic image of Free R-module.

(iii) Define Torsion element and torsion module.

(iv)   It T is a homorphism of M on to N with $K(T) = A$, Prove that N is isomorphic to M/A.

(v)   Show that every vector space over a field F is torsion free.

(vi)   Let R be a ring and M,N be two R-modules and $\phi : M \to N$ be a module homomorphism from M into N then ϕ is homormorphism iff $Ker\phi = \{0_M\}$.

Solve the following.   (3x10=30)

Q.2   Prove that a module M satisfies the ascending chain condition for sub-module if and only if every sub-module of M is finitely generated.

Q.3   Let R be a ring and M be an R module and $f: M \to M$ be a module homomorphism such that $f^2 = f$. Show that $M = Kerf \oplus Imf$

Q.4   Let M be an R-module. Show that for any $0 \neq a \in M$, the set
$$Ann(a) = \{q \in R : qa = 0_M\} \text{ is ideal of } R.$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following: **(6x5=30)**

(I)	If K is an algebraic number field then show that $\alpha \in K$ is a unit if and only if $N(\alpha) = \pm 1$.
(II)	Find the solution of quadratic congruence $3x^2 + 9x + 7 \equiv 0 \pmod{13}$.
(III)	Show that the only unit elements in the Gussian ring $Z[i]$ are $1, -1, i, -i$.
(IV)	Find the minimal polynomial for the given algebraic number $\sqrt[5]{2 + \sqrt{2}}$.
(V)	Find all the unit elements of the ring $\mathbb{Z}_3[i]$.
(VI)	Define quadratic residue. Find all the quadratic residues of 37 and 41.

Solve the following.   **(5x6=30)**

|	
Q2	If $\alpha_1, \alpha_2, \cdots, \alpha_t$ and $\beta_1, \beta_2, \cdots, \beta_s$ are both basis for K over F then show that $s = t$.
Q3	If p is an odd prime then, show that $$\left(\frac{2}{p}\right) = \begin{cases} 1, & if\ p \equiv \mp 1 \pmod 8); \\ -1, & if\ p \equiv \mp 3 \pmod 8). \end{cases}$$
Q4	State and prove Gauss' Quadratic Reciprocity Law.
Q5	Let $N(\alpha)$ be the norm of α then show that (a) $N(\alpha)$ is a rational integer, (b) $N(\alpha\beta) = N(\alpha)N(\beta)$.
Q6	Prove that the product of primitive polynomials is primitive.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Write the following linear programming problem in the matrix form:
Maximize $z = 6x_1 + 3x_2 + 4x_3$ subject to $x_1 + x_2 + x_3 \leq 5$, $2x_1 + x_2 \leq 5$, $x_1 + 3x_2 + 2x_3 \leq 10$, $x_1 \geq 0$, $x_2 \geq 0$, $x_3 \geq 0$.

ii. Write a note on parametric linear programming.

iii. In dynamic programming, explain the curse of dimensionality and discuss how it affects the efficiency of solving large-scale problems.

iv. Using shortest path algorithm, find the shortest path from node A to node D in the following directed graph:
$A \rightarrow B = 5$, $A \rightarrow C = 3$, $B \rightarrow D = 6$, $C \rightarrow D = 2$.

v. In the following network, compute the maximal flow from A to E:
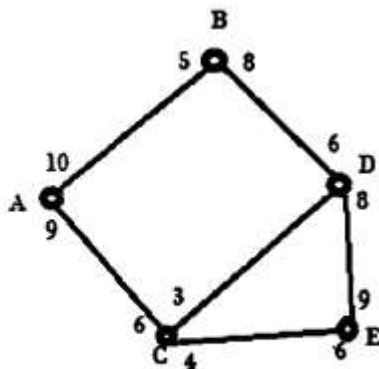
vi. Describe the main steps of Floyd's algorithm.

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

i. Solve the following integer linear programming problem:
Minimize $z = 7x_1 + 6x_2$
subject to $2x_1 + 3x_2 \leq 10$, $4x_1 + x_2 \leq 5$, $x_1, x_2 \geq 0$ and integers.

ii. Find the optimal value of the following problem using dynamic programming.
Maximize $z = x_1 + 2x_2$
subject to $x_1 + x_2 \leq 6$, $2x_1 + x_2 \leq 8$, $x_1, x_2 \geq 0$.

iii. Consider the following linear programming problem:
Maximize $z = 3x_1 + 2x_2$ subject to $x_1 + x_2 \leq 4$, $2x_1 + x_2 \leq 6$, $x_1, x_2 \geq 0$.
Solve the problem using the revised simplex method.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Define Uniform B-Spline.

2. Given three control points P, Q, R, explain the steps involved in computing a point on the quadratic Bézier curve using the De Casteljau algorithm.

3. Define the Degree Reduction Algorithm.

4. State and prove the Affine Invariance property for Bernstein Bezier curve.

5. Define Bernstein Bézier quadratic patch

Q.2.   Solve the following.   (3x10=30)

1. Find the clamped cubic spline $S(x)$ that passes through (0, 0.0), (1, 0.5), (2, 2.0) and (3, 1.5) with the endpoint conditions $S'(0) = 1$, $S'(3) = -1$.

2. Determine and show that $N_{-2}^{(4)}(t)$ are continuous at konts.

3. Consider the cubic Hermite interpolatory function, derive a matrix form for periodic end conditions.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Solve the following.   (6x5=30)

(i)   Discuss the flow due to a source in the presence of a wall? Find the complex velocity potential and pressure distribution in this case.

(ii)   State and prove the Milne-Thomson circular theorem.

(iii)   Express the relationship between stress and strain rate for a viscous Newtonian fluid.

(iv)   What are parallel flows? Discuss generalized Couette flow.

(v)   Define Stokes' stream function? Discuss it briefly.

(vi)   What is Hagen-Poiseuille flow? Prove that the ratio between the mean velocity and maximum velocity for this flow is $\frac{2}{3}$.

Solve the following.   (3x10=30)

Q. 2   What is Karman's vortex street? Find the complex velocity potential and components of vortices.

Q. 3   Derive Navier-Stokes equation of motion for a compressible viscous fluid. Also, write its form for an incompressible viscous fluid.

Q. 4   A circular cylinder is fixed across a stream of velocity U with circulation Γ round the cylinder. Show that the maximum velocity in the liquid is: $2U + \frac{\Gamma}{2\pi a}$, where a is the radius of the cylinder.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   List and briefly explain a few key applications of plasma in science and technology.

II.   Define black body radiation and explain its fundamental properties.

III.   Derive covariant form of equation of continuity.

IV.   What are retarded vector and scalar potentials? Discuss their significance.

V.   Briefly describe plasma oscillations and their physical interpretation.

VI.   What are right and left circularly polarized waves? Explain with proper definitions.

Answer the following questions.   (3x10=30)

Q.2   Derive the Fresnel coefficients for a plane electromagnetic wave incident normally on the boundary between two non-conducting media. Clearly explain the reflection and transmission phenomena in your derivation.

Q3   Describe the Ruby Laser in detail. Provide a comprehensive explanation of its construction and operational principles.

Q.4   Provide a detailed explanation of Debye shielding in plasma physics. Derive the expression for the Debye shielding distance and elaborate on its physical significance.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(i) Explain the difference between a compound nucleus process and a resonance reaction?

(ii) Explain the level width and its effect on the energy release in a nuclear reaction.

(iii) How can we use a neutron capture reaction to determine the energy and spin-parity of the capturing state?

(iv) When a nucleus assumes a non-spherical deformation, which specific terms in the semi-empirical binding energy are most significantly modified? Among these contributing terms, which one must become dominant to drive nuclear fission?

(v) What kind of moderator would be the most suitable to slow down the fast neutrons? Explain.

(vi) Why do fission isomers have relatively small activation energy for fission?

Q.2.   Answer the following questions.

(i) (a) Explain the Compound nucleus theory of the Nuclear reactions? Why do these reactions take longer to complete as compared to direct reactions? What other differences do compound nucleus reactions have with the direct reactions? [05]

(b) The five highest energy α's emitted by ^{242}Cm have energies (in MeV) of 6.113, 6.070, 5.972, 5.817, 5.609. Each state is connected with the state directly below it by a γ transition. Calculate the energies of the γ rays.[05]

(ii) (a) For the nuclear reaction: [05]

$$a + X \rightarrow Y + b,$$

where a is the incident particle, X is the target nucleus, Y (Heavy) and b (lighter) are the product nuclei, what defines the Q value? If the reaction has a negative Q value, what threshold energy must the incident particle exceed for the reaction to proceed? Furthermore, how does this threshold energy change if the product nucleus Y is left in an excited state? [05]

(b) What is the kinetic energy given to the proton in the decay of the neutron ($n \rightarrow p + e^- + \bar{\nu}$) when (a) the electron has negligibly small kinetic energy; (b) the neutrino has negligibly small energy?   [05]

(iii) (a) Why do nuclear fission fragments typically have unequal charge distributions rather than splitting symmetrically into two nuclei with half the parent's charge? Additionally, why do these fragments predominantly undergo β^- decay post-fission? [05]

(b) In ^{239}Pu, the thermal fission cross section is 742 b, while the cross section for other (nonfission) absorptive processes is 267 b. Each fission produces, on the average, 2.86 fast neutrons. What is the mean number of fission neutrons produced by ^{239}Pu per thermal neutron? [05]

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) Explain microscopic theory of frequency-dependent dielectric constant.

b) Explain the concept of renormalization of effective electron mass.

c) Explain how electron-phonon interactions affects the Hamiltonian of a system.

d) What is de Hass-van Alphen (dHvA) effect? Explain it briefly.

e) What does Hubbard model describe? Explain how this model is considered as useful approximation for particles in a periodic potential at sufficiently low temperatures?

f) Explain to differentiate between Hall effect and quantum Hall effect (QHE). Discuss application of each in solid state physics.

Answer the following questions.

Q. 2 Derive expression for specific heat capacity of solids on the basis of Debye model. Summarize how this model fits well with experimental observations for low and high temperature limits.   **(10)**

Q. 3 Explain a semi-classical model for conduction in metals. Derive Boltzmann transport equation containing collision terms.   **(4+6)**

Q. 4 What is Pauli paramagnetism? Explain it briefly and also derive expression for magnetic susceptibility of conduction electrons.   **(10)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) Define magnetization M. Write SI units of M and applied field H. Write mathematical relation involving M and H.

b) What is magnetic susceptibility (χ) of a material? Which class of magnetic material has very large χ?

c) What is shape anisotropy? How does it affect the shape of the hysteresis curve? Explain it for a rectangular shape of magnetic sample.

d) How one can differentiate between magnetic behavior of a ferromagnetic and ferrimagnetic material? Explain briefly.

e) Establish a relation through which magnetic permeability and magnetic susceptibility of a magnetic material is related with each other.

f) What is superparamagnetism? Plot M versus H curve for a superparamagnetic and a ferromagnetic material to differentiate the magnetic behavior.

g) Explain how saturation magnetization of iron is affected with increase of temperature.

h) What is biomagnetism? Describe where the origin of biomagnetism lies.

i) Define Neel wall and Bloch wall. Explain why domain walls are formed in materials.

j) What is single domain particle (SDP)? What kind of anisotropy is dominant in SDP?

Answer the following questions.

Q.2   Explain shape effects in FMR and derive the expression of ferromagnetic resonance frequency in the applied field B_0 along z-axis.   **(10)**

Q.3   What are magnons? Derive a dispersion relation of a magnon wave propagating in antiferromagnetic lattice. Assume nearest neighbor interactions only between neighboring spins.   **(10)**

Q.4   Explain: (i) nuclear magnetic resonance (NMR) and (ii) spin-wave resonance (SWR).   **(5+5)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   State the principle of causality.
II.   Distinguish between inertial and non-inertial frame of references.
III.   Describe the red shift and blue shift phenomenon in Doppler's effect for light.
IV.   Explain the terms (a) Absolute future (b) Manifold
V.   Describe Ricci scalar in terms of curvature tensor.
VI.   Write down the Maxwell's equations in four-vector interacted with electromagnetic interaction A^μ.
VII.   Describe the difference between dark matter and dark energy.
VIII.   Distinguish between time-like, light-like and space-like intervals.
IX.   What are the covariant and contravariant components of a vector (tensor)?
X.   Define geodesics and write its equation on manifold.
XI.   Describe the equivalence principle in general relativity.
XII.   Define cosmological principle.
XIII.   What is event horizon?
XIV.   What is Cosmic Microwave Background (CMB) in cosmology?
XV.   Write down the covariant form of equation of continuity and show that how they relate with current density.

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

Q2. Derive the Lorentz transformation equations for time and space coordinates and explain their implications for time dilation and length contraction in special relativity.

Q3. Derive the Einstein Field Equations. Also reduce these equations for vacuum.

Q4. Derive the Friedmann equation, which describes the evolution of the scale factor in an expanding universe. Explain how this equation relates to the density and curvature of the universe and discuss its implications for our understanding of the universe's fate.

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)- What is meant by magnetic scalar potential and magnetic pole density? Derive an expression for magnetic induction in terms of magnetic pole density $\rho_M(\vec{r})$ and surface density of magnetic pole strength $\sigma_M(\vec{r})$.

(ii)- How field equations $\text{div}\vec{B} = 0$ and $\text{curl}\vec{B} = \mu_0\vec{J}$ are modified when the magnetic field $\vec{B}$ includes a contribution from magnetized material.

(iii)- Show that inclusion of displacement current gives generalized Ampere's law.

(iv)- Derive the following Maxwell equations:

$$\text{(i)- } \text{div}\vec{B} = 0 \qquad \text{(ii)- } \text{curl } \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

(v)- Show that by imposing Lorentz condition, both the scalar and vector potentials are forced to satisfy inhomogeneous wave equations of similar form.

(vi)- Derive the equation of continuity for plasma by explaining all the terms used and show that,

$$\text{div}(\xi \, \vec{v}) + \frac{\partial \xi}{\partial t} = 0$$

where ξ is mass density of plasma and $\vec{v}$ is fluid velocity.

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

(a)- What is electromagnetic energy? Derive its expression and prove that power transferred into electromagnetic field through the motion of free charge in volume V is equal to rate of change of electromagnetic energy stored in V and a surface integral.

(b)- The equations for scalar and vector potentials (symbols with usual meanings) are given by,

$$\nabla^2\varphi - \in \mu \frac{\partial^2 \varphi}{\partial t^2} = -\frac{\rho}{\in} \quad \text{and} \quad \nabla^2\vec{A} - \in \mu \frac{\partial^2 \vec{A}}{\partial t^2} = -\mu\vec{J}$$

Find solutions of these equations and show that these solutions lead to retarded magnetic scalar and vector potentials.

(c)- Discuss the reflection and refraction of electromagnetic waves at a plane interface between dielectrics in case of normal incidence. Find corresponding reflection and transmission coefficients and show that their sum is unity.

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

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

(i) How would you slow down fast neutrons?

(ii) How is the asymmetric fission explained?

(iii) Give two limitations of compound nucleus theory.

(iv) Why does a proton have different spin magnetic dipole moment than an electron even though their spin and magnitude of electric charge is same?

(v) What are fission isomers?

(vi) Why does fusion of light nuclei results in large energy release?

(vii) Why does a neutron, despite no electric charge, have any spin magnetic dipole moment?

(viii) Why do we need fast neutrons to induce fission in ^{238}U whereas thermal neutrons are enough to induce fission in ^{235}U?

(ix) What is p-p cycle in fusion?

(x) What would be the shape of a nucleus with zero magnetic dipole moment?

(xi) Is nuclear binding energy a linear function of the nuclear mass number "A" or a quadratic function?

(xii) List two differences between a cyclotron and synchrocyclotron.

(xiii) Why larger nuclei have more neutrons as compared to protons?

(xiv) Is the mass of a nucleon in a nucleus different than its mass when it is free? Explain.

(xv) Give two differences of shell model with the collective model.

Q.2.   Answer the following questions.

(i) (a) Consider the following nuclear reaction
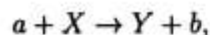
$$a + X \rightarrow Y + b,$$

where a is the incident particle, X is the target nucleus, Y (Heavy) and b (lighter) are the product nuclei. What is the Q value of this reaction? What would be the threshold energy for this reaction assuming that the Q value is $-$ve?

(b) It is desired to study the first excited state of ^{16}O, which is at an energy of 6.049 MeV. Using the (α, n) reaction on a target of ^{13}C, what is the minimum energy of incident alphas which will populate the excited state? In what direction will the resulting neutrons travel?   [06+04]

(ii) (a) What is the compound nucleus theory for nuclear reactions? Explain with an example. How do compound nucleus reactions differ with direct nuclear reactions?

(b) What are direct reactions? How do these reactions differ with compound nucleus reactions? [06+04]

(iii) (a) Why do nuclei undergo fission? How much energy would be released if ^{236}U* splits and how is it distributed in different processes?

(b) Given that the activation energy of ^{236}U is 6.2 MeV, what is the minimum-energy α particle that can produce fission following the bombardment of a ^{232}Th target? [m(^{236}U)=236.045563 u, m(^{232}Th)=232.038051 u, m(α)=4.002603 u]

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(i) Why do compound nucleus processes take more time than direct reactions?

(ii) Give two differences between a cyclotron and a synchrotron.

(iii) How can we use a neutron capture reaction to determine the energy and spin-parity of the capturing state?

(iv) Which part of the nuclear binding energy favors the distortion of its shape?

(v) Explain the CNO cycle in the solar fusion.

(vi) Why do fission isomers have relatively small activation energy for fission?

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

(i) (a) Explain the physical meaning of the cross-section of a nuclear reaction? Does it depend on the physical dimensions of the involved nuclei? Derive an expression for the cross-section of resonance reactions (the so-called Breit-Wigner formula) and use it to explain the width of the resonance. [05]

(b) What is the Q value of the nuclear reaction

$$n + {}^A_Z X_N \rightarrow {}^A_{Z-1} X_{N+1} + p.$$
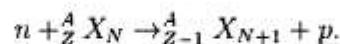
The same product nucleus could be formed through the following reaction

$${}^A_Z X_N \rightarrow {}^A_{Z-1} X_{N+1} + e^+ + \nu.$$
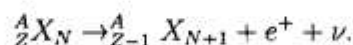
If we assume that ν is mass less what would be the maximum energy of e^+. Relate this maximum kinetic energy with the Q value of the last reaction. [05]

(ii) (a) What is the Q value of a nuclear reaction:

$$a + X \rightarrow Y + b,$$

where a is the incident particle, X is the target nucleus, Y (Heavy) and b (lighter) are the product nuclei. What are the conditions for particle b to have two values of the kinetic energy? [05]

(b) The (d,p) reaction on ${}^{52}Cr$ leads to the $\frac{3}{2}^-$ ground state of ${}^{53}Cr$. How would the analysis of the angular momentum transfer in this reaction differ between an analysis in terms of direct reactions and one in terms of compound-nucleus reactions? [05]

(iii) (a) Why do nuclei undergo fission? What prevents ${}^{238}U$ from undergoing sponatneous fission despite its positive Q-value? [05]

(b) Compute the Q values for the basic D-D reactions: ${}^2H + {}^2H \rightarrow {}^3He + n$ and ${}^2H + {}^2H \rightarrow {}^3H + p$. Assuming the incident particle kinetic energies to be negligible, find the energies of the outgoing particles in both reactions. [$m({}^2H)$=2.014102 u, $m({}^3H)$=3.016049 u, $m({}^3He)$=3.016029 u, $m(p)$=1.007825 u, $m(n)$=1.00866501 u] [05]

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) The Λ^o is an isosinglet baryon with strangeness $S = -1$, what is its quarks content?
2) Write down the matrix representation of J^2, for $j = 1$.
3) Define helicity. Discuss briefly the helicity of an electron.
4) Explain why is it necessary to assign color charge quarks?
5) Draw a Feynman diagram showing the mechanism of μ^- decay.
6) What are space time symmetries and internal symmetries? What are the consequences of these symmetries?
7) Draw the Baryon octet in accordance with eight fold way.
8) Shortly explain CPT Theorem?
9) What is charge conjugation and what is its effect on the charge of a particle?
10) State which of the following processes are allowed and which are forbidden? If allowed state which interaction is responsible, if forbidden give reason.
    a. $\Xi^o \to \Sigma^o \gamma$
    b. $K^- \to d \to \pi^+ + \Sigma^-$
11) Why free quarks could not be observed?
12) Write down the properties of hadrons and explain how do they interact?
13) All resonance particles have very short life times. Why does this suggest they must be hadrons?
14) What are exchange particles? Write exchange quanta in case of fundamental interactions. Identify the unknown particle in the reaction given below?
    $$\mu^- + P \longrightarrow n + \ldots.$$
15) Discuss conservations of angular momentum under rotation in space?

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

Q No. 2:   What is Special Unitary Group? Find the Generators of SU (3) Group?

Q No.3:   Show that translation in space leads to the conservation of momentum.

Q No. 4:   Explain isospin symmetry. Using isospin symmetry, calculate the reaction cross section of following reactions.

$$p + \pi^- \to K^o + \Sigma^o$$

$$p + \pi^- \to K^+ + \Sigma^-$$

$$p + \pi^+ \to K^+ + \Sigma^+$$

Also calculate the ratio of their cross sections.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Find matrix representations of X gate and Z gate using the Hadamard Basis $\{|+\rangle, |-\rangle\}$.

2. Define Bell's Basis. Find the unitary transformation to change Bell's Basis to Computational Basis.

3. Explain the difference between POVM and von Neumann Measurement.

4. Let ρ denote the density matrix of a pure quantum state. Show that $Trace(\rho^2) = Trace(\rho) = 1$.

5. State and explain the Operator Postulate of Quantum Mechanics.

6. Find von-Neumann entropy of the quantum state given by the density matrix $\rho = |+\rangle\langle+|$.

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

1. Explain the use of Entanglement as a resource for Quantum Teleportation.

2. Consider the ensemble consisting of the two states $|0\rangle\langle0|$ and $|+\rangle\langle+|$ with equal probabilities i.e., $\left(p_0 = \frac{1}{2}, p_+ = \frac{1}{2}\right)$. Find the minimum error probability P_{error}.

3. Define Holevo Bound for a quantum ensemble. Also find the Holevo Bound for the following ensemble

$$\{\rho_1 = |+\rangle\langle+|, \quad \text{propability} \quad p_1 = \frac{1}{2}; \quad \rho_2 = |-\rangle\langle-|, \quad \text{propability} \quad p_2 = \frac{1}{2}\}$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Classify nanomaterials based on their dimensions and give one example of each.
2. What are nanocomposites?
3. What is photolithography?
4. Give four examples of nanodevices.
5. What is the application of UV-Vis spectroscopy?
6. Define sputtering.
7. What is photodetector?
8. What are energy storage devices? Give examples.
9. What is electron beam lithography?
10. What is photocatalysis?
11. What is the advantage of Physical Vapor Deposition (PVD) techniques over Chemical Vapor Deposition (CVD) techniques?
12. Which technique is used to find unit cell parameters of a crystal structure?
13. What is XRD spectrum?
14. Why vacuum is required in certain synthesis and characterization techniques?
15. Write the name of the technique which is used to determine the band gap of materials.

Q.2.   Answer the following questions.

1. (a) What is the hydrothermal process? Explain the synthesis procedure and the main factors affecting the morphology of nanomaterials.   **(5)**

   (b) Write a note on the Electron Beam Evaporation (EBE) technique.   **(5)**

2. (a) What is X-ray diffraction (XRD) technique? How is it utilized to determine the structural parameters of a material?   **(4)**

   (b) Explain the key information gained about a material through the use of the following techniques;

   - Scanning Electron Microscopy (SEM)
   - Fourier Transform Infrared Spectroscopy (FTIR)
   - X-ray Photoelectron Spectroscopy (XPS)   **(6)**

3. (a) Explain some potential risks associated with nanomaterials.   **(4)**

   (b) What defines the morphology of nanomaterials? Discuss any two characterization tools to study the morphology of nanomaterials.   **(6)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Design 4-bit parity Checker circuit.

2. Design 1 to 8 line De-multiplexer circuit with help of truth table.

3. Draw Basic architecture of computer system.

4. Write a short on microprocessor working.

5. Define TTL, ECL, PMOS, NMOS, CMOS and EEMOS Technology.

6. What is the basics of FPGA? Define in term of technology.

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

1. Design Decade asynchronous counter and draw its timing diagram.

2. Differentiate between GAL, PAL and PLA technology by using examples.

3. Write the note any two of the followings.

    a. 5 bit Johnson counter

    b. 10 bit ring counter

    c. Full Subtractor

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. If we treat atomic binding force as harmonic, so that electron acts like a mass on a spring. Starting from the equation of motion Show that the induced dipole moment of this simplified atom is

$$p = \frac{e^2}{m} \frac{1}{(\omega_0^2 - \omega^2 - i\omega\gamma)} E$$

2. Describe direct and indirect gap semiconductors with the help of diagrams. Further, what is direct and indirect electronic transitions?

3. If the diffusion part of distribution function for Boltzmann Transport equation is given by the following expression

$$\frac{\partial f_k}{\partial t}\Big|_{diff} = - \frac{\partial f_k}{\partial r} \cdot \vec{v}$$

Then show that $\nabla_r f_o = -\frac{\partial f_o}{\partial E}\left[\nabla_r E_F + \frac{E-E_F}{T}\nabla_r T\right]$. All mathematical steps are mandatory.

4. What do you understand by excitons condensations into Electron–Hole-Drops (EHD)?

5. What is Polaron? How does it help to explain the interaction between electrons and atoms of a solid material?

6. Explain briefly the Stokes and AntiStokes Raman effect, giving their conservation of energy and momentum.

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

1. What is Boltzmann transport equation? What are the three important parts of this equation? Describe briefly relaxation time approximation about Boltzmann transport equation (BTE) and using the BTE equation evaluate the following form of electrical conductivity.

$$\sigma = \frac{ne^2\tau}{m}$$

2. Show that the Hamiltonian for free electron in a metal, in the presence of magnetic field B along z direction, is given by

$$\hat{H} = \frac{-\hbar^2}{2m}\left[\frac{\partial^2}{\partial x^2} + \left(\frac{\partial}{\partial y} - i\frac{eBx}{\hbar c}\right)^2 + \frac{\partial^2}{\partial z^2}\right]$$

Using the required mathematical steps further, Derive energy Eigen values of electrons and explain the occurrence of Landau levels.

3. a. What is an exciton? Explain the difference between Wannier Mott and Frenkel excitons.
   b. Find out the energy dispersion relation of Frenkel excitons.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Briefly describe (i) Paramagnetism, (ii) Type-I Superconductor, (iii) Coherence length, (iv) Piezoelectricity, (v) Heterostructures.

2. What is Meissner effect? How one can differentiate Type-I and Type-II superconductors?

3. How does the isotopic mass affect phase transition temperature (T_c)?

4. Derive an expression for DC Josephson junction.

5. What is the difference between normal electrons and super-electrons? Also describe the scientific reason behind the formation of Cooper pairs.

6. Define polarizability and describe various contributions to the total polarizability? Also plot frequency dependence of these contributions to the polarizability.

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

1. Give details of the quantum theory of paramagnetism.

2. Find an expression for the coherence length of a superconductor.

3. Explain De Haas-van Alphen effect.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) What is the reason of ferromagnetism to occur in materials? Explain briefly.

b) Define magnetic susceptibility. Write a mathematical relation through which magnetization and magnetic susceptibility is related with each other.

c) Plot a magnetic susceptibility versus temperature behavior of antiferromagnet. Also mark Neel temperature on this Plot.

d) Schematically show how spins are aligned below Curie temperature in ferrimagnets? Do ferrimagnets show magnetism? Plot magnetization behavior to justify the answer.

e) Write SI units of magnetic susceptibility and magnetic permeability. Also, write the value of magnetic permeability (with SI units) of free space.

f) Explain the origins of magnetic anisotropy. Which type of magnetic anisotropy is dominating in a single-domain state? Name it and explain briefly.

g) Both Fe and Ni are cubic in structure but easy and hard directions of magnetization are opposite to each other in Fe and Ni. Why? Explain reason briefly.

h) Explain NMR effect. Write two applications of this effect in medical science.

i) What is superparamagnetism? Explain briefly.

j) How does shape of a ferromagnetic sample affect hysteresis curve? Explain briefly in general and schematically by comparing the hysteresis curves measured for a sample of rectangular shape for its short and long axis.

   Answer the following questions.

Q.2   Derive a relation to calculate fractional change of magnetization in ferromagnets due to thermal excitation of magnons.   **(10)**

Q.3   Derive a dispersion relation for spin-wave propagating in antiferromagnetic lattice. **(10)**

Q.4   Explain briefly: **(i)** ferromagnetic resonance **(ii)** electron paramagnetic resonance. **(5+5)**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Discuss the comparative analysis of different energy loss.

ii. What is the specific ionization resulting from the passage of a 0.1-MeV beta particle through standard air?

iii. A very small source (physically) of 3.7×10^{10} Bq (1 Ci) of ^{32}P is inside a lead shield just thick enough to prevent any beta particles from emerging. What is the bremsstrahlung energy flux at a distance of 10 cm from the source (neglect attenuation of the bremsstrahlung by the beta shield)?

iv. Explain about photoelectric effect, in which the photon disappears, is an interaction between a photon and a tightly bound electron.

v.   Sate about the any possible risks involve in Magnetic Resonance Imaging (MRI).

vi. Explain about bioeffects mechanism and acoustics output metrics of Ultrasound medical imaging technique.

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

Q2. Discuss in detail about range-energy relationship for beta particles (beta rays)and alpha particle(alpha rays).

Q3. Most X-ray devices emit electrons from a cathode, accelerate them with a voltage, and allow them to hit an anode, which emits X-ray photons. Explain detail about diagnostic X-rays, production and absorption other planes in medical laboratories.

Q4. Explain about principal of Doppler ultrasound, employ for imaging moving blood and thereby estimate blood velocity in detail. Discuss how different dopplers techniques work for medical imaging

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following questions.   (6x5=30)

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

i.   Write a note on Tehsil Nazim.

الف)   تحصیل ناظم پر ایک نوٹ لکھیں۔

ii.   What do you mean by good governance?

ب)   گڈ گورننس سے آپ کی کیا مراد ہے؟

iii.   Explain the word panchayat.

ج)   لفظ پنچایت کی وضاحت کریں۔

iv.   How is the district Ombudsman appointed?

د)   ضلعی محتسب کا تقرر کیسے کیا جاتا ہے؟

v.   Explain the community board.

ہ)   کمیونٹی بورڈ کی وضاحت کریں۔

vi.   Discuss element of local government.

و)   مقامی حکومت کے عناصر (ایلیمنٹس) پر بحث کریں۔

Q.2.   Write detailed answers to the following questions.   (3x10=30)

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

i.   Critically examine the different approaches to the study of local government.

الف)   مقامی حکومت کے مطالعہ کے مختلف طریقوں کا تنقیدی جائزہ لیں۔

ii.   Highlight various issues of local government in developing countries.

ب)   ترقی پذیر ممالک میں مقامی حکومت کے مختلف مسائل اجاگر کرتا ہے۔

iii.   Describe the kind of transfer of power at local level.

ج)   مقامی سطح پر اقتدار کی منتقلی کی مختلف اقسام کی وضاحت کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Write short answers to the following questions.** **(6x5=30)**

i. Define Asylum

ii. What is a difference between Diplomatic Envoys and Counsels?

iii. What is meant by International Disputes?

iv. Define Armed Conflicts.

v. What is Neutrality?

vi. Define Laws of War.

Q.2. **Write detailed answers to the following questions.** **(3x10=30)**

i. Define Nationality and different methods of acquisition of Nationality.

ii. Define Treaties and write down the formation of Treaties.

iii. Write down present day challenges for International Law.

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. What were objectives of the League of Nations?

i۔ انجمن اقوام کے مقاصد کیا تھے؟

ii. Write briefly some major achievements of the League of Nations.

ii۔ انجمن اقوام کی کچھ اہم کامیابیاں مختصر تحریر کریں۔

iii. Write some characteristics of an international organization.

iii۔ بین الاقوامی تنظیم کی چند خصوصیات تحریر کریں۔

iv. Give a brief introduction of the United Nations Development Program (UNDP).

iv۔ اقوام متحدہ کے ترقیاتی پروگرام کا مختصر تعارف پیش کریں۔

v. Write Charter of the United Nations?

v۔ اقوام متحدہ کا منشور تحریر کریں۔

vi. Write a short note on the Trusteeship Council of United Nations?

vi۔ اقوام متحدہ کی تولیتی کونسل پر مختصر نوٹ تحریر کریں۔

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

درج ذیل سوالات کے جوابات تحریر کریں۔

Q.2. Elaborate the history and evolution of international organizations.

سوال نمبر 2: بین الاقوامی تنظیموں کی تاریخ اور ارتقاء کا جائزہ پیش کریں۔

Q.3. Explain the functions and powers of United Nations Security Council.

سوال نمبر 3: اقوام متحدہ کی سلامتی کونسل کے فرائض و اختیارات کی وضاحت کریں۔

Q.4. Critically evaluate the role of United Nations in resolving the international conflicts.

سوال نمبر 4: بین الاقوامی تنازعات کے حل میں اقوام متحدہ کے کردار کا تنقیدی جائزہ پیش کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following questions.   (6x5=30)

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

i)   Write down the objectives of United Nations?

الف)   اقوام متحدہ کے مقاصد لکھیں؟

ii)   What is the European Union and its purpose?

ب)   یوپی یونین اور اس کا مقصد کیا ہے؟

iii)   What is the main purpose of the Gulf Cooperation Council?

ج)   خلیج تعاون کونسل کا بنیادی مقصد کیا ہے؟

iv)   Discuss the importance of Security Council?

د)   سلامتی کونسل کی اہمیت پر بات کریں؟

v)   Write any two objectives of African Union.

ہ)   افریقی یونین کے کوئی دو مقاصد لکھیں۔

vi)   What is the reason for the existence of the European Union?

و)   یوپی یونین کے وجود کی وجہ کیا ہے؟

Q.2.   Write detailed answers to the following questions.   (3x10=30)

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

1)   What is the concept of Collective Security, and how United Nation is working under this concept?

الف)   اجتماعی سلامتی کا تصور کیا ہے، اور اقوام متحدہ اس تصور کے تحت کیسے کام کر رہی ہے؟

2)   Highlight the differences between League of Nations and United Nations?

ب)   لیگ آف نیشنز اور اقوام متحدہ کے درمیان فرق کو اجاگر کریں؟

3)   What do you think is the biggest contribution of ASEAN to the economic development of its member countries?

ج)   آپ کے خیال میں آسیان کے رکن ممالک کی اقتصادی ترقی میں آسیان کا سب سے بڑا تعاون کیا ہے؟

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.　Write short answers to the following questions.　　　(5x6=30)

1. Define Marxism. Briefly explain Marxist theory of Surplus Value.

2. Is Socialist Revolution possible in Today's time and age?

3. Define Ultranationalism.

4. Briefly explain the concept of Free Market Economy.

5. Who wrote "Wealth of Nations"? Explain the basic Idea of the Book.

Q.2.　Write detailed answers to the following questions.　　　(2x15=30)

1. Define Capitalism. Explain its pros and cons in detail.

2. Define the concept of Nationalism in Islam. What are the challenges of Pan-Islamic Nationalism in contemporary world, and how can they be addressed?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   **Write short answers to the following questions.**   **(6x5=30)**

1. Define Social Change?
2. What are the important instruments of Social Change
3. Define and explain development
4. What are physical resources in economic development?
5. Define sociology of economic development.
6. What is Non-availability of technical know-how?

Q.2.   **Write detailed answers to the following questions.**   **(3x10=30)**

1. Discuss in detail dynamics of Social Change in Pakistan.
2. Write a detailed analysis of economic development in modern world.
3. What are Rural and urban sections of economic development.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short note on the following.   (5x6=30)

1. Evaluation and Preventive Programming
2. Interrelation between Applied and Clinical Sociology
3. Mediation and Conflict Resolution
4. Ethics in Clinical Sociology
5. Levels of Intervention in Clinical Sociology

Q.2.   Write detailed answers to the following questions.   (2x15=30)

1. Write a note on Communication and Relationship with Clients in Clinical Sociology.
2. What is Intervention in Clinical Sociology? Write a detailed note on the Process of Intervention in Clinical Sociology.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following questions.   (5x6=30)

a. Define public policy
b. What are political dimension of globalization
c. What is global governance
d. What is process of governance
e. Write a short note on elite theory

Q.2.   Write detailed answers to the following questions.   (3x10=30)

A. What is governance, discuss theories and principles of improving governance and democracy
B. Discuss character of the Pakistani welfare state and the main pillars of Pakistani social policy
C. Define what institutions are and discuss the notion of 'Institutional causation'

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. **Write short answers to the following questions.** (6x5=30)

I. What is Minimum Chi Square Estimation (MCSE), under what situation MCSE is preferred over Maximum Likelihood Estimator.

II. Write Down Merits and Demerits of Moment Estimators.

III. How do we Construction Posterior Distribution.

IV. Let $X_1, X_2 \ldots\ldots X_n$ denote the random sample from Poisson distribution with parameter λ. Find MLE of λ.

V. Give Practical Example of Type-I and Type-II Errors, which error is more serious.

VI. Compare Best Linear Unbiased Estimator (BLUE) and Minimum Variance Quadratic Unbiased Estimator (MVQUE).

Answer the following questions. (3x10=30)

Question 2: The probability density function of r.v is given as

$$f(x) = \frac{1}{2} e^{-|x-\theta|} \; ; -\infty < x < \infty$$

Whether, MLE of θ can be obtained through Maximum likelihood principal. If no suggest some alternative MLE, do you think the MLE you suggest is unique.

Question3 : The random variable "X" follows the exponential distribution with parameter λ. we assume the prior density for unknown λ as

$$f(\lambda) = \frac{1}{m!} \left(\frac{m+1}{\lambda_0}\right)^{m+1} \lambda^m e^{-\frac{(m+1)\lambda}{\lambda_0}}$$

Given the random sample of size "n". Estimate the **Bayes estimator**.

Question4: Based upon the random sample of size n from

$$f(x; \theta) = \theta^x (1-\theta)^{1-x} \; , x = 0, 1$$

Obtain the MCSE for θ

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(i) What do you mean by non-spherical disturbances?

(ii) Explain the steps of the Goldfeld-Quandt test for heteroscedasticity.

(iii) What is a lagged variable? Give a brief explanation.

(iv) What are the limitations of the Durbin-Watson test for detecting autocorrelation?

(v) What are the causes of multicollinearity?

(vi) Explain the simultaneous equation system.

Answer the following questions.   (3x10=30)

Q.2.   What happens when OLS estimators are used while the error terms have first-order autocorrelation?

Q.3.   What steps can be taken to address the issue of multicollinearity?

Q.4. Given the following structural model:

$$Y_1 = \alpha_1 + \alpha_2 Y_2 + \alpha_3 X_1 + u_1 \quad \text{and} \quad Y_2 = \beta_1 + \beta_2 Y_1 + \beta_3 X_2 + u_2$$

Which results in the reduced form equations:

$$Y_1 = 4 + 3X_1 + 8X_2 \quad \text{and} \quad Y_1 = 2 + 6X_1 + 10X_2 .$$

Find the structural parameters using the estimated coefficients of the reduced form equations.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) Write a brief note on principle of parsimony.
b) Define Box and Jenkins model building methodology.
c) Explain univariate forecasting procedure.
d) Compare the theoretical ACF and PACF of an MA(q) process with those of an AR(p) process, using graphical representations.
e) Describe the procedures for residuals analysis.

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

Q.2. Develop the procedure to obtain the moment estimates of an AR(3) process.

Q.3. i) The following table represents the autocorrelation of residuals for a sample time series of 300 observations.

k	1	2	3	4	5	6	7	8	9	10
r_k	-0.04	0.05	-0.09	0.08	-0.02	0	0.12	0.06	0.02	-0.08

If ARMA (0, 1) model is fitted to the series then check the appropriateness of the model using portmanteau tests.

ii) Fifteen successive observations on a stationary time series are as follows:

t	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
X_t	1.6	0.8	1.2	0.5	0.9	1.1	1.1	0.6	1.5	0.8	0.9	1.2	0.5	1.3	1.4

Forecast X_{16} using simple exponential smoothing. Take $\alpha = 0.90$

Q.4. Show that for an ARIMA(1,1,1) process, the MMSE forecast is given by

$$Y_n(l) = Y_n + \frac{\phi(1 - \phi^l)}{(1 - \phi)}(Y_n - Y_{n-1}) + \frac{\theta(1 - \phi^l)}{(1 - \phi)} Z_n$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Write short answers to the following questions.   (6x5=30)

1. A bivariate dataset has $n = 10$, sample mean vector

$$\bar{x} = [3.2, 4.8]^T,$$

and sample covariance matrix

$$S = \begin{bmatrix} 1.5 & 0.6 \\ 0.6 & 1.8 \end{bmatrix}.$$

Compute the Hotelling's T^2 statistic to test $H_0 : \mu = [3, 5]^T$.

2. Calculate the Mahalanobis distance of a point $x = [5, 6, 7]^T$ from the mean vector

$$\mu = [4, 6, 8]^T,$$

given the covariance matrix

$$S = \begin{bmatrix} 2 & 0.5 & 0.7 \\ 0.5 & 1 & 0.2 \\ 0.7 & 0.2 & 1.5 \end{bmatrix}.$$

3. Find the eigenvalues and eigenvectors of the covariance matrix

$$S = \begin{bmatrix} 3 & 1 \\ 1 & 2 \end{bmatrix}.$$

Interpret the results in the context of principal component analysis.

4. Derive the Fisher linear discriminant function for a two-group classification problem.

5. Explain the steps involved in conducting canonical correlation analysis. Provide an example to illustrate its application.

6. Discuss the advantages and limitations of factor analysis compared to principal component analysis.

Q.2.   Write detailed answers to the following questions.   (3x10=30)

1. Test the hypothesis $H_0 : \mu_1 = \mu_2$ for two populations with the following sample information:

$$\mu_1 = [6, 4]^T, \quad \mu_2 = [5, 5]^T, \quad S_p = \begin{bmatrix} 1.5 & 0.4 \\ 0.4 & 1.2 \end{bmatrix},$$

with sample sizes $n_1 = 15$ and $n_2 = 18$. Use the Hotelling's T^2 test at $\alpha = 0.05$.

2. Given the covariance matrix

$$\Sigma = \begin{bmatrix} 8 & 4 & 2 \\ 4 & 7 & 3 \\ 2 & 3 & 6 \end{bmatrix},$$

perform a principal component analysis. Compute the eigenvalues and identify the components that explain at least 80% of the variance.

3. Derive the mathematical model used in canonical correlation analysis. Explain its practical use with the help of a small example.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(i) Benefits of International Standard Organization (ISO)

(ii) Internal failure costs in TQM

(iii) Natural tolerance limits

(iv) Advantages of double sampling plans

(v) Principles of quality management

(vi) Benchmarking process

Answer the following questions.   (3x10=30)

Q. No. 2: Elaborate Deming's Fourteen Points to implement TQM in detail.

Q. No. 3: Samples of n–6 items are taken from a manufacturing process at regular intervals. A normally distributed quality characteristics is measured and $\bar{X}$ and S values are calculated for each sample. After analyzing 50 groups, we have

$$\sum_{i=1}^{50} \bar{x}_i = 1000, \sum_{i=1}^{50} S_i = 75$$

(a) Compute the control limits for the $\bar{X}$ and S control charts.

(b) Assume that all points on both charts plot within the control limits, what are the natural tolerance limits of the process?

(c) If the specification limits are 19 ± 4.0, what are your conclusions regarding the ability of the process to produce items conforming to specifications?

(d) Assuming that if an item exceeds the upper specification limit it can be reworked and if it is below the lower specification limit it must be scrapped, what percent scrap and rework is the process now producing?

(e) Make suggestions as to how the process performance could be improved

Q. No. 4: What is acceptance sampling? Discuss major advantages of acceptance sampling plans.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Write short answers to the following questions.   (6x5=30)

1. Shortly explain the Islamic Concept of Social Service?

2. Explain two social problems of Pakistan?

3. Shortly explain the services of Edhi foundation?

4. Shortly explain racial inequalities?

5. Shortly explain the role of "norms and values" with respect to Social Service?

6. Explain the role of 'service' in professional life?

Q.2. Write detailed answers to the following questions.   (3x10=30)

1. Explain in details the principles of "social service"?

2. Enlist the fields of Social Services and explain two fields in details?

3. Explain the role of "United Nations High Commissionaire for Refugee (UNHCR)" in details?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر1: مندرجہ ذیل سوالات کے مختصر جوابات لکھیں۔ (6x5=30)

ا۔ ساختیات کی تعریف کریں اور مثال سے واضح کریں۔

ب۔ سوسیر کے لسانی ماڈل کی روشنی میں یک زمانی اور تاریخی لسانی مطالعے میں فرق واضح کریں۔

ج۔ ساختیاتی تنقید کے بنیادی طریقہ ہائے کار کی وضاحت کیجیے۔

د۔ پس ساختیات کے بنیاد گزار ماہرین علوم میں سے دو کا مختصر تعارف پیش کریں۔

ہ۔ نئے تنقیدی مباحث کے بین العلومی پس منظر کی مختصر وضاحت کیجیے۔

و۔ ساختیات اور پس ساختیات میں فرق واضح کیجیے۔

سوال نمبر2: مندرجہ ذیل سوالات کے تفصیلی جوابات تحریر لکھیں۔ (3x10=30)

ا۔ ساختیاتی تنقید کے مطالعاتی طریق کار کی وضاحت مثالوں کی مدد سے کیجیے۔

ب۔ ردِ تشکیل کیا ہے؟ کسی متن کی ردِ تشکیل کے اہم نکات کی وضاحت کیجیے۔

ج۔ مشیل فوکو کے علمی طریقہ کار اور بنیادی تصورات کی وضاحت کریں۔۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Iqbal ka Khasoosi Mutalia (fiqri o funny mutalia aur tashery maton)
Course Code: URDU-407

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر 1: مندرجہ ذیل سوالات کے مختصر جوابات لکھیں۔ (6x5=30)

ا: شعر کا مفہوم بیان کیجیے اور متن کا حوالہ بھی دیجیے۔

اگر کج رو ہیں انجم آسماں تیرا ہے یا میرا

مجھے فکرِ جہاں کیوں ہو جہاں تیرا ہے یا میرا

۲: شعر کا ترجمہ کیجیے اور متن کا حوالہ بھی دیجیے۔

سرِّ دین مصطفیٰ ﷺ گویم تیرا

ہم بقمر اندر دعا گویم تیرا

۳: علامہ اقبال کے پانچ شعری مجموعوں کے نام مع سنہ اشاعت لکھیے۔

۴: تصورِ مردِ مومن کے حوالے سے اقبال کے دواشعار مع مفہوم تحریر کیجیے۔

۵: اقبال کے تصورِ عشق و خرد کا تقابل کرتے ہوئے پانچ نکات قلم بند کیجیے۔

۶: پانچ اقبال شناسوں کے اسمالکھیے اور ان کی ایک ایک تصنیف کا نام بھی درج کیجیے۔

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

ا: علامہ اقبال کے تصورِ فن کی وضاحت کیجیے۔

۲: کلامِ اقبال کی روشنی میں! اقبال کے تصورِ خودی اور تربیتِ خودی کے مراحل کی توضیح کیجیے۔

۳: درج ذیل اشعار کی تشریح حوالہٴ متن کے ساتھ کیجیے، نیز فنی محاسن کی نشان دہی بھی کیجیے۔

رنگ و ہو یا خشت و سنگ چنگ ہو یا حرف و صوت

معجزۂ فن کی ہے خونِ جگر سے نمود

قطرۂ خونِ جگر سیل کو بناتا ہے دل

خونِ جگر سے صدا، سوز و سُرور و سُرود

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Urdu Nasar Kay Asaliyab: Maza Safar Nama Aap Biyti
Course Code: URDU-408

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر1: مندرجہ ذیل اقتباس کی تشریح مع حوالہ متن وسیاق وسباق کیجیے۔ **(15)**

یہ تو ساتھ والوں کا حال ہوا۔اب راستے والوں کی سنیے۔اگر میت کے ساتھ صرف دو چار آدمی ہیں تو کوئی پوچھتا بھی نہیں کہ کون جیا کون مرا۔اگر جنازے کے ساتھ بڑے بڑے لوگ ہوئے تو دکان والے ہیں کہ ننگے پاؤں چلے آرہے ہیں۔آئے۔مرنے والے کا نام پوچھا۔مرض دریافت کیا اور واپس ہوگئے۔گویا میونسپل کمیٹی نے رجسٹر حیات ومات انہی کو تفویض کردیا ہے۔اور یہ صرف اس لیے نام پوچھنے آئے تھے کہ رجسٹر میں سے مرنے والے کا نام خارج کردیں۔

سوال نمبر2: مندرجہ ذیل سوالات کے مختصر نوٹ لکھیں۔ **(3x5=15)**

١۔ اسلوب سے کیا مراد ہے؟

٢۔ مشتاق احمد یوسفی کے انداز نگارش پر مختصر روشنی ڈالیں۔

٣۔ "سیرت النبیﷺ" کے حوالے سے مولانا شبلی نعمانی کے اسلوب کے بنیادی عناصر پر مختصر بحث کیجیے۔

سوال نمبر3: مندرجہ ذیل سوالات کے مفصل جوابات تحریر لکھیں۔ **(3x10=30)**

١۔ سرسید احمد خان کے اسلوب نے اردو نثر کے مروجہ انداز تحریر میں کیا کیا تبدیلیاں کیں تفصیل سے بیان کریں۔

٢۔ پطرس بخاری کے اسلوب تحریر پر روشنی ڈالیں۔

٣۔ محمود نظامی کے انداز نگارش پر مفصل مضمون 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: مندرجہ ذیل سوالات کے مختصر جوابات لکھیں۔   (6x5=30)

1۔ ادب اور تاریخ کے باہمی تعلق پر روشنی ڈالیے۔

2۔ اردو میں ادبی تاریخوں پر تحقیق و تنقید کے حوالے سے کسی ایک کتاب کا نام تحریر کیجیے۔

3۔ اردو کی کوئی سی چار اہم ادبی تاریخوں کے نام تحریر کیجیے۔

4۔ اردو میں ادبی تاریخ نویسی کا اولین نقش کون سی کتاب مانی جاتی ہے؟

5۔ تاریخ ادب اردو از ڈاکٹر جمیل جالبی کی پہلی جلد کب شائع ہوئی؟

6۔ مختصر تاریخ ادبیات مسلمانان پاکستان وہند کب شائع ہوئی؟

سوال نمبر 2: مندرجہ ذیل سوالات کے جوابات تحریر لکھیں۔   (3x10=30)

1۔ ادبی مورخ کے اوصاف پر مفصل اظہار خیال کیجیے۔

2۔ ادبی تاریخ نویسی کے بنیادی اصولوں پر روشنی ڈالیے۔

3۔ تاریخ ادب اردو از ڈاکٹر جمیل جالبی کی دوسری جلد کا مفصل تعارف تحریر کیجیے۔

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – Spring 2025

Roll No. ....

Paper: Urdu Adab ka Mabed no Aabedyati Mutaila
Course Code: URDU-412

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر1: مندرجہ ذیل سوالات کے مختصر جوابات درکار ہیں۔ (6x5=30)

i. نوآبادیات اور مابعد نوآبادیات میں فرق واضح کریں۔

ii. ایڈورڈسعید کی "شرق شناسی" کے اہم نکات کا جائزہ لیجیے۔

iii. برصغیر میں یورپی نوآبادیات کی مختصر تاریخ پر بحث کیجیے۔

iv. نوآبادیات کے برصغیر کے ادب پر اثرات کی نشاندہی کیجیے۔

v. نوآبادیاتی نظام ظلم، استحصال اور انسان کشی کا راستہ ہے، بحث کیجیے۔

vi. نوآبادیاتی نظام کے حوالے سے اقبال کے کوئی سے دو اشعار پر بحث کیجیے۔

سوال نمبر2: مندرجہ ذیل سوالات کے مفصل جوابات تحریر کریں۔ (3x10=30)

i. منٹو کا افسانہ'تماشا' جابرانہ نظام میں خوف سازی کے طریقوں کا بیانیہ ہے، تبصرہ کیجیے۔

ii. اکبرالہ آبادی کی شعری مثالوں سے استعمار کے خلاف مزاحمت واضح کیجیے۔

iii. ابن الوقت نوآبادیاتی نظام سے مفاہمت کی ناکمل داستان بیان کرتا ہے، اپنی رائے دیجیے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) What is the difference between phylogenetic signal and phylogenetic noise?

b) Write a note on orthologs, paralogs and Xenologs.

c) Define sequence assembly. Explain its importance in bioinformatics.

d) Define Genome mapping. Briefly discuss the linkage mapping.

e) Name an online tool used for Primer designing. List the qualities of a good primer.

f) You have a nucleotide sequence (e.g. Primer sequence of 20 nt). If you want to find out, with which gene this nucleotide sequence (primer) can work, which bioinformatics tool you can use to find out the name of the gene and organism. Briefly discuss about the tool and its applications.

Answer the following questions. (3x10=30)

Q2. What is bioinformatics, which major tasks are involved in bioinformatics analysis, Give an example of bioinformatics tools.

Q3. Define sequence alignment. Discuss its importance of and explain the Local and global alignment

Q4. What is a phylogenetic tree. Describe key terminologies e.g. nodes, branches, root, leaves/terminals, clades, and homology.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short essay on the following.   (6x5=30)

i.   Paper chromatography

ii. Use of t-test with examples

iii. Distillation

iv. Gel electrophoresis

v.   Gram's staining

vi. Section cutting

Answer the following questions.   (3x10=30)

Q. 2   What are basic materials/instruments needed for collection of zoological specimen? What precautions should be taken at the time of animal collection?

Q.3   Write detail note on photometer.

Q.4   How would you present your research data? Give its lay out

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Climatic Barriers

II.   North American Plate

III. Malagasy Subregion

IV.   Isolation Distribution

V.   Faunistic Zoogeography

VI.   Eurybathic Animals

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

Q.2. Write Barriers and Means of Dispersal for Marine Animals.

Q.3. Write a Note on Palaearctic Region.

Q.4. Explain Plate Tectonic Theory.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   TOPOGRAPHICAL BARRIERS
II.   COSMOPOLITAN DISTRIBUTION
III. PALEOGEOGRAPHY
IV.   LIVING FOSSILS
V.   LITHOSPHERE
VI.   BIOSTRATIGRAPHY

Answer the following Questions.   (3x10=30)

Q.2. Explain CONTINENTAL DRIFT THEORY.

Q.3. Explain DISCONTINUOUS DISTRIBUTION.

Q.4. Explain SEDIMENTARY ROCKS.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   What are grubs?

ii.   Differentiate between Apterygote and Pterygote insects?

iii. Differentiate between Moths and Skippers?

iv.   Differentiate between bedbugs and Fleas?

v.   What are Aphids?

vi.   What is stridulation?

vii. What is pronotum?

viii. Differentiate between queens of Honeybee and Termites

ix.   What is Hypermetamorphosis?

x.   Name two insects belonging to order Hemiptera?

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

I). Discuss diagnostic characters of the following orders?

i.   Ephemeroptera

ii.   Dermaptera

II). What are the diagnostic characters of order Lepidoptera? Give economic importance of any two families of order Lepidoptera?

III). Discuss importance of following 2 families of insects?

i.   Bombycidae

ii.   Tabanidae

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Differentiate between cationic and anionic dyes. Give examples.

II.   What is membrane filter counting of bacteria?

III.   Explain electron microscopy.

IV.   What is an assay medium?

V.   Discuss briefly the procedure for the cultivation of anaerobic bacteria.

VI.   What are mechanisms of action of dry and wet heat for microbial destruction?

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

I.   How biosynthesis of lipids takes place in microorganisms?

II.   Explain different types of media for obtaining microbial growth.

III.   What are antibiotics? How they are classified on the basis of mode of action?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Natural waters.
2. Microbiology of canned food spoilage.
3. Light as stress for microbes.
4. Coliform as water quality indicator.
5. Microbial food web in estuaries.
6. Compositing.

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

1. Describe various steps of municipal treatment processes
2. Write about role of microbes in carbon cycle.
3. Write a comprehensive note on preservation of food.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1: Why site selection is crucial for fish farm construction, what are the common construction challenges?

2: Why lime is used in fish farming, and how do fertilizers boost fish farm productivity?

3: What is biofloc technology, and how is it applied in aquaculture?

4: Enlist the species commonly used for seed production in warm water aquaculture.

5: Why are growth-promoting substances essential in aquaculture, illustrate few examples?

6: Write down the general signs and symptoms of a diseased fish.

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

1: What are the current trends and emerging technologies used in aquaculture industry?

2: Write a detailed note on the types, applications, and drawbacks of fertilizers in fish ponds.

3: Describe the signs and control measures of viral and bacterial fish diseases.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Differentiate between shrimp and prawns.

ii. What role do recirculating aquaculture systems play in promoting sustainable fish farming?

iii. What is oyster culture, and what are its optimal environmental conditions?

iv. What is paddy culture, and how can paddy fields be optimized for the production of rice and fish?

v. Differentiate between enclosures and cages.

vi. Enlist various objectives of aquaculture.

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

1: Write a detailed account on using agricultural and urban wastes in aquaculture system.

2: Write a detailed note on sustainable aquaculture practices of shrimp culture.

3: Discuss in detail various types of aquaculture systems, technology used, potential issues and benefits.