



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. Explain punishment and its effects during the process of learning.
- ii. Write a short note on short term memory.
- iii. Explain any one theory of emotions.
- iv. What is the difference conformity and obedience?
- v. Explain the Gestalt Laws of Perceptual organization.
- vi. Write a note on Structuralism.

Q.2. Answer the following questions:

(5x6=30)

- i. Explain the principles of Classical Conditioning.
- ii. What are the factors that can affect motivation?
- iii. Explain forgetting and its causes.
- iv. Explain the physiological and Glandular changes during emotion of sadness or grief.
- v. Define Problem solving and explain its process in detail.



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Q.1. Answer the following short questions:

(15x2=30)

1. Explain the role of a psychologist.
2. Define motivation.
3. What are the differences between clinical psychology and organizational psychology?
4. Describe operant conditioning.
5. What ethical issues are important in psychological research.
6. What are the responsibilities of a counselling psychologist?
7. What is the survey method of research?
8. What is the difference between sensation and perception.
9. Define thinking.
10. Explain experiment with the help of an example.
11. What is an illusion?
12. Describe forgetting and its causes.
13. Define depth perception.
14. Describe observational learning.
15. Define language.

Q.2. Answer the following questions.

(3x10=30)

1. Write a detailed note on any TWO schools of psychology.
2. Define emotions? Write a detailed note on any TWO theories of emotions.
3. What is memory? Describe its types with an example.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Cognitive Psychology

Course Code: APSY-231

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. Explain the historical roots of cognitive psychology and its relation to other disciplines.
- ii. How information is coded in visual cells, and why is it important for perception?
- iii. Discuss the role of voice onset time in speech recognition.
- iv. What are the key differences between spatial and linear representation in cognition?
- v. How does the fan effect influence memory retrieval?
- vi. Define deductive reasoning and provide an example of its application in problem-solving.

Q.2. Answer the following questions.

(3x10=30)

- i. Discuss the perceptual laws of organization and their relevance in everyday perception.
- ii. Compare and contrast working memory and long-term memory in terms of their functions and capacities.
- iii. Evaluate the importance of psycholinguistics in understanding language acquisition and comprehension.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Environmental Psychology (Revised)

Course Code: APSY-232

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. What is Environmental Psychology? Briefly explain its scope.
2. Explain the relationship between arousal and performance with the help of Yerkes-Dodson Law.
3. Differentiate between daily hassles and ambient stressors with suitable examples.
4. How acclimatizing is different from acclimation? Explain
5. What is the range of activities that can occur in an intimate zone of personal space?
6. What steps are involved in wayfinding?

Q.2. Answer the following questions.

(3x10=30)

1. Explain in detail the factors influencing personal space.
2. Write a detailed note on Adaptation level theory in Environmental Psychology.
3. Give a detailed account of the physiological and psychological effects of natural disasters on human behaviour.



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

سوال نمبر: 1۔ مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔ (5x6=30)

- (i) صحیح الأخطاء في الجمل حسب القواعد العربية (جملوں میں موجود غلطیوں کو گرامر کے مطابق درست کریں)
- (1) هن طلاب (2) هذه كتاب جديد (3) عندي سيارة سريع (4) هو أبنائي (5) هي أبي الكريم (6) الأستاذ واقفة
- (ii) اكمل / اكملتي الفراغات بالحروف الجارة المناسبة (خالی جگہیں مناسب حروف جارہ لگا کر مکمل کریں)
- (أ) الكتاب ----- المكتب. (ب) أنا ----- باكستان. (ج) الطالب ----- الفصل. (د) ذهب خالد ----- إسلام آباد. (هـ) خرج المدير ----- المدرسة. (و) كُتِبَ ----- القلم.
- (iii) کوئی سے چھ اہم اشارہ ذکر کریں اور مثال سے واضح کریں:
- (iv) عرف / عرفني المركب الإضافي واذكر مثلاً واحداً (مركب اضافی کی تعریف کریں اور ایک مثال بھی ذکر کریں)
- (v) ما هو الفعل المضارع، اذكر / اذكرني مثلاً واحداً (فعل مضارع کی وضاحت کریں اور مثال سے اس کا معنی واضح کریں)

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

- سوال نمبر 2: درج ذیل حدیث کا ترجمہ کریں:
- قال الرسول ﷺ: "البر حسن الخلق والإثم ما حاك في نفسك وكرهت أن يطلع عليه الناس."
- سوال نمبر 3: درج ذیل اشعار کا ترجمہ کریں:
- دع الأيام تفعل ما تشاء وطب نفساً إذا حكم القضاء
ولا تجزع لحادثة الليالي فما لحوادث الدنيا بقاء
وكن رجلاً على الأهوال جلداً وشيمتك السماحة والوفاء
- سوال نمبر 4: درج ذیل جملوں کا عربی میں ترجمہ کریں:
- ۱- والدہ کمرے میں ہیں۔
۲- میں گھر میں ہوں۔
۳- سکول مسجد کے قریب ہے۔
۴- میرے پاس بہت سی کتابیں ہیں۔
۵- یہ میرا بیگ ہے۔



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

(6x5=30)

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

- i. حروف جوازم المضارع سے کیا مراد ہے۔ کوئی سے تین کی عربی مثالیں لکھیے۔
- ii. نائب الفاعل کی پانچ عربی مثالیں لکھیے۔
- iii. فعل لازم کی تعریف اور تین عربی مثالیں لکھیے۔
- iv. فعل متعدی کی تعریف اور تین عربی مثالیں لکھیے۔
- v. باب ”استفعال“ کی پانچ عربی مثالیں لکھیے۔
- vi. انواع خبر میں سے ”خبر شبہ جملہ“ کی پانچ عربی مثالیں لکھیے۔

(3x10=30)

مندرجہ ذیل سوالات کے جوابات تحریر کریں۔

- سوال نمبر: 2: ابواب ثلاثی مزید فیہ کے اوزان اور ان کی ایک ایک عربی مثال لکھیے۔
- سوال نمبر: 3: المفعول المطلق اور المفعول لاجلہ کی تعریف اور تین تین عربی مثالیں لکھیے۔
- سوال نمبر: 4: ”السکن“ یا ”فی مکتب المدیر“ کے عنوان پر عربی میں مکالمہ لکھیے۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

10

السؤال الأول: رتب الكلمات لتكون جملاً.

Arrange the words to make sentences.

1- الله- الطيب - يقبل - طيب.

2- الاستاذ - الولد - يعلم.

3- العامل- فى عمل- يجتهد- هـ.

4- كريم - لكن- الرجل - هـ - غنى.

5- النوم- اولاد - ثلاثة - استيقظ من.

10

السؤال الثاني: ترجم الى العربية. Transalate into Arabic.

1- رسول بدھ کا دن ہوگا۔ 2- کل اتوار تھا۔ 3- میں مفید بات سنتا ہوں۔

4- بچہ دروازہ کھولتا ہے۔ 5- لڑکا گیند سے کھیلتا ہے۔

10

السؤال الثالث: اجب عن الأسئلة التالية باللغة العربية.

Answer the following questions in Arabic Language.

1 متى ترجع من الحج؟ 2- الى اين تنظر؟ 3- ماذا سقط على الارض؟

4- متى تحصل على الشهادة؟ 5- متى تحج؟

Part-II

10

السؤال الرابع: ترجم الى الأردية. Translate into Urdu.

قال رسول صلى الله عليه وسلم: من كان يوم من بالله واليوم الآخر فلا يؤذ جاره ومن كان يوم من بالله واليوم الآخر فليكرم ضيفه. ومن كان يوم من بالله واليوم الآخر فليقل خيرا او ليصمت.

10

السؤال الخامس: ترجم الى الأردية. Translate into Urdu.

فغضب الشاب على هذا الشرك و عزم ان يقطع الشجرة. فاخذ فاسه وذهب الى تلك الشجرة ليقطعها. وفي الطريق ظهر امامه الشيطان.

10

السؤال السادس: استخدم الكلمات التالية في جمل.

Use the following words in sentences.

ظهر، مساء، يوم، ستة، أم، سبع، رَفَع، جَاء، عمة، حاضرة



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 content marketing in promotion?
- II. Differentiation between Market Targeting and Product Posting.
- III. How does the choice of a direct versus indirect channel impact customer relationships?
- IV. What is product differentiation?
- V. Differentiate between packaging and labeling.
- VI. What are the 4Ps of the marketing mix?

Answer the following questions. (3x10=30)

Q.No.2: Write a detailed note on the strategic planning and marketing process.

Q.No.3: Write a detailed note on the Process of the Marketing Research system.

Q.No.4: Write a detailed note on the Buyer Decision Process of Consumers.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- What are the primary goals of financial management?
- Define the term "capital budgeting."
- What is the role of the CFO in financial management?
- Explain the concept of time value of money.
- Define the term "cost of capital."
- Use of liquidity ratios

Answer the following questions. (3x10=30)

Question 2:

Punjab University is considering a proposed project for the establishment of a new research center at its Gujranwala Campus. The Treasure has estimated the following cashflows (after tax) related to the project:

(\$100,000)	20,000	40,000	40,000	40,000	50,000
0	1	2	3	4	5

Evaluate the proposed project on the basis of Payback Period, Net Present Value (NPV,) and Profitability Index. For NPV and PI, you can assume WACC 20%. Give your recommendation whether the company should accept the project? Why or why not?

Question 03:

Here are some historical data on the risk characteristics of Nishat and Sapphire:

	Nishat	Sapphire
Beta (β)	1.41	0.77
Yearly Standard Deviation of Returns	30.9%	17.2
Standard Deviation of Market	15%	
Correlation Coefficient for Stocks	0.31	

- What is the standard deviation of a portfolio invested half in Nishat and half in Sapphire?
- What is the standard deviation of a portfolio invested one-third in Nishat, one-third in Sapphire, and one-third in risk-free Treasury bills?

Question 04:

A company issue a 5-year bond with the with a face value of \$1,000 and paying an annual coupon of 6%. The market YTM is 8% and there are 5 years to maturity. Calculate the annual coupon payment. What is the current price of the bond (Present Value of the Bond)? What will the price of the bond be if the market interest rate increases to 10%? What is the bond's Yield to Maturity (YTM) if the current market price of the bond is \$950?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Discussed fixed and flexible budget.
- ii. What are the crucial features of Prime cost?
- iii. Explain the term fixed cost and variable cost.
- iv. Define standard order quantity what is the formula of standard order quantity
- v. How would you distinguish between financial accounting and Cost accounting?

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

1. What is process costing, differentiate between process costing and job order costing.

2. The following information has been taken from **Arbab Jafri Group Of Industries**:

Normal consumption	= 1,100 units per week
Minimum consumption	= 700 units per week
Maximum consumption	= 1,500 units per week
Economic order quantity	= 5,000 units per week
Re-order period	= 5 to 7 weeks

Required:

- i. **Reorder level**
- ii. **Minimum stock level**
- iii. **Maximum stock level**

3. Following are the data related to operations of **Mr. M. Ali Khan Pharmacy** for the accounting year ended as on 30th September, 2024:

Changes in inventory:	Rs.
Finished goods increased by	8950
Work in process decreased by	9350
Raw material increased by	12545
Raw material purchased	265655
Purchase returns	12200
Purchase discounts	10350
Transportation inward	6,470
Direct labor cost	45,200
Manufacturing overheads incurred	37,370

Required: Prepare cost of goods manufactured and sold statement.



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Q.1. Answer the following short questions:

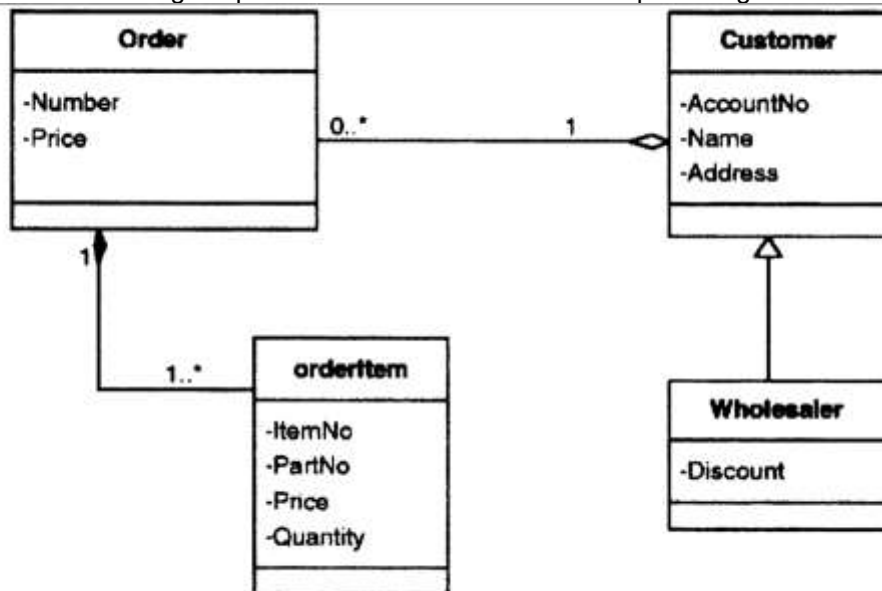
(6x5=30)

- Differentiate the following:
 - Primary Key
 - Candidate Key
 - Foreign Key
- Describe three disadvantages of using file processing systems.
- Describe the Data Dictionary and Metadata.
- How DBMS provides database security?
- What is a relationship, and what three types of relationship exist?
- Describe Data Manipulation Language (DML) with two examples.

Q.2. Answer the following questions.

(3x10=30)

- List and describe the different types of databases.
- Consider the following snapshot of an ERD and answer the question given below it.



- What is the relationship between **Order** and **Customer**?
- Write an SQL query to display all items in order with **Number** = 5612.
- Write an SQL query to display all items (**Item No**, **Part No**, **Price**, etc.) that were ever ordered by the customer with **Account No** = 213.

- Normalize the following "Property Management" Relation up to the 3rd Normal form step by step. Show each intermediate resultant table with its data.

Property Management							
P_Code	P_Title	P_Manager	P_Budget	Emp_No.	Emp_Name	Dept_ID	Dept_Name
P1	Block1	Ali	4500	1	Amir	1	IT
P1	Block1	Ali	4500	3	Hamid	2	Accounts
P1	Block1	Ali	4500	2	Khurram	3	Sale
P2	Bridge	Kabir	7400	2	Khurram	3	Sale
P2	Bridge	Kabir	7400	1	Amir	1	IT
P2	Bridge	Kabir	7400	4	Naveed	2	Accounts
P3	Store	Zahra	2250	5	Umair	1	IT
P3	Store	Zahra	2250	2	Khurram	3	Sale
P3	Store	Zahra	2250	3	Hamid	2	Accounts



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Entrepreneurship

Course Code: BBA-211

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.No.1: Answer the following short questions (6x5=30)

- I. Name two examples of famous entrepreneurs and their ventures of the World.
- II. Name a recent technological innovation that has transformed an industry.
- III. What is guerrilla marketing, and why is it important for startups?
- IV. Name one Pakistani entrepreneur and their significant contribution.
- V. What is the role of SMEs (Small and Medium Enterprises) in economic development?
- VI. Name three innovative marketing strategies used by entrepreneurs.

Answer the following questions (3x10=30)

Q.No.2: Examine the relationship between entrepreneurship, job creation, and poverty alleviation.

Q.No.3: How do cultural and social factors influence the success of an entrepreneur?

Q.No.4: Discuss the entrepreneurial journey of any one global entrepreneur, highlighting their challenges and achievements.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- I. What are the main branches of biology? Shortly describe each.
- II. How does mitosis differ from meiosis in terms of process and outcome?
- III. What is the function of a gene and how is it related to a chromosome?
- IV. Explain with examples how human activities affect ecosystems.
- V. What is ethology? Why is it important in the study of animal behavior?
- VI. Give applications of biotechnology in agriculture.

Q.2. Answer the following questions.

(3x10=30)

- i. Discuss the role of nutrition in maintaining human health. Include the functions of major nutrients.
- ii. Explain the principles of biotechnology and describe at least two of its modern applications in industry.
- iii. Describe the structure and functions of major human endocrine glands.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. Level of Organization
- ii. Human impact on Biosphere
- iii. Information flow and Neuron
- iv. Respiration
- v. Homeostasis
- vi. Environment Conservation

Answer the following questions.

(3x10=30)

Q.2 Write about Myths and Realities of evolution in detail.

Q.3 Describe Nervous system with suitable sketches

Q.4 Write a comprehensive note on nutrition and transport.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Business Law

Course Code: BLAW-111

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. Differentiate between void and voidable contracts.
- ii. What are the essential features of Bailment?
- iii. What is a negotiable instrument? Give an example.
- iv. What are contingent contracts? Give an example.
- v. What are the main duties of a carrier under the law of carriage of goods?
- vi. Define partnership. List down its features.

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

1. "All contracts are AGREEMENTS but all agreements are not contracts". Comment.
2. Differentiate between VOID AGREEMENTS and VOIDABLE CONTRACTS. Provide examples of each.
3. Define INDEMNITY and GUARANTEE. What are the rights and duties of the parties involved in such contracts?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Botany-III (Cell Biology, Genetics and Evolution)

Course Code: BOT-201

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. What is difference between back cross and test cross.
- ii. Define genetic recombination. What is F (fertility) factor and their role in conjugation.
- iii. Explain the functions of endoplasmic reticulum.
- iv. What is difference between cellulose and starch.
- v. What is importance of cholesterol in human beings.

Answer the following questions. (3x10=30)

- Q. 2** What is transcription. Explain it with help of diagram.
- Q. 3** Define evolution and explain its different theories.
- Q. 4** What is gene regulation. Explain Lac Operon.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a. What are Properties of genetic code.
- b. Differentiate between Chromoplast and chloroplast
- c. What is chromatin. Explain its types.
- d. Explain conjugation.
- e. What is gene mutation.

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

1. Describe gene regulation.
2. Describe different levels of organization of protein structure.
3. a. What are different types of speciation. Differentiate between Allopatric speciation and Sympatric speciation.
b. What are functions of mitochondria.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(10x3=30)

- i. What is difference between test cross and back cross.
- ii. What is sex linked inheritance. Explain with example.
- iii. What are applications of genetic engineering.
- iv. Explain Nuclear Pore Complex.
- v. What is importance of lipids.
- vi. Explain polysaccharides with its examples.
- vii. Differentiate between peroxisomes and glyoxysomes.
- viii. Define linkage. Describe its significance.
- ix. What is difference between smooth and rough endoplasmic reticulum.
- x. What is genetic code. Enlist its properties.

Q.2. Answer the following questions.

(3x10=30)

1.
 - a. Define crossing over. Explain its mechanism.
 - b. What are functions of plastids.
2. What are different types of protein in plasma membrane. Explain the functions of transmembrane protein.
3. What is evolution. Explain different theories of evolution.



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Q.1. Answer the following short questions:

(10x3=30)

- i. What is difference between test cross and back cross.
- ii. What is sex linked inheritance. Explain with example.
- iii. What are applications of genetic engineering.
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- viii. Define linkage. Describe its significance.
- ix. What is difference between smooth and rough endoplasmic reticulum.
- x. What is genetic code. Enlist its properties.

Q.2. Answer the following questions.

(3x10=30)

1. a. Define crossing over. Explain its mechanism.
b. What is inversion and translocations.
2. What is gene regulation. Explain with lac operon.
3. What is evolution. Explain different theories of evolution.



UNIVERSITY OF THE PUNJAB

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

Paper: Mass Communication

Course Code: BSCS-211

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 نمبر 1: درج ذیل سوالات کے مختصر جوابات دیں۔

i. Describe the key function of media?

i. میڈیا کے اہم کاموں کی وضاحت کریں؟

ii. What do you know about online journalism?

ii. آن لائن جرنلزم کے بارے میں آپ کیا جانتے ہیں؟

iii. Write a short note on traditional media?

iii. روایتی میڈیا پر ایک مختصر نوٹ لکھیں؟

iv. Define barriers of effective communication?

iv. موثر ابلاغ میں رکاوٹوں کی وضاحت کریں؟

v. Explain priming as Agenda setting technique?

v. اجینڈا ترتیب دینے کی تکنیک کے طور پر پرائمرنگ کی وضاحت کریں؟

vi. Summarize the care differences between Radio and TV in terms of communication?

vi. کمیونیکیشن کی اصلاح کو مد نظر رکھتے ہوئے ٹی اور ریڈیو کے درمیان فرق واضح کریں؟

Q.2. Answer the following questions.

(3x10=30)

سوال نمبر 2: درج ذیل کے تفصیلاً جوابات دیں۔

i. What are the different type of framing techniques used in Mass communication?

i. ماس کمیونیکیشن میں فریمنگ کی تکنیک کی مختلف اقسام بیان کریں؟

ii. Briefly explain the process of communication? With examples.

ii. کمیونیکیشن کے عمل کو تفصیلاً بیان کریں؟ مثالیں دے کر وضاحت کریں۔

iii. Discuss the pros and cons of New Media in present time?

iii. موجودہ دور میں نئے میڈیا کے فوائد اور نقصانات پر تبادلہ خیال کریں؟



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- a) Define Argumentative essay.
- b) How note-taking helps in better reading skills?
- c) What is the structure of Research Proposal?
- d) Define reading. Also mention the various types of reading.
- e) What is feedback in oral presentations?
- f) How cause and effect essays are different from problem and solution essays?

Q.2. Answer the following questions.

(3x10=30)

- a) Write down some useful strategies for vocabulary building skills.
- b) Define Literature Review and briefly elaborate its types.
- c) What techniques are important while presenting a topic?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Urdu Language: Formation and Evolution

Course Code: BSU-204

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۔

(6x5=30)

سوال نمبر 1: درج ذیل سوالات کے مختصر جوابات دیں۔

- i. اردو زبان کے قدیم نام "ہندی" پر مختصر نوٹ لکھیں۔
- ii. اردو زبان کے متعلق سید سیلمان ندوی کی رائے تحریر کریں۔
- iii. کھڑی بولی سے کیا مراد ہے؟
- iv. برج بھاشا اور اردو زبان کے مابین مماثلتوں کی وضاحت کریں۔
- v. اردو زبان کی تشکیل میں چند صوفیا کرام کے نام تحریر کریں۔
- vi. اردو زبان کے مختلف نام اور ان کی وجہ تسمیہ بیان کریں۔

(3x10=30)

سوال نمبر 2: درج ذیل سوالات کے تفصیلاً جوابات دیں۔

- i. اردو کے مختلف نام اور ارتقائی منازل پر تفصیلی جواب تحریر کریں۔
- ii. اردو اور تحریک پاکستان کے تعلق کی وضاحت کریں۔
- iii. حافظ محمود شیرانی کے اردو زبان کی تشکیل کے ضمن میں پیش کردہ نظریات کی وضاحت کریں۔

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED****Q.1. Solve the following:****(6x5=30)**

- (i) Find the derivative of $h(x) = \sin 3x + 2e^{-x}$.
- (ii) For $f(t) = 3t^3 + 4t$. Find $f''(t)$.
- (iii) Solve for x and y $x + y = 7; 2x - 4y = -10$.
- (iv) Evaluate $\int (x \sin x + x^2) dx$.
- (v) Evaluate $\int_{-1}^1 (3y^2 + 2x^2 y) dy$.
- (vi) Evaluate $\frac{\partial g}{\partial x}$ and $\frac{\partial g}{\partial y}$ for $g(x, y) = 2x^3 + 5y$.

Solve the following:**(3x10=30)****Q. 2** Find $\frac{d^2 y}{dx^2}$ if $x(t) = a \sin t$, $y(t) = b \cos t$.

Q. 3 Riaz produces x units of commodity A and y units of commodity B . All the units can be sold for $p=30-x$ rupees per unit of A and $q=30-y$ rupees per unit of B . The cost of producing these units is given by the function $C(x, y) = x^2 + 2y$. What should be x and y to maximize the profit?

Q. 4 Evaluate (a) $\int (\sin^2 x - x^2) dx$ (b) $\int_1^4 (e^{2y} + 3y) dy$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions

(6x5=30)

1. What will be the output of the program?

```
#include <iostream>
using namespace std;

class Demo {
    int id;
public:
    Demo(int id) : id(id) {}
    void print() {
        cout << "ID: " << id << endl;
    }
};

int main() {
    Demo* arr[3];
    for (int i = 0; i < 3; i++) {
        arr[i] = new Demo(i + 1);
    }

    for (int i = 0; i < 3; i++) {
        arr[i]->print();
    }

    for (int i = 0; i < 3; i++) {
        delete arr[i];
    }

    return 0;
}
```

2. What will be the output of the following?

```
#include <iostream>
using namespace std;

class Chain {
    int value;
public:
    Chain() : value(0) {}
    Chain& setValue(int v) {
        value = v;
        return *this;
    }
    Chain& increment() {
        value++;
        return *this;
    }
    void display() const {
        cout << "Value: " << value << endl;
    }
};

int main() {
    Chain* obj = new Chain();
    obj->setValue(10).increment().increment().display();
    delete obj;
    return 0;
}
```

3. What will be the output of the following?

```
#include <iostream>
using namespace std;

class Base {
public:
    virtual void show() {
        cout << "Base class show" << endl;
    }
};

class Derived : public Base {
public:
    void show() override {
        cout << "Derived class show" << endl;
    }
};

int main() {
    Base* ptr;
    Derived obj;
    ptr = &obj;
    ptr->show();

    return 0;
}
```

4. What will be the output of the program?

```
#include <iostream>
using namespace std;

class Test {
    int x;
public:
    Test(int val) : x(val) {}
    Test(const Test& obj) {
        cout << "Copy constructor called!" << endl;
        x = obj.x;
    }
    void display() { cout << "x = " << x << endl; }
};

void printValue(Test obj) {
    obj.display();
}

int main() {
    Test obj1(20);
    printValue(obj1);
    return 0;
}
```

5. What will be the output of the program?

```
#include <iostream>
#include <fstream>
using namespace std;

int main() {
    ifstream file("data.txt");
    if (!file) {
        cout << "Error opening file!" << endl;
        return 1;
    }

    char ch;
    while (file.get(ch)) { // Read one character at a time
        cout << ch; // Print each character
    }
}
```

```

    file.close();
    return 0;
}

```

Assume **data.txt** contains:
Hello;World;

6. What will be the output of the program?

```

#include <iostream>

using namespace std;

class Base {
private:
    int privateVar;

protected:
    int protectedVar;

public:
    Base(int privVal, int protVal) : privateVar(privVal), protectedVar(protVal) {}
};

class Derived : public Base {
public:
    Derived(int privVal, int protVal) : Base(privVal, protVal) {}

    void display() {
        // cout << "privateVar = " << privateVar << endl; // Uncomment this line
        cout << "protectedVar = " << protectedVar << endl;
    }
};

int main() {
    Derived obj(10, 20);
    obj.display();
    return 0;
}

```

Q.2. Answer the following questions:

(2x15=30)

i)

Write the missing code for polymorphism where the `displayInfo()` function in a derived class overrides the base class method, and objects are accessed via base class references.

```

#include <iostream>
#include <vector>
using namespace std;

class Employee {
public:
    virtual void displayInfo() const {
        // Missing code
    }
};

class Manager : public Employee {
    string department;

```

```

public:
    Manager(string dept) : department(dept) {}
    void displayInfo() const override {
        // Missing code
    }
};

class Developer : public Employee {
    string programmingLanguage;

public:
    Developer(string lang) : programmingLanguage(lang) {}
    void displayInfo() const override {
        // Missing code
    }
};

int main() {
    vector<Employee*> employees;
    employees.push_back(new Manager("HR"));
    employees.push_back(new Developer("C++"));

    for (const Employee* e : employees) {
        // Missing code
    }

    // Clean up dynamically allocated memory
    for (Employee* e : employees) {
        delete e;
    }

    return 0;
}

```

ii)

Complete the missing code where a base template class holds generic values, and a specialized derived class provides additional functionality for integers.

```

#include <iostream>
using namespace std;

template <typename T>
class Base {
protected:
    T value;

public:
    Base(T val) : value(val) {}
    T getValue() const {
        // Missing code
    }

    virtual void display() const {
        cout << "Base Value: " << value << endl;
    }
};

```

```

public:
    Base(int val) : value(val) {}
    int square() const {
        // Missing code

    }

    void display() const {
        cout << "Integer Value: " << value << endl;
    }
};

class Derived : public Base<int> {
public:
    Derived(int val) : Base<int>(val) {}
    void display() const override {
        // Missing code

    }
};

int main() {
    Base<double> obj1(5.5);
    obj1.display(); // Output: Base Value: 5.5

    Derived obj2(4);
    obj2.display(); // Output: Integer Value: 4, Square: 16

    return 0;
}

```



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions

(6x5=30)

1. What is IP address and difference between IPv4 and IPv6?
2. Write a short note on any two wired network medium.
3. What is the main purpose of a DNS server?
4. Why Bandwidth is important to network performance parameters?
5. Can a routing table in the datagram network have two entries with the same destination address?
6. What is CGMP (Cisco Group Management Protocol)?

Answer the following questions:

(3x10=30)

Question#2.

How traffic flow control, error control and congestion control are handled over transport layer, explain with diagram.

Question#3.

- (a) Differentiate between packet switching and circuit switching.
- (b) Briefly describe Address Resolution Protocol with diagram and its different cases.

Question#4.

- (a) Write the advantages and disadvantages of Peer-to-peer network and Server Based Network?
- (b) Many companies have a policy of having two (or more) routers connecting the company to the Internet to provide some redundancy in case one of them goes down. Is this policy still possible with NAT? Explain your answer.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

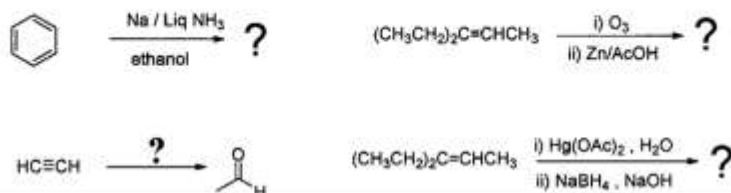
Q.1. Answer the following short questions:

(15x2=30)

- i. Which member of each of the following pairs would have the higher boiling point. Explain your answers. **(a)** Pentane or 2-methylbutane **(b)** Propane or 2-chloropropane
- ii. Classify the following solvents as being protic or aprotic:
 - a. formic acid, HCO_2H ; b: acetone, CH_3COCH_3 ; c: acetonitrile, CH_3CN ; d: formamide, HCONH_2
- iii. Define resonance energy?
- iv. Draw different resonating structures of naphthalene.
- v. Predict the products from reaction of 2-hexyne with the following reagents:
 - a) Na in liq. NH_3 b) H_2O , H_2SO_4 , HgSO_4
- vi. Which member of each of the following pairs would have the higher boiling point. Explain your answers. **(a)** Butane or CH_3COCH_3 **(b)** Heptane or 1-pentanol
- vii. Define tautomerism with an example.
- viii. What is Williamson ether synthesis?
- ix. What are the two main limitations of Friedel craft alkylation reaction of benzene.
- x. Classify the following solvents as being protic or aprotic:
 - sulfur dioxide, SO_2 ; ammonia, NH_3 ; trimethylamine, $\text{N}(\text{CH}_3)_3$; ethylene glycol, $\text{HOCH}_2\text{CH}_2\text{OH}$.
- xi. Why phenol is much stronger acid than 2,6-di-tert-butylphenol?
- xii. Differentiate between inter and intramolecular hydrogen bonding with examples.
- xiii. Differentiate between constitutional isomerism and stereoisomerism.
- xiv. Predict the more stable alkene of each pair:
 - (a)** 1-hexene or cis-3-hexene; **(b)** trans-2-hexene or 2-methyl-2-pentene.
- xv. (a) What effect would you expect the following changes to have on the rate of the $\text{S}_\text{N}2$ reaction of 1-iodo-2-methylbutane with cyanide ion?
 - (b) The CN^- concentration is halved, and the 1-iodo-2-methylbutane concentration is doubled.

Answer the following questions.

- Q.2 (a) Predict the major products of bromination of following compounds and show complete reaction (5)
 - (i) o-nitrotoluene (ii) salicylaldehyde (iii) m-nitroacetanilide
 - (iv) m-cyanobenzenesulfonic acid (v) Aniline hydrochloride
- (b) How will you prepare following compounds from n-butyl alcohol? (5)
 - (i) 1-butyne (ii) n-Octane
- Q.3 (a) How can you prepare primary, secondary and tertiary alcohol using Grignard reagent? (5)
- (b) Write a note on hydroboration-oxidation of alkenes. Give any two examples with mechanism. (5)
- Q.4 Complete the following reaction with mechanisms? 4x2.5=10





THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1 What is order of reaction? Give a method for determination of order of a reaction.
- 2 What is difference between gels and emulsions?
- 3 Give types of adsorption process.
- 4 What is surface tension and how it can be determined? Give SI units of surface tension?
- 5 Derive relation between Gibbs energy change, enthalpy change and entropy change.
- 6 Briefly describe the process of dialysis for purification of colloidal system.

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

1. What is molar heat capacity? Derive and discuss relation between C_v and C_p .
2. Derive the kinetic equation for 2nd order reaction with different initial concentration of reactants.
3. What is adsorption isotherm? Derive and discuss Langmuir adsorption isotherm.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1 What is rate constant? Give its units for zero order, 1st order and 2nd reaction.
- 2 What is difference between dialysis and electro-dialysis?
- 3 What is adsorption? Discuss Freundlich adsorption isotherm.
- 4 What is surface tension? How can it be determined experimentally?
- 5 Derive relation between Gibbs energy change, entropy change and enthalpy change.
- 6 Briefly describe dialysis for purification of colloidal system.

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

- 1 What are colloids? Discuss the methods of purification of colloids.
- 2 Derive kinetic equation for 2nd order reaction for same initial concentrations.
- 3 What is entropy? Give its formula and units. Discuss entropy change due to mixing of two ideal gases..



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(10x3=30)

- i. What are the objectives of maintaining departmental accounts?
- ii. Define and differentiate between direct and indirect expenses.
- iii. What is Liquidator's statement of account? When it is prepared and how?
- iv. Who are contributors in context of liquidation of a company?
- v. Give the various methods for redemption of debentures.
- vi. What is trading account? Why is it prepared?
- vii. What is statement of affairs? When it is prepared?
- viii. Describe different methods of companies' liquidation.
- ix. Why do companies amalgamate?
- x. What is meant by right shares?

Answer the following questions.

(3x10=30)

Q.2 The following are the extracts from the draft balance sheet of Star Ltd; as on 30th June 2024:

Authorized Capital:	Rs.
30,000 ordinary shares of Rs. 10 each	<u>300,000</u>
Issued & Subscribed Capital:	
20,000 ordinary shares of Rs. 10 each	200,000
Reserve Fund	120,000
Profit & Loss Account	70,000

The board of directors recommended:

- a) To issue bonus shares in the ratio of one bonus share for every four ordinary shares held.
- b) To issue right share at par in the ratio of one right share for every four ordinary shares held. The bonus shares will not be entitled for above right shares. For the purpose of issue of bonus shares, the funds were to be provided out of profit & loss account and reserve fund in equal proportion. All right shares were taken up.

Required: Make necessary journal entries to give effect to the recommendation of the Board and show how they affect the Balance Sheet.

Q # 3 Noor Limited went into liquidation with the following liabilities:

- a) Secured Creditors Rs. 40,000 (securities realized Rs. 50,000).
- b) Preferential Creditors Rs. 12,000.
- c) Unsecured Creditors Rs. 61,000.

Liquidators' out of pocket expenses amounted to Rs. 504. The liquidator is entitled a remuneration of 3% on the amounts realized and 1.50% on the amounts distributed to unsecured creditors. The various assets (excluding securities in the hand of fully secured creditors) realized Rs. 52,000.

Required: prepare the liquidators' Account showing the composition given to the unsecured creditors.

Note: The Liquidator is entitled to his remuneration on the realization of securities in the hands at secured creditors.

Q.4 The undermentioned balances appeared in the books of the Ferhaj Footwear Ltd. as on December 31st 2024.

	Rs.		Rs.
Share capital (authorized and issued) 60000 shares	600,000	Motor Vehicles	15,000
General Reserve	250,000	Furniture	5,000
Unclaimed Dividend	6,526	Stock	172,058
Trade Creditors	36,858	Book Debts	223,380
Building	100,000	Investment	288,950
Purchases	500,903	Depreciation reserve	71,000
Sales	983,947	Cash Balance	72,240
Manufacturing Expenses	359,000	Director's fees	1,800
Establishment	26,814	Interim Dividend	15,000
General charges	31,078	Interest (Cr)	8,544
Machinery	200,000	Profit and Loss account (Cr)	16,848
		Staff Provident Fund	37,500

Adjustments:

- a) The stock of wheat and flour on 31st December 2024 were valued at Rs. 148,680.
- b) Provide Rs. 10,000 for depreciation on building and Rs. 1,500 for the company's contribution to the staff provident fund.
- c) Interest accrued on investment amounted to Rs. 2,750.
- d) A claim of Rs. 2,500 for workmen's compensation is being disputed by the company.
- e) Establishment included Rs. 6,000 paid to manager who is entitled to remuneration @ 5% of profit ascertained subject to a minimum of Rs. 10,000 p.a.

Required: Prepare Trading and Profit & Loss Account, Profit & Loss Appropriation Account and Balance sheet.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Business & Industrial Law

Course Code: COMM-202

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. Elaborate the undue influence and coercion with example.
2. Explain the expressed and implied offer.
3. What is contract of agency?
4. Explain the types contract of sales.
5. What is breach of contract in case bailment.
6. What do you mean by endorsement and its types?

Q.2. Answer the following questions.

(3x10=30)

1. Who is the unpaid seller? What are his rights provided in the sale of Goods Act?
2. What are the social security benefits available to factory workers in case of maternity under the Maternity Benefit Act?
3. Explain the characteristics and types of negotiable instruments.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Briefly explain the following:

(6x5=30)

- (1) Income Tax Ordinance 2001.
- (2) Residential status of an Individual, Association of Person & Company.
- (3) Active Taxpayers' List.
- (4) Beneficial owner.
- (5) Legal provisions governing the exemption of Pension under second schedule of Income Tax Ordinance, 2001.
- (6) Legal provisions governing the exemption Perquisites Received by Employee.

Answer the following questions.

(3x10=30)

Q.2 Discuss the various types of reliefs and allowances which can be claimed as tax credits by an individual.

Q.3 Discuss the powers and function of Federal Board of Revenue.

Q4 Compute the taxable income of Mr. Abdul Majid who during the tax year ended 30th June 2024 derived income form the following sources:

Salary	Rs. 9 15,000
Annual leave fare assistance	77,600
Interest free loan received from employer	19,00,000
Overtime payments received	40,500
Encashment of leave preparatory to retirement	90,000
Conveyance provided by employer	
(Both for personal & professional use) The employer took this car from a Leasing company at annual lease rent of Rs. 200,000 the fair market value of this car at the commencement of lease was Rs. 44,00,000	
Gratuity received from the employer (Approved by Board)	375,000
Reimbursement of gas, water and electricity bills	90,000
Income from property	380,000
Profit from speculation business	300,000
Loss from other speculation business	275,000
Capital gain on sale of shares of private company (Holding period more than 12 months)	80,000
Zakat deducted	55,620
Prize on prize bond	50,000
Tax deducted at source	52,000

Amount claimed for rebate:

a) Shares of listed company purchased sold by Privatization Commission of Pakistan	80,000
b) Donation to Punjab University	72,000

Required: Computer taxable income and tax payable

Tax rate for salaried person year 2024:		
1	Where taxable income does not exceed Rs. 600,000	0%
2	Where taxable income exceeds Rs. 600,000 but does not exceed Rs.1200,000	2.5% on 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 exceeding Rs. 12,00,000
4	Where taxable income exceeds Rs. 24,00,000 but does not exceed Rs.36,00,000	Rs. 1,65,000 + 22.5% on the amount exceeding Rs. 24,00,000
5	Where taxable income exceeds Rs. 36,00,000 but does not exceed Rs.60,00,000	Rs. 435,000 + 27.5% on the amount exceeding Rs. 3,6,00,000



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Money Banking & Finance

Course Code: COMM-204

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. Elaborate the role of money in market economy through price mechanism
- ii. Discuss the rationale for interest free economy
- iii. Briefly explain different types of deposit maintained by commercial banks
- iv. Explain the qualitative tools of monetary policy
- v. Elaborate briefly the motives for demand for money
- vi. Differentiate between pledge and mortgage

Q.2. Answer the following questions.

(2x15=30)

- i. Explain in detail different types of loans provided by commercial banks
- ii. Discuss the banker and customer relationship



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. What is CPU?
- ii. What is Cache Memory?
- iii. What is E-Commerce? Explain different types of E-Commerce.
- iv. What is the process of copying, moving and deleting files and folders?
- v. Define Word Art.
- vi. What is Desktop? Explain the Elements of Desktop.

Q.2. Answer the following questions.

(3x10=30)

1. What is Memory? Explain types of computer memory.
2. What is Spreadsheet Software? Explain Nested-IF function with the help of example.
3. Explain paragraph formatting, table creation in MS-Word



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Computer-III

Course Code: COMP-201

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) Write a Java program to create a simple "Hello World" web page using Java.
- b) What is database connection in web development?
- c) What does "static" mean in the context of the web?
- d) Describe the role of JavaScript in creating dynamic websites.
- e) Can static websites use CSS for styling? Explain.
- f) What are the key principles of OOP?

Q.2. Answer the following questions.

(3x10=30)

- a) Write a Java program to demonstrate inserting records into a database using JDBC.
- b) Write a Java program to demonstrate file handling in Java.
- c) Write a Java program to validate user input in a form using JavaScript.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- a-What is Budget Line? Derive its Slope that is P_y/P_x .
- b-Briefly explain the Inferior Good.
- c-What is weak and strong axiom of Revealed Preference ?
- d- Explain Revenue concepts under Monopoly with the help of Table and Graphs
- e-Shutdown situation under Perfect competition in the short run
- f-Explain Increasing vs. Decreasing Returns to scale

Answer the following questions:

Q. #2- Explain the Consumer Equilibrium with the help of Indifference Curve approach 10

Q. # 3 – Bring out the difference between Perfect Competition and Monopoly 10

Q. #4 –a)- What is Individual Demand curve and Proportional Demand curve 05

b)- Critically examine the Sweezy Kinked Demand Model with the help of diagram 05



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. What is the difference between GDP and GNP?
- ii. What is the difference between induced investment and autonomous investment?
- iii. What is a progressive tax system?
- iv. What is meant by Absolute Advantage? Give an example?
- v. What are SDRs with reference to IMF?
- vi. Differentiate between Real and Nominal GDP.

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

- a. Define National Income and describe the concepts like National Income at factor cost, Personal Income and Disposable Income.
- b. Describe the Keynesian Theory of Income and Employment in detail.
- c. Explain the modern theory of trade (H-O theorem) with the help of examples and schedules.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Write any two definition of Education given by experts and elaborate their meaning.
- ii. Discuss the background of Macaulay's report enlist its main recommendations.
- iii. Identify the main issue focused in the Education conference 1947.
- iv. What are the characteristics of good curriculum?
- v. Describe the role of secondary education in the development of a country.
- vi. Define literacy? Identify the causes of low literacy level in Pakistan.

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

- i. Describe the role of information communication technology (ICT) in education.
- ii. Enlist the important organs and functions of provincial education department.
- iii. What recommendation had been made in the education Policy 1972-1980 for the development of higher education in Pakistan?



UNIVERSITY OF THE PUNJAB

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

Paper: Psychology of Learning

Course Code: ED-312

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. Write down the sources of Non Formal Education.
- ii. Define psychology and Educational psychology.
- iii. Enlist the principles of Gestalt psychology.
- iv. Briefly explain the self-esteem.
- v. Describe the law of readiness by 'Thorn dike'.
- vi. Write a note on Introversion.

Q.2. Answer the following questions.

(3x10=30)

- i. Explain the principles of Growth and Development in detail.
- ii. What is operant conditioning? Explain
- iii. Explain the Maslow Hierarchy of needs.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: English Language-III

Course Code: EDE-105

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. Santiago's religiosity, in *The Old man and the Sea*, is utilitarian in character. Discuss.
- ii. Sharks are a richly symbolic material. Discuss.
- iii. What is the importance of eighty-four days in Santiago's life?
- iv. What makes the old man an energetic soul?
- v. Discuss Santiago as a code hero.
- vi. Soliloquies are very important for Santiago. Discuss.

Answer the following questions.

(2x15=30)

Q.2. Write a letter to the editor of an English daily on the futility of outdated syllabi in Pakistan.

Q.3. Write a letter to the principal of your college to request him for installing Wi-Fi facilities in the library.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following questions:

(5x6=30)

- A sum of money is distributed among two friends in the ratio of 5:11. If one of them got Rs. 1200 more than the other then find the total amount to be distributed.
- The ratio between the present ages of A and B is 4:5. If the difference between their ages is 8 years, what is sum of their present ages?
- Simplify the following to find the value of x, $\frac{24}{x-12} - \frac{15}{x-3} = \frac{9}{x-7}$.
- 150% of what number is 83.25?
- Find the perimeter of a rectangle of length 12 m and breadth 6 m.

Solve the following questions.

(3x10=30)

Q.No.2 (a) The length of a rectangular garage is 2 meters more than the width. If the width is 7 meters, what is the length?

(b) The perimeter of a rectangle is 82cm and its area is 400 m^2 . Find the length and breadth of the rectangle.

Q.No.3 (a) Solve the linear equation, $2x - 2y = 2$ and $x + y = 4$

(b) In a right-angle triangle ABC with hypotenuse **c** and sides **a** & **b**. Find the unknown length, $b = 5\text{m}$, $a = 5\sqrt{7}\text{m}$, $c = ?$

Q.No.4) The following marks represent the final examination marks for a basic education course.

23	60	79	32	57	74	52	70	82	36
79	77	81	95	41	65	92	85	55	76
52	10	64	75	78	25	80	98	81	67
41	71	83	54	64	72	88	62	74	43
60	78	90	76	84	48	84	90	15	79
34	67	17	82	69	74	63	80	85	61

- Using 9 intervals with the lowest starting at 10 make a frequency distribution table.
- Find the Mean and Median from the data.



UNIVERSITY OF THE PUNJAB

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

Paper: Content Elective (Political Science – II)

Course Code: EDE-164

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- 1 Define Islamic concept of Democracy and discuss its basic attributes?
- 2 What are the fundamentals of Modern Secular State?
- 3 Define Adult and Restricted Suffrage?
- 4 How Presidential System works, discuss its major features?
- 5 Discuss the features of a Federal State?
- 6 What are the major differences between Referendum and Plebiscite?

Q.2. Answer the following questions:

(2x15=30)

- 1 Discuss the Realist theory regarding nature and purpose of state?
- 2 Discuss different types of Political Parties and its role in the development of Democracy?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Content Elective-A (Sociology-II)

Course Code: EDE-168

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. What is meant by social mobility. Explain vertical mobility.
2. Define Religious Institution. Describe four functions of religious institution.
3. Define Family Institution. Describe four functions of family institution.
4. Define Cultural Ethos and Cultural Complexes with examples.
5. What are Cultural Uniformities along with examples?
6. Define Role Taking and Role Playing.

Q.2. Answer the following questions.

(3x10=30)

1. Discuss the relationship between education and family institution.
2. Define Personality. Explain different factors of personality development.
3. Discuss the role of caste and class in Pakistani society.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

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

- (۱) تفسیر ہارائے کی وضاحت کریں۔
- (۲) قرآن پاک کی روشنی میں اطاعتِ رسول پر نوٹ لکھیں۔
- (۳) قرآن پاک میں بیان شدہ حد و اللہ کون سی ہیں؟
- (۴) لعان کا طریقہ کیا ہے؟
- (۵) مرکب اضافی کی وضاحت دو مثالوں کے ساتھ تحریر کریں۔
- (۶) سورۃ التور کا شان نزول کیا ہے؟

(3x10=30)

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

(۱) مندرجہ ذیل آیت قرآنی کا ترجمہ و تشریح کریں:

وَالَّذِينَ يَرْمُونَ الْمُحْصَنَاتِ ثُمَّ لَمْ يَأْتُوا بِأَرْبَعَةِ شُهَدَاءَ فَاجْلِدُوهُمْ ثَمَانِينَ جَلْدَةً وَلَا تَقْبَلُوا لَهُمْ

شَهَادَةً أَبَدًا وَأُولَئِكَ هُمُ الْفَاسِقُونَ

(۲) اسلام کے تصورِ ابلاغیات پر روشنی ڈالیں۔

(۳) اسم فاعل کی گردان صیغوں کی پہچان کے ساتھ لکھیں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(10x3=30)

- 1: Which school of painting is associated with the Pre-Mughal period?
- 2: Name a key feature of Rajput School of painting.
- 3: Who was Aurangzeb, and how does he relate to Indo-Pakistan architecture?
- 4: Which school of painting focuses on courtly and romantic themes?
- 5: What was the primary material used in Indus valley sculpture?
- 6: Name one characteristic feature of Buddhist sculpture.
- 7: What was a primary architectural innovation during the reign of Shahab-ud-Din Ghori?
- 8: What distinguishes the Gujarati School of painting from others?
- 9: What type of theme dominated Pahari paintings?
- 10: Name one monument built during the Mughal period.

Q.2. Answer the following questions.

(2x15=30)

- 1: Discuss in detail the evolution of Indo-Pakistan architecture from Shahab-ud-Din Ghori to Aurangzeb.
- 2: Compare and contrast the sculpture art of Indus Valley and Buddhist periods.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answer the following short questions:

(6x5=30)

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

- Define individual difference. What is its importance in teaching?
i. انفرادی اختلافات کی تعریف کیجئے۔ نیز اس کی تدریس میں کیا اہمیت ہے؟
- Explain briefly the relation between Ideology and a teacher.
ii. ایک استاد اور نظریہ کے درمیان تعلق کو مختصر واضح کریں۔
- Write a note on "Pragmatism". In Philosophy of Educations.
iii. "فلاسفی آف ایجوکیشن" میں "نظریہ عملیت" پر نوٹ لکھیں۔
- Write down the objectives of education in Pakistan?
iv. پاکستان میں تعلیم کے مقاصد لکھیں۔
- Write about the importance of environmental education.
v. ماحولیاتی تعلیم environmental education کی اہمیت کے بارے میں لکھیں۔
- What is the Importance of Health Education in Schools?
vi. سکولوں میں ہیلتھ ایجوکیشن کی کیا اہمیت ہے

Q.2. Answer the following questions.

(3x10=30)

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

- What is importance of Special Education? Write down steps taken by present Government of Punjab for its improvement.
i. خصوصی تعلیم (Special Education) کی اہمیت کیا۔ اس کی بہتری کیلئے موجودہ حکومت پنجاب کے اقدامات تحریر کریں۔
- Write a comprehensive commentary on objectives of Education policy 1980-1991.
ii. 1980-1991 کی تعلیمی پالیسی کے مقاصد پر سیر حاصل تبصرہ لکھئے۔
- What is the role of a teacher in Islamic Education? Explain concept of Islamic Education form perspective of Modern Education.
iii. اسلامی تعلیم میں ایک استاد کا کیا کردار ہے۔ اسلامی تعلیم کے تصور کو موجودہ جدید دور کی تعلیم کے پیش نظر واضح کیجئے۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- Reduce $F = (x'y' + z)' + z + xy + wz$ to three literals using Boolean algebra.
- Write two-address, and three-address instructions for the expression $F = \frac{A + B \times C}{D - E}$.
- Show the construction of a logic unit designed using 4 X 1 MUX that has A, B at its inputs and C, D connected to selection inputs. The working of the logic unit is given as under:

Selection Inputs		Logic Function
C	D	
0	0	$A + B$
0	1	$A \cdot B$
1	0	$A \oplus B$
1	1	A'

- What is instruction pipelining and what are its advantages?
- Obtain the simplified expression in SOP form for the following function using K-Map.

$$(A,B,C,D) = \sum(0, 2, 4, 5, 7, 8, 10, 13, 15)$$

- Design a combinational circuit that multiplies two 2-bit numbers A_1A_0 and B_1B_0 to produce a 4-bit product $P_3P_2P_1P_0$. Use AND gates and block diagrams half adders for the construction of the circuit.

Answer the following questions.

(3x10=30)

Question#2:

Specify the truth table, output functions (in simplified form) and draw the logic circuit diagram of a 4x3 priority encoder. The inputs of the encoder are $D_3D_2D_1D_0$ and the input with the highest subscript is given the highest priority. The outputs of the encoder are X, Y, and Z. The outputs X,Y indicates the subscript of the active input. The output Z will be 1 if all the inputs are 0.

Question#3:

In a certain chemical processing plant, a liquid chemical is used in a manufacturing process. The chemical is stored in three different tanks. Each tank has a sensor which sends a logic-1 upon getting empty otherwise it sends a logic-0. A red LED should turn ON, if any two of the three tanks gets empty. Design a combinational circuit of the chemical processing plant.

Question#4:

Design a sequential circuit with two JK flip-flops, A and B, and two inputs, E and x. If $E = 0$, the circuit remains in the same state regardless of the value of x. When $E = 1$ and $x = 1$, the circuit goes through the state transitions from 00 to 01 to 10 to 11 back to 00, and repeats. When $E = 1$ and $x = 0$, the circuit goes through the state transitions from 00 to 11 to 10 to 01 back to 00, and repeats.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: English-III (Advance Communication Skills)

Course Code: ENG-201

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answers the following short questions:

(6x5=30)

- 1) What should be the closing remarks and tone in a job application letter?
- 2) How do you think the questions about one's weaknesses, gap in a degree or low grades in a particular subject should be tackled in an interview?
- 3) What are the significant techniques to engage the audience in a presentation? Is it appropriate to include humor in your presentation?
- 4) How do you think the rule of parallelism should be applied while preparing your cv?
- 5) Which important steps should be included in a formal letter before beginning the 'main body' of the letter?
- 6) What is the importance of audio/ visual techniques used during the presentation?

Q.2. Answer the following questions.

(3x10=30)

Q1) Write a short report on electricity crisis in your hometown?

Q2) Write a letter to the newspaper editor about the irresponsible behavior of public regarding certain vaccination campaigns started by the government.

Q3) Write a job application letter to the company/ institute where you intend to work. State your goals. Mention your academic achievements and communication and IT skills. Show you desire to work with them.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: ENG III (Tech Report Writing & Presentation Skills)

Course Code: ENG-201N

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answers the following short questions:

(6x5=30)

- A. Discuss 'Observation' as a source of material for essay writing.
- B. What is an Abstract?
- C. Story-telling is an effective strategy in presentation skills, discuss.
- D. What is an Impromptu method of presentation.
- E. What is a Quantitative research?
- F. Clarity of volume and pronunciation are the basic requirements of successful presentation. Why?

Q.2. Answer the following questions.

(3x10=30)

- 1. Define presentation skills and discuss four methods of presentation.
- 2. Write an essay on any one of the following topics.
 - A. The holy month of Ramadan
 - B. If I were a scientist
- 3. Write a detailed note on research paper.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. Discuss Francis Bacon's aphoristic and epigrammatic style of writing?
- ii. Gulliver's Travels is a satire? How?
- iii. Define misanthropy. Give examples from 'the Gulliver's Travels' to support the fact that Swift disliked human beings?
- iv. Throw light on Thomas Hardy's pessimism with reference to The Mayor of Casterbridge?
- v. What is coming-of-age? Discuss Araby as a coming of age story?
- vi. How do you compare Eastern and Western ideals of happiness discussed by Russell in his essay?

Q.2. Answer the following questions.

(3x10=30)

- i. Discuss in detail the major themes of Gulliver's Travels by Swift?
- ii. Highlight the similarities and differences of writing style between Bacon and Russell's essays?
- iii. What is tragedy? Explore the tragical elements in the novel 'The Mayor of Casterbridge'?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Linguistics-III (Phonetics and English Phonology)

Course Code: ENG-203

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 difference between phonetics and phonology?
- ii. Describe how vowels are classified based on height, backness, roundedness, and tension with examples from English sounds.
- iii. What are minimal pairs? Provide three examples relevant to English phonology to illustrate your answer.
- iv. Explain elision with examples from everyday spoken English contexts.
- v. Transcribe the following words: **ship, ring, boat, cloud, home.**
- vi. Discuss how stress affects meaning in English words with relevant examples.

Q.2. Answer the following questions.

(3x10=30)

- i. Analyze how weak forms function within connected speech and their impact on comprehension for non-native speakers.
- ii. Compare segmental and suprasegmental features of phonology with illustrative examples from English.
- iii. Describe English consonants using three parameters of manner, place and voicing



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following Short Questions:

(6x5=30)

- a) An essay consists of many paragraphs .what are the three structural parts to develop a paragraph.
- b) What are do's and don'ts of successful presentation? Explain.
- c) What is the best procedure to write a term paper?
- d) What is report and in how many steps it is organized.
- e) Explain the sections "cover sheet" and "executive summary" in a report format.
- f) Explain how you will cope with the nervousness felt during delivering the presentation.

Q.2. Answer the following questions.

(3x10=30)

- a) Discuss various steps to develop a good presentation.
- b) What are the key components of research proposal?
- c) Write an essay on one of the following topics :
 - 1. Islamo phobia
 - 2. Sports and education



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. Use the following words (one word-one sentence) in Sentences of your own clarifying the meaning of the words.

Defame, Affable, Prolific, Energetic, Inflect

- ii. Which are different types of Oral Presentations?
iii. What is the importance of Visual Aids are commonly used in Presentations?
iv. What are different purposes of Oral Presentations?
v. What is critical reading? How it helps in developing writing skill?
vi. What are the essential steps on preparing Presentations effectively?

Answer the following questions.

(2x15=30)

Question 2: Write a Letter to the Editor of 'The News' highlighting the issue of cleanliness in your local market which is causing multiple problems, suggest possible solutions too.

Question 3: Write THREE connected Paragraphs on any one of the following topics.

Importance of Peace and Tolerance

Use of Artificial Intelligence (AI) tools by Students

Importance of Exercise in our Life



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following Short Questions:

(6x5=30)

- i. Analyze the interactive model of communication.
- ii. Explain significance of communication in personal and professional contexts.
- iii. Outline the Shannon-Weaver linear model of communication and its components.
- iv. Identify and explain two types of communication barriers.
- v. Discuss the significance of context in communication.
- vi. Explain how non-verbal cues complement verbal messages.

Answer the following questions.

(3x10=30)

- i. Define communication process and describe its components in detail.
- ii. Evaluate the impact of non-verbal communication on interpersonal relationships, providing examples.
- iii. Discuss strategies for overcoming communication barriers in a professional setting.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Technical Writing and Presentation Skills of English (Compulsory 7)

Course Code: ENG-215

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. When writing an essay, why is it critical to understand the concepts of asserting, justifying, and presupposing?
2. While giving a presentation—do you agree with the advice "Keep it simple: one idea per slide"? Why or why not?
3. If you were preparing a research proposal, what writing style would you use and why?
4. While crafting an argument for an essay. What are the four stages you would go through to build a strong argument?
5. In the context of developing your argument, how do causation, correlation, and coincidence differ from each other?
6. "To get good grades you have to keep a particular marker in mind as you write". What role does the "marker" mentioned in the statement play in your writing process?

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

1. While writing a report, what are five key characteristics that would make it clear, effective, and professional?
2. When preparing for a presentation, why do you think people often write down their speeches beforehand?
3. If you were working in an organization, why would a progress report be essential for keeping the team and managers informed?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following questions.

(6x5=30)

1. Write a brief note on formal and informal communication.
2. Write a short note on 'you attitude' in business writing.
3. Write a short note on conciseness in business writing.
4. List three main differences between verbal and non-verbal communication.
5. Define "active listening" and explain its importance in the business context.
6. Why is feedback crucial in the communication process?

Q.2. Attempt the following questions.

(3x10=30)

1. Write a note on seven C's and give appropriate examples of each step of the communication
2. Write a detailed note on the importance of good communication and comment on how barriers to communication can lead to bad communication
3. Write a business letter to the principal of your college proposing to open a student café in your college, make sure you follow the mechanics of business writing



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(15x2=30)

- i. Why sigma bond is stronger than pi bond.
- ii. Define co-ordinate covalent bond with one example.
- iii. What is Bond energy? Which factors affect bond energy?
- iv. Define sp hybridization.
- v. Define dipole moment with its unit.
- vi. Define surface tension. Write name of factors affecting surface tension.
- vii. Define Lewis acid and Lewis base with examples.
- viii. Define rate of reaction with its unit.
- ix. Define order of reaction with one example.
- x. Define nuclear fusion with one example.
- xi. Arrange molecules as per descending order of their bond energy; HF, HI, HBr, HCl
- xii. Draw Lewis structure of H₂ and NH₃.
- xiii. What is modern periodic law?
- xiv. Write two applications of dipole moment.
- xv. What are the trends of electron affinity in groups and periods? Explain with reasoning.

Answer the following questions.

(6x5=30)

-
- Q. 2. Define resonance. Draw resonance contributing structures of phenol.**
 - Q. 3 What is order of reaction. Derive relation between first order rate constant and half-life.**
 - Q. 4 Define dipole moment. How it helps to differentiate between polar and nonpolar molecule. Explain with examples.**
 - Q. 5 Define ionization energy. Discuss four factors affect the ionization energy.**
 - Q. 6 Define orbital hybridization. Discuss geometry of ethene (CH₂=CH₂) molecule with respect to hybridization.**
 - Q. 7 Draw Molecular Orbital theory (M.O.T) diagram of O₂ molecule.**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Define Cartography.
- ii. Write down the different types of scale.
- iii. Differentiate between Authalic Sphere and Oblate Ellipsoid.
- iv. What do you know about the size of Earth?
- v. Enlist names of any Four Muslim scholars who valuably contributed in the development of cartography.
- vi. What is meant by Geometric Symbols?
- vii. Differentiate between Font and Typeface.
- viii. Enlist any Four principles of Map Design.
- ix. What are the uses of Choropleth maps?
- x. What are the key ingredients for the preparation of a map?
- xi. Define Geodesy.
- xii. What is Geographic Coordinate System
- xiii. Give any four examples of Thematic maps?
- xiv. What are Volume symbols?
- xv. What are Daysmetric maps?

Q.2. Give detailed answers. Illustrate with the help of diagrams. (3x10=30)

- i. Define Lettering. Also explain various forms of Lettering.
- ii. Write a detailed note on the use of primary and secondary visual variables in map design
- iii. Write a comprehensive note on qualitative and quantitative Point symbols used in mapping.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Geography

Course Code: GEOG-211

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. What is geography and how does it relate to other natural sciences?
2. What are the major lines of latitude and longitude used in positioning on maps?
3. Discuss the term "geological time scale."
4. What is the significance of the Prime Meridian in map-making and navigation?
5. List the major gases in Earth's atmosphere and their approximate concentrations.
6. What is the role of Earth's tilt in creating seasons?

Q.2. Answer the following questions.

(3x10=30)

1. Describe the structure and composition of Earth's atmosphere. Discuss the role of each layer and its importance to life on Earth.
2. Discuss the formation and movement of ocean currents. How do they affect regional climates and global weather patterns? Provide examples.
3. Explain the process of continental drift and plate tectonics. Discuss their role in shaping Earth's continents and ocean basins over geological time.



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 کے مختصر جوابات دیں۔

i. Define the sources of Islamic Law.

i. اسلامی شرعی قوانین کے ذرائع بیان کریں۔

ii. Why there was a need to introduce Muslim family ordinance, 1961 in Pakistan?

ii. پاکستان میں مسلم فیملی آرڈیننس کے اطلاق کی ضرورت کیوں محسوس ہوئی؟ بیان کریں۔

iii. What is the difference between marriage and Polygamy?

iii. شادی اور کثرت الازواج میں فرق واضح کریں۔

iv. How dower empowers women?

iv. حق مہر خواتین کو کیسے خود مختار بناتا ہے؟ مختصر تحریر کریں۔

v. Explain the law of Iddat for women.

v. خواتین کے حوالے سے عدت کے قانون کی وضاحت کریں۔

vi. Define law of maintenance in family laws of Pakistan.

vi. پاکستان کے عائلی قانون میں نان و نفقہ کے قانون پر مختصر روشنی ڈالیں۔

Q.2. Answer the following questions.

(2x15=30)

سوال نمبر 2: درج ذیل کے جامع جواب دیں۔

i. Write down a comprehensive note on any one of the following topics.

a) Law of Inheritance in Pakistan.

b) Dissolution of Muslim marriage Act (1939).

i. درج ذیل عنوانات میں سے کسی ایک پر جامع نوٹ تحریر کریں۔

(الف) پاکستان میں قانون وراثت۔

(ب) مسلم شادیوں کے خاتمے کا قانون، (1939)

ii. Problematic the issue of dowry and explain its legal regulation in Pakistan.

ii. جہیز کا نظام ایک سماجی مسئلہ ہے؛ وضاحت کریں نیز پاکستان میں اس کے تدارک کے لئے موجود قانون واضح کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. What are the basic differences in approach and methodology of radical feminism and liberal feminism.
- ii. What is the major reason for discrimination and exploitation against women according to Socialist feminisms?
- iii. How does queer theory view gender?
- iv. What are the main features of ecofeminism?
- v. Did Marx himself carry out any gender analysis in his works? From where does Marxist feminism get its inspiration?
- vi. What do you understand by gender performativity?

Q.2. Answer the following questions.

(3x10=30)

- i. Write short note on postmodern feminism.
- ii. Define and compare Marxist and Socialist feminisms. Kindly also give critical analysis of these theories as per your understanding.
- iii. Write a note about Islamic feminism and today's world?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Application of Computer in Physical Education (Compulsory 8)

Course Code: HPE-201

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. How internet and websites work explain.
2. Who owns internet? and how we get service of internet?
3. Write an excel formula to find average of 5 different numbers.
4. Explain the feature "Group By" and "Un Group" of Power Point.
5. Write a note on different kinds of storage used in a computer.
6. Make clear the difference between application and system software.

Q.2. Answer the following questions.

(3x10=30)

- i. Explain the significance of computers in overall field of sports now a days.
- ii. Explain how the different Charts provided by Excel can be used to monitor a live match situation.
- iii. Write a note on different types of computers.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- i. What are the different challenges of HRM?
- ii. What is writing job analysis?
- iii. Explain continuity and transformation in the context of HRM?
- iv. What is glass ceiling?
- v. Explain external versus internal recruitment?
- vi. What is the importance of health and safety at workplace?
- vii. What is the nature of job analysis?
- viii. What are the traditional organizational development methods?
- ix. What is team building?
- x. What are occupational health problems?
- xi. What are different forms of discrimination?
- xii. What are the key elements of good selection devices?
- xiii. Explain job analysis in a jobless world?
- xiv. What is forecasting human resource availability?
- xv. What is training and need assessment?

Q.2. Answer the following questions.

(3x10=30)

- i. Explain the methods of job analysis in detail?
- ii. Write a comprehensive note on organizational change and development?
- iii. Explain goals of recruitment and factors that affect recruitment?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to International Relations

Course Code: IR-111

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answers the following short questions:

(6x5=30)

- 1. Write a note on End of History**
- 2. Analyze the status of diplomacy in the post-cold war**
- 3. Write down the types of national interests**
- 4. Elaborate theory of Realism**
- 5. Explain the concept of Nationalism**
- 6. Write a note on Globalization**

Q.2. Answers the following questions.

(3x10=30)

- 1. What is Power and its relevance in modern world?**
- 2. Analyze Clash of Civilization Between Islam and West**
- 3. What is different level of analyze to understand International Relations.**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

سوال نمبر 1: مندرجہ ذیل سوالات کے جواب بالکل مختصر طور پر دیجئے۔

- 1- سورہ بقرہ میں بیان کردہ "متقین" کے پانچ اوصاف بیان کریں۔
- 2- وقرن فی بیوتکن ولتبرجن تبرج الجاہلیۃ الااولی کا ترجمہ اور سورۃ احزاب کی روشنی میں پردے کے احکام لکھیں؟
- 3- سورۃ الفتح کی روشنی میں اصحاب رسول ﷺ کے اوصاف لکھیں؟
- 4- السبع الموبقات سے کیا مراد ہے اور البع الموبقات کے نام لکھیں؟
- 5- عشرہ مبشرہ سے کیا مراد ہے اور چار عشرہ مبشرہ کے نام لکھیں؟
- 6- مہیناق مدینہ کی پانچ شرائط لکھیں؟

(3x10=30)

مندرجہ ذیل سوالات کے جواب پر دیجئے۔

- سوال نمبر 2: درج ذیل آیت مبارکہ کا ترجمہ اور تشریح کریں۔
(6+4=10)
وَإِذْ قَالَ مُوسَى لِقَوْمِهِ يَا قَوْمِمْ تَوَدُّونَنِي وَقَدْ تَعْلَمُونَ أَنِّي رَسُولُ اللَّهِ إِلَيْكُمْ فَلَمَّا زَاغُوا أَزَاغَ اللَّهُ قُلُوبَهُمْ وَاللَّهُ لَا يَهْدِي الْقَوْمَ الْفَاسِقِينَ
- سوال نمبر 3: صلح حدیبیہ کی شرائط اور اہمیت پر مفصل نوٹ لکھیں۔
- سوال نمبر 4: اسلامی تہذیب کی خصوصیات بیان کرتے ہوئے کسی ایک خصوصیت پر جامع نوٹ لکھیں۔

ETHICS (For Non-Muslim Candidates)

(3x20=60)

نوٹ: مندرجہ ذیل سوالات کے جواب تحریر کیجئے۔

- سوال نمبر 1: اقلیتوں کے بارے میں اسلامی تعلیمات کو تفصیل سے لکھیں؟
- سوال نمبر 2: "معاشرے میں اخلاقی اقدار کی ترقی کے لیے فرد کا کردار" پر جامع نوٹ لکھیں۔
- سوال نمبر 3: مسیحیت کی روشنی میں "تصور نیکی" پر مضمون لکھیں۔



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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 دیں۔

- 1- کشمیر میں مسلمانوں پر ہونے والے مظالم کا جائزہ لیں۔
- 2- او آئی سی (OIC) کے اغراض و مقاصد بیان کریں۔
- 3- مسلم اقلیتوں کے چار مسائل تحریر کریں۔
- 4- وسطی ایشیائی ممالک کے نام لکھیں۔
- 5- عالم اسلام میں دہشت گردی کی چار وجوہات لکھئے۔
- 6- چیچنیا کے موجودہ حالات بیان کریں۔

1. Write down the oppressions of Kashmiri Muslims.
2. Describe the objectives and purposes of OIC.
3. Enlist 4 problems of Muslim minorities.
4. Write down the name of central Asian Muslim countries.
5. Write down the 4 causes of terrorism in Muslim World.
6. Write down the current situation of Chechnya.

Q.2. Answer the following questions.

(3x10=30)

سوال نمبر 2: درج ذیل سوالات کے تفصیلی جوابات دیں۔

- 1- رابطہ عالم اسلامی پر نوٹ لکھئے۔
- 2- عالم اسلام کے اتحاد میں مشکلات بیان کریں۔
- 3- اسرائیل کی فلسطین پر یلغار کی وجوہات بیان کریں۔

1. Write down note on Rabta Alam-e-Islami.
2. Describe the hurdles to unite the Muslim countries.
3. Write the reasons behind Israel attacked on Palestine.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

سوال نمبر 1: درج ذیل سوالات کے مختصر جوابات دیں۔

i. وضو کے فرائض کون سے ہیں؟

ii. مصارف زکوٰۃ کون سے ہیں؟

iii. حج کی اقسام کون سے ہیں؟

iv. روزہ کا فدیہ کیا ہے، اور یہ کیوں ہوتا ہے؟

v. غسل کے فرائض کیا ہیں؟

vi. قضاء نماز ادا کرنے کا طریقہ کیا ہے؟

(3x10=30)

درج ذیل سوالات کے تفصیلی جوابات دیں۔

سوال نمبر 2۔ درج ذیل آیت مبارکہ کا ترجمہ اور تشریح بیان کریں۔

الماء الجاري إذا وقعت فيه نجاسة جاز الوضوء منه إذا لم ير لها أثراً تستقر مع جريان الماء والغدير العظيم الذي لا يتحرك أحد طرفيه بتحريك الطرف الآخر إذا وقعت نجاسة في أحد جانبيه جاز الوضوء من الجانب الآخر لأن الظاهر أن النجاسة لا تصل إليه وموت ما ليس له نفس سائلة في الماء لا ينجسه۔

سوال نمبر 3۔ صدقة الفطر کیا ہے، اس کا نصاب کیا ہے، تفصیل سے تحریر کریں۔

سوال نمبر 4۔ مسافر کی نماز سے متعلق دس احکام تفصیل سے تحریر کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(10x3=30)

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

۱۔ حضرت علی المرتضیٰ رضی اللہ عنہ کی شجاعت کے کوئی سے دو واقعات لکھیے۔

۲۔ حضرت ابو بکر صدیق رضی اللہ عنہ نے اسامہ بن زیدؓ کے لشکر کے معاملے میں کیا فرمایا تھا؟

۳۔ حضرت امیر معاویہ رضی اللہ عنہ کے عہد کی انتظامی اصلاحات کو مختصر بیان کیجیے۔

۴۔ امام ابو حنیفہ رحمۃ اللہ علیہ کی فقہی بصیرت کو مختصر بیان کیجیے۔

۵۔ عہد بنو امیہ کی فتوحات کے نام بیان کیجیے۔

۶۔ عباسی عہد میں دینی علوم کی ترقی کا احوال لکھیے۔

۷۔ درج ذیل واقعات کے سن بیان کیجیے۔

جنگ یرموک شہادت علیؓ سقوط بغداد

۸۔ سیدنا عمر فاروقؓ کی تین اولیات کی مختصر وضاحت کیجیے۔

۹۔ فرقہ معتزلہ کے تین عقائد تحریر کیجیے۔

۱۰۔ سیرت خلفائے راشدین پر دو کتب کے نام مع مؤلفین لکھیے۔

(3x10=30)

درج ذیل سوالات کے تفصیلاً جوابات تحریر کریں۔

سوال نمبر ۲: حضرت ابو بکر رضی اللہ عنہ کو خلافت سنبھالتے ہی کن مشکلات کا سامنا کرنا پڑا اور آپ نے ان پر کیسے قابو پایا؟

سوال نمبر ۳: حضرت عثمان بن عفانؓ کی سیرت کے نمایاں خصائص بیان کیجیے۔

سوال نمبر ۴: عہد بنی عباس میں سائنسی ترقی کا حال اپنے الفاظ میں لکھیے۔

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED****Q.1. Solve the following:****(6x5=30)**

- (i) Solve $e^x \left(1 + \frac{dy}{dx}\right) = xe^{-y}$
- (ii) Solve: $x \frac{dy}{dx} + y = y^2 \ln x$
- (iii) Solve the initial value problem $(2xy - 3)dx + (x^2 + 4y)dy = 0, \quad y(1) = 2$
- (iv) Find the general solution: $(D^2 - 5D + 6)y = \sin 3x$
- (v) Solve the general solution: $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = xe^x \ln x$
- (vi) Compute: $\mathcal{L}^{-1} \left\{ \frac{5s+3}{(s+7)^5} \right\}$

Solve the following:**(3x10=30)**

- Q.2. Solve and find the singular solution if any, $y = px + p^n$
- Q.3. Apply the power series method to solve $xy' - (x+2)y = -2x^2 - 2x$
- Q.4. Use the laplace transformation method to solve the initial value problem

$$\frac{d^2y}{dt^2} - 3\frac{dy}{dt} - 4y = 12e^{-3t} \sin 2t \quad y(0) = 1, \quad y'(0) = 0$$

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED****Q.1. Solve the following:****(5x6=30)**

- I. Show that $x^2 + 4y^2 - 4x + 8y + 4 = 0$ represents an ellipse. Find its foci and vertices.
- II. Find parametric equation of the curve $r = a \sin 2\theta$, $0 \leq \theta \leq 2\pi$.
- III. Find the length of arc of the curve $x = e^\theta \sin \theta$, $y = e^\theta \cos \theta$ from $\theta = 0$ to $\theta = \frac{\pi}{2}$.
- IV. Find radius of curvature of $r(1 + \cos \theta) = a$ at any point.
- V. Find equation of perpendicular from the point $P(1, 6, 3)$ to the straight line

$$\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$$

Solve the following:**(3x10=30)****Q.2**

- a) Express the equation $3y^2 - 16y - x^2 + 16 = 0$ in polar form and find eccentricity and equation of directrix.
- b) Find equation of tangent and normal to the curve $x = (t-1)^{3/2}$, $y = 3t$ at $t = 5$.

Q.3

- a) Locate the points of relative extrema of the curve $f(x) = \sin x \cos 2x$.
- b) Find area of region bounded by the graph of parabola $y^2 = 4ax$ and its latusrectum

Q.4

- a) Find the equation of plane passing through the straight line $x + 2z = 4$, $y - z = 8$ and parallel to straight line $\frac{x-3}{2} = \frac{y+4}{3} = \frac{z-7}{4}$.
- b) Show that equation of the cone with vertex at $(3, 1, 2)$ and directrix $2x^2 + 3y^2 = 1$, $z = 0$ is $2x^2 + 3y^2 + 5z^2 - 3yz - 6zx + z - 1 = 0$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

1. If A and B are symmetric matrices, then prove that AB is symmetric if and only if A and B commute.
2. Let A and B are matrices of order 6 such that $\det(AB^2) = 72$, and $\det(A^2B^2) = 144$.
Find $\det(A)$ and $\det(AB^6)$.
3. Is $W = \{(x, y, z): x, y, z \in \mathbb{R}, y^2 = x + z\}$ is subspace of \mathbb{R}^3 .
4. Find the rank of the matrices $\begin{bmatrix} -3 & 5 & 1 & 2 \\ 7 & 2 & 0 & 4 \\ -8 & 3 & 1 & 6 \end{bmatrix}$.
5. Let $V = P_3(x)$ be the vector space of all polynomials of degree ≤ 3 over \mathbb{R} together with the zero polynomial. Determine whether the vectors
 $u = x^3 - 3x^2 - 2x + 3, v = x^3 - 4x^2 - 3x + 4, w = 2x^3 - 7x^2 - 7x + 9$ are linearly dependent or linearly independent in V .
6. If A and B are square matrices, show that AB and BA have the same eigenvalues.

Q.2. Solve the following:

(5x6=30)

- 1 Find the eigenvalues and corresponding eigenvectors of the matrix $\begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$
- 2 Use Gauss-Jordan method to find the solution of the linear equations
$$2x_1 - x_2 - x_3 = 4$$
$$3x_1 + 4x_2 - 2x_3 = 11$$
$$3x_1 - 2x_2 + 4x_3 = 11.$$
3. If A and B are 3×3 matrices such that $\det(A^2B^2) = 108$ and $\det(A^2B^3) = 72$, find $\det(2A)$ and $\det(B^{-1})$.
4. Find the orthogonal matrix whose first row is multiple of $(1, 1, 1)$.
5. Show that the linear transformation $T: \mathbb{R}^2 \rightarrow \mathbb{R}^3$ defined by $T(x, y) = (x + y, x - y, x + 2y)$ is one-to-one.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(5x6=30)

- (i) Show that the matrix is involutory $\begin{pmatrix} 0 & 1 & -1 \\ 4 & -3 & 4 \\ 3 & -3 & 4 \end{pmatrix}$
- (ii) If A and B are symmetric matrices, then prove that AB is symmetric if and only if A and B commute.
- (iii) Show that $\begin{vmatrix} 1 & 1 & 1 \\ \alpha & \beta & \gamma \\ \beta\gamma & \gamma\alpha & \alpha\beta \end{vmatrix} = (\alpha - \beta)(\beta - \gamma)(\gamma - \alpha)$
- (iv) Find an equation defining the subspace W of R^3 spanned by $\mathbf{v}_1 = (1, -2, 1)$, $\mathbf{v}_2 = (-2, 0, 3)$, $\mathbf{v}_3 = (3, -2, -2)$ by expressing an arbitrary element $(x, y, z) \in R^3$ as a linear combination of $\mathbf{v}_1, \mathbf{v}_2, \mathbf{v}_3$.
- (v) Any two eigenvectors corresponding to two distinct eigenvalues of an orthogonal matrix are orthogonal.

Q.2. Solve the following:

(5x6=30)

- (a) Reduce the matrix in reduced echelon form $\begin{pmatrix} 0 & 1 & 3 & -2 \\ 2 & 1 & -4 & 3 \\ 2 & 3 & 2 & -1 \end{pmatrix}$
- (b) Solve the following system of linear equations by Gauss-Jordan method.

$$3x_1 + 2x_2 + 4x_3 = 7$$

$$2x_1 + x_2 + x_3 = 4$$

$$x_1 + 3x_2 + 5x_3 = 3$$

- (c) Find the eigenvalues of the matrix. $\begin{pmatrix} 1 & -3 & 11 \\ 2 & -6 & 16 \\ 1 & -3 & 7 \end{pmatrix}$
- (d) Determine whether the following vectors in R^4 are linearly independent or linearly dependent

$$\{(1, -2, 4, 1), (2, 1, 0, -3), (1, -6, 1, 4)\}$$

- (e) Show that $\{(1, -1, 0), (2, -1, -2), (1, -1, -2)\}$ is a basis of R^3 . Find an orthonormal basis of R^3 using the Gram Schmidt process.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Mathematics B-III [Calculus (II)]

Course Code: MATH-202

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(5x6=30)

(i)	State Basic Comparison Test for infinite series. Apply it to the series $\sum_{n=1}^{\infty} \frac{1}{1+n^2}$ for convergence or divergence.
(ii)	Evaluate $\lim_{(x,y) \rightarrow (0,0)} \frac{xy}{x^2+y^2}$ if $(x,y) \neq (0,0)$
(iii)	Let $u = x - y^2$; $x = 2r - 3s + 4$; $y = -r + 8s - 5$, then find the value of $\frac{\partial u}{\partial r}$ & $\frac{\partial u}{\partial s}$
(iv)	Evaluate $\int_2^4 \int_1^2 (x^2 + y^2) dy dx$
(v)	Find the equation of normal line to the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ at point (x_1, y_1, z_1)

Solve the following:

(3x10=30)

Q.No.2	Find the point of surface $-x^2 - z^2 + y = 2$ nearest to the origin
Q.No.3	If $f(x, y) = \frac{x^2+y^2}{x+y}$, then show that $(f_x - f_y)^2 = 4(1 - f_x - f_y)$
Q.No.4	Using Spherical Coordinates, Evaluate $\int \int \int z^2 dx dy dz$ where "s" is the quarter $x^2 + y^2 + z^2 \leq 1$; $y \geq 0$; $z \geq 0$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

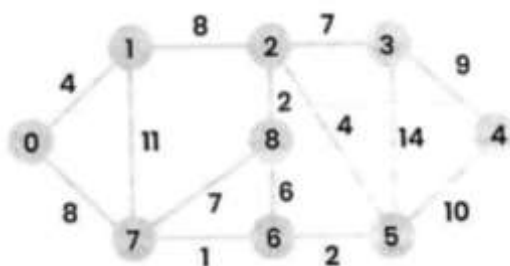
(6x5=30)

- Define regular graphs. Use handshaking lemma to find the size of these graphs
- Define complement of a simple graph. Also find complement of cycle graph C_5 .
- Define bridge and tree with example.
- Explain edge deletion, vertex deletion and edge contraction.
- Define Hamiltonian graph with example. Determine for which value of n , wheel graph W_n is Eulerian?
- If degree sequence of two graphs is same then determine whether graphs are isomorphic or not? Justify your answer.

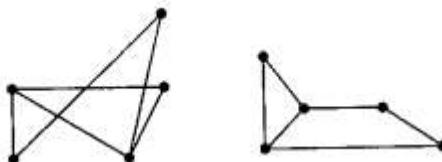
Q.2. Solve the following:

(5x6=30)

- Find the shortest path from vertex 0 to every other vertex in the following graph.



- If G is a simple graph with at least two vertices then prove that G must contain two or more vertices of the same degree.
- Prove that a tree has at least two pendant vertices.
- Write a note on matrix representation of a graph.
- Prove that the following graphs are isomorphic.



**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED****Q.1. Solve the following:****(6x5=30)**

- i) If $A = \{1, 2, 3, 4\}$, $B = \{3, 4, 5, 6, 7, 8\}$, and $C = \{5, 6, 7, 9, 10\}$, then show that $A \cup (B \cap C) = (A \cup B) \cap C$, $(A \cup B)^c = A^c \cap B^c$.
- ii) Define one-one, onto and bijective function. Also show that function given by $f(x) = x + 1$ is a bijective function.
- iii) Solve the quadratic equation $5x^2 - 13x + 6 = 0$
- iv) If the sum of the first 10 terms of an AP is 100 and the sum of the first 20 terms is 400, find the 30th term.
- v) Use binomial theorem to evaluate $(3.14)^5$
- vi) If $\sin x = \frac{3}{5}$, then evaluate $\cos x$, $\sec x$ by using trigonometry relation.

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

- i) Find the solution to the given system using Cramer's Rule.

$$\begin{aligned}x + y + z &= 6 \\2x - 2y + z &= 3 \\x + 2y - z &= 4.\end{aligned}$$

- ii) Let $X = \begin{bmatrix} 2 & 1 & -3 \\ 1 & 1 & 1 \\ -2 & -3 & -5 \end{bmatrix}$, then evaluate X^2, X^t, X^{-1} .

- iii) Use mathematical induction to prove that $1 + 2 + 2^2 + \dots + 2^n = 2^{n+1} - 1$

- iv) Solve the following system of linear equations

$$\begin{aligned}2x + y &= 4 \\x + 3y &= 3.\end{aligned}$$

- v) Solve the equation $x^{\frac{2}{3}} - 2x^{\frac{1}{3}} - 15 = 0$.

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED****Q.1. Solve the following:****(5x6=30)**

- (i) Solve the inequality $|5x + 6| \geq 5$.
- (ii) Evaluate $\lim_{x \rightarrow 2} \frac{x^3 - 8}{x^2 + x - 6}$.
- (iii) Find $\frac{dy}{dx}$, where $x + \sin^{-1} y = xy$.
- (iv) Evaluate the integral $\int \frac{\sec^2 x}{\sqrt{\tan x}} dx$.
- (v) Find the area between the curve $y = x(x - 1)(x + 1)$ and the x-axis.

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

- (a) Draw the graph of the function and determine $\lim_{x \rightarrow 3} f(x)$

$$f(x) = \begin{cases} 2x - 1, & \text{if } x < 3 \\ x + 2, & \text{if } x \geq 3 \end{cases}$$

- (b) Prove that $y \frac{dy}{dx} + x = 0$ if $x = \frac{1 - t^2}{1 + t^2}$ and $y = \frac{2t}{1 + t^2}$.
- (c) Find the extreme values of the function $f(x) = (x - 2)^2(x - 1)$.
- (d) Evaluate $\int \frac{1}{x^3 - 1} dx$.
- (e) Discuss the continuity of function f at $x = a$.

$$f(x) = \begin{cases} \frac{x^2}{a} - a, & \text{if } x < 0 < a \\ 0, & \text{if } x = a \\ a - \frac{a^2}{x}, & \text{if } x > a \end{cases}$$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a) A poker hand consisting of 5 cards is drawn randomly from a deck of 52 playing cards. What is the probability that
 - i. all cards are face cards.
 - ii. it contains at least 2 kings.
- b) A random sample of 100 deaths in United States in the past years showed an average lifespan of 71.8 years. Assuming the population standard deviation of 8.9 years, does this seem to indicate that the mean lifespan is greater than 70 years?
- c) Differentiate between the following terms by giving suitable examples of each.
 - i. t-test and z-test
 - ii. Type-I and Type-II errors
 - iii. Exhaustive and Mutually Exclusive events
- d) Explain simple linear regression with the help of examples. Also state its assumptions.
- e) It is supposed that an impurity exists in 30% of all drinking wells in a certain rural community. In order to gain some insight into the true extent of the problem, it is determined that some testing is necessary. It is too expensive to test all of the wells in the area, so 10 are randomly selected for testing.
 - i. What is the probability that exactly 3 wells have the impurity?
 - ii. What is the probability that more than 2 wells are impure?

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

1. Suppose that the error in the reaction temperature, in °C, for a controlled laboratory experiment is a random variable X having the probability density function:

$$f(x) = \frac{x^2}{3}; -1 < x < 2$$

- i. Verify that $f(x)$ is a valid density function.
- ii. Compute the mathematical expectation of the random variable X .
- iii. What is the probability that the error in reaction temperature will be between 0 and 1.
- iv. Obtain the third moment about origin.
- v. Construct the distribution function.

2. Two varieties of tomato were experimented with concerning their fruit producing abilities, measured in pounds, the following data were obtained. Test the hypothesis of no difference between fruit producing ability of two varieties, assuming the data to be normal.

Variety A	3.03	3.10	2.35	3.86	3.92	1.71	2.60	2.30	2.70
Variety B	2.08	3.63	2.17	3.56	3.73	1.80	1.40	1.80	2.76

3. Let X denote the number of software updates a company's server undergoes in a month: 1, 2, or 3 updates. Let Y denote the number of times the server experiences downtime. Their joint probability distribution is given as:

$f(x,y)$		x		
		1	2	3
y	1	0.05	0.05	0.10
	3	0.05	0.10	0.35
	5	0.00	0.20	0.10

- a) Evaluate the marginal distribution of X and Y .
- b) Find $P(Y = 3 | X = 2)$.
- c) Compute $E(X)$ and $E(Y)$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answers the following short questions:

(6x5=30)

1. How Nietzsche define instinct?
2. Does Frazer know about primitive religion?
3. What is monistic vitalism?
4. What is the first rule of character?
5. What is the function of reason?
6. How synthesis is more difficult than analysis?

Q.2. Answers the following questions.

(3x10=30)

1. How far do you agree that Philosophy is a study of experience as a whole? Discuss.
2. Describe the significance of family. Why the institution of family is necessary for human being
3. Discuss the characteristics of positive and negative character.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Philosophy

Course Code: PHIL-211

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 difference between categorical duty and hypothetical duty?
- ii. What is meant by intentional fallacy?
- iii. Which theory of art distinguishes art from craft?
- iv. Why some theorists influenced by Karl Marx regard democracy as an illusion?
- v. What is meant by 'Hedonism'?
- vi. Define Idealism.

Q.2. Answer the following questions:

(3x10=30)

- i. Critically examine the Cosmological and the Ontological argument for the existence of God.
- ii. What is the difference between common-sense realism and representative realism? Elaborate.
- iii. Discuss the mind/body problem of dualism with and without interaction.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. Elaborate Negative Freedom.
- ii. Define the main divisions and at least three benefits of philosophy.
- iii. What is Reverse Discrimination?
- iv. For Kant it was clear that a moral action was one performed out of a sense of duty. Elaborate.
- v. Define a-priori and a-posteriori proposition with at least one example each.
- vi. What is the difference between Art and Craft?

Q.2. Answer the following questions:

(3x10=30)

- i. What is Art? Critically evaluate idealist theory of Art.
- ii. What is Utilitarianism? Distinguish between Act-utilitarianism and Rule-utilitarianism.
- iii. Define Equality. How political philosophy addresses the issue of equal distribution of money among the society?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- (i)- Gauss's law is not very useful in calculating the electric field of charged disk. Explain.
- (ii)- Give a comparison of Coulomb's law of electrostatics and Newton's law of gravitation.
- (iii)- A proton is placed in uniform electric field \vec{E} . What must be magnitude and direction of this field if the electrostatic force just to balance its weight?
- (iv)- What is unit of charge? Define it.
- (v)- What advantage might there be in using two identical capacitors in parallel connected in series with another identical parallel pair, rather than using a single capacitor?
- (vi)- What is effect of dielectric on original electric field of capacitor?
- (vii)- An electron linear accelerator produced a pulsed beam of electrons. The pulse current is 485mA and the pulse duration is 95ns. How many electrons are accelerated per pulse?
- (viii)- Differentiate between electric and magnetic dipoles.
- (ix)- Write down formula for magnetic induction at center of a current loop of radius R and number of turns N. Whether magnetic is uniform at all points in space?
- (x)- Can the path of integration around which we apply Ampere's law pass through a conductor?
- (xi)- Is it meaningful to say that atom is ferromagnetic?
- (xii)- You are given a length l of copper wire. How would you arrange it to obtain maximum inductance?
- (xiii)- High voltages are used to transmit electrical energy through long distance cables? Explain.
- (xiv)- How a p-type semiconductor is formed?
- (xv)- What happens to barrier potential when temperature increases?

Q.2. Answer the following questions.

(3x10=30)

- (i)- What is electric dipole? What is dipole moment? Find electric field intensity due to a dipole at far off point on axial line.
- (ii)- What is an RC circuit? Using loop rule, write equation of this circuit. Discuss growth of charge and current in this circuit. What is time constant of circuit?
- (iii)- Explain in detail principle, construction and working of transformer. What are energy losses and how they are reduced to minimum?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(15x2=30)

- a) What Stefan-Boltzmann law and Wien's displacement law states? Explain briefly.
- b) Why classical theory fails to explain photoelectric effect? Explain briefly.
- c) Calculate the shortest wavelength present in the Paschen series of spectral lines.
- d) Calculate the longest wavelength for Brackett series of hydrogen spectrum.
- e) State Moseley law. Write its empirical equation in its general form and explain each term appearing in it. Plot Moseley's empirical equation?
- f) Characteristic x-rays of frequency 4.2×10^{18} Hz are produced when transitions from *L* shell to *K*-shell take place in a certain target material. Determine the atomic number of the target material. (Rydberg's constant $= 1.097 \times 10^7 \text{ m}^{-1}$).
- g) What Heisenberg uncertainty principle states? Write and explain (i) position and momentum, ii) energy and time uncertainty relationships.
- h) What are the conditions for acceptable wave function of a particle?
- i) What are quantum numbers? Write down acceptable values of each quantum number.
- j) What is Zeeman effect? Explain it briefly.
- k) Why classical theory fails to explain the phenomenon of cavity radiations?
- l) Explain the difference between continuous X-rays and characteristics X-rays.
- m) Write down the operator for energy and momentum.
- n) An eigenfunction of the operator d^2/dx^2 is $\psi = e^{2x}$. Find the corresponding eigenvalue.
- o) What is meant by linearity and superposition in quantum mechanics? Explain briefly.

Answer the following questions.

- Q. 2** What is Compton effect? Sketch a diagram of Compton scattering and derive Compton shift equation. (2+8)
- Q. 3** What is de-Broglie hypothesis of matter waves? Describe an experiment which confirms matter behaves like a wave. (2+8)
- Q. 4** Solve Schrödinger wave equation for a particle bounded to move in a one dimensional box of infinite hard walls (at $x = 0$ and at $x = L$) and show that the energy of a particle in such a box is discrete. (10)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. Write down sub-fields of political science.
2. How state was evolved?
3. Define Nation. On which principles nations are made?
4. What is legitimacy and how it affects Political system.
5. Describe three functions of Judiciary.
6. Give four merits of modern approach to the study of political science.

Q.2. Answer the following questions.

(3x10=30)

1. Discuss in detail the merits and demerits of presidential form of Government.
2. Briefly discuss the kinds of sovereignty, and also write its importance for state.
3. How political science is related to other social sciences, Discuss.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Political Science-I (MAS)

Course Code: POL-221

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1. What is the main purpose of studying Political Science?**
- 2. What is the internal aspect of sovereignty?**
- 3. What are the conditions for a voter to cast his vote?**
- 4. What is meant by Political System?**
- 5. Differentiate between flexible and inflexible constitution.**
- 6. What is meant by the Rule of Law?**

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

- 1. Describe the basic conditions for the independence of judiciary?**
- 2. Discuss the role of media in creating awareness in society.**
- 3. Discuss the functions of Legislature.**



UNIVERSITY OF THE PUNJAB

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

Roll No.

PAPER: Pakistan Studies

Course Code: PST-111

Time: 3 Hrs. Marks: 60

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.1. Write short note on the following:

(5x6=30)

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

I. Sir Syed Ahmad Khan

I۔ سر سید احمد خان

II. Lahore Resolution 1940

II۔ قرارداد لاہور 1940

III. Cabinet Mission Plan

III کابینہ مشن پلان۔

IV. Early Challenges of Pakistan

IV۔ پاکستان کی ابتدائی مشکلات

V. Z. A. Bhutto

V۔ زیڈ اے بھٹو

Q.2. Answer the following questions:

(2x15=30)

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

1 Explain the historical significance of 3rd June Plan 1947.

1۔ تین جون 1947 کے منصوبے کی تاریخی اہمیت بیان کریں۔

2 Discuss the salient features of 1962 Constitution.

2۔ 1962 کے آئین کے نمایاں خدوخال پر بحث کریں۔



UNIVERSITY OF THE PUNJAB

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

Paper: Introduction to Sociology

Course Code: SOC-211

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. Relation of Sociology with Psychology and Political Science
- ii. Peer Group as an agent of Socialization
- iii. Sociology challenges common sense assumptions
- iv. Crime as a social problem
- v. Importance of Symbols
- vi. Culture and its types

Q.2. Answer the following questions.

(3x10=30)

- i. Write a note on Symbolic Interaction perspective.
- ii. Define Norms. What are Prescriptive and Proscriptive Norms? Differentiate between Mores and Folkways.
- iii. Define Role. Differentiate between Role Conflict and Role Strain and give an example of each.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Differentiate between finite population and infinite population.
- ii. What do you know about the term Sample Size?
- iii. What do you know about Quota Sampling?
- iv. What is meant by proportional Allocation?
- v. Differentiate between the terms Population and Sample?
- vi. Is an estimate a random variable? Why or why not?
- vii. What do you know about interval estimation?
- viii. What is meant by efficient Estimator?
- ix. Define the term statistical hypothesis.
- x. What is meant by the term two tailed test?
- xi. What do know about type-II error?
- xii. What is the purpose of Goodness of fit-test?
- xiii. What are the assumptions in using the t-distribution?
- xiv. Under what conditions paired t-test is used?
- xv. Write down any two properties of the F-distribution.

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

- i. If the size of the simple random sample from an infinite population is 55, the variance of sample mean is 27, what must be the standard error of sample mean if $n=165$.
- ii. A population consists of $N=4$ members 1,3,4,5. Draw all possible sample of size $n=3$ without replacement, find the sample proportion of ODD numbers in samples and verify that.
$$i) \quad \mu p^{\wedge} = P \qquad ii) \quad \sigma^2 p^{\wedge} = \frac{P(1-P)}{n} \left[\frac{N-n}{N-1} \right]$$
- iii. Find a 90% confidence interval for the mean of normal population with $\sqrt{=3}$ given the sample as: 2.3,-0.2,-0.4,-0.9 what would be the limits if $\sqrt{}$ were unknown?
- iv. A sample of 400 male students is found to have a mean height of 67.47 inches. Can it be regarded as a simple random sample from a large population with mean height 67.39 with standard deviation of 1.3inches?
- v. A height distribution has a variance σ^2 of at most $(2.792)^2$. Do the following 10 values, selected at random, have a greater variance than what is expected?
 $X=67.50, 70.75, 72.00, 63.25, 65.25, 68.75, 69.25, 68.50, 66.50, 64.75$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Sampling Error.
- ii. Properties of Binomial Distribution.
- iii. Standardized Variable.
- iv. Quartiles
- v. Secondary Data.
- vi. Histogram

Answer the following questions. (5x6=30)

Q.2. Given the following frequency distribution, calculate median and mode.
Classes: 60 – 65 65 – 70 70 – 75 75 – 80 80 – 85 85 – 90
Frequency: 24 47 80 102 66 40

Q.3. The following calculations have been obtained from a frequency distribution of weights (X) having 125 observations after making the substitution. $x = 16 + 5\mu$ $\sum f\mu = -46$, $\sum f\mu^2 = 306$
Compute Airthematic mean, standard deviation and its relative measure.

Q.4. Suppose that the number of insurance claims closely approximates a poisson distribution with mean 0.06. find the probability of (i) no claim and (ii) 1 or fewer claims

Q.5. The IQ's of the college students are known to be normally distributed with a mean of 125. A random sample of 50 students showed an average IQ of $\bar{x} = 120.87$ and $S = 8.94$ Test the hypothesis that $\mu = 125$ against the alternative that it is less. Let $\alpha = 0.05$

Q.6. Calculate Chi-square from the following contingency table of attributes and test for independence at $\alpha = 0.01$

Attributes	A ₁	A ₂	A ₃
B ₁	44	22	15
B ₂	265	257	178
B ₃	41	91	98



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i) Define the term "psychology"
- ii) Differentiate between psychologist and psychiatrists.
- iii) Write a short note structuralism.
- iv) Why Sigmund Freud is known as Father of modern psychology?
- v) Define criminal psychology as a branch of psychology?
- vi) Define Intelligence?

Q.2. Answer the following questions:

(3x10=30)

- i) Write a detail note on different definitions of psychology.
- ii) Describe observational method in detail.
- iii) Write theory of personality by Carl Jung.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

سوال نمبر 1 مندرجہ ذیل سوالوں کے مختصر جواب دیں۔

- (الف): صنعت حسن تعلیل کیا ہے؟ دو مثالیں بھی دیں۔
 (ب): مبالغہ سے کیا مراد ہے؟ نیز دو مثالیں دیں۔
 (ج): تلمیح کی تعریف کریں نیز دو مثالوں سے واضح کریں۔
 (د): اردو کا رسم الخط کون سا ہے؟
 (ه): ”زار“ کو بطور لاحقہ استعمال کرتے ہوئے کوئی سے دو مرکب الفاظ بنائیں۔
 (و): درج ذیل محاورات کو جملوں میں استعمال کریں۔
 (ا): طوطی بولنا (۱۱): قلعی کھل جانا

(3x10=30)

سوال نمبر ۲ مندرجہ ذیل سوالوں کے تفصیلی جواب لکھیں۔

- (الف): اردو زبان کے آغاز و ارتقاء پر جامع نوٹ لکھیں۔
 (ب): ترجمہ نگاری کیا ہے نیز دیگر زبانوں سے اردو زبان میں ترجمہ نگاری کی اہمیت واضح کریں۔
 (ج): اصطلاح سازی کیا ہے؟ اردو میں اصطلاح سازی کے ضمن میں مشکلات کا جائزہ لیں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Functional Urdu

Course Code: URDU-211

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۔

(6x5=30)

سوال نمبر ۱: مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔

۱۔ علم بیان اور علم بدیع میں کیا فرق ہے؟

۲۔ مجاز مرسل کی تفہیم سے زبان کا کیا پیچیدہ مسئلہ سمجھ میں آ جاتا ہے؟

۳۔ کنایہ جلی اور کنایہ خفی سے کیا مراد ہے؟

۴۔ صنعتِ تجنیس سے کیا مراد ہے؟ مثال سے واضح کریں۔

۵۔ سیاقۃ الاعداد کسے کہتے ہیں؟ دو مثالوں سے واضح کریں

۶۔ تلمیح کیا ہوتی ہے؟ دو اشعار لکھ کر نقطہ واضح کریں۔

(3x10=30)

سوال نمبر ۲: درج ذیل سوالات کے تفصیلی جوابات تحریر کیجئے۔

۱۔ اردو زبان کو کن کن علاقوں سے موسوم کیا گیا؟ کیا علاقائی نسبت کے علاوہ بھی اردو کے نام رہے ہیں؟

۲۔ اصطلاح سازی کے عملی معیارات پر روشنی ڈالیں۔

۳۔ معیاری ترجمہ کرنے کے لیے کن بنیادی امور کا خیال رکھنا ضروری ہے؟



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. Glycolipids and Glycerophospholipids
- ii. Peptidoglycans of bacterial cell wall
- iii. Isozymes and Enzyme precursors
- iv. Functional diversity of Globular proteins
- v. Immigration and crossbreeding
- vi. Law of thermodynamics

Answer the following questions.

(3x10=30)

- Q.2** Describe the nature and origin of life. Also discuss about genetic drift in detail.
- Q.3** What is meant by acid/base properties of amino acids and their titration curves in detail.
- Q.4** Write about fatty acids, their types and major characteristics.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Write a detailed note on synapse.
2. Describe the lateral line system and electrical sensing.
3. Compare the specific and non-specific immune response.
4. Describe shortly the invertebrates' hormones and their functions.
5. Elaborate the non-muscular movement in invertebrates with examples.
6. Write a note on blood composition.

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

1. Write a detailed note on hormones released from thyroid, adrenal cortex and gonads.
2. Describe in detail the resting and action membrane potential in a neuron cell.
3. Briefly describe the ultra-structure of skeletal muscle and its mechanism by sliding filament model.



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Q.1. Write short answers to the following questions: (15x2=30)

- I. What is integument and its function?
- II. Describe skin of jawless fishes.
- III. Discuss limitation of exoskeleton.
- IV. Differentiate between cartilage and Bone tissue.
- V. Describe looping movement.
- VI. What is saltatory Conduction.
- VII. Discuss nervous organization in cnidarians.
- VIII. What are meninges.
- IX. What are hygroreceptors.
- X. What are hemocytes.
- XI. What is plasma.
- XII. Define pancreatic islets.
- XIII. Write function of thymus gland.
- XIV. What are Jacobson's organs.
- XV. Describe the types of blood cells.

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

1. Write a detailed note on nerve impulse transmission across the neuron.
2. Write a detailed note on hormones of anterior pituitary.
3. Write a detailed note on Hearing and Equilibrium in Air.