



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Define unearned income and prepaid expenses.
- ii. What is meant by cost principle in accounting?
- iii. What is going concern assumption with reference to accounting?
- iv. Explain the concept of consistency in accounting.
- v. Why is the provision for bad debts is created?
- vi. Explain accounting cycle.
- vii. What is matching principle in accounting?
- viii. State types of financial statements.
- ix. What is meant by accrued expenses and accrued income?
- x. Define errors of omission and errors of commission.

Answers the following questions. (3x10=30)

Q. 2 Z Company records its cash and bank transactions in a triple-column cash book. The following transactions were performed by the company during the month of June 2024.

- Jun 01: Cash in hand Rs. 1,600 (debit balance), Cash at bank Rs. 6,730 (debit balance).
Jun 03: Paid Jamil by check Rs. 2,350, discount received from him Rs. 50.
Jun 05: Received from Dawood a check amounting to Rs. 1,980, discount allowed to him Rs. 20.
Jun 07: Deposited into bank the check received from Dawood.
Jun 15: Purchased merchandise for cash, Rs. 2,560.
Jun 15: Cash sales for the first half of the month, Rs. 4,900.
Jun 16: Deposited into bank Rs. 2,500.
Jun 21: Drew from bank for office use, Rs. 840.
Jun 24: Received a check amounting to Rs. 2,870 from Haris and allowed him a discount of Rs. 30.
The Haris check was deposited into bank immediately.
Jun 27: Bought furniture for cash for office use, Rs. 720.
Jun 30: Cash sales for the second half of the month Rs. 9,100.
Jun 30: Paid salaries by check Rs. 1,520.
Jun 30: Withdrew from bank for office use Rs. 940.

Required: Record the above transactions in a triple column cash book.

Q. 3 On November 1, 2024, the account balances of Ravi Repairing Works were as follows.

Debits (Rs.)		Credits (Rs.)	
Cash	4,800	Accumulated Depreciation	4,000
Accounts Receivable	8,500	Accounts Payable	5,200
Supplies	3,600	Service Revenue	2,400
Store Equipment	24,000	Salaries Payable	1,400
		Nouman's Capital	27,900
	<u>40,900</u>		<u>40,900</u>

Adjustment data:

1. Supplies on hand Rs. 3,000.
2. Accrued salaries payable Rs. 800.
3. Depreciation for the month is Rs. 400.

Required: Prepare Income Statement, Statement of Owner's Equity and a Balance Sheet for the month ended November 30, 2024.

Q. 4

The following information is extracted from the books of Mr. Shahid.

May 1: Opening balance cash Rs. 9,700 and bank balance (Overdraft) Rs. 5,000.

May 7: Cash deposited to bank Rs. 6,000.

May 13: Cash received from Tahir Rs. 5,950 in full settlement of Rs. 6,000.

May 17: Paid cash to Tariq Rs. 3,975 in full settlement of Rs. 4,000.

May 22: Cheque received from Naeem and deposited into bank Rs. 9,900 and discount allowed Rs. 100.

May 24: Drawn from the bank for office use Rs. 4,000.

May 26: Paid by cheque to Babar Rs. 5,450 and discount allowed Rs. 50

May 29: Withdrawn by Shahid for household purposes Rs. 1,000

Required: Record Shahid's transactions for the month in accounting equation.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Define illusions and extra sensory perception with the help of an example.
2. Explain the concept of social facilitation.
3. Define Positive and Negative Punishment with an example.
4. Describe gestalt principles in detail.
5. Describe memory and its types.
6. Explain any ONE theory of intelligence.

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

1. What is Memory? Explain different types of memory.
2. Define Personality. Write a detailed note on any TWO theories of personality.
3. Write a detailed note on peripheral nervous system.



UNIVERSITY OF THE PUNJAB

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

Paper: Psychology-II (MAS)

Course Code: APSY-212

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6X5=30)

- 1. What are some common physical and emotional responses to stress?**
- 2. Describe cognitive behavior therapy.**
- 3. Explain any TWO defence mechanisms with an example.**
- 4. What is the goal of psychotherapy in psychology?**
- 5. How social cognition influence an individual's behavior in a group setting?**
- 6. What is the difference between obsessions and compulsions?**

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

- 1. Define abnormal psychology. Explain any TWO psychopathologies in detail.**
- 2. What is personality? Explain any TWO theories of personality development.**
- 3. Explain the concept of consciousness in psychology. How do psychologists study consciousness, and describe theories of consciousness?**



UNIVERSITY OF THE PUNJAB

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

Paper: Cross Cultural Psychology

Course Code: APSY-241

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: Write the historical foundation of **Cultural Psychology**.
- 2: Differentiate between **Acculturation** and **Multiculturalism** with examples?
- 3: Define **Conformity**? How conformity is different across cultures?
- 4: What are methodological issues in cross culture research?
- 5: Compare **intergroup** and **intergenerational** relations across cultures
- 6: How culture form stereotypical **gender roles** explain in detail?

Answer the following questions. (3x10=30)

Q.2:What are different issues experienced by researchers while **translating measures** from different cultures?

Q.3:What is the role of culture in **language development**?

Q.4: What is the nature and scope of **culture psychology**? Explain using different cultural perspectives.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Ethical Issues in Psychology (Revised)

Course Code: APSY-242

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 are the ethical guidelines for informed consent?
2. Describe the ethical guidelines related to accuracy in teaching?
3. What is integrity? Explain in detail.
4. What are the ethical guidelines related to the deception in research?
5. Describe the ethical guidelines related to group therapy?
6. What is meant by disclosure? Explain briefly with the help of examples.

Q.2. Answers the following questions.

(3x10=30)

1. Explain in detail the ethical guidelines regarding different forms of harassment.
2. Write a detailed note on the historical development of the code of ethics.
3. Write a detailed note on plagiarism and publication credits?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Gender Issue in Psychology (Revised)

Course Code: APSY-243

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 **gender role attitudes** and give an example of how they differ in men and women.
2. Differentiate between **aggression and violence**.
3. Describe **sexual harassment** and list two characteristics of perpetrators.
4. Explain the concept of **new men and new women**.
5. What is **sex typing**? Provide one historical example related to its study.
6. Define **gender discrimination** and provide one example in the workplace.

Q.2. Answers the following questions.

(3x10=30)

1. Differentiate between **biological theories** and **social learning** theories of aggression with examples.
2. Explain the changes in **gender values** and relationships in the context of Pakistan.
3. Discuss the similarities and differences between gender psychopathologies in men and women.



UNIVERSITY OF THE PUNJAB

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

Paper: Introduction to Arabic

Course Code: ARAB-111

Roll No.

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. Translate into Urdu.

السؤال الأول: اترجم إلى العربية: ١٥

قال رسول الله صلى الله عليه وسلم: «أَتَغْنَمُ أَصْلِحَ لِي دِينِي الَّذِي هُوَ عِصْمَةٌ أَمْرِي. وَأُصْلِحَ لِي دُنْيَايَ الَّتِي فِيهَا مَعَايِشِي وَأُصْلِحَ لِي آخِرَتِي الَّتِي إِلَيْهَا مَعَادِي وَأُجْعَلَ الْحَيَاةُ زِيَارَةً لِي فِي كُلِّ خَيْرٍ وَأُجْعَلَ الْمَوْتُ رَاضَةً لِي مِنْ كُلِّ شَرٍّ»

Q-2. Translate into Urdu:

السؤال الثاني: اترجم إلى العربية: ١٥

تَشْفِيقُ الظُّلُمِ فَرَحَانَةٌ بِالْقَوْرِ
تَقُولُ فِي سُرُورٍ مَا أَجْمَلُ الصَّنَاءُ
وَالْحَقْلُ وَالزُّهْرُ وَالْجَذْوَلُ الصَّبِغُ
تَقُولُ فِي سُرُورٍ مَا أَجْمَلُ الصَّنَاءُ
وَالْوَلَدُ الْقَبِيضُ وَالزُّجَلُ الْكَبِيرُ
تَقُولُ فِي سُرُورٍ مَا أَجْمَلُ الصَّنَاءُ
فِي الْأَرْضِ وَالسَّمَاءِ مَا أَجْمَلُ الصَّنَاءُ
يُشْرِقُ بِالْبَهَاءِ مَا أَجْمَلُ الصَّنَاءُ

Q-3. Answer the following questions

السؤال الثالث: أجب عن الأسئلة التالية: ١٥ = 2x5

١- بماذا تكتب؟ ٢- كيف حالك؟ ٣- بمن أين جئت؟ ٤- من ذاك؟ ٥- ماذا يريد؟

Q-4. Arrange the following words.

السؤال الرابع: رتب الكلمات التالية: ١٥

i - يلام - شديد - الليل
ii - شرب - الماء - الولد
iii - الى - ذهب - المدرسة - الطالب
iv - طفلة - المرأة - تحمل
v - شجر - مبارك - رمضان
vi - لون - احمر - الورد
vii - تلك - لاعبة - طفلة
viii - الطبية - غرفتها - من - نزلت
ix - الفقير - المال - طلب
x - البقرة - حليب - مفيد

Q-5. Write the Plurals of the following:

السؤال الخامس: اكتب الجمع لهذه المفردات: ١٥

عين - شارع - قلم - يد - ولد - طيبة - فنانة - طفل - رجل - غنم

Q-6. Fill in the blanks with the suitable word:

السؤال السادس: املأ الفراغ بكلمة مناسبة: ١٥

i - اسأذي رجل (صالحون - صالحة - صالح)
ii - هذا شارع (ناقة - حويل - مدرس)
iii - بستان صديق (تلك - هذه - ذاك)
iv - البيت الضيق (مظلمة - مظلم - طيبة)
v - تلك جبلة (رجل - ولد - بنت)
vi - هذه فاكهة (لذينة - لذينة - لذينة)
vii - تلك صورة (كتاب - حصة - باب)
viii - ابن الأستاذ (ذكية - اذكيا - ذكهم)
ix - المدرسة واسعة (جدار - نافذة - باب)
x - صندوق النصارى (قوية - قوي - قبيلة)



UNIVERSITY OF THE PUNJAB

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

Paper: Arabic Language-I

Course Code: ARB-111

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q-1. Translate into Urdu.

السؤال الأول: ترجم إلى الأردية - (10)

قال رسول الله صلى الله عليه وسلم: «مُحِبُّ الْأَنْزِلِ الْمَوْجِسُ: إِنْ أَتَتْهُ مُلْكَةٌ لَمْ خَيْرٌ، وَلَيْسَ ذَلِكَ لِأَحَدٍ إِلَّا لِلْمُؤْمِنِ
إِنْ أَصَابَتْهُ سَرَّاءٌ سَرَّاهُ فَكَانَ لَهُ خَيْرٌ لَهُ وَإِنْ أَصَابَتْهُ ضَرَرَةٌ ضَرَّرَتْهُ فَكَانَ خَيْرٌ لَهُ»

Q-2. Translate into Urdu.

السؤال الثاني: ترجم إلى الأردية - (10)

الفلاح: إني أنا الفلاح من طبعي اللطاح
طعامكم من جذري وخيركم من لذي
النجار: إني أنا النجار رفيعي المششار
من صنعتي الموائد والباب والمقاعد
الحمد: في كل الجديد أنحل في جذري
من صنعتي الموائد عن الحمى رافع
الجنج: عاشت لنا الزراعة وأختها الصناعة
فعلنا بالبحر نرفع شأن الوطن

Q-3 Answer the following Questions.

السؤال الثالث: أجب عن الأسئلة التالية - (10)

١- ما اسم أبيك؟ ٢- ماذا تدرس؟ ٣- ما يملك؟ ٤- من خلقك؟ ٥- أين أنت؟

Q-4. Arrange the following words.

السؤال الرابع: رتب الكلمات التالية - (10)

١- السقف - مريحة - تحت
٢- بيت - هذا - جديد
٣- المدرسة - جبلية - حديقة
٤- تلميذ - كتاب - ذلك
٥- العلم - لون - أخضر
٦- كرمية - اسارة - هذه
٧- نخل - هذا - الله
٨- مفتوحة - نافذة - هذه
٩- عبيد - هذا - يوم
١٠- الطعام - محمود - يأكل

Q-5. Give Plurals of the following Singulars.

السؤال الخامس: أعط الجور للمفردات التالية - (10)

سليم - صبرة - طفل - خرافة - كبير - اسم - باب - بيت - طالب - ابن

Q-6. Translate into Arabic.

السؤال السادس: ترجم إلى العربية - (10)

١- گھر کا دروازہ کھلا ہے - ٢- میں اخبار پڑھتا ہوں - ٣- تم کالج جاتے ہو -
٤- آسمان کا رنگ نیلا ہے - ٥- لڑکی نے پانی پیا -



UNIVERSITY OF THE PUNJAB

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

Paper: Arabic-IV

Course Code: ARB-202

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

(6x5=30)

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

- ۱- من ألقى خطبة حجة الوداع؟
- ۲- من الخنساء وما اسمها الكامل؟
- ۳- من هم عباد الرحمن؟ اكتب ثلاثة أسطر؟
- ۴- ماذا قيل عن حياة العالم والجاهل؟
- ۵- ترجم واشرح (في الأردية) قول الله تعالى: "إِنَّ اللَّهَ لَا يَغَيِّرُ مَا يُقِيمُ حَتَّىٰ يَغْيِرُوا مَا بَأْنَفْسِهِمْ".
- ۶- ماهي جوامع الكلم؟ اكتب ثلاثة منها.

(10)

سوال نمبر 2۔ درج ذیل میں سے کسی ایک عنوان پر مکالمہ لکھیں۔

في السوق المركزي - في مكتب البريد العام

(2x5=10)

سوال نمبر 3۔ درج ذیل میں سے کسی دو کا اردو ترجمہ لکھیں۔

- | | |
|--|---|
| (أ) ليس الجمال بمنزلة | فاعلم وإن رُدَّتْ بُرْدَا |
| إِنَّ الْجَمَالَ مَعَادِنٌ | وَمَنَاقِبٌ أَوْزَنُ مَجْدَا |
| (ب) هذا ابنُ خَيْرِ عِبَادِ اللَّهِ كُلِّهِمْ | هذا التَّقَى التَّقَى الطَّاهِرُ الْقَلَمُ |
| إِذَا رَأَتْهُ قُرَيْشٌ قَالَ قَاتِلُهَا | إِلَى مَكَارِمِ هَذَا يَنْتَهِي الْكَرَمُ |
| (ج) وَمَنْ هَابَ أَشْنَابُ الْمَنَاقِبِ يَنْلَنَهُ | وَإِنْ يَرْقَى أَشْنَابُ السَّمَاءِ يَسْلُمُ |
| وَأَنَّ سَفَاهَ الشَّيْخِ لَا حِلْمَ بَعْدَهُ | وَإِنَّ الْفَتَى بَعْدَ السَّفَاهَةِ يَحْلُمُ |

(10)

سوال نمبر 4۔ درج ذیل میں سے کسی ایک عنوان پر تفصیلی نوٹ لکھیں۔

اسم التفضيل - اسم المفعول



UNIVERSITY OF THE PUNJAB

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

Paper: Financial Accounting (Advanced)

Course Code: BBA-205

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- I. What is the difference between a perpetual and a periodic inventory system?
- II. What is the purpose of a multi-step income statement in a merchandising business?
- III. What are financial assets, and give two examples?
- IV. How are interest revenues recorded on a note receivable?
- V. What is the purpose of a bank reconciliation statement?
- VI. What is the cost principle in accounting?
- VII. Explain the concept of conservatism in accounting.
- VIII. Define depreciation and name two methods of calculating it.
- IX. How is the gain or loss on disposal of a plant asset determined?
- X. What is meant by salvage/scrape value?

Answer the following long questions.

(3x10=30)

Question No. 02

Rehman, the owners of Rehman Company, prepare the following trial balance for the year ended on June 30, 2024.

Rehman Company Trial Balance June 30, 2024		
Account Title	Debit	Credit
Cash	63,000	
Accounts Receivable	18,800	
Office Supplies	57,080	
Prepaid Insurance	36,000	
Office Equipment	216,000	
Accumulated Depreciation - Office Equipment		43,200
Accounts Payable		11,800
Rehman, Capital		207,580
Rehman, Drawing	153,000	
Revenues		1,144,000
Salaries Expense	800,000	
Rent Expense	54,000	
Utilities Expense	10,000	
Provision for doubtful debts		1,300
Totals	1,407,880	1,407,880

Adjustments data:

1. Office supplies on hand on June 30, 2024, Rs. 37,400.
2. Rehman Company purchased a one-year insurance policy for Rs. 36,000 on January 1, 2024.
3. Depreciation of office equipment for the year is Rs. 43,200.
4. Salaries are unpaid on June 30, 2024, Rs. 18,000.
5. The provision for doubtful debts to be increased by Rs.700.

Required: Prepare income statement for the year ended June 30, 2024, and balance sheet as of June 30, 2024.

Question No. 03

The cash transactions and cash balances of California Corporation for July were as follows:

- i. The ledger account for cash showed a balance of on July 31 of Rs. 125,568.
- ii. The July bank statement showed a closing balance of Rs. 114,828.
- iii. The cash received on July 31 amounted to Rs. 16,000. It was left at the bank after banking hours on July 31 and therefore was not recorded by the bank on the July statement.
- iv. Also included in the July bank statement was a debit memorandum from the bank for Rs.50 representing service charges for July.
- v. A credit memorandum enclosed with the July bank statement indicated that a note receivable for Rs. 4,000 collected by bank from a customer and credited to the account of California Corporation.
- vi. Comparison of paid checks returned by bank with the entries in the accounting records revealed that check number 821 for Rs. 519, issued July 15 in payment for office equipment, had been erroneously entered in California records as Rs. 915.
- vii. Examination of paid checks also revealed that three checks, all issued in July, had not yet been paid by the bank amounting to Rs. 314, Rs. 625 and for Rs. 175.
- viii. Included with the July bank statement was a Rs. 200 check drawn a customer was marked NSF.

Required: Prepare a bank reconciliation statement for California Corporation on July 31.

Question No. 04

Subhan Company, purchased a new machine on September 1, 2012 at a cost of Rs.108,000. The machine's estimated useful life at the time of the purchase was five years, and its residual value was Rs.8,000.

Required:

Prepare a complete depreciation schedule, beginning with calendar year 2012, under each of the methods listed below (assume that the half-year convention is used):

1. Straight-line.
2. 200 percent declining-balance.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- i. Define valid contract.
- ii. Define unilateral promise.
- iii. Define the term invitation to offer?
- iv. Define the term coercion.
- v. Define the term damages.
- vi. What do you understand by pledge?
- vii. Define the term goods.
- viii. Define the term caveat emptor.
- ix. What do you mean by delivery of goods?
- x. Define firm and partner?
- xi. Who is sleeping partner?
- xii. What is the position of minor in a partnership?
- xiii. What do you understand carriage by sea?
- xiv. Define bill of exchange?
- xv. Who is a bearer?

Q.2. Answer the following questions

(3x10=30)

- i. What are the essentials of a valid contract?
- ii. Briefly explain the contract of agency. What are the duties of an agent?
- iii. What is the difference between agreement to sell and a contract of sale?



UNIVERSITY OF THE PUNJAB

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

Paper: Money and Banking

Course Code: BBA-207

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. Explain Flat money?
- II. Difference between Musharika and Mudarabah?
- III. Define Proportionate Reserve System?
- IV. What is meant by Lender of last resort?
- V. What is Trade Cycle?
- VI. What is Dishonor of Cheque?

Answer the following questions (3x10=30)

Q.No.2: Differentiate between, Inflation, Deflation, Reflation and Stagflation.

Q.No.3: Define Central Bank and discuss major functions of a Central Bank.

Q.No.4: Critically examine Quantity Theory of Money and also discuss its limitations.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- What are the rules for declaring variables and constants in VB?
- Explain the concept of parameter passing in VB. What are the different ways to pass parameters?
- What is the difference between a one-dimensional and a two-dimensional array?
- What is polymorphism and how is it achieved in VB?
- Given the following code, what will be the output?

```
Dim count As Integer = 5
Do While count > 0
    Console.Write(count & " ")
    count -= 1
Loop
```

- Given the following code, what will be the output?

```
Dim a As Integer = 3
Dim b As Integer = 4
If a = b Then
    Console.WriteLine("Equal")
Else
    Console.WriteLine("Not Equal")
End If
```

Answer the following questions

(3x10=30)

Question 2. Write a Visual Basic program that merges two arrays into one. Assume that both arrays have the same data type and that the resulting array should contain all the elements of both arrays.

Example: Array 1: {1, 2, 3}, Array 2: {4, 5, 6}

Output: {1, 2, 3, 4, 5, 6}

Question 3. Write a Visual Basic program that checks if a given string is a palindrome. A palindrome is a word, phrase, or number that reads the same backward as forward (ignoring spaces and punctuation). The program should output True if the input string is a palindrome, and False otherwise.

Example: Input: "madam"

Output: True

Input: "hello"

Output: False

Question 4. Write a Visual Basic program that calculates and prints the sum of all elements in an array of integers.

Example: Input: {1, 2, 3, 4, 5}

Output: 15



UNIVERSITY OF THE PUNJAB

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

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. Briefly explain the kinds of a contract according to enforceability?
- ii. State some provisions regarding unfair labor practices in factories?
- iii. What is a partnership deed in case of partnership?
- iv. Briefly discuss the exceptions of doctrine of caveat emptor?
- v. Define common carrier. Explain the essentials of a common carrier?
- vi. Define contract of indemnity. Explain the rights of indemnity-holder under this contract?

Q.2. Answer the following questions

(3x10=30)

- i. Explain the liabilities of the parties to negotiable instruments?
- ii. Define unpaid seller. Elaborate the main rights of unpaid seller in case of contract of sale of goods?
- iii. What is discharge of contract? Discuss the discharge of contract by operation of law and mutual agreement?



UNIVERSITY OF THE PUNJAB

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

Paper: Botany-IV (Plant Physiology and Ecology) Course Code: BOT-203

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. What is the product of Anaerobic fermentation in yeast?
- ii. What is water logging and its causes.
- iii. What are types of nastic movements.
- iv. What is importance of cytokinin hormones.
- v. What are deficiency symptoms of Boron and Calcium.
- vi. What is pressure potential.
- vii. What is difference between Microterm and Hekisotherm.
- viii. Define wind. How can it measured.
- ix. What is abundance. Give its formula.
- x. What are effects of light on plants.

Answer the following questions (3x10=30)

Question No. 2. What is difference between C_2 and C_3 pathways?

Question No. 3. What are synthetic characters of plant community..

Question No. 4. What is nitrogen cycle. What are anthropogenic effects on it.



UNIVERSITY OF THE PUNJAB

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

Paper: Plant Physiology and Ecology

Course Code: BOT-207

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. What is difference between Scarification and Stratification?
- ii. What are effects of Salinity on plants?
- iii. Differentiate between Aeroponic growth system and nutrient film growth system.
- iv. Compare site of synthesis of all hormones.
- v. What is difference Substrate level phosphorylation and oxidative phosphorylation?

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

- i. Describe synthetic characteristics of plant community.
- ii. Explain CAM pathway and its significance.
- iii. Compare site of synthesis of all hormones.



UNIVERSITY OF THE PUNJAB

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

Paper: Biodiversity and Conservation

Course Code: BOT-208

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- I. Differentiate between national parks and zoos.
- II. What are IUCN threatened species categories?
- III. What are the major protected areas of Pakistan?
- IV. Briefly explain the direct and indirect competition of local resources among different species.
- V. What should be Public awareness strategies for conservation of different species?

Answer the following questions (3x10=30)

- Q. 2. a) Describe the threats to biodiversity?
b) Briefly describe the in-situ and ex-situ conservation.
- Q. 3. a) What are the National and international laws and agreements for species and habitat protection?
b) Describe briefly the reasons of habitat loss and fragmentation.
- Q. 4. Explain in detail the gene bank management and operations for conservation of biodiversity.



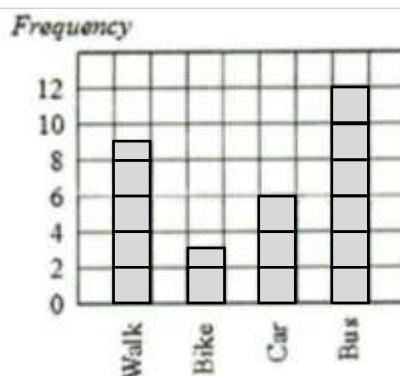
THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are the responsibilities of a biostatistical researcher? Explain significance of biostatistics in scientific research.
2. Define the concept of variables in biostatistics. Differentiate between Continuous variable, Qualitative variable and Discrete Variable in the table below.

Number of flowers	Length of stem	Name of birds feeding on plant	Beak shape
20	12.5cm	Robin	Narrow, pointed
22	12.6cm	Blue jay	Needle like, elongated
20	12.0cm	Sparrow	Small, v shape
23	12.2cm	Dove	Small, slight pointed

3. A bar chart for the most popular way of going to school is illustrated below. Describe the most popular and least popular way to get to school in bar chart. Draw a corresponding pie chart showing similar results.



4. Differentiate between mean and range. How can we calculate them.
5. Describe the binomial distribution and its key characteristics.
6. Differentiate between Null and alternative hypothesis. How can we accept or reject the null hypothesis?

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

1. Discuss principles of experimental design. Explain the differences between replication and randomization. Explain the concept of random sampling and why it is important in research.
2. Data shows effects of various treatments on plant heights. Calculate the Range, Variance, Standard deviation, Standard Error, Coefficient of variance for Treatment A and Treatment B.

	Plant height (cm)	Plant height (cm)	Plant height (cm)	Plant height (cm)
Treatment A: CO ₂ concentration	12	15	14	18
Treatment B: Light intensity	11	14	13	17
Treatment C: Wind velocity	13	16	15	19
Treatment D: Altitude	12	15	14	18

3. You are provided with the following set of data representing the scores of students in a biology quiz: 8, 9, 6, 8, 7, 9, 8, 6, 7, 8, 7, 7, 6, 6, 8, 8. Organize the given raw data into a frequency table, Calculate the mean and median of the data. Show your step-by-step calculations to demonstrate how you arrived at each value. Use the frequency table to construct a histogram representing the distribution of scores. Label the axes appropriately.



UNIVERSITY OF THE PUNJAB

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

Paper: Basic Grammar II

Course Code: BSAR-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۔

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

- (1) اکتب/اكتبی أسلوب الشرط مع المثال. (شرط کا اسلوب مثال کے ساتھ لکھیں)
- (2) اکتب/اكتبی ضمائر النصب المتصلة مع مادة "كَتَبَ". ("كَتَبَ" کے لفظ کے ساتھ ضمائر منصوب متعلقہ لکھیں)
- (3) کیف تتم إضافة الجمع المذكور السالم والمثنى إلى مضاف إليه، بين الأمر بالأمثلة. (جمع مذکر سالم اور مثنیہ مضاف کیسے بنتے ہیں؟ نیز اس کی مثالوں سے وضاحت بھی کریں)
- (4) استخدم/استخدمی الضمير المتصل مضافاً إليه في كلِّ تصاريفه مع كلمة "أَمَّ" ("أَمَّ" کے لفظ کے ساتھ ضمیر متصل کو مضاف الیہ بناتے ہوئے ساری ضمائر لکھیں۔)
- (5) اکتب/اكتبی العدد العربي من 3 إلى 9 مع المعدود المذكور. (مذکر معدود کے ساتھ 3 سے 9 تک عربی گنتی لکھیں۔)

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

- 2.Q: ما ذا تعرف/تعرفین عن الاستثناء وأسلوبه في اللغة العربية، هات أدواته وأركانها مع إيضاح الأسلوب والإعراب بالأمثلة (استثناء کا اسلوب، اعراب، اس کے ارکان اور آلات ذکر کریں اور پھر اس کو مثالوں سے واضح کریں)۔
- 3.Q: عرّف/عرّفي المركب التوصيفي مع ذكر شروط المراعاة فيه، ووضحه بالأمثلة. (مركب توصيفي کی تعریف کریں اور ان شرائط کا ذکر کریں جن کی اس مرکب میں رعایت رکھی جاتی ہے، اور مثالوں سے واضح کریں)
- 4.Q: عرّف/عرّفي بالجملة الاسمية وأركانها مع القواعد المهمة لمراعاة أركانها تذكيراً وتأنيداً وتعريفاً وتنكيراً وغيرها. ثمّ وضح/وضحی المسألة بالأمثلة. (جملہ اسمیہ کی تعریف کریں نیز اس کے ارکان کیا ہیں؟ اور ان کے مابین مذکر، مؤنث، معرفہ، نکرہ، افراد، مثنیہ و جمع لانے کے اہم قواعد لکھیں؟ پھر اس کو مثالوں سے واضح کریں)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Briefly explain the following:

(6x5=30)

- سوال نمبر 1: درج ذیل سوالات کے مختصر جواب تحریر کریں۔
- Briefly describe the reason of popularity of the web radio in Pakistan.
(الف) پاکستان میں ویب ریڈیو کی مقبولیت کی وجوہات کو مختصر بیان کریں۔
 - Identify and discuss the challenges faced by Press at present in Pakistan.
(ب) پاکستان میں اس وقت پریس کو درپیش چیلنجز کی نشاندہی کریں اور ان پر تبادلہ خیال کریں۔
 - Write a short note on columns in shaping Public Opinion in Pakistan.
(ج) پاکستان میں رائے عامہ کی تشکیل کے لئے کالموں پر ایک مختصر نوٹ لکھیں۔
 - Write a short note on "Al-Hilal" newspaper in Pakistan Movement.
(د) تحریک پاکستان میں "الہلال" اخبار پر ایک مختصر نوٹ لکھیں۔
 - Critically analyze the role of Cable Television in cultural and ethical dimensions.
(ه) ثقافتی اور اخلاقی جہتوں میں کیبل ٹیلی ویژن کے کردار کا تنقیدی تجزیہ کریں۔
 - Write down a note on PEMRA.
(و) پیمرپا پر ایک مختصر نوٹ لکھیں۔

Q.2. Answer the following questions

(3x10=30)

- سوال نمبر 2: درج ذیل سوالات کے تفصیلی جواب تحریر کریں۔
- Explain in detail the role of films in promotion and preservation of culture and society.
(الف) معاشرے میں ثقافت کے فروغ اور تحفظ میں فلموں کے کردار کی تفصیل سے وضاحت کریں۔
 - How has the media landscape in Pakistan evolved over the past decade?
(ب) پچھلی دہائی میں پاکستان میں میڈیا کا منظر نامہ کس طرح تیار ہوا ہے؟
 - What is the role of state-owned media outlets such as PTV and Radio Pakistan in shaping Public Opinions?
(ج) رائے عامہ کی تشکیل میں سرکاری ذرائع ابلاغ جیسے پی ٹی وی اور ریڈیو پاکستان کا کیا کردار ہے؟



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

(5x6=30)

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

۱. اصطلاح کسے کہتے ہیں؟
۲. ”اساطیر“ کا معنی و مفہوم بیان کیجئے۔
۳. ادبی اصطلاح ”علامتیت“ کی وضاحت کیجئے۔
۴. ”سہل ممتنع“ کو شعری مثالوں کی مدد سے واضح کیجئے۔
۵. ”نرکسیت“ کے معنی و مفہوم پر روشنی ڈالیے۔
۶. داخلیت و خارجیت میں فرق کو مختصر بیان کیجئے۔

(3x10=30)

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

۱. درج ذیل ادبی اصطلاحات پر مفصل نوٹ لکھیں۔
ا. کلاسیکیت ب. رومانویت
۲. ”داخلیت“ پر مفصل نوٹ تحریر کیجئے۔
۳. آمد اور آورد پر تفصیل سے بحث کیجئے۔



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(6x5=30)

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

- 1- پریم چند کے افسانے "کفن" کا پلاٹ مختصراً بیان کریں۔
- 2- منٹو کے پانچ افسانوں کے نام لکھیں۔
- 3- "پر میٹر سنگھ" کا مرکزی خیال لکھیں۔
- 4- ناول "امراؤ جان ادا" کے کردار خانم کا تعارف پیش کریں۔
- 5- توبہ انصوح کے کرداروں پر روشنی ڈالیں۔
- 6- نذیر احمد کی مقصدی ناول ناول نگاری میں "توبہ انصوح" کا مقام واضح کریں۔

(3x10=30)

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

- 1- "زرد کتا" کے علامتی اسلوب پر نوٹ لکھیں۔
- 2- "فینسی ہیئر کٹنگ سیلون" اور "پر میٹر سنگھ" میں تقسیم کو موضوع بنایا گیا ہے۔ تفصیلی نوٹ لکھیں۔
- 3- "انارکلی" کے کرداروں کا تنقیدی جائزہ پیش کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(15)

سوال نمبر 1: مندرجہ ذیل اقتباس کی تشریح مع حوالہ متن و سیاق و سباق کیجئے۔

سات مہینے تک سگریٹ اور سوسائٹی سے اجتناب کیا۔ لیکن خدا بڑا مسبب الاسباب ہے۔ آخر ایک دن جب وہ وعظ سن کر خوش خوش گھر لوٹ رہے تھے تو انہیں بس میں ایک سگریٹ لائٹر پڑا مل گیا۔ چنانچہ پہلے ہی بس اسٹاپ پر اتر پڑے اور لپک کر گولڈ فلیک سگریٹ کا ڈبا خریدا (ہمیں اس واقعے پر قطعاً تعجب نہیں ہوا۔ اس لیے کہ گزشتہ کرسمس پر انہیں کہیں سے نائلون کے موزے چار آنے رعایت سے مل گئے تھے جن کو ”میچ“ کر لینے کے لیے انہیں ایک دوست سے قرض لے کر پورا سوٹ سلوانا پڑا) سگریٹ اپنے جلتے ہوئے ہونٹوں میں دبا کر لائٹر جلانا چاہا تو معلوم ہوا کہ اندر کے تمام پرزے غائب ہیں۔ اب ماچس خریدنے کے علاوہ کوئی چارہ نہ رہا۔

(15)

سوال نمبر 2: مندرجہ ذیل سوالات پر مختصر نوٹ لکھیں۔

- ۱۔ پطرس بخاری کے اسلوب کے نمایاں خصائص مختصر بیان کیجئے۔
- ۲۔ ملا وجہی کے مقفی اور مسجع اسلوب کا جائزہ مثالوں کی مدد سے لیجئے۔
- ۳۔ شبلی کے عالمانہ طرز تحریر پر مختصر بحث کیجئے۔

(3x10=30)

سوال نمبر 3: درج ذیل سوالات کے مفصل جوابات تحریر کریں۔

- ۱۔ سیرت النبی ﷺ کی روشنی میں شبلی نعمانی کے اسلوب کا جائزہ لیجئے۔
- ۲۔ ”جہان دانش“ کو پیش نظر رکھتے ہوئے احسان دانش کے اسلوب نگارش پر بحث کیجئے۔
- ۳۔ اسلوب کیا ہے نیز اس کے تشکیلی عناصر پر نوٹ قلمبند کیجئے۔



UNIVERSITY OF THE PUNJAB

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

Paper: Software Engineering

Course Code: CC-212

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 and explain "software engineering" in short?
2. Define and explain "non-functional requirements"?
3. List elements of "State Transition Diagram" and explain any two of these?
4. Explain the types of 'use-case'?
5. Differentiate "testing technique" and "testing strategy"?
6. Define and explain "quality assurance" with example?

Q.2. Answer the following questions:

(3x10=30)

1. Explain "Prototyping Model" in details with example?
2. Explain the process to make "Architectural Design" by taking an example?
3. How "Domain Model" is transformed into "Design Class Diagram"? Explain it with example?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. What is the time complexity of the following code?

```
void earlyTermination(int n) {  
    for (int i = 0; i < n; i++) {  
        if (i == n / 2) break;  
        cout << i << " ";  
    }  
}
```

2. Complete the function that inserts element at the end of the linked list in the following code.

```
#include <iostream>  
using namespace std;  
  
struct Node {  
    int data;  
    Node* next;  
    Node(int x) : data(x), next(nullptr) {}  
};  
  
class LinkedList {  
private:  
    Node* head;  
  
public:  
    LinkedList() : head(nullptr) {}  
  
    void insertAtEnd(int x) {  
        Node* newNode = new Node(x);  
        if (!head) {  
            //write missing code  
        }  
        Node* temp = head;  
        while (temp->next) {  
            //write missing code  
        }  
    }  
};
```

```

}
//write missing code

}

};

```

3. A database system uses a hash table to index large datasets. Users frequently query the hash table for ranges of keys, e.g., all keys between 100 and 200. Assess whether a hash table is a good fit for this scenario.
4. Given the in-order traversal sequence: 2, 5, 7, 10, 12, 15, 20, and knowing the root node is 10. Reconstruct the binary search tree.
5. Perform a BFS traversal (level-order traversal) of the tree.

```

      A
     /\
    B  C
   /\  \
  D  E  F

```

6. What is the difference between BFS and DFS with respect to data structure used?

Q.2. Answer the following questions:

(2x15=30)

i.

Given the array:

5,3,8,6,25, 3, 8, 6, 25,3,8,6,2

Count the number of comparisons made by **Bubble Sort** to fully sort the array.

ii.

Complete the function to merge two sorted linked lists into one sorted linked list.

```

Node* mergeLists(Node* l1, Node* l2) {
    if (l1 == nullptr) return l2;
    if (l2 == nullptr) return l1;

    if (l1->data <= l2->data) {
        // Missing Code
    } else {
        // Missing Code
    }
}

```




UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Database Systems

Course Code: CC-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)

Q.2. Answer the following questions:



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- i. State Faraday's second law of electrolysis.
- ii. Give effect of Temperature on equilibrium position and equilibrium constant?
- iii. What do you mean by Zeeman effect?
- iv. How Co-precipitation differentiates from Fractional precipitation?
- v. Give two postulates of quantum mechanics?
- vi. What is Aldol Condensation? Give its significance.
- vii. Describe two different types of electronic transitions in UV Spectroscopy?
- viii. Differentiate between Emission and Absorption Spectroscopy.
- ix. Give mechanism of Esterification reaction.
- x. Compare Standard deviation and Relative Standard deviation.
- xi. What do you know about Molecular Absorption Spectroscopy?
- xii. What is De-Broglie Equation? Give its Significance.
- xiii. What is Transport Number?
- xiv. Give general mechanism of Base Catalyzed Nucleophilic addition reaction of aldehydes?
- xv. What are Confidence Limits?

Q.2. Answer the following questions

(5x6=30)

- a) What is Common ion effect? Give its applications in qualitative inorganic analysis.
- b) Briefly explain the concept of Solubility product.
- c) Derive Schrodinger wave equation in terms of Polar Coordinates.
- d) How Ethanol is converted to Ethyl acetate? Give its mechanism.
- e) What is Cannizarro's reaction? Explain its Mechanism.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is the range of UV region?
2. In UV/Vis spectroscopy, which type of transitions are observed?
3. What is the range of IR?
4. What are stretching vibrations?
5. Which types of transitions are noticed in IR spectroscopy?
6. Give one example of atomic emission spectroscopy?
7. What are the raw materials used for glass manufacturing?
8. What are reducing sugars, give example?
9. What is the percentage of sucrose in sugarcane juice?
10. Write the name and formula of any iron ore.
11. What are oligosaccharides, give one example.
12. Write the two types of nucleic acids?
13. What are the main functions of nucleic acids?
14. Write two examples of polysaccharides?
15. What is the difference between oils and fats?

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

1. Describe the principle of flame emission spectroscopy.
2. Explain the Beer-Lambert's law for molecular absorption spectroscopy.
3. Describe all the stages for the production of Urea using chemical equations.
4. Name all the stages involved in sugar manufacturing from sugarcane.
5. What are different types of lipids and their function in body?
6. Explain the denaturing of proteins, also describe one example.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Advanced Financial Accounting-II

Course Code: COMM-205

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- Define and differentiate between department and branch account.
- What is meant by retention money in the context of construction contracts?
- What do you mean by creditable profit?
- Define joint venture. What is the difference between partnership and joint venture?
- What is stock and debtor system in branch accounting?
- What is operating lease?
- What are the classes in which incomplete contracts can be divided?
- What is meant by escalation clause in a construction contract?
- What is meant by consignment? How does it differ from sale of goods?
- What is meant by work certified and work uncertified in contract account?

Answer the following questions (3x10=30)

Q.2 The following data relates to a company that has two departments on December 31, 2024.

	Deptt. A (Rs.)	Deptt. B (Rs.)
Opening stock	160,000	-
Purchases from outsider	800,000	80,000
Wages	40,000	4,000
Transfer of goods from Department A	-	200,000
Closing stock at cost	120,000	40,000
Sales to outsiders	800,000	284,000

B's entire stock represents goods from Department A which transfer them at 25% above its cost. Administrative and selling expenses amount to Rs. 60,000 which are to be allocated between departments A and B in the ratio of 4:1 respectively.

Required: Prepare trading and profit and loss account showing the profit or loss for the year ended December 31, 2024.

Q.3 X Ltd. undertakes a contract on January 1st 2024 for a price of Rs. 120,000. The value of materials issued during the year 2024 was Rs. 24,000 and the value of plant issued at the beginning of the year was Rs. 4,000. Wages paid during the year amounted to Rs. 32,880 and the establishment charges incurred were Rs. 1,720. During the year the work certified was valued at Rs. 60,000 and on this the contractee made an advance of Rs. 48,000. The work done but uncertified amounted to Rs. 1,000, material on 31st December 2021 were valued Rs. 1,000 and plant was valued at Rs. 3,600.

Required: Prepare contract account, work in progress account and show the entries in the balance sheet on December 31st 2024.

Q.4 Shahid Traders sent goods to its Jacobabad branch at cost plus 25%. The following information is given for the year 2024.

	Rs.		Rs.
Opening Stock (Invoice Price)	60,000	Opening Petty Cash	320
Opening Debtors	40,000	Goods Sent to Branch at Cost	160,000
Cash Remitted to Branch for Expenses	360	Cash Sales	104,000
Cash Sales	144,000	Cash Received from Debtors	134,800
Discount Allowed to Customers	3,200	Liability for Expenses	1,000
Closing Stock (Invoice Price)	48,000		

Required: Prepare Jacobabad Branch Account in the Books of Shahid Traders for the year 2024.



UNIVERSITY OF THE PUNJAB

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

Paper: Auditing

Course Code: COMM-206

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. What are the limitations of auditing?
- II. What is the role of an auditor in fraud detection?
- III. Explain the concept of risk-based auditing.
- IV. What factors would an auditor consider when deciding on the type of audit opinion to issue?
- V. Explain the significance of 'going concern' in an audit report.
- VI. What are the 4 types of audit opinions??

Answer the following questions

(3x10=30)

Q.No.2: Write a detailed note on the errors and fraud in auditing.

Q.No.3: Write a detailed note on the Audit of Textile and Hotel.

Q.No.4: Write a detailed note on the Types of Audit. Which type of audit is used in the sugar Industry?



UNIVERSITY OF THE PUNJAB

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

Paper: Cost Accounting

Course Code: COMM-207

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)

- Difference between Cost accounting and Financial accounting
- Variable cost vs fixed cost
- Why there is a need to use standard cost?
- Inventory ledger cards
- Budget variance vs idle capacity variance
- Periodic vs perpetual inventory system

Answer the following questions

(3x10=30)

Q.2 On March 31, 2022 a fire breaks out in factory of HR Limited. Consequently, the factory and work in process inventory are destroyed, but the storeroom is successfully saved by fire brigade. After the fire, inventories in storeroom are determined by physical count. The inventories are as follows:

Raw materials	Rs 40000
Finished goods	70000

The accounting records reveal the following inventories as on January 1, 2022:

Raw materials	Rs 25000
Factory supplies	1000
Work in process	45000
Finished goods	75000

Sales upto March 31, 2022 are Rs 170000. Raw materials purchased during the current time period are Rs 60000. Carriage on purchase of materials is Rs 7000. Direct labour for the three months is Rs 50000. For the past five years the company applies factory overhead at 50% of direct labour cost.

A review of accounts showed that sales and gross profit for the last five years were:

Years	Sales	Gross Profit
2021	Rs 300000	Rs 120000
2020	340000	132000
2019	370000	143000
2018	340000	132000
2017	250000	113000
Total	Rs 1600000	Rs 640000

Required: Compute the value of work in process inventory lost by fire

Q.3 Yadgar Ltd. uses process cost system. The costs of department-2 for the month of November were as follows:

Cost from department-1	Rs 300000
Cost added by the department:	
Material	210000
Labour	150000
Factory overhead	100000

The following information was also obtained from department-2:

Units received	30000
Units transferred out	24000
Units still in process	5000
Normal Loss units	1000

Units in process were completed 60% with respect to material and 50% with respect to labour and 40% with respect to overhead.

Required: Cost of Production Report for the month of November of Department-2

Q.4 Waseem Company estimated its factory overhead for the next year at Rs 500000. It is estimated that 40000 units will be produced at a materials cost of Rs 300000. Production will require 50000 man hours at an estimated wage cost of Rs 600000. The machine will run about 25000 hours.

Required:

- Predetermined Factory overhead rates based on:
 - Direct material cost
 - Direct labour hours
 - Direct labour cost
 - Machine hours
 - Prime cost
- Total cost and per unit cost of Job No. 007 consisting of 100 units by each rate in (1) above (Job no 007: direct materials Rs 34000; direct labour Rs 42000; direct labour hours 3800 and machine hours 2200)



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Sales Tax Custom and Federal Excise Duty

Course Code: COMM-208

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- Sales Tax Invoice
- Associates
- Input tax
- Difference between exempted and zero-rated supply
- Requirement of Sales Tax Registration
- De-registration under sale Tax Act 1990

Answer the following questions

(3x10=30)

Q.2 What are the provisions of Federal Excise Act, 2005, with regard to?

- Determination of tariff value and rate of duty
- Collection of excise duty.

Q.3 What are the different types of returns filled under Sales Tax Act 1990?

Q.4 From the following data of Mr. Ahmad Nadeem dealing in wholesale business. Calculate his liability of sales tax for the month of October, 2023.

S.No	Transactions	Rs.
1.	Taxable turnover to registered person	55,00,000
2.	Taxable turnover to wholesalers (value fixed by FBR Rs 280,000)	290,000
3.	Supplies to consumers on installment basis (market price Rs 230,000)	250,000
4.	Supplies to charitable hospital (consists on more than 50 beds)	380,000
5.	Supplies of the goods given in 5 th schedule	300,000
6.	Free samples to customers	290,000
7.	Credit notes issued for taxable supplies	200,000
8.	Taxable goods supply to cottage industry	175,000
9.	Supplies to Gwader free zone company Ltd	460,000
10.	Taxable purchases from registered persons (tax invoices available of Rs 700,000)	850,000
11.	Purchase of raw material from non-registered person	180,000
12.	Imported taxed goods	700,000
13.	Purchases from registered persons (sales tax has not been deposited by respective supplier in govt. treasury)	350,000
14.	Purchase of uniform for security guards	160,000
15.	Goods and services acquired for personal consumption	250,000
16.	Amount paid to courier company for delivering free samples to customers (excluding the amount of sales tax)	70,000
17.	Sales tax paid on electricity bills (STN printed on bills)	110,000



UNIVERSITY OF THE PUNJAB

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

Paper: Computer -IV

Course Code: COMP-203

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- a) How do you create a new VB project?
- b) What is the purpose of the ReDim statement in VB?
- c) Explain the purpose of the MessageBox.Show function.
- d) What does "modality" mean in the context of VB forms?
- e) Explain how to create an input dialog box in VB.
- f) Explain the Do While loop with an example.

Q.2. Answer the following questions

(3x10=30)

- a) Write a Visual Basic program to calculate the row-wise sum of a 2D array.
- b) Write a Visual Basic program to sort the characters in a string alphabetically.
- c) Write a Visual Basic program to check if a number is even or odd.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Theory of Automata

Course Code: DC-222

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 Finite Automata (FA) and explain its components with an example.
2. What is the difference between DFA and NFA?
3. State and explain Kleene's theorem.
4. Write a regular expression for the language that accepts all binary strings ending with '01'.
5. What is a derivation tree? Provide an example for a context-free grammar.
6. Define Chomsky's hierarchy and list its levels with examples.

Q.2. Answer the following questions

(3x10=30)

1. Design a Deterministic Finite Automata (DFA) to recognize the language of all binary strings that contain '101' as a substring. Show all steps.
2. Convert the given NFA to an equivalent DFA with the given states and transitions.
3. Explain Turing Machines. Design a Turing Machine that accepts the language of all binary strings consisting of an even number of 1s.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Intermediate Macroeconomics

Course Code: ECON-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)

- i. Discuss inflationary and deflationary gaps.
- ii. Discuss random walk hypothesis and its implications -
- iii. What is monetary policy? What are its instruments?
- iv. Differentiate between autonomous and induced investment.
- v. Differentiate between lead and lagged variables.
- vi. What are the measurements of inflation?

Answer the following questions (3x10=30)

Q.2 Derive graphically IS curve and what are the factors that affect position and slope of IS curve?

Q.3 Compare permanent income and life cycle hypothesis with Keynesian consumption function.

Q.4 What is Aggregate Supply Curve? Also discuss imperfect information model.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Define the difference between actual output and potential output.
- ii. Define autonomous and induced investment with examples.
- iii. Explain the concept of Tobin's Q Theory.
- iv. Differentiate between M1, M2, and M3 measures of the money supply.
- v. Differentiate between flexible and sticky wage models in the labor market.
- vi. What is a supply shock, and how does it affect aggregate supply?

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

- i. Discuss the Keynesian revolution and its impact on the development of macroeconomics.
- ii. Analyze the theories of consumption, highlighting the differences between Absolute Income, Relative Income, and Permanent Income Hypotheses.
- iii. Analyze the short-run and long-run Phillips Curve and its implications for inflation and unemployment policy.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. Define research and explain its main objectives.
- ii. Define plagiarism and explain its implications in research.
- iii. Discuss the role of time in research, comparing cross-sectional and longitudinal studies.
- iv. Differentiate between exploratory and descriptive research questions.
- v. Explain the importance of a literature review in research.
- vi. How is a hypothesis formulated?

Q.2. Answer the following questions

(3x10=30)

- i. Explain the seven-step process in the hypothetico-deductive method of scientific investigation.
- ii. Compare and contrast the multivariate quantitative methods and qualitative interpretive methods in research.
- iii. Write a comprehensive note on the ethical and methodological considerations in using mixed methods research.



UNIVERSITY OF THE PUNJAB

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

Paper: Islamic Economics

Course Code: ECON-208

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. Economics Problem in Islamic Economic System**
- ii. Sources of Islamic Economics**
- iii. Economic Spheres of Justice**
- iv. Explain Musharka**
- v. Goals of Islamic Economic System**
- vi. Instruments of Fiscal Policy in Islam**

Q.2. Answer the following questions

(3x10=30)

- 1. Discuss Economic implication of Islamic Law of Inheritance**
- 2. What are salient features of Islamic Economics?**
- 3. Write a comprehensive note on the superiority of Islamic Economic System over Capitalism.**



UNIVERSITY OF THE PUNJAB

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

Paper: Economics of Pakistan

Course Code: ECON-232

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. What is observation .write its two kinds.
- ii. Define Inflation.
- iii. What are Major exports of Pakistan?
- iv. Explain the tools of monetary policy
- v. Difference between Aid and Debt
- vi. Discuss the performance of banking sector of Pakistan

Q.2. Answer the following questions

(3x10=30)

1. Describe briefly the role of Agriculture Sector in Pakistan's Economy.
2. Discuss how Pakistan get facilitated from the IMF funding facilities
3. Differentiate the concept of economic development and economic growth with the help of examples.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Philosophy of Education

Course Code: ED-302

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. Write a short note on speculative philosophy.
2. What is the philosophy of education?
3. What is deductive logic?
4. What is the concept of idealism in philosophy?
5. What is the relation between philosophy and science?
6. What type of curriculum is suggested by realists?

Q.2. Answer the following questions

(3x10=30)

1. Discuss the key principles and features of Islamic philosophy and the way they shape Islamic thought.
2. What are the major differences between the perennialism curriculum and the essentialism curriculum?
3. Explain how educational institutions can incorporate social and ethical values into their curriculum to foster responsible citizenship.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: English Language-IV

Course Code: EDE-106

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- What advantages and disadvantages a bachelor has over a married man? (*Bachelor's Dilemma*)
- How does spiritual ugliness affect surface beauty? (*The Beauty Industry*)
- Give a critical appreciation of the lesson *Whistling of Birds* by D.H.Lawrence.
- Do you think Stephen Leacock tries to make the reader sympathize with the tailor? (*My Tailor*)
- What do you think is the importance of saying 'Thank you' and 'Please' in our social life? (*On Saying Please*)
- What were the socio-political problems faced by Pakistan soon after independence? (*Pakistan and the Modern World*)

Answer the following questions

(2x15=30)

Q.2. Translate the following passage into English:

تندرستی بڑی نعمت ہے۔ لیکن انسان جب تک تندرست رہتا ہے اس نعمت کی قدر نہیں کرتا۔ جب اسے کوئی معمولی بیماری لگ جاتی ہے تو اسے اس کی اہمیت کا اندازہ ہوتا ہے۔ جسم کے کسی حصے میں درد ہو تو پورا جسم اس کا اثر محسوس کرتا ہے۔ اگر انسان صحت مند ہے تو اسے کھانے پینے، چلنے پھرنے اور کام کرنے میں مزہ آتا ہے۔ صحت خراب ہو جائے تو کسی چیز میں مزہ نہیں آتا۔ جو لوگ اثر بیمار رہتے ہیں ان کی زندگی خود ان کے لئے اور ان کے دوسرے متعلقین کے لئے وبالِ جان بن جاتی ہے۔

Q.3. Write a dialogue between two friends regarding Poor Governance in Pakistan.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: English-IV (Advance Academic Reading and Writing)

Course Code: ENG-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)

1. What are the SIX common problems in **Academic Writing**?
2. Define FOUR steps of critical analysis.
3. How do you write a summary of an article?
4. Write the characteristics of writing a **Term Paper**?
5. How would you construct an informed argument?
6. What is the difference between expository and descriptive essays?

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

1. Elaborate the basic techniques of improving the reading skills?
2. What are the characteristics of long and short report?
3. Write an essay on ONE of the following topics:
 - a) Is Fashion important!OR
 - b) Cell Phone-uses and abuses



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Literature-IV (History of Literature-II)

Course Code: ENG-205

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. What are the key principles of REALISM as discussed by George Eliot??
- ii. Who are the originators of the theory of SYMBOLISM?
- iii. What is EXISTENTIALISM? Write the names of two key figures associated with EXISTENTIALISM?
- iv. What are the literary features of MODERNISM?
- v. What is the function of FORMALISM?
- vi. What is Intertextuality?

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

- i. Discuss in detail the main concepts in Post-Structuralism?
- ii. Describe Feminism as a literary theory. Discuss the various types of Feminism.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- 1. What do you know of the basic notions in morphology? Discuss.**
- 2. Do plural markers in English come in one shape? Discuss briefly.**
- 3. Roots in English are mostly free rather than bound. Briefly discuss.**
- 4. Clauses are the constituents that sentences are made up. How do you understand it?**
- 5. What are the functions of Verb phrase? Discuss.**
- 6 Discuss Prepositional and Adjective Phrases.**

Q.2. Answer the following questions

(3x10=30)

- 1. Discuss Inflectional Morphology in detail.**
- 2. What are word formation types? Discuss at least 4 types.**
- 3. Draw tree diagrams of the following sentences:**
 - I. Why are you working hard these days?**
 - II. This is my favourite film.**
 - III. When did the dinosaur live?**
 - IV. Statements are the most common type of sentence.**
 - V. They don't ask questions.**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1. Why is VISUAL TEXT created? Discuss briefly.**
- 2. How can you move from a GENERAL SUBJECT to SPECIFIC TOPIC? Narrate.**
- 3. How does a reader determine his/her PURPOSE before reading? Discuss.**
- 4. Briefly discuss INVENTION, or PREWRITING.**
- 5. Tell which of the following combinations of the clauses make a compound sentence.**
 - I. Bushra was the storyteller in her family she remembers making up stories for the younger children.**
 - II. There is a proliferation of “how-to” and “self-help” books on the market, they are frequently on the best-seller list.**
 - III. Kashif is the older of five children he is the only one to have graduate from college.**
 - IV. Paper towels serve many useful purposes, and they are not very expensive.**
 - V. Prof. Shibli’s desk was cluttered with books the mess seemed to bother him.**

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

- 1. Discuss in detail any TWO techniques of the brainstorming.**
- 2. Make a checklist for REVISING an essay.**
- 3. Discuss TRANSITIONS of the following types:**
 - I. Sequence or Addition**
 - II. Time**
 - III. Comparison**
 - IV. Contrast**



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: English-IV (English for Practical Aims)

Course Code: ENG-212

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 skimming important in reading skills?
- 2) What is active reading?
- 3) What is effective CV writing?
- 4) Elaborate the three skills of Comprehension.
- 5) What is the significance of face-to-face interview?
- 6) What is the importance of Descriptive Essay?

Answer the following questions

Q. 2 . Read the following passage carefully and answer the following questions in your own words. (10 Marks)

When we look at the history and circumstances of the time of the advent of the Holy Prophet (SAW), we see Arabia and the rest of the world around steeped in corruption and the forces of falsehood were in ascendancy. There was nothing but the forces of disruption and disequilibrium surrounding the world. Such were the circumstances of the time. The Holy Prophet (SAW) of Islam broke the chains and shackles that had enslaved humanity and removed the burden under which the humanity was being crushed. He gave the message of brotherhood and equality for all. History tells us that before the advent of the Holy Prophet (SAW), women were treated as chattel and in some tribes, newly-born girls were buried alive. The Holy Prophet (SAW) gave women freedom and equality in the society, which was unthinkable at that time.

- 1- What was the condition of the world at the advent of Prophet Muhammad (SAW)?
- 2- How did Prophet Muhammad (SAW) bring equality and freedom for the people?
- 3- What was condition of the women before the advent of Prophet Muhammad (SAW)?
- 4- Suggest a suitable title.

Q. 3 . Write an essay on any ONE of the following topics:

(20 Marks)

- 1- Impact of Climate Change.
- 2- Future of Democracy in Pakistan.
- 3- Importance of Sports.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: English-IV (English for Practical Aims)

Course Code: ENG-214

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 do the personal values of an individual align with their potential career path?
2. How different types of networks and connections can support your job search efforts?
3. What is the purpose of a cover letter to a Resume?
4. What kind of behavior is considered positive or desirable during an interview?
5. What is meant by 'bridging' the unfair preemployment questions?
6. Why is it important to prepare questions in advance for the interviewer and How does this reflect on your candidacy?

Answer the following questions

(3x10=30)

Q.2. Read the given passage below and answer the questions given at the end.

Surveillance has increased manifold since the 9/11 terror attacks on the World Trade Centre in the U.S. This increase in surveillance today shapes the relationship between the state and the individual. The state keeps an eye on its citizens, thereby positing each and every citizen as a potential wrong-doer. For instance, the proliferation of the CCTV cameras in streets, restaurants and in every imaginable public space. In fact, the camera need not even be functional in order to make the citizens behave themselves – its mere presence is enough to scare the citizens into submission. Such is the power of the mere potential of surveillance. Surveillance studies have shown that these techniques might not be too effective at all times, citizens might feign decent behavior in order to avoid themselves from getting into a tussle with the law of the land. But it does not assure the state of the reformation in the attitude of the citizens. It is a mere eye-wash. It works only when the citizen truly desires to transform his or her attitude and adopt decency in all walks of life. The act of constant surveillance makes the state a voyeur – a person who derives pleasure from watching events unfold in a secretive manner. A recent case in point would be the raid on a hotel in the so-called cosmopolitan city of Mumbai where young couples were consensually residing. The state has today entered the bed-room. And this is an unhealthy proposition!

Questions:

- 1 What is the effect of the state's surveillance on the individual?
- 2 Does the CCTV need to be functional all the time?
- 3 Why is surveillance not effective always?
- 4 When is surveillance really effective?
5. Suggest a suitable title for this passage

Q.3. Explain the difference between Resume and Cover letter.

Q.4. Write an essay on one of the following topics:

- i. Effects of Social Media on Youth
- ii. Drug Addiction



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. What are General Statements In an essay?
- ii. What are some of the tips of writing an effective summary?
- iii. What is meant by" stating the source" in a cover letter?
- iv. Write your CV focusing on skills, education and experience?
- v. What is a follow up letter? Discuss
- vi. What is a panel interview for job?

Q.2. Answer the following questions

(3x10=30)

- i. Write an essay on any one of the following topics:
a) Health is Wealth b) Summers c) Flood
- ii. Read the following passage and attempt the questions given:

Mike and Morris lived in the same village. While Morris owned the largest jewelry shop in the village, Mike was a poor farmer. Both had large families with many sons, daughters-in-law and grandchildren. One fine day, Mike, tired of not being able to feed his family, decided to leave the village and move to the city where he was certain to earn enough to feed everyone. Along with his family, he left the village for the city. At night, they stopped under a large tree. There was a stream running nearby where they could freshen up themselves. He told his sons to clear the area below the tree, he told his wife to fetch water and he instructed his daughters-in-law to make up the fire and started cutting wood from the tree himself. They didn't know that in the branches of the tree, there was a thief hiding. He watched as Mike's family worked together and also noticed that they had nothing to cook. Mike's wife also thought the same and asked her husband "Everything is ready but what shall we eat?" Mike raised his hands to heaven and said "Don't worry. He is watching all of this from above. He will help us." The thief got worried as he had seen that the family was large and worked well together. Taking advantage of the fact that they did not know he was hiding in the branches, he decided to make a quick escape. He climbed down safely when they were not looking and ran for his life. But, he left behind the bundle of stolen jewels and money which dropped into Mike's lap. Mike opened it and jumped with joy when he saw the contents. The family gathered all their belongings and returned to the village. There was great excitement when they told everyone how they got rich. Morris thought that the tree was miraculous and this was a nice and quick way to earn some money. He ordered his family to pack some clothes and they set off as if on a journey. They also stopped under the same tree and Morris started commanding everyone as Mike had done. But no one in his family was willing to obey his orders. Being a rich family, they were used to having servants all around. So, the one who went to the river to fetch water enjoyed a nice bath. The one who went to get wood for fire went off to

sleep. Morris's wife said " Everything is ready but what shall we eat?" Morris raised his hands and said," Don't worry. He is watching all of this from above. He will help us." As soon as he finished saying, the thief jumped down from the tree with a knife in hand. Seeing him, everyone started running around to save their lives. The thief stole everything they had and Morris and his family had to return to the village empty handed, having lost all their valuables that they had taken with them.

- 1) Why did Mike and his family decide to rest under the thief's tree?
 - a) Being a large family, they knew that they could easily defeat the thief
 - b) It was a convenient spot for taking a halt at night
 - c) There was a stream nearby and wood enough to build a house
 - d) That was the only large tree that could shelter their large family
- 2) Which of the following best describes Morris?
 - a) He was a rich businessman
 - b) He bullied his wife
 - c) He paid his servants well
 - d) He was greedy and imitated Mike
- 3) What did Mike mean when he said "He is watching all this from above"?
 - a) He had spotted the thief and wanted to scare him
 - b) He was telling his wife to have faith in god
 - c) It was just a warning for his family members to stick together
 - d) He was begging the thief to help his family
- 4) Why did the thief return to the tree?
 - a) To wait for Mike to return
 - b) To set up a trap
 - c) To wait for Morris's family
 - d) Not mentioned in the passage
- 5) How did the fellow villagers react to Mike getting rich overnight?
 - a) They were jealous of him
 - b) They were very excited
 - c) They followed his example
 - d) They envied him.
- 6) Write a precis of the following paragraph and suggest a suitable title.

- iii. Write a cover letter in response to the following ad:
- Wanted Teachers
Must be a Graduate
Good Communication and Computer Skills



UNIVERSITY OF THE PUNJAB

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

Paper: English-IV (Business Communication-II)

Course Code: ENG-222

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- A. Explain solicited and unsolicited job application.
- B. Define cultural variables and discuss education as a cultural variable.
- C. Write a brief note on the history of technology.
- D. What is an executive summary?
- E. What is a Periodic report.
- F. Discuss proxemics as an individual cultural variable.

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

- 1. What are the different types of follow up messages?
- 2. Write a progress report about a restaurant working under your supervision.
- 3. Discuss business communication and the ethical context.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Economics

Course Code: GC-113

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- I. Define fiscal policy.
- II. What is meant by Market demand?
- III. Explain four factors of production.
- IV. Define disposable personal income.
- V. What is meant by Exchange Rate and how we measure it.
- VI. Differentiate between Public and Private goods
- VII. Define Consumption function
- VIII. Explain contraction and extension of demand.
- IX. Define the assumptions of the law of demand.
- X. Define deficit in the balance of payments.
- XI. What is meant by monopolistic competition?
- XII. Define Micro Economics.
- XIII. Differentiate between real GDP and nominal GDP.
- XIV. Differentiate between substitutes and complements.
- XV. Define consumer behavior by using law of diminishing marginal utility function.

Q.2. Answer the following questions

(3x10=30)

- I. Explain Law of demand with the help of table and diagram.
- II. Explain the Law of Diminishing Marginal Utility with the help of table and diagram.
- III. Explain the concept of inflation. Also describe its types and causes.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: History

Course Code: GC-115

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.

(5x6=30)

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

i. War of Independence 1857.

i. جنگ آزادی 1857ء

ii. All India Muslim League.

ii. آل انڈیا مسلم لیگ

iii. Lucknow Pact.

iii. لکھنؤ پیکٹ

iv. Nehru Report.

iv. نہرورپورٹ

v. Allahabad Address 1930.

v. خطبہ الہ آباد 1930ء

Q.2. Answer the following questions.

(2x15=30)

سوال نمبر 2: درج ذیل سوالات کے جوابات دیں۔

i. Describe the services of Aligarh Movement.

i. تحریک علی گڑھ کی خدمات بیان کریں۔

ii. Write a detailed note on Government of India Act 1935.

ii. گورنمنٹ آف انڈیا ایکٹ 1935 پر ایک تفصیلی نوٹ لکھیں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Philosophy

Course Code: GEN-2006

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 and discuss materialism in metaphysics.
2. Shed light on ethics (moral philosophy).
3. What is logic and also define argument.
4. Explain main theses of empiricism in epistemology.
5. What is definition of knowledge?
6. What is theory of knowledge (epistemology)?

Q.2. Answer the following questions.

(3x10=30)

1. What is philosophy? Briefly describe philosophy of science and political philosophy.
2. Discuss in detail idealism in metaphysics.
3. Write a note on rationalism and its main theses in theory of knowledge.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Gender Studies

Course Code: GEND-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. Liberal feminism
2. Gender and fundamental rights
3. Need for gender studies
4. Power and Patriarchy
5. Radical feminism
6. Gender and social mobility

Q.2. Answer the following questions

(3x10=30)

- 1: Explain Universal Declaration of Human Rights (UDHR) with special reference to women rights.
- 2: Highlight some of the major issues of gender development in Pakistani perspective.
- 3: Gender mainstreaming can resolve a host of implementation challenges in welfare policies of Pakistan. Accept or refute the statement with logical reasoning.



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.

(15x2=30)

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

- i. Differentiate between Physical regions and Climate regions.
طبعی اور موسمیاتی علاقوں کے درمیان فرق لکھیں۔ .i
- ii. Highlight different countries in South Asia.
جنوبی ایشیا کے مختلف ممالک کی نشاندہی کریں۔ .ii
- iii. Identify population wise top 10 countries of the world.
آبادی کے لحاظ سے دس بڑے شہروں کی نشاندہی کریں۔ .iii
- iv. Define Middle East.
مشرق وسطیٰ کی تعریف کریں۔ .iv
- v. Identify major Alpine Folded Mountain ranges in the world.
دنیا میں اہم Alpine Folded Mountain رینجز کی نشاندہی کریں۔ .v
- vi. Differentiate between Andies and Scandies.
انڈیز اور سکیٹنڈیز کے درمیان فرق کریں۔ .vi
- vii. Define plateau and enlist the important plateau of the world.
سطح مرتفع کی تعریف کریں۔ دنیا کی اہم سطوح مرتفع کی فہرست بنائیں۔ .vii
- viii. Highlight Eastern and Western contributors of Indus River.
دریائے سندھ کے مشرقی و مغربی معاون کی نشاندہی کریں۔ .viii
- ix. Briefly describe Sahara Desert.
صحرائے سہارا کو بیان کریں۔ .ix
- x. Divide North America into different physiographic regions.
شمالی امریکہ کی مختلف جغرافیائی خطوں میں تقسیم کریں۔ .x
- xi. Define Fossil Fuels.
Fossil Fuels کی تعریف کریں۔ .xi
- xii. Which are the different primary economic activities in any region.
کسی بھی علاقے کی ابتدائی معاشی سرگرمیاں کون سی ہوتی ہیں؟ .xii
- xiii. Define strait and discuss about the important straits of the world.
آبنائے کی تعریف کریں: دنیا کی اہم آبنائوں پر بحث کریں۔ .xiii
- xiv. Elaborate small scale industries.
چھوٹے پیمانے پر فیکٹریوں کی وضاحت کریں۔ .xiv
- xv. Explain human resources.
انسانی وسائل کی وضاحت کریں۔ .xv

Q.2. Answer the following questions

(3x10=30)

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

- i. Divide Asia into different physiographic regions and explain in detail features of Himalayas.
(الف) ایشیا کو مختلف جغرافیائی خطوں میں تقسیم کریں۔ ہمالیہ کے خدوخال کی وضاحت کریں۔
- ii. What is the difference between a region and a realm? Discuss different types of world region.
(ب) خطے اور علاقے کے درمیان فرق کیا ہے؟ دنیا کے مختلف قسم کے علاقوں پر بحث کریں۔
- iii. Discuss the major economic attributes of South Asia.
(ج) جنوبی ایشیا کی اہم معاشی خصوصیات بیان کریں۔



UNIVERSITY OF THE PUNJAB

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

Paper: Basic Field Surveying

Course Code: GEOG-204

Time: 3 Hrs. Marks: 60

Roll No.

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.

(15x2=30)

i.	Differentiate between Angle and Bearing.
ii.	Name six instruments used in Plane Table Survey.
iii.	How focusing is done in Theodolite?
iv.	Differentiate between Open and Closed Traverse.
v.	Fore bearing of a line is $120^{\circ} 15'$. Find the back bearing.
vi.	Whole Circle Bearing of line BA is $64^{\circ} 15'$ and line BC is $234^{\circ} 45'$. Find the Included angle ABC.
vii.	Write three advantages of Plane Table Survey.
viii.	Write three uses of Theodolite.
ix.	What is Theodolite. Name its any four types.
x.	Differentiate between Horizontal and Vertical angle in Theodolite Survey.
xi.	Write two functions of Digital Theodolites.
xii.	What is meant by Base Line in Theodolite Survey.
xiii.	Explain Intersection method in Plane Table Survey.
xiv.	How Centering is done in Plane Table Survey?
xv.	What is meant by Local Attraction?

Answer the following questions. Illustrate your answer with the help of diagrams.

(3x10=30)

Q 2.	Describe the function of any eight parts of Theodolite.
Q 3.	Compare the salient features of Whole Circle and Quadrantile Bearings.
Q 4.	Enlist the various methods of Plane Table Surveying and discuss any ONE in detail. Supplement your answer with sketches and diagrams



UNIVERSITY OF THE PUNJAB

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

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) Define geography and explain its significance.
- 2) What is the Big Bang theory and how does it explain the universe's creation?
- 3) What are lunar and solar eclipses and how do they occur?
- 4) How is local time different from standard time?
- 5) Write a note on land breeze and sea breeze.
- 6) Define biomes write short note on desert biomes.

Q.2. Answer the following questions.

(3x10=30)

- 1) Define physical Geography. Also, briefly discuss the main branches of physical geography.
- 2) Explain the internal structure of the earth with help of diagrams.
- 3) Write a comprehensive note on the structure of atmosphere.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- i. Write down fourth state of matter.
- ii. The Spinning motion of a body about its axis is called.
- iii. Define Theory.
- iv. What is the role of statistics in research?
- v. Write down Laws of Motion.
- vi. Define Law of Conversation of Energy.
- vii. Write down the senses of light.
- viii. Define regular and irregular reflection.
- ix. Draw a typical animal cell.
- x. Define food chain.
- xi. Define blood circulatory system.
- xii. What is a difference between metals and non metals.
- xiii. Give one method far the preparation of oxygen Gas.
- xiv. Define Diegetic system.
- xv. Differentiate between arteries and vein.

Q.2. Answer the following questions

(3x10=30)

- i. Describe the execrating system of Man.
- ii. Write a note on Biotic and Abiotic Components of Ecosystem.
- iii. Define Structure of Eye and Camera.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to History

Course Code: HIS-111

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Write short notes on the following:

(5x6=30)

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

i. All India Muslim League

i۔ آل انڈیا مسلم لیگ

ii. Minto Morley Reforms

ii۔ مینٹو مارلی اصلاحات

iii. Simon Commission

iii۔ سائمن کمیشن

iv. First Roundtable Conference

iv۔ پہلی گول میز کانفرنس

v. Congress Ministries 1936-37

v۔ کانگریسی وزارتیں 1936-1937

vi. Simla Conference 1945

vi۔ شملہ کانفرنس 1945

Answer the following questions.

(2x15=30)

درج ذیل سوالات کے تفصیلی جواب تحریر کریں۔

Q. No. 2. Describe the significance of Lahore Resolution 1940.

سوال نمبر 2۔ قرارداد لاہور 1940 کی اہمیت بیان کریں۔

Q. No. 3. Critically examine the 3rd June Plan 1947.

سوال نمبر 3۔ 3 جون 1947 کے منصوبے کا تنقیدی جائزہ لیں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Muslim Rule in South Asia (712-1526)

Course Code: HIS-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۔

Q.1. Answer the following short questions.

(5x6=30)

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

i. What was the significance of the Lodi dynasty?

i۔ لودھی خاندان کی اہمیت کیا تھی؟

ii. Who was Alauddin Khilji?

ii۔ علاؤ الدین خلجی کون تھے؟

iii. Who was Sher Shah Suri?

iii۔ شیر شاہ سوری کون تھا؟

iv. What was the main religion of the rulers?

iv۔ حکمرانوں کا اہم مذہب کیا تھا؟

v. When did the Mughal Empire begin?

v۔ مغل سلطنت کا آغاز کب ہوا؟

Answer the following questions.

(2x15=30)

درج ذیل سوالات کے جوابات دیں۔

Q. No. 2. What were the main contributions of the Delhi Sultanate to the cultural and architectural development of South Asia?

سوال نمبر 2۔ دہلی سلطنت کے جنوبی ایشیا کی ثقافتی اور معماری ترقی میں کیا اہم کردار تھے؟

Q. No. 3. Evaluate the impact of the advent of Islam on the socio-economic and religious structure of South Asia during the Muslim rule.

سوال نمبر 3۔ مسلم حکمرانی کے دوران اسلام کے ظہور کا جنوبی ایشیا کے سماجی، اقتصادی اور مذہبی ڈھانچے پر اثرات کا جائزہ لیں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Government and Politics in Pakistan-II (1971-2000)

Course Code: HIS-206

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(5x6=30)

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

i. Simla Agreement 1972

i۔ شملہ معاہدہ 1972

ii. Constitution 1973

ii۔ 1973 کا آئین

iii. Pakistan National Alliance

iii۔ پاکستان نیشنل الائنس

iv. MRD

iv۔ ایم آر ڈی

v. Kargil Conflict

v۔ کارگل تنازعہ

Answer the following questions

(2x15=30)

درج ذیل سوالات کے جوابات تحریر کریں۔

Q. No. 2. Discuss the causes behind the separation of East Pakistan.

سوال نمبر 2۔ مشرقی پاکستان کی علیحدگی کے محرکات پر بحث کریں۔

Q. No. 3. Examine the Islamization of Zia ul Haq.

سوال نمبر 3۔ ضیاء الحق کی اسلامائزیشن کا جائزہ لیں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر 1: مندرجہ ذیل آیات کا اردو/انگریزی میں ترجمہ کریں: (20)

Q.1. Translate the following Verses into Urdu or English Language.

1. اَلَّا تَعْبُدُوْا اِلَّا اللّٰهَ اِنِّىْ لَكُمْ مِّنْهُ نَذِيْرٌ وَّ بَشِيْرٌ

2. اَلرَّ تِلْكَ اٰیٰتُ الْكِتٰبِ الْمُبِيْنِ اِنَّا اَنْزَلْنٰهُ قُرْءٰنًا عَرَبِيًّا لَّعَلَّكُمْ تَعْقِلُوْنَ

3. اللّٰهُ الَّذِیْ رَفَعَ السَّمٰوٰتِ بِغَیْرِ عَمَدٍ تَّرٰوْنَهَا ثُمَّ اسْتَوٰی عَلٰی الْعَرْشِ وَ سَخَّرَ الشَّمْسَ وَ الْقَمَرَ

4. اَلرَّ كِتٰبٌ اَنْزَلْنٰهُ اِلَیْكَ لِتُخْرِجَ النَّاسَ مِنَ الظُّلُمٰتِ اِلَى النُّوْرِ بِاِذْنِ رَبِّهِمْ اِلَى صِرَاطٍ الْعَزِیْزِ الْحَمِیْدِ

5. رَبَّمَا یَوَدُّ الَّذِیْنَ كَفَرُوْا لَوْ كَانُوْا مُسْلِمِیْنَ

سوال نمبر 2: "رسول" کے ساتھ ضماں متصلہ لگائیں اور ان کے معانی بتائیں: (10)

Q.2. Use attached pronouns with "رسول" and give their meanings.

الفاظ	معانی	الفاظ	معانی
رسول + هُ		رسول + كُمْ	
رسول + هُمْ		رسول + كِ	
رسول + هَا		رسول + كُنَّ	
رسول + هُنَّ		رسول + يَ	
رسول + كَ		رسول + نَا	

سوال نمبر 3: مندرجہ ذیل الفاظ کا اردو/انگریزی میں ترجمہ کریں: (10)

Q.3. Write the meanings of the following Qur'anic words.

الفاظ	معانی	الفاظ	معانی
الصَّلٰوة		رُءْيَا	
كُلٌّ		شَدِيدًا	
الْمَآءِ		صُدُوْرَ	
اَحْسَنُ		اَكْثَرُ	
الْغَيْبِ		ثِيَابَ	

سوال نمبر 4: مندرجہ ذیل الفاظ کی مدد سے واحد کی جمع لکھیں:

(10)

Q.4. Write the plural with the given words.

أراضي ، خالدون ، قلوب ، آباء ، كواكب ، غلمان ، شمس ، دلاء ، معقبات ، أيام ، مجرمين ، منظرين ، أموات ، صادقين ، قمصان ، اصحاب ، حافظون ، أرحام ، بيوت ، آيات

واحد	جمع	واحد	جمع	واحد	جمع	واحد	جمع
ذلو		غلام		حافظ		خالد	
ارض		كوكب		صاحب		معقبة	
ميت		يوم		صادق		آية	
أب		شمس		رحم		قلب	
قميص		بيت		منظر		مجرم	

سوال نمبر 5: آیات کو ان کے ترجمے سے لکیر کے ذریعے ملائیں:

(10)

Q.5. Match the verses with lines to the translation.

آیات	ترجمہ
1. أُولَئِكَ فِي ضَلَالٍ بَعِيدٍ.	حقیقت یہ ہے کہ ان ساری باتوں میں ان لوگوں کے لئے نشانیاں ہیں جو غور و فکر کریں۔
2. ذَرُّهُمْ يَأْكُلُوا وَيَنْتَعِمُوا وَيُلَبِّسُ الْأُمَمُ فَسَوْفَ يَعْلَمُونَ.	وہ پرلے درجے کی گمراہی میں مبتلا ہیں۔
3. إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يَتَفَكَّرُونَ.	(اے پیغمبر!) انہیں ان کی حالت پر چھوڑ دو کہ یہ خوب کھالیں، مزے اڑائیں، اور خیالی امیدیں انہیں غفلت میں ڈالے رکھیں، کیونکہ عنقریب انہیں پتہ چل جائے گا (کہ حقیقت کیا تھی)۔
4. وَ أَنْ اسْتَغْفِرُوا رَبَّكُمْ ثُمَّ تُؤْمِنُوا إِلَيْهِ.	یہ (اُس وقت کی بات ہے) جب یوسف نے اپنے والد (یعقوب علیہ السلام) سے کہا تھا کہ: ”ابا جان! میں نے خواب دیکھا ہے۔
5. إِذْ قَالَ يُوسُفُ لِأَبِيهِ يَا أَبَتِ إِنِّي رَأَيْتُ.	اور یہ (ہدایت دیتا) کہ: ”اپنے پروردگار سے گناہوں کی معافی مانگو، پھر اس کی طرف رجوع کرو۔



UNIVERSITY OF THE PUNJAB

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

Paper: Citizenship Education (Human Rights)

Course Code: HR-213

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- I. Which types of rights are provided in Article 23 of UDHR?
- II. Is it possible to implement UDHR (Universal Declaration of Human Rights) in its true spirit?
- III. Explain any three problems with solutions for the rights of women in Pakistan.
- IV. Describe principles of universality in Human Rights.
- V. Discuss child labor in the context of the rights of children in Pakistan.

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

- I. Explain the fundamentals of human rights and how these are helpful in the implementation of human rights?
- II. Discuss issues and their solutions to Human Rights in South Asia.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر 1: درج ذیل سوالات کے مختصر جواب لکھیں۔ (6X5=30)

1. تاریخ کی تعریف لکھیں، نیز تاریخ نگاری کے مراحل پر جامع نوٹ تحریر کریں۔
2. درج ذیل کتب تاریخ کے منہج و اسلوب پر جامع نوٹ قلمبند کریں (تاریخ طبری، تاریخ ابن کثیر)۔
3. فتح قسطنطنیہ کے تناظر میں عظیم مسلم حکمران سلطان محمد فاتح کی شخصیت پر مختصر نوٹ لکھیں۔
4. سلطنت عثمانیہ کے زوال کے اسباب اور احیاء خلافت اسلامیہ پر مختصر مگر جامع نوٹ تحریر کریں۔
5. سلاطین تغلق کا تعارف لکھیں، نیز سلطان محمد تغلق کی شخصیت و کردار پر مختصر نوٹ تحریر کریں۔
6. سلطان محمود غزنوی کا دور اسلامی تاریخ کا ایک درخشاں باب ہے، تاریخ کے آئینہ میں مختصر وضاحت کریں۔

سوال نمبر 2: درج ذیل سوالات کے تفصیلی جواب لکھیں۔ (3x10=30)

1. بایزید یلدرم کے دور حکومت کے اہم واقعات قلمبند کریں، نیز سلطنت عثمانیہ پر امیر تیمور لنگ کے حملے کے اسباب و اثرات پر سیر حاصل بحث کریں۔
2. شیر شاہ سوری کا شمار برصغیر کے عظیم حکمرانوں میں کیا جاتا ہے۔ آپ کے دور سلطنت کی دینی، سیاسی، معاشی اور فوجی اصلاحات پر مفصل نوٹ تحریر کریں۔
3. اورنگ زیب عالمگیر آخری مغل حکمران تھے جنہوں نے برصغیر پاک و ہند پر مستحکم حکومت کی، آپ کے دور کے کارہائے نمایاں پر مفصل نوٹ تحریر کریں۔



UNIVERSITY OF THE PUNJAB

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

Paper: Tafseer-III

Course Code: ISE-205

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر 1: درج ذیل سوالات کے مختصر جواب لکھیں۔ (6X5=30)

۱۔ ظہار کسے کہتے ہیں؟ سورۃ الاحزاب میں اس کا کیا حکم بیان ہوا ہے؟

۲۔ متبنیٰ کسے کہتے ہیں؟ سورۃ الاحزاب میں اس کا کیا حکم بیان ہوا ہے؟

۳۔ سورۃ الاحزاب میں منافقین کا رویہ بیان ہوا ہے؟

۴۔ سورۃ الاحزاب کی ختم نبوت کی آیت مع ترجمہ تحریر کریں؟

۵۔ رخصتی سے قبل طلاق کا کیا حکم ہے؟ متعلقہ آیت کا ترجمہ لکھیں۔

۶۔ آیت وضو کی روشنی میں وضو کی تفصیل لکھیں؟

سوال نمبر 2: درج ذیل سوالات کے تفصیلی جواب لکھیں۔ (3x10=30)

۱۔ لفظی ترجمہ کریں

يَا أَيُّهَا الَّذِينَ آمَنُوا أَوْفُوا بِالْعُقُودِ أُحِلَّتْ لَكُمْ بَهِيمَةُ الْأَنْعَامِ إِلَّا مَا يُتْلَى عَلَيْكُمْ غَيْرَ مُحِلِّي الصَّيْدِ وَأَنْتُمْ حُرْمٌ إِنَّ اللَّهَ يَحْكُمُ مَا يُرِيدُ (1) يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَحِلُّوا شَعَائِرَ اللَّهِ وَلَا الشَّهْرَ الْحَرَامَ وَلَا الْهَدْيَ وَلَا الْقَلَائِدَ وَلَا آمِينَ الْبَيْتِ الْحَرَامَ يَنْتَفِعُونَ فَضْلًا مِنْ رَحْمَتِ رَبِّهِمْ وَرِضْوَانًا وَإِذَا حَلَلْتُمْ فَاصْطَادُوا وَلَا يَجْرِمَنَّكُمْ شَنَاَنُ قَوْمٍ أَنْ صَدُّوكُمْ عَنِ الْمَسْجِدِ الْحَرَامِ أَنْ تَعْتَدُوا وَتَعَاوَنُوا عَلَى الْبِرِّ وَالتَّقْوَى وَلَا تَعَاوَنُوا عَلَى الْإِثْمِ وَالْعُدْوَانِ وَاتَّقُوا اللَّهَ إِنَّ اللَّهَ شَدِيدُ الْعِقَابِ

۲۔ سورۃ المائدہ میں یہود کی کون کون سی برائیاں بیان کی گئی ہیں؟ تفصیلاً تحریر کریں؟

۳۔ سورۃ الاحزاب کی روشنی میں امہات المؤمنین کی مقام و مرتبہ کو واضح کریں؟



UNIVERSITY OF THE PUNJAB

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

Paper: Islam and Modern Political Thoughts

Course Code: ISE-206

Roll No.

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 مطلوب ہیں۔

- (i) ہندوستانی سیاسی فکر کے مندرجات بیان کیجیے۔
- (ii) شریعت کا لغوی و اصلاحی مفہوم تحریر کیجیے۔
- (iii) شوری کی اہمیت از روئے قرآن بیان کیجیے۔
- (iv) اسلام کا نظام فلاح مختصر بحث کیجیے۔
- (v) عصر حاضر میں دعوت دین کی ضرورت کو بیان کریں۔
- (vi) فارابی کے سیاسی نظریات کا جائزہ لیجیے۔

(3x10=30)

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

- (i) شاہ ولی اللہ کے سیاسی نظریات پر سیر حاصل بحث کیجیے۔
- (ii) علم سیاسیات کے مفہوم کو واضح کرتے ہوئے اس کی اہمیت و افادیت پر ایک مفصل مضمون تحریر کیجیے۔
- (iii) جمہوریت کی خوبیاں اور خامیاں دلائل کی روشنی میں واضح کیجیے۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Short questions

(5x6=30)

- 1) Obtain **step count** of following code segment.

```
for (i = 0; i < n; i = i + 3)
    temp;
```

- 2) The running time of a program is given by the expression $5N^3 + 2N^2 + 4N + 3$, where N is the input size. Determine the **upper bound** for the growth rate of the program using **Big- O** notation. Specify the values of constants c and N_0 to justify your answer.
- 3) An algorithm takes 2 seconds to process an input size of 1000. Assuming the running time of the algorithm is $T(N) = 5N$, how large a problem can be solved in one minute?
- 4) Convert $M + N * O / P \% Q - R$ into its equivalent **pre-fix** form.
- 5) Represent the following **sparse matrix** in a **3-column** representation using arrays.

0	1	0	0	0	0
0	0	0	4	0	0
5	0	0	0	0	3
0	0	7	0	0	0
0	2	0	0	6	0

Q.2. Long questions

(3x10=30)

- 1) Apply **Quick Sort's partition algorithm** on the following array and show the contents of the array after **one partition step**, using the **first element (6)** as the **pivot**.

6	7	9	1	4	2	10	5	3	8
---	---	---	---	---	---	----	---	---	---

- a) What value will be returned by Quick Sort's partition algorithm after this partitioning step?
- b) Explain the **purpose** of this returned value in the Quick Sort algorithm.

- 2) A **Max Heap** of 6 elements is stored in the following array:

20	12	9	10	2	6
----	----	---	----	---	---

- a) Show this heap in the form of a **complete binary tree**.
- b) Perform the following **operations (in the given order)** and show the resulting heap (in the form of a tree) after each operation:
- Insert 15
 - Delete the root

- 3) Given the following declaration of a **Singly-Linked-List**:

<pre>class Node { friend class LinkedList; private: int data; Node* next; };</pre>	<pre>class LinkedList { private: Node* head; // Points to the first node. public: void swapEnds (); // To be implemented. };</pre>
--	--

Implement the **swapEnds** member function of the **LinkedList** class. This function swaps the **first** and **last** nodes of the linked list. After the function is executed, the **first node** becomes the **last node**, and the **last node** becomes the **first node**.

Examples: The following lists demonstrate the expected results for various cases.

list before swapEnds:	list after swapEnds:
< empty >	< empty >
(17)	(17)
(1, 2)	(2, 1)
(1, 3, 4, 2, 5)	(5, 3, 4, 2, 1)

The implementation should **traverse the list only once**, without creating new nodes, modifying the data field, and while handling all boundary cases.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

I Define followings:

(a) NORM OF A VECTOR

(b) SUBSPACE

(c) COORDINATE VECTOR

(d) BASIS OF VECTOR

(e) DIMENSION OF A SOLUTION SPACE

II Consider the BASES $B = \{u_1, u_2\}$ and $B' = \{u'_1, u'_2\}$ for \mathbb{R}^2 , where $u_1 = (1, 0)$, $u_2 = (0, 1)$, $u'_1 = (1, 1)$,

$u'_2 = (2, 1)$, Find the TRANSITION MATRIX $P_{B \rightarrow B'}$ from $B \rightarrow B'$

III Find a matrix P that diagonalizes A , and compute $P^{-1}AP$.

$$A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$$

IV Find the determinant of the matrix by cofactor expansion along the first row and second column simultaneously.

$$A = \begin{bmatrix} 3 & 1 & 0 \\ -2 & -4 & 3 \\ 5 & 4 & -2 \end{bmatrix}$$

V Let $\{u, v\}$ be the EUCLIDEAN INNER PRODUCT on \mathbb{R}^2 , and $u = (3, -2)$, $v = (4, 5)$, $w = (-1, 6)$, and $k = -4$. Verify the followings:

(a) $\{u, v\} = \{v, u\}$

(b) $\{u + v, w\} = \{u, w\} + \{v, w\}$

(c) $\{ku, v\} = k\{u, v\} = \{u, kv\}$

VI Prove that if A is orthogonal, then A^T is orthogonal.

Q.2. Solve the following:

(5x6=30)

1.	Check whether the complex numbers $2 + 3i$ and $1 - 2i$ generate the vector space \mathbb{C} over \mathbb{R} .
2.	Determine the inverse of the matrix $\begin{bmatrix} 2 & 1 & -1 \\ 0 & 2 & 1 \\ 5 & 2 & -3 \end{bmatrix}$.
3.	Let V be the vector space of all $n \times 1$ matrices over \mathbb{R} . Let $C_1, C_2 \in V$, $C_1 = [x_1 \ x_2 \ \dots \ x_n]^t$, $C_2 = [y_1 \ y_2 \ \dots \ y_n]^t$. Prove that $\langle C_1, C_2 \rangle = x_1y_1 + x_2y_2 + \dots + x_ny_n$ is an inner product on V .
4.	Find a matrix P that diagonalizes $A = \begin{bmatrix} 1 & 0 \\ 6 & -1 \end{bmatrix}$ and determine $P^{-1}AP$.
5.	Find the least squares solution of the linear system $Ax = b$ given by $\begin{aligned} x_1 - x_2 &= 4 \\ 3x_1 + 2x_2 &= 1 \\ -2x_1 + 4x_2 &= 3 \end{aligned}$ and find the orthogonal projection of b onto the column space of A .



UNIVERSITY OF THE PUNJAB

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

Paper: Applied Mathematics

Course Code: MATH-2006

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

(i)	Given two vectors $\vec{A} = (2, 2, -1)$ and $\vec{B} = (6, -3, 2)$, find direction cosines of $\vec{A} \times \vec{B}$.
(ii)	Find the directional derivative of $\phi = x^2yz + 4xz^2$ at $(1, -2, -1)$ in direction of $2\hat{i} - \hat{j} - 2\hat{k}$.
(iii)	Find constants a, b, c such that $A = (x + 2y + az)\hat{i} + (bx - 3y - z)\hat{j} + (4x + cy + 2z)\hat{k}$ is irrotational.
(iv)	Find f_x, f_y, f_z if $f(x, y, z) = (x^2 + y^2 + z^2)^{-1/2}$
(v)	Show that the inverse of each element (if exists) in a group is unique.
(vi)	If $\tau, \sigma \in S_6$ and $\tau = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 3 & 1 & 4 & 5 & 6 & 2 \end{pmatrix}$ $\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 4 & 1 & 3 & 6 & 5 \end{pmatrix}$. Compute $\tau^2\sigma$.

Solve the following:

(5x6=30)

Q.2	Show $ydx + xdy + 4dz$ is exact and evaluate the integral $\int_{(1,1,1)}^{(2,3,-1)} ydx + xdy + 4dz$ over the line segment from $(1,1,1)$ to $(2,3,-1)$
Q.3	Apply Green's Theorem to evaluate the integral $\oint_C (3ydx + 2xdy)$ where C: boundary of $0 \leq x \leq \pi, 0 \leq y \leq \sin x$
Q.4	Evaluate $\iint_S \vec{\nabla} \times (y\hat{i}). \vec{n} d\sigma$ where S is the hemisphere $x^2 + y^2 + z^2 = 1, z \geq 0$
Q.5	If H and K are subgroups of an Abelian group G, Show that $H \cap K$ is also subgroup of G.
Q.6	Prove that every cyclic group is Abelian.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- i. Form the differential equation of which $y = ae^x + b \ln |x| + cX + d$ is the solution.
- ii. Solve $y(1+x)dx + x(1+y)dy = 0$
- iii. Solve $(x^2 + y^2 + 2x) dx + 2y dy = 0$
- iv. Solve $\frac{dy}{dx} + y = xy^3$
- v. Solve $(D^3 - 27)y = 0$
- vi. Solve $y'' - 4y' + 4y = e^{2x}$ by method of undetermined coefficient

Solve the following:

(5x6=30)

- Q2 Find the general solution of $(D^2 - 7D + 12)y = e^{2x}(x^3 - 5x^2)$
- Q3 Find the general solution of $(x^3D^3 + 2x^2D^2 + 2)y = 10x + \frac{10}{x}$
- Q4 Solve $\frac{d^2y}{dx^2} + 4y = 4 \tan 2x$
- Q5 Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = (1 + e^{-x})^{-1}$
- Q6 Find the series solution of $y'' - x^3y = 0$ around the ordinary point $x = 0$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- i. Form the differential equation of which $x^2 + y^2 + 2gx + 2fy + c = 0$ is the solution.
- ii. Solve $(\sin x + \cos x)dy + (\cos x - \sin x)dx = 0$
- iii. Solve $(y^2 + xy)dx - x^2 dy = 0$
- iv. Solve $x \frac{dy}{dx} - 2x^2 y = y \ln y$
- v. Solve $(4D^4 - 4D^3 - 3D^2 + 4D - 1)y = 0$
- vi. Solve the initial value problem

$$(1 + 2y^2)dy = y \cos x dx, \quad y(0) = 1$$

Solve the following:

(5x6=30)

- Q2 Find the solution of $y'' + y = x \sin x$, $y(0) = 1, y'(0) = 2$
- Q3 Find the general solution of $[(x + 1)^2 D^2 + (x + 1)D + 1]y = 4[\cos \ln(x + 1)]^2$
- Q4 Solve $x^2 \frac{d^2 y}{dx^2} - (x^2 + 2x) \frac{dy}{dx} + (x + 2)y = x^3 e^x$
- Q5 Solve $\frac{d^2 y}{dx^2} + 4 \frac{dy}{dx} + 5y = e^{-2x} \sec x$
- Q6 Find the series solution of $y'' + \frac{3x}{1+x^2} y' + \frac{1}{1+x^2} y = 0$ around $x = 0$



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Mathematics B-IV (Metric Spaces & Group Theory)

Course Code: MATH-204

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- I. Let (X, d) be a metric space, Show that d_1 defined by $d_1(x, y) = \frac{d(x, y)}{1 + d(x, y)}$ is a Metric on X .
- II. Prove that Each open sphere is an open set in a metric space.
- III. If G is a group, then $(ab)^{-1} = b^{-1}a^{-1} \forall a, b \in G$.
- IV. Find all the subgroups of a Cyclic group of order 24.
- V. Find the inverse of the permutation $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 1 & 3 & 4 & 2 \end{pmatrix}$.
- VI. Prove that the finite subset of a metric space has no limit points.

Solve the following:

(3x10=30)

- Q2. Prove that every convergence sequence in a metric space is a Cauchy sequence.
- Q3. Define Generator of a group, Also Show that the set of n th roots of unity is a cyclic group under multiplication.
- Q4. Prove that The Index and order of a subgroup of a finite group divides the order of the group.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- (i) If a divides bc and $(a, b) = 1$, then a divides c .
- (iii) Find the remainder when 7^{23} is divided by 8.
- (iii) Prove that the number of prime numbers is not finite.
- (iv) Determine the smallest positive integer x such that $x \equiv 3 \pmod{5}$ and $x \equiv 4 \pmod{7}$.
- (v) Express $\gcd(256, 1166)$ as a linear combination of 256 and 1166.
- (vi) Solve the linear Diophantine equation $14x + 21y = 35$.

Q.2. Solve the following:

(3x10=30)

- (i) Prove that every integer $n > 1$ is a product of primes. The representation is unique, except for the order of the factors.
- (ii) Explain the process of the Sieve of Eratosthenes. Use this method to find all prime numbers up to 50.
- (iii) Let $a = a_n \cdot 10^n + a_{n-1} \cdot 10^{n-1} + \dots + a_1 \cdot 10 + a_0$ be the decimal representation. Prove that $11|a$ if and only if $11|(a_n - a_{n-1} + a_{n-2} - \dots + a_1 - a_0)$. Show a step-by-step proof, also provide two examples.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(15x2=30)

- Find the domain and range of the function $f(x) = \frac{\sqrt{x-3}}{x-5}$.
- Draw the graph of $f(x) = |x|$.
- Prove that $g(x) = x^3 + x$ is odd.
- Evaluate composition $h \circ g$, where $g(x) = x^2 + 1$, $h(x) = \sqrt{x+5}$.
- Determine the solution of $|2x+1| \geq 5$.
- Find the inverse of $f(x) = \frac{2x+3}{x-4}$.
- Define power rule of integration with example.
- Find derivative of $\frac{x}{\sin x}$ with respect to x .
- Show that the function $f(x) = \frac{1}{x-2}$ is not continuous at $x = 2$.
- Evaluate $\lim_{x \rightarrow 2} \frac{\sqrt{x}-\sqrt{2}}{x-2}$.
- Explain the difference between a continuous function and a discontinuous function.
- Find $\frac{dy}{dx}$ if $x^3 + y^2 = 2x$.
- Evaluate $\int \frac{e^x}{e^x+3} dx$.
- Evaluate $\int_0^3 \frac{dx}{x^2+9}$.
- Compute derivative of $(x \sin x)^8$.

Q.2. Solve the following:

(5x6=30)

- Evaluate $\lim_{\theta \rightarrow 0} \frac{\tan(\theta) - \sin(\theta)}{\sin^3(\theta)}$.
- Discuss the continuity of $f(x)$ at $x = 2$:
$$f(x) = \begin{cases} 2x + 5, & \text{if } x \leq 2 \\ 4x + 1, & \text{if } x > 2 \end{cases}$$
- If $y = e^x \sin(x)$, then show that $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y = 0$.
- Evaluate $\int \frac{(1-\sqrt{x})^2}{\sqrt{x}} dx$.
- Solve by partial fraction $\int \frac{x dx}{(x+4)(x-6)}$.



UNIVERSITY OF THE PUNJAB

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

Paper: Linear Algebra

Course Code: MATH-224

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Solve the following:

(6x5=30)

Q.1	Find all the subgroups of the cyclic group of order 60 generated by a .
Q.2	Define the following terms. a) Group b) Homomorphism c) Isomorphism
Q.3	Prove that $A = \begin{bmatrix} 1 & 1-i & 2 \\ 1+i & 3 & i \\ 2 & -i & 0 \end{bmatrix}$ is Hermitian matrix.
Q.4	Find the inverse of the matrix $\begin{bmatrix} 0 & -1 & 0 \\ 0 & 0 & -1 \\ 1 & 0 & 0 \end{bmatrix}$ over R .
Q.5	Let $T: R^2 \rightarrow R$ be defined by $T(x_1, x_2) = 2x_1x_2$. Determine whether it is linear or nonlinear.
Q.6	For what value of α is the matrix $A = \begin{bmatrix} 3 & 1 & \alpha+2 \\ 1 & \alpha & 4 \\ 2-\alpha & \alpha+2 & \alpha+5 \end{bmatrix}$ singular?

Solve the following:

(3x10=30)

Q.7	Use Cramer's rule to determine the solution of the following system of equations. $\begin{aligned} x_1 + 5x_2 + 2x_3 &= 9 \\ x_1 + x_2 + 7x_3 &= 6 \\ -3x_2 + 4x_3 &= -2 \end{aligned}$
Q.8	Find the eigenvalues and eigenvectors of $A = \begin{bmatrix} 5 & 4 \\ 4 & -1 \end{bmatrix}$.
Q.9	Show that $(1, -1, 0), (2, -1, -2), (1, -1, -2)$ is a basis of R^3 . Using the Gram-Schmidt process, find an orthonormal basis of R^3 .



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

i. For what values of h and k is the following system consistent?

$$2x_1 - x_2 = h$$

$$-6x_1 + 3x_2 = k$$

ii. The matrix A can be put into Echelon form using the following row operations:

$$A = \begin{bmatrix} 1 & 0 & 3 \\ -3 & 4 & -7 \\ 2 & 4 & 5 \end{bmatrix} \xrightarrow{R2 \rightarrow R2 + 3R1} \begin{bmatrix} 1 & 0 & 3 \\ 0 & 4 & 2 \\ 2 & 4 & 5 \end{bmatrix} \xrightarrow{R3 \rightarrow R3 - 2R1} \begin{bmatrix} 1 & 0 & 3 \\ 0 & 4 & 2 \\ 0 & 4 & -1 \end{bmatrix}$$

$$\xrightarrow{R3 \rightarrow R3 - R2} \begin{bmatrix} 1 & 0 & 3 \\ 0 & 4 & 2 \\ 0 & 0 & -3 \end{bmatrix} = U$$

What is the matrix L in the LU decomposition of A corresponding to the above U ?

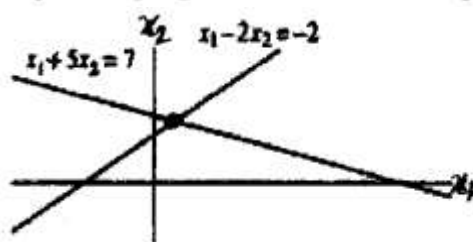
iii. Suppose A and B are invertible 3×3 matrices, with inverses $A^{-1} = \begin{bmatrix} 1 & 0 & 0 \\ -2 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

and $B^{-1} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 5 & 1 \end{bmatrix}$. What is $(AB)^{-1}$?

iv. Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^4$ such that $T(x, y) = (2x - 3y, x - 7y, x + 2y + 1, 5x - 2y)$.

Determine why T is not a linear transformation?

v. Find the point (x_1, x_2) that lies on the lines given in the following graph?



vi. Is 5 an eigen value of $A = \begin{bmatrix} 6 & -3 & 1 \\ 3 & 0 & 5 \\ 2 & 2 & 6 \end{bmatrix}$?

Q.2. Solve the following:

(3x10=30)

i.	Use Gauss-Jordan method to determine the solution of the following system of equations. $\begin{aligned} x_1 - x_2 + 2x_3 &= 0 \\ 4x_1 + x_2 + 2x_3 &= 1 \\ x_1 + x_2 + x_3 &= -1 \end{aligned}$
ii.	Find the characteristic polynomial, all eigenvalues and eigenvectors for the matrix $A = \begin{bmatrix} 1 & -3 & 3 \\ 3 & -5 & 3 \\ 6 & -6 & 4 \end{bmatrix}$
iii.	Find a real orthogonal matrix P for which $P^{-1}AP$ is diagonal, where $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- (i)- Is there a lowest temperature below which black body radiation is no longer given by an object?
- (ii)- In both photoelectric effect and Compton Effect there is an incident photon and an ejected electron. What is difference between these two effects?
- (iii)- Is Compton effect more supportive of photon theory of light than is the photoelectric effect? Explain your answer.
- (iv)- What common expression can be used for momentum of either a photon or a particle?
- (v)- Why is the Heisenberg uncertainty principle not more readily apparent in our daily observations?
- (vi)- Is light a wave or a particle? Support your answer by citing specific experimental evidence.
- (vii)- In quantum mechanics, it is possible for the energy E of a particle to be less than the potential energy, but classically this condition is not possible. Why?
- (viii)- Does quantization of angular momentum for hydrogen atom is agreed with de-Broglie hypothesis?
- (ix)- According to Bohr's model of the hydrogen atom, what is the uncertainty in the radial coordinate of the electron? In what way does the model violate the uncertainty principle?
- (x)- Why the inner shell transition is basic requirement for production of X-rays?
- (xi)- Prove that $1u = 931\text{MeV}$.
- (xii)- The number of neutrons is more than number of protons in heavy nuclei? Explain why this happen.
- (xiii)- What factors make a fusion reaction difficult to achieve?
- (xiv)- How does the concept of simultaneity enter into the measurement of the length of an object?
- (xv)- Two events occur at same place and at same time for one observer. Will they be simultaneous for all other observers?

Answer the following questions

(3x10=30)

- Q. 2: (a)**-What is photoelectric effect? What features of photoelectric effect cannot be explained on classical wave theory of radiation? (04 + 06)
- (b)**-Define de-Broglie's hypothesis. Explain in detail, how Davisson-Germer proved de Broglie's hypothesis.
- Q. 3: (a)**-What is meant by nuclear reaction? Write down Q-value equation of general nuclear reaction and explain what are exothermic and endothermic nuclear reactions? (04 + 06)
- (b)**-What is beta decay? Discuss energy spectrum curve from beta decay of a radioactive nuclide.
- Q. 4: (a)**-What do you understand by time dilation? Discuss the variation of time with velocity according to special theory of relativity. (06 + 04)
- (b)**-Derive the relation,

$$E^2 = c^2p^2 + m_0^2c^4$$

Give its physical significance.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Briefly describe the following. (15x2=30)

- i. Write down the postulates of special theory of Relativity.
- ii. Define the term population inversion. Why population inversion is necessary between two atomic levels for laser action to occur?
- iii. What is Q -value of nuclear reaction? How does its positive or negative value effect the nuclear reaction?
- iv. Explain insulators, according to band theory of solids.
- v. Find the energy released during the alpha decay of ^{238}U . The needed atomic masses are $^{38}\text{U} = 238.050785 \text{ u}$; $^{234}\text{Th} = 234.043593 \text{ u}$; $^4\text{He} = 4.002603 \text{ u}$;
- vi. What is relativistic momentum? Give its relation.
- vii. Define Cooper pair.
- viii. What is inverse beta decay?
- ix. Mention four characteristics of laser.
- x. Differentiate between boson and fermions.
- xi. Write down the general nuclear reaction showing how atomic and mass number of an atom is affected with the emission of gamma radiation.
- xii. Differentiate between absorption and emission spectrum with the aid of diagram.
- xiii. Write down the Maxwell Boltzmann distribution function.
- xiv. Why does the classical theory fail to explain specific heat of solids?
- xv. What is the purpose of moderator in nuclear reactor?

Answer the following questions

- Q2. (a) State basic postulates of special theory of relativity. (2)**
(b) What is the total energy of a 2.53 MeV electron? What is the magnitude of the electron's momentum, in the unit MeV/c? (Note that c is the symbol for the speed of light). (6)
(c) Can a massless particle exist? Justify your answer in accordance with special theory of relativity. (2)
- Q3. (a) Show that radioactive decay obeys exponential law. Deduce relation between half-life and disintegration constant. (7)**
(b) Write down three differences between alpha and beta particles. (3)
- Q4. What are super conductors? How does the resistance vary with temperature in a perfect superconductor? What are the applications of superconductors in daily life? (10)**



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Political Science

Course Code: POL-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)

1. What is national politics?
2. What is political economy?
3. What is political socialization?
4. Differentiate between 'De Jure and De Facto Sovereignty'.
5. What is federalism?
6. What is rule of law?

Q.2. Answer the following questions

(3x10=30)

1. What is an approach? Describe traditional approaches to the study of Political Science.
2. What is Sovereignty? Differentiate Islamic and Western concept of sovereignty.
3. What is Executive? Explain various functions and powers of it.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Political Systems (Developing)

Course Code: POL-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)

- i. Political awareness
- ii. Pressure groups
- iii. Civil-military relations
- iv. Role of Executive
- v. Council of Common Interest
- vi. Political Economy

Q.2. Answer the following questions

(3x10=30)

- i. Write the powers and functions of the Indian Prime Minister.
- ii. Critically evaluate the 26th Amendment in the 1973 Constitution.
- iii. Write salient features of the Turkish constitution.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Pakistan Movement

Course Code: POL-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)

سوال نمبر 1۔ درج ذیل سوالات کے مختصر جوابات مطلوب ہیں۔

1. What was the impact of World War 2nd on the world scenario?

دوسری جنگ عظیم کا عالمی منظر نامے پر کیا اثر ہوا؟

2. Cabinet mission be analysed in the light of its development, plan and working.

کابینٹ مشن کا تجزیہ اس کی ترقی، منصوبہ بندی اور کام کی روشنی میں کیا جائے۔

3. Describe the reasons of Muslim downfall in Sub-Continent.

برصغیر میں مسلمانوں کے زوال کی وجوہات بیان کریں۔

4. What was one positive result of the British Raj's rule in India?

ہندوستان میں برطانوی راج کی حکمرانی کا ایک مثبت نتیجہ کیا تھا؟

4. What was one positive result of the British Raj's rule in India?

ہندوستان میں برطانوی راج کی حکمرانی کا ایک مثبت نتیجہ کیا تھا؟

5. What were the three consequences of partition of British India in 1947?

1947 میں برٹش انڈیا کی تقسیم کے تین نتائج کیا تھے؟

6. What are the powers of the interim government?

عمدوری حکومت کے اختیارات کیا ہیں؟

Q.2. Answer the following questions

(3x10=30)

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

1. The Muslims demanded for the separate homeland as they were left no other option to survive as a nation .illustrate this statement in the light of sufferings and cause which led them to demand the separate Muslim homeland.

مسلمانوں نے علیحدہ وطن کا مطالبہ کیا کیونکہ ان کے پاس بحیثیت قوم زندہ رہنے کا کوئی دوسرا راستہ نہیں بچا تھا۔ اس بیان کو مصائب اور اسباب کی روشنی میں بیان کریں جس کی وجہ سے انہوں نے علیحدہ مسلم وطن کا مطالبہ کیا۔

2. What were the factors and events that compelled the Muslims to be active in the politics its policy alienation from politics adopted after war of independent?

وہ کون سے عوامل اور واقعات تھے جنہوں نے مسلمانوں کو سیاست میں سرگرم ہونے پر مجبور کیا اس کی سیاست سے دوری کی پالیسی جنگ آزادی کے بعد اختیار کی گئی؟

3. Why did the British attitude towards the Muslims change in the later part of the 19th century?

19ویں صدی کے آخر میں مسلمانوں کے بارے میں انگریزوں کا رویہ کیوں بدلا؟



UNIVERSITY OF THE PUNJAB

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

Paper: Introduction to Political Science

Course Code: POL-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: What is the relationship of Political Science with History?
- ii: Differentiate De Facto and De Jure kinds of Sovereignty.
- iii: Explain the three Features of Parliamentary form of Government.
- iv: How can compare Islamic and Western concept of State.
- v: A brief note the term of Nation?
- vi: What is power? Explain.

Answer the following questions

(3x10=30)

- Q: 2. What is the definition of Political Science? discuss its Nature and Scope.**
- Q: 3. What is the Executive? Elaborate its Powers.**
- Q: 4. Explain the Federation and its Responsibilities.**



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Pakistan Studies (Compulsory 2)

Course Code: PST-111

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. Write short note on the following.

(5x6=30)

سوال نمبر 1: درج ذیل پر مختصر نوٹ تحریر کریں۔

I. Two Nation Theory

I۔ دو قومی نظریہ

II. Aligarh Movement

II۔ تحریک علی گڑھ

III. 3rd June Plan

III۔ تین جون پلان

IV. Early Challenges of Pakistan

IV۔ پاکستان کی ابتدائی مشکلات

V. Zia-ul-Haq

V۔ ضیاء الحق

Answer the following questions

(2x15=30)

درج ذیل سوالات کے جوابات تحریر کریں۔

Q. No. 2. Explain the historical significance of Lahore Resolution.

سوال نمبر 2۔ قرارداد لاہور کی تاریخی اہمیت بیان کریں۔

Q. No. 3. Discuss the salient features of 1956 Constitution.

سوال نمبر 3۔ 1956 کے آئین کے نمایاں خدوخال پر بحث کریں۔

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

- i. State the Stokes' Theorem.
- ii. Verify that $w_{xy} = w_{yx}$ if $w = \ln(2x + 3y)$.
- iii. Find unit tangent \underline{T} if $\underline{r}(t) = (\cosh t)\hat{i} - (\sinh t)\hat{j} + t\hat{k}$.
- iv. Convert the Cartesian equation $xy = 2$ in polar form.
- v. Find the center and radius of the sphere $x^2 + y^2 + z^2 + x - 4z + 1 = 0$.
- vi. The line through the point $P(3, -4, -1)$ parallel to the vector $\hat{i} + \hat{j} + \hat{k}$.

Answer the following questions**Q. No. 2** Show that if f is homogeneous of degree n , show that

$$x^2 \frac{\partial^2 f}{\partial x^2} + 2xy \frac{\partial^2 f}{\partial x \partial y} + y^2 \frac{\partial^2 f}{\partial y^2} = n(n-1)f(x, y). \quad [7]$$

Q. No. 3 If $y = e^{c_1 x_1 + c_2 x_2 + c_3 x_3 + \dots + c_n x_n}$, where $c_1^2 + c_2^2 + c_3^2 + \dots + c_n^2 = 1$, show that

$$\frac{\partial^2 y}{\partial x_1^2} + \frac{\partial^2 y}{\partial x_2^2} + \frac{\partial^2 y}{\partial x_3^2} + \dots + \frac{\partial^2 y}{\partial x_n^2} = y. \quad [7]$$

Q. No. 4 Verify that the function $u = 1/\sqrt{x^2 + y^2 + z^2}$ is a solution of the three dimensional Laplace equation $u_{xx} + u_{yy} + u_{zz} = 0$. [8]**Q. No. 5** Convert the Cartesian equation $xy = 2$ in polar form. [8]



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Modeling and Simulation

Course Code: SI-241

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)	Define modeling and simulation. Explain its significance in engineering.
b)	What are the key differences between continuous and discrete models in simulation?
c)	Discuss the role of Monte Carlo simulations in uncertainty modeling.
d)	Explain the concept of system dynamics and its application in simulation models.
e)	What is the purpose of verification and validation in simulation studies?
f)	Describe the discrete event simulation and its application in modeling real-world systems.

Q.2. Answer the following questions

(3x10=30)

a)	Explain the Bungartz simulation approach. Discuss its steps and advantages for modeling complex systems.
b)	Discuss in detail the Markov Chain and its relevance to simulation modeling. Provide examples.
c)	Describe the process of system modeling in terms of different types of models, including their strengths and limitations of each.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Sociology

Course Code: SOC-211

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. Sociological Perspectives and its benefits**
- ii. Values and value inconsistency**
- iii. Subculture and Counterculture**
- iv. Socialization and its importance**
- v. Media as an agent of socialization**
- vi. Latent Functions of Crime**

Q.2. Answer the following questions

(3x10=30)

- 1. Define Self. Write a note on Theory of Self Development by George Herbert Mead?**
- 2. Write a note on following two Cultural Elements? (i) Symbols (ii) Beliefs**
- 3. Define Culture. Write a note on Types of Culture?**



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Social Case Work

Course Code: SOCW-205

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 تحریر کریں۔

1. Define Social Case Work and mention its objectives.

سوشل کیس ورک کی تعریف کریں اور اس کے مقاصد ذکر کریں۔

2. What is the role of a place in Social Case Work?

سوشل کیس ورک میں جگہ (ایجنسی) کا کیا کردار ہے؟

3. Describe the role of communication in the interviewing process.

انٹرویو کے عمل میں مواصلات کا کردار بیان کریں۔

4. What is the significance of diagnosis in case work?

کیس ورک میں تشخیص کی اہمیت کیا ہے؟

5. How do social workers identify and manage economic problems in Social Case Work?

سوشل ورکرز سوشل کیس ورک میں اقتصادی مسائل کی شناخت اور ان کا انتظام (حل) کیسے کرتے ہیں؟

6. Explain the concept of treatment in Social Case Work.

سوشل کیس ورک میں علاج کے تصور کی وضاحت کریں۔

Q.2. Answer the following questions

(3x10=30)

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

1. Discuss in detail the components of Social Case Work and their importance.

سوشل کیس ورک کے اجزاء کو تفصیل سے بحث کریں اور ان کی اہمیت بیان کریں۔

2. Explain counseling in Social Case Work, including its definition, meaning, and techniques.

سوشل کیس ورک میں صلاح اور مشاورت (کونسلنگ) بشمول اس کی تعریف، مفہوم، اور تکنیکوں کی وضاحت کریں۔

3. What are the major principles of Social Work practice, and how do they apply to case work?

سوشل ورک کی عملی مشق کے اہم اصول کیا ہیں، اور یہ کیس ورک پر کیسے لاگو ہوتے ہیں؟



UNIVERSITY OF THE PUNJAB

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

Paper: Social Psychology

Course Code: SPSY-221

Marks: 60

Roll No.

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 social psychology in modern society?**
- ii. What are the key characteristics of personality development?**
- iii. Explain socio-cultural dynamics?**
- iv. Describe socialization in personality development?**
- v. Explain the methods and framework of social psychology?**
- vi. Explain the dynamics of leadership?**

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

- 1. Write comprehensive note on the field of social psychology.**
- 2. Explain in detail Self-presentation and Social perception.**
- 3. What is aggression? Explain its influences and ways to reduce it.**



UNIVERSITY OF THE PUNJAB

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

Paper: Statistics-IV

Course Code: STAT-203

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)

- Find the least value of r in a sample of 18 pairs from a bivariate normal population that is significant at 5% level.
- Define simple, multiple, and partial correlation.
- Given that

X_1	3	5	6	8
X_2	16	10	7	4
X_3	90	72	54	42

Determine $r_{13,2}$ and $R_{1,23}$.

- What is meant by experimental design. Describe in brief the basic principle of experimental design.
- Discuss why using multiple two sample t test is not an appropriate alternate to analysis of variance.
- A Skilled typist on routine work keep the record of mistakes made per day during 300 working days

Mistake per day(x)	0	1	2	3	4	5	6
No. of days(f)	143	90	42	12	9	3	1

Test the hypothesis that X has the poisson distribution.

Answer the following questions

(3x10=30)

Q2. The atmosphere in 4 different districts of a large town were sample, the samples being taken at 4 heights. Four different tests for the presence of a certain chemical were made on the sample. Letter denotes the different tests

Heights	Districts			
	1	2	3	4
1	A8	B5.3	C4.1	D5.0
2	D6.8	A4.9	B4.1	C3.2
3	B6.3	C4.7	D4.0	A5.0
4	C5.7	D3.3	A4.0	B4.2

Is there evidence of significant variation from district to district and between heights in the percentage of the chemical present in the atmosphere.

Q3. 492 candidate for scientific posts gave particular of their university degrees and their hobbies

categories	Maths	chemistry	physics
Music	24	83	17
Craftwork	11	62	28
Reading	32	121	34
Drama	10	26	44

Discuss the association between two criteria of classification i.e degrees and hobbies.

Q4. From 12 pairs of values (X,Y) the following quantities are calculated

$$\Sigma X = 766 \quad \Sigma Y = 1700 \quad \Sigma XY = 109380 \quad \Sigma X^2 = 49068 \quad \Sigma Y^2 = 246100$$

Assuming normality

- Find 95% confidence interval for α .
- Test the hypothesis $\beta = 1$ against $\beta \neq 1$.



UNIVERSITY OF THE PUNJAB

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

Paper: Elementary Statistics

Course Code: STAT-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)

- Empirical Relation between Mean, Median & Mode.
- Standardized Variable.
- Sample Design.
- Major properties of Normal Distribution.
- Independence of Attributes.
- Type I and Type II errors.

Answer the following questions (5x6=30)

Q.2. Find first and third Quartiles for the following data:

Classes:	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45
Frequency:	29	76	108	81	62	34

Q.3. Compute second moment about mean for the data given below:
58, 49, 76, 80, 47, 72, 61, 59, 77, 48

Q.4. The probability that a patient recovers from a delicate heart operation is 0.85. What is the Probability that exactly seven of the next ten patients having this operation survive?

Q.5. We are given the following calculations:
 $n = 5, \Sigma y = 89, \Sigma x = 30, \Sigma y^2 = 1885, \Sigma x^2 = 238, \Sigma X, Y = 619$
Compute regression equation and correlation coefficient

Q.6. The cathode warm up time was determine for three different tubes (A, B, C) as:

A:	19	23	26	18	20
B:	20	32	27	40	24
C:	16	15	26	19	17

Test the hypothesis that no difference exist among the three tubes.



UNIVERSITY OF THE PUNJAB

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

Paper: Probability and Statistics

Course Code: STAT-221

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- What is Quantitative Variable?
- Define Arithmetic Mean.
- Give two advantages of Mode.
- What do you know about Dispersion?
- If $n = 10$, $\sum X = 200$, $\sum X^2 = 8000$, Calculate the Variance.
- Define Sample Space.
- Explain equally likely events.
- State the Multiplication law of Probability for two independent events.
- If $P(A) = 0.5$, $P(B) = 0.4$, $P(A \cap B) = 0.3$ find $P(A \cup B)$
- Define the conditional probability.
- Give the properties of Binomial Experiment.
- Write two properties of Normal Distribution.
- What is Simple Regression?
- Write two properties of simple linear correlation coefficient.
- What is the difference between correlation and regression?

Answer the following questions (6x5=30)

Q.2 Calculate the Arithmetic Mean from the following frequency distribution.

Classes	20–24	25–29	30–34	35–39	40–44	45–49	50–54
Frequency	4	19	27	10	9	6	5

Q.3 Calculate the Variance from the following frequency distribution.

Weight	10–15	15–20	20–25	25–30	30–35	35–40
Frequency	3	7	9	12	5	4

Q.4 A bag contains 12 identical balls, 4 of which are red, 5 black and 3 are white. Five balls are drawn from the bag without replacement. Find the probability that (i) Three are red (ii) At least three are black.

Q.5 When 6 coins are tossed what is the probability of getting (i) at least 4 heads (ii) not more than 2 heads.

Q.6 Scores on a certain nation-wide college entrance follow a normal distribution with a mean of 500 and standard deviation of 100. Find the probability that a student will score (i) over 650 (ii) between 300 and 600.

Q.7 Find the regression equation Y on X from the following data.

X	1	2	3	4	5	6
Y	20	50	60	70	80	100



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Psychology

Course Code: UE-272

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- Describe Psychology as Science of Behavior.
- II- Describe role of Psychologist in Clinic.
- III- Describe Contribution of Sigmund Freud as father of modern Psychology.
- IV- Define Forgetting, what is meant by Motivated Forgetting.
- V- Describe internal determinants of Attention.
- VI- Describe behavioral Disorders.

Q.2. Answer the following questions:

(2x15=30)

- I. Define Neuron, Describe Structure, Functions and Types of Neuron.
 - II. Describe comprehensively Observational Method.
-



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Tehqeeq o Tanqeed (Bunyadi Mubahas) Course Code: URDU-205

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: مندرجہ ذیل سوالات پر مختصر نوٹ لکھیں۔

- ۱۔ ناقدین کی آرا کی روشنی میں تنقید کے معنی و مفہوم پر روشنی ڈالیں۔
- ۲۔ تحقیق کے خصائص مختصر بیان کریں۔
- ۳۔ بابائے اردو مولوی عبدالحق کی تحقیقی خدمات کا مختصر جائزہ لیجئے۔
- ۴۔ ”نفسیاتی تنقید“ سے کیا مراد ہے؟
- ۵۔ تنقید کے مقاصد مختصر بیان کریں۔
- ۶۔ محمد حسن عسکری کے تنقیدی نظریات پر مختصر نوٹ لکھیں۔

(3x10=30)

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

- ۱۔ اردو تنقید کی روایت میں ”عمرانی تنقید“ کی اہمیت پر مفصل نوٹ لکھیں۔
- ۲۔ اقصاام حسین کے تنقیدی نظریات پر روشنی ڈالیں۔
- ۳۔ تنقید اور تخلیق کے باہمی رشتے پر جامع نوٹ لکھیں۔



UNIVERSITY OF THE PUNJAB

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

Paper: Tehreer o Insha (Practice)

Course Code: URDU-206

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: مندرجہ ذیل سوالات پر مختصر نوٹ لکھیں۔

- ۱۔ سر سید احمد خان کس صنف ادب کے حوالے سے معروف ہوئے اور کیوں؟ (۵)
- ۲۔ مکالمہ کسے کہتے ہیں؟ اس کے کیا اصول ہیں؟ (۵)
- ۳۔ قدیم دور میں مراسلہ نگاری کا کیا انداز تھا؟ (۵)
- ۴۔ کہانی کس اصنافِ نثر کا حصہ ہے؟ (۵)
- ۵۔ قلمی اور ادبی مضمون میں کیا فرق ہے؟ (۵)
- ۶۔ رپورٹاژ کیا ہے؟ (۵)

(3x10=30)

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

- ۱۔ تبصرہ نگاری کے اہم اصول کیا ہیں؟ (۱۰)
- ۲۔ اردو مراسلہ نگاری میں غالب کا حصہ ہے؟ (۱۰)
- ۳۔ اردو انشائیہ نگاری کی روایت اور ارتقا بیان کریں؟ (۱۰)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- I. Differentiate between sensory and motor neuron
- II. Describe the location and function of Photoreceptors.
- III. Describe the complex camera eye?
- IV. Describe the difference between hormone and pheromone.
- V. Describe the gaseous exchange through gills.
- VI. Write a note on structure and functions of adrenal cortex.
- VII. Briefly describe the platelets.
- VIII. Describe the appendix.
- IX. Write a note on secretions of stomach.
- X. Describe, briefly, the role of ribosomes in cell
- XI. Differentiate between endocytosis and exocytosis
- XII. Describe the skin sensors of damaging stimuli
- XIII. Enlist the hormones released from anterior pituitary
- XIV. Differentiate between the serum and plasma
- XV. Describe the salivary glands of humans

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

- I. Give an account of the nerve impulse transmission mechanism in a neuron.
- II. Discuss, very briefly, hormonal control of female reproductive system.
- III. Account, in detail, the hormones of pituitary gland, in mammals.



UNIVERSITY OF THE PUNJAB

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

Paper: Animal Form & Function II

Course Code: ZOOL-207

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- I. Describe the thyroid gland secretions.
- II. Differentiate between sensory and motor neuron.
- III. Describe the location and function of Photoreceptors.
- IV. Diagrammatically, only, differentiate the nervous organization of a cephalopod and a crustacean.
- V. Describe the lateral line system of fish.
- VI. Draw a labelled diagram of cross section of spinal cord.
- VII. Describe in detail the sonar.
- VIII. With the help of labeled figures only, compare the heart and circulatory system of reptiles and mammals. Indicate the direction of blood flow.
- IX. Give four basic physiological principles of cutaneous gas exchange.
- X. Describe the properties of a respiratory exchange surface?
- XI. Describe, briefly, the role of neurons.
- XII. Draw a labelled diagram of the human heart.
- XIII. Describe the fate of lipids in heterotrophs.
- XIV. Give a comparison of suspension feeders and deposit feeders.
- XV. Describe, briefly, the role of pancreas in digestion.

Q.2. Answer the following questions.

(3x10=30)

1. Give a detailed account of the nerve impulse transmission through a neuron cell.
2. Discuss, very briefly, modes of action of hormones.
3. Discuss, very briefly, the structure and function of vertebrate's stomach.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- i. What is motivation?
- ii. What is stereotype behavior?
- iii. What is action potential?
- iv. What are proximate causes of behavior?
- v. What is navigation?
- vi. What are acoustic behaviors?
- vii. What is conflict?
- viii. What is altruism?
- ix. What is classical conditioning?
- x. What is aggression?
- xi. What is imprinting?
- xii. What is optimal foraging?
- xiii. What are pseudomorphs?
- xiv. What is Homeostasis?
- xv. What is Latency?

Q.2. Answer the following questions.

(3x10=30)

- i. Write a detailed note on the role of hormones in animal behavior?
- ii. Describe castes and life history of *Apis* (Honeybee)?
- iii. Discuss successful foragers and winners of predator-prey relationships?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- I. What is difference between amylose and amylopectin?
- II. What kind of forces of attraction is present in the primary structure of a protein?
- III. What is pro-protein, give example?
- IV. What is Lactose intolerance?
- V. How does gel electrophoresis helps in protein purification?
- VI. Write down the formula of L & D glucose.
- VII. Differentiate between purines and pyrimidine.
- VIII. What is importance of titration curve in amino acids?
- IX. Explain phospholipids.
- X. What are reverse inhibitors?
- XI. What is an isoelectric point?
- XII. Write down the three important functions of the Coenzyme.
- XIII. What are the steps involved in column chromatography?
- XIV. Describe economic importance of proteins.
- xv. Differentiate between saturated and unsaturated fatty acids.

Q.2. Answer the following questions.

(2x15=30)

- i. Write in detail the types of amino acids and their classification.
- ii. What are structural levels of proteins, discuss in detail.



UNIVERSITY OF THE PUNJAB

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

Paper: Biological Techniques

Course Code: ZOOL-212

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. Preparation of stock solutions of various strengths
- ii. Confocal Microscopy
- iii. Column Chromatography
- iv. Preservation of dry specimens
- v. Tissue mounting
- vi. Cell fractionation

Answer the following questions.

(3x10=30)

Q. 2 Discuss Maxam Gilbert method for DNA sequencing.

Q.3 Write detail note on Filtration and its types.

Q.4 Write about electron microscope. Support your answer with suitable sketches



UNIVERSITY OF THE PUNJAB

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

Paper: Animal Form & Function II

Course Code: ZOOL-213

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- I. Differentiate b/w carnivore and herbivore.
- II. What is the metabolic fate of lipids in heterotrophs.
- III. Briefly describe the fluid feeders.
- IV. Differentiate b/w intracellular and extracellular digestion?
- V. What is a gastrovascular cavity?
- VI. Write down the composition of pancreatic juice.
- VII. What is convection?
- VIII. Briefly describe endotherms.
- IX. Why invertebrates are thermoconforms.
- X. What is gular flutter.
- XI. Write a note on contractile vacuole.
- XII. What are green glands?
- XIII. Write a note on the process of fission?
- XIV. Describe hermaphroditism?
- XV. Write down the functions of LH.

Q.2. Answer the following questions.

(3x10=30)

1. Write a note on gastrointestinal motility and its control with figures.
2. Advantages and disadvantages of sexual & Asexual reproduction in invertebrates.
3. How does the metanephric kidney function? Elaborate with diagram.