THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Differentiate between Depression and Anxiety with examples.

2. Discuss the criteria of Normality and Abnormality.

3. What are Neurodevelopmental Disorders?

4. Differentiate between Anorexia Nervosa and Bulimia Nervosa.

5. Differentiate between Hallucinations and Illusions with examples.

6. Differentiate between Obsessive Compulsive and Obsessive Compulsive Personality Disorder.

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

1. Explain Somatic Symptoms and related Disorders in detail.

2. Explain significant Developments and Achievements in the field of Abnormal Psychology.

3. Differentiate Narcolepsy and Sleep Terrors with examples.

UNIVERSITY OF THE PUNJAB

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

Paper: Schools and Perspectives in Psychology
Course Code: APSY-352

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. Explain the main concepts of Structuralism.

2. What is the difference between Punishment and Negative Reinforcement? Explain with examples.

3. Define the term "Gestalt" and its significance in the Gestalt Psychology movement.

4. How Albert Ellis has contributed to the Cognitive Perspective in the field of Psychology.

5. Explain the main principles of the Humanistic Perspective in Psychology.

6. Explain the role of Sociocultural Perspective in Psychology.

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

1. Describe the Islamic Perspective in the light of the teachings of the Quran & Sunnah concerning the contributions of any Two Muslim Psychologist Perspectives.

2. Compare and Contrast the main concepts given by Classical Psychoanalytic and Neo Freudians.

3. Write a detailed note on the Existential school of thought in Psychology.

UNIVERSITY OF THE PUNJAB

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

Paper: Developmental Psychology (Revised)
Course Code: APSY-353

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. Describe the nature and scope of developmental psychology.

2. What are the stages of language development during infancy?

3. what are the role of familial and extra familial influences during childhood.

4. Describe the emotional and personality development during childhood.

5. Elaborate the ethical issue in research on developmental Psychology.

6. Write a note on problems and disturbances in adolescence.

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

1. Define developmental Psychology. What are the Research methods used for studying developmental changes?

2. Narrate in detail the Erik Erikson's psychosocial stages of development.

3. Describe Neurodevelopmental disorders. What are the childhood disorders?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Explain the importance and uses of psychological testing and assessment.
2. What are culture fair tests? Elaborate with the help of example.
3. Describe ethical issues in assessment.
4. Differentiate between projective and self-report tests of personality with examples.
5. Describe criterion validity and its types.
6. What are norms? What different types of norms are used in psychological tests?
7. Who developed Rotter's Incomplete Sentence Blank? Describe its administration and scoring.
8. Differentiate verbal and non-verbal tests of intelligence with examples.
9. Write down the guidelines for item writing.
10. Which types of tests are used in clinical settings? Briefly describe.

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

1. Define Reliability. Name and elaborate different types of reliability alongwith examples.
2. Write a detailed note on Neuropsychological testing.
3. Explain in detail the steps of test construction.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Write a note on the Survey Method.

2. How is Simple random sampling done?

3. Why are Hypotheses important? Discuss the types of Hypotheses with examples.

4. Briefly discuss the limitations of the use of Scientific Methods in psychology.

5. Briefly discuss the Research Process.

6. Discuss Ethnographic studies in qualitative research.

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

1. What are the types of Non-probability Sampling Methods? How are they applied to psychological research? Give examples.

2. Discuss the way to conduct a literature review.

3. Discuss in detail the APA Ethical Guidelines for research with Humans.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Write down steps in construction of grouped frequency distribution.
2. Name and define types of graphs.
3. What is the difference between variance and standard division? Explain with the help of formulas.
4. Find median for the following set of data: 13,15,17,11,12,18,14,15,11,12,19,14,17,16
5. What are directional and non-directional hypothesis? What is the relation of critical region with the direction of the hypothesis?
6. Differentiate between parametric and non-parametric tests with examples.
7. Explain the differences between one-way and two-way ANOVA.
8. If scores on a test are normally distributed with mean = 30.5 and Standard division = 7.1, what is the z score of a student whose marks in the test are 41?
9. What is the difference between Pearson and Spearman correlation? Explain with formulas.
10. Define mode, write down and explain the formula of mode for grouped data.

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

1. A study was conducted to find if optimism predicts performance. The following data was obtained. Find regression coefficient (b).

Optimism (X)	12	15	19	15	16	20	13	17	17
Performance (Y)	3	6	4	5	7	8	6	5	10

2. A group of individuals with agoraphobia reported how often they have ventured out of the house in the past month. A therapy was given and scores were again obtained after therapy. The data are as follows. Find if there is any significant difference in number of trips participants take? Use $\alpha = .05$.

Before treatment	2	0	3	4	3	2	1	0	1
After treatment	4	1	7	8	7	4	5	2	1

3. The following table shows number of students present on days of the week. Run chi square test of goodness of fit to find if there is any significant difference in number of students present on any particular day.

Day of the week	Monday	Tuesday	Wednesday	Thursday	Friday
Number of students present	125	88	85	94	108

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

i. عربی میں ترجمہ کیجیے۔

(a) He is a doctor.   (b) Where is my pen?   (c) I love reading.
(d) Go to the school.   (e) The girl is sitting on a chair.   (f) We sleep at night.

ii. انگریزی میں ترجمہ کیجیے۔

(أ) مَنْ أَنتَ؟   (ب) أين تذهب؟   (ج) نصلّي الجمعةَ في المسجد الكبير.

(د) ينهَبُ الولدُ إلى المدرسة.   (ه) ماذا تريدُ؟   (و) المدرّسة تجلسُ على الكرسي.

(iii) اكتُب/اكتُبي ستة أسطر في ترجمة الجاحظ. .   (جاحظ کے حالات زندگی کے حوالے سے چھ سطریں تحریر کریں)

(iv) اكتُب/اكتُبي ستة أسطر في ترجمة حسان بن ثابت.(حسان بن ثابت رضی اللہ عنہ کے حالات زندگی کے حوالے سے چھ سطریں تحریر کریں)

(v) عَرِّف/ عَرِّفْي بقس بن ساعدة الأيادي في ستة أسطر..   (قس بن ساعدہ کا چھ سطروں میں تعارف کروائیں)

ذیل میں دیے گئے سوالات کے تفصیلاً جوابات لکھئے۔   (3x10=30)

سوال نمبر۲: خنساءرضی اللہ عنھا کے حالاتِ زندگی اور شاعری" پر تفصیلی نوٹ لکھیے۔

سوال نمبر۳: قرآن کریم کے اسلوب اور بلاغی اعجاز" پر تفصیلی نوٹ لکھیے۔

سوال نمبر۴: عبداللہ بن مقفع کی زندگی اور ادبی آثار" پر تفصیلاً روشنی ڈالیے ۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Types of commercial credit

II.   Credit policy discrimination

III.   Sources of bank credit

IV.   Analysis of credit information

V.   Collection policy appraisal

VI.   Role of credit department

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

i.   Briefly explain the models off creating changes on securities Commercial Vs Bank credit?

ii.   Explain the appraisal of credit proposal and preparation CLP in detail?

iii.   Explain the analysis of credit information and its financial and non-financial factors?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

   I.   Epistemology

   II.   Benefits of Literature Review

   III.   Pragmatism

   IV.   Classification of business research

   V.   Types of research questions

   VI.   Problem Identification

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

   i.   Discuss in detail the theoretical framework with the help of suitable examples?

   ii.   What are the different types of Research Designs in business research? Explain with help of suitable examples?

   iii.   What is the difference between the Rating and Ranking scales? Explain in detail with the help of suitable examples?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is the purpose of the <head> section in an HTML document?
2. What is the purpose of action and method attributes in the <form>.
3. Explain the purpose of the <ul>, <ol>, and <li> elements.
4. Explain the <audio> and <video> elements, including their attributes.
5. Which file extension is used for ASP files?
6. How do you handle errors in classic ASP?

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

1. Write HTML code to create a form with a hidden input field. Use JavaScript to populate the hidden field with a value before submitting the form.

2. Write a code to set a cookie named "username" with the value "Ahmed" that expires in 7 days. Moreover, write a code to read the value of the cookie named "username" and display it in an alert box.

3. Write a code to authenticate a user from databases using his/her name and password, received from client. Design appropriate HTML page, too.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. ATRICHOUS & AMPHITRICHOUS BACTERIA
2. BACTERIOPHAGE & PROPHAGE
3. TRANSFORMANTS & CONJUGANTS
4. FACULTATIVE ANAEROBES & OBLIGATE ANAEROBES
5. PHOTOTROPHS & LITHOTROPHS

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

i. What do you understand by the term SPECIALIZED TRANSDUCTION in BACTERIA? Explain its mechanism.

ii. Describe various carriers of VIRAL infection in plants.

iii. Explain various classes of BACTERIA on the basis of pH.

iv. Write about various growth phases in BACTERIAL life cycle.

v. Describe about beneficial PLANT –MICROBE INTERACTION for agricultural sustainability.

UNIVERSITY OF THE PUNJAB

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

Paper: Evolutionary Trends among Vascular Cryptogams
Course Code: BOT-307 A

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. Define Evolution. Differentiate between Divergent and Homoplastic Evolution. Elaborate your answer with the help of suitable examples.

II. Discuss various types of xylem maturation pattern? Support your answer with the help of neat and labeled diagrams.

III. How are the fossil plants named? Explain with the help of suitable examples.

IV. How do Leptosporangia differ from Eusporangia?

V. What are the diagnostic features of Trimerophyllophytes?

VI. Differentiate between Neopalynology and Palaeopalynology. What are the applications of Palaeopalynology?

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

1. Write a comprehensive note on various types of steles. Support your answer with the help of neat and labelled diagrams.

2. Describe morphological and reproductive characteristics of Lycopsida. Why are they phylogenetically significant?

3. What are aquatic ferns? Discuss in detail their vegetative and reproductive characteristics along with examples.

UNIVERSITY OF THE PUNJAB

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

Paper: Evolutionary Trends among Vascular Cryptogams
Course Code: BOT-307 A

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 palynomorphs? What characteristics make them suitable to study the evolution? Enlist various categories of palynomorphs.

II.   What are the salient features of Selaginellales? Also provide its evolutionary significance with special reference to the evolution of seed habit.

III.   Briefly describe the types of plants fossils? What does each type depict?

IV.   What is meant by rate of evolution? Explain the types.

V.   Explain the phylogenetic significance of Psilopsids.

VI.   How do the new species arise? Briefly explain various phenomena.

Answer the following questions.   (3x10=30)

Q. No. 2: Describe the general characteristics of Eusporangiate ferns with suitable examples. Also discuss the process of development of sporangia in these ferns.

Q. No. 3: What are the significant morphological and reproductive features exhibited by the Lycopsids? How is this group classified?

Q. No. 4: Describe the morphological features of *Pseudobornia ursina* in detail. What are the probable plant affinities of Pseudoborniales? Discuss.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is Zoosporogenesis? Describe this process in members of Lower fungi.

2. Describe the importance and generalized life cycle of fungal spores in Saprolegniales.

3. Describe role of hormones in sexual reproduction of Mucorales.

4. Write a note on distinguishing characteristics of Labyrinthulomycota.

5. What is meant by Zygosporogenesis? Explain.

6. Why members of Peronosporales are important globally? Explain.

Answer the following questions.

Q. No. 2 (a): What is Heterothallism? Describe it in Zygomycota.   (05)

(b): Write a note on economic importance of lower fungi.   (05)

Q.No. 3: What are noteworthy features of Entomophthorales? Describe their use in biocontrol of insects.   (10)

Q. No. 4. What are Arbuscular Mycorrhizae (AM)? What is their role in agriculture?   (10)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

طَلَبْتُ مِنْ أبِى وَ أُمِّى أنْ أَصُوْمَ يَوْمًا مِنْ رَمَضَانَ، فَقَالَ أبِى: إنَّكَ صَغِيْرٌ ضَعِيْفٌ لَا تَصْبِرُ عَلَى الْجُوْعِ وَالْعَطَشِ، وَ قَالَتْ أُمِّى: هَذِهِ أيَّام صَيْف وَالصَّوْمُ فِيْهَا شَدِيْدٌ اصْبِرْ حَتَّى تَكُوْنَ أيَّام شِتَاءٍ. وَلكِنِّى بَكَيْتُ وَ قُلْتُ: قَدْ صَامَ مَحْمُوْدٌ وَهُوَ فِى سِنِّى، وَقَدْ صَامَ إسْمَاعِيْلُ وَهُوَ أصْغَرُ مِنِّى. وَ لِمَاذَا أنْتَظِرُ أنَّ؟ وَ قَدْ رَأيْتُ مَحْمُوْدًا لُمَّا صَامَ لَبِسَاسًا جَدِيْدًا وَضِعَتْ لَهُ أطْعِمَةٌ وَقَدَّمَ لَهُ أقَارِبُهُ هَدَايَا وَ جَوَائِزَ وَاجْتَمَعَ نَاسٌ كَثِيْرٌ، وَكَانَ مَحْمُوْدٌ لَهُ شَرَفٌ، كُلٌّ يَتَحَادَثُ مَعَهُ وَ يَقْرَبُهُ إلَيْهِ. وَ قَدْ سَمِعْتُ أنَّ الْوَلَدَ الصَّغِيْرَ إذَا صَامَ كَانَ لِوَالِدَيْهِ الأجْرُ وَالثَّوَابُ، وَ أُحِبُّ أنْ يَنَالَ أبِى وَ أُمِّى الأجْرَ وَالثَّوَابَ. وَ قَبِلَ أبِى وَ رَضِيَتْ أُمِّى، وَدَعَتْ أُمِّى أصْدِقَائِى وَ أتْرَابِى لِلسُّحُوْرِ مَعِى فَبَاتُوْا فِى بَيْتِى، وَ فِى السَّاعَةِ الرَّابِعَةِ فِى اللَّيْلِ اسْتَيْقَظْنَا وَقَدَّمَتْ أُمِّى طَعَامًا لَذِيْذًا، فَأكَلْنَا وَ شَبِعْنَا وَ نِمْنَا قَلِيْلًا وَاسْتَيْقَظْنَا لِصَلَاةِ الصُّبْحِ.

السؤال الاول: اقرأ هذه العبارة واستخرج منها ما يلى:

(i)	فعلا ماضيا صحيحا (1)	(ii)	خمسة جموع التكسير (5)
(iii)	ضميرا منفصلا مرفوعا (1)	(iv)	اسم الإشارة البعيد (1)
(v)	اسما علما (1)	(vi)	مفعولًا مطلقا (1)
(vii)	ثلاثة مركبات إضافية (3)	(viii)	ثلاثة مركبات توصيفية (وصفية) (3)
(ix)	فعلان معتلان (2)	(x)	فعلا مهموزا (1)
(xi)	فعلا مضارعا منصوبا (1)	(xii)	ضمير منفصلا مجرورا (1)
(xiii)	خمسة حروف جارة (5)	(xiv)	أداة الاستفهام (1)
(xv)	فعلا أمرًا مبنيا مجزوما (1)	(xvi)	حرفان عطفان (2)

السؤال الثانى: ما هى أنواع الجملة و أجزاء أنواع الجملة؟ (6)

السؤال الثالث: هات الأفعال الخمسة مع الأمثلة. (7)

السؤال الرابع: استخدم الضمائر السبعة المتصلة بالاسم. (7)

السؤال الخامس: اكتب حروف جازمة الفعل المضارع مع الأمثلة. (5)

السؤال السادس: حوّل الأفعال التالية من المزيد إلى المجرد. (5)

يَهْتَمُّ- يُدْخِلُ- يَسْتَخْصِلُ- يَتَحَادَثُ- يُغَزَّى

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر1: نیچے دیئے گئے اجزاء کے مختصر جوابات لکھئے۔

الف) حکایات کو ملحوظ رکھتے ہوئے عربی میں جواب دیجئے۔ (5x4=20)

1: لماذا لم يدخل الثعلب في غار الأسد؟

2: كيف شكرت الحمامة للصياد؟

3: اكتب/اكتبي نصيحتين نصح بهما الأب ابنه.

4: كيف فاز الابن في الامتحان؟

5: اكتب/اكتبي بيتًا بمناسبة العيد.

(ب) ان الفاظ کو اپنی جانب سے عربی جملوں میں استعمال کریں۔ (5x2=10)

1: رسالة   2: رغبة   3: سمعتُ   4: أسأل   5: الوقت

سوال نمبر2: ذیل میں دیے گئے سوالات کے تفصیلاً جوابات لکھئے۔ (3x10=30)

ا- اكتب/اكتبي رسالة تهنئة بعيد الفطر إلى صديقك/صديقتك .

ب- اكتب/اكتبي طلبًا إلى السفير السعودي لتأشيرة العمرة والزيارة.

ج- اكتب/اكتبي حكاية تحت عنوان "مَنْ جدَّ وجدَ".

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Explain the concept of cognitive dissonance theory in mass media.

2. Briefly explain the two step flow of communication theory.

3. What is the role of persuasion in media communication?

4. Define normative theories in communication. Provide examples.

5. Give an example of social learning theory and explain its impact.

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

1. Critically evaluate the Gatekeeping theory in the context of modern media. How does the internet and social media platforms challenge traditional gatekeeping practices? Discuss with examples how gatekeepers (e.g., editors, algorithms) influence public discourse and information flow

2. Discuss the evolution and development of Mass Communication theory. Highlight the key paradigms that have shaped the field and their impact on our understanding of media effects. Compare traditional models (e.g., Hypodermic Needle, Two-Step Flow) with newer theories in terms of their relevance in today's media landscape

3. Discuss the concept of Selective Exposure, Perception, and Retention in communication theory. How do these concepts explain the ways audiences engage with media? Analyze how selective exposure and retention can lead to the formation of echo chambers and polarization in society, particularly in the context of political communication

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Fifth Semester – Spring 2025

Roll No. ....

Paper: Thematic and Artistic Study of Urdu Ghazal
Course Code: BSU-302

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 اشعار کی تشریح کریں اور شاعر کا نام بھی بتائیے۔ (6x5=30)

(i)
وہ صنم جب سوں بسا دیدہ حیران میں آ

آتش عشق پڑی عقل کے سامان میں آ

(ii)
ہونٹوں پہ کبھی ان کے مرا نام ہی آئے

آئے تو سہی برسرِ الزام ہی آئے

(iii)
قفس اداس ہے یارو صبا سے کچھ تو کہو

کہیں تو بہرِ خدا آج ذکرِ یار چلے

(iv)
چاروں طرف سے صورتِ جاناں ہو جلوہ گر

دل صاف ہوتا ہے تو ہے آئینہ خانہ کیا

(v)
نہ اب وہ یادوں کا چڑھتا دریا نہ فرصتوں کی اداس برکھا

یونہی ذرا سی کسک ہے دل میں جو زخم گہرا تھا بھر گیا وہ

(vi)
خط میں لکھے ہوئے رنجش کے کلام آتے ہیں

کس قیامت کے یہ نامے مرے نام آتے ہیں

سوال نمبر 2: درج ذیل سوالات کے جواب شعری مثالوں کی مدد سے تحریر کریں۔ (3x10=30)

(i) ولی دکنی کی شاعری میں سراپا نگاری اور جمال پرستی کے عناصر کی نشاندہی کریں

(ii) خواجہ میر درد کی غزل میں تصوف کا عنصر غالب ہے۔ واضح کریں

(iii) ناصر کاظمی کی غزل کے موضوعات پر تفصیلی نوٹ لکھیں۔

UNIVERSITY OF THE PUNJAB

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

Roll No. ....

Paper: History of Urdu Literature and Literary Movements
Course Code: BSU-303

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 جوابات درکار ہیں۔ (6x5=30)

i. عادل شاہی عہد کے معروف شعرا کا عمومی جائزہ پیش کریں۔

ii. غالب و مومن کے دور کی غزل کے امتیازی اوصاف کا جائزہ لیں۔

iii. آتش و ناسخ نے اردو غزل میں کیا اضافہ کیا، مختصر دلائل فراہم کیجیے۔

iv. علی گڑھ تحریک کے زیر اثر اردو مضمون نگاری کا مختصر جائزہ لیجیے۔

v. اردو میں رومانوی نثر کے اہم نمائندوں کا تعارف پیش کریں۔

vi. میر اور سودا کی غزل میں شعری مثالوں کی مدد سے کم از کم تین فرق واضح کیجیے۔

سوال نمبر 2: درج ذیل سوالات کے جامع جوابات فراہم کیجیے۔ (3x10=30)

i. جرات و انشا کے دور کی غزل کے بنیادی اوصاف کا مختصر جائزہ لیں۔

ii. علی گڑھ سماجی مسائل کی اصلاح کے لیے ادب کا سہارا لیتی ہے، مثالوں کی مدد سے ثابت کیجیے۔

iii. ترقی پسند تنقید کے نظری اور اطلاقی پہلوؤں کا جائزہ پیش کریں۔۔

UNIVERSITY OF THE PUNJAB

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

Roll No. ....

Paper: Computer Applications
Course Code: BSU-305

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) Differentiate "Business Software" and "Application Software"?

b) Explain the types of hard discs?

c) Differentiate "CRT Monitors" and "LCD Monitors"?

d) Discuss the types of printers?

e) Differentiate RAM and ROM?

f) Briefly explain network topologies?

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

Question # 2 (Marks 10)

Define Operating System and also describe main functions of an Operating System (Process Management, Memory management, File management, Security)

Question # 3 (Marks 10)

Explain secondary storage devices in details?

Question # 4 (Marks 10)

Discuss five Charts in Microsoft Excel in details?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

i.   باغ و بہار کے پہلے درویش کے قصے پہ تبصرہ کیجئے۔

ii.   فسانہ عجائب میں جان عالم کے کردار کا جائزہ پیش کریں۔

iii.   نذیر احمد کے ناول ابن الوقت کے کردار جاں نثار کا جائزہ لیں۔

iv.   جام سرشار میں نواب صاحب کے کردار کا تجزیہ کریں۔

v.   باغ و بہار میں خواجہ سگ پرست کے قصے کا تجزیہ کیجئے۔

vi.   فسانہ عجائب میں ملکہ کے کردار کی اہمیت واضح کیجئے۔

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

i.   فردوسِ بریں کی اہم فنی خوبیوں کے تجزیے سے ثابت کریں کہ یہ ایک بہترین ناول ہے۔

ii.   "آخرِ شب کے ہم سفر" کے سماجی و تاریخی شعور کا تجزیہ کیجئے۔

iii.   امراؤ جان ادا اردو کا پہلا بڑا ناول ہے، ثابت کیجئے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) What are time-sharing systems? How time-sharing systems are used to get maximum utilization of CPU and I/O devices?

b) Write a note on hardware protection mechanisms used in operating system.

c) What is a thread? How the thread creation is different from spawning a new process?

d) Briefly explain deadlock using wait-for graph and unsafe state.

e) Explain the difference between Multiprogramming with Fixed number of tasks (MFT) and Multiprogramming with Variable number of tasks (MVT).

f) In a system, a logical address space of 64 pages, each of 512 Bytes mapped into physical memory of 1024 frames. Compute: lengths (in bits) of p, d, f, logical address and physical address.

Answer the following questions.   (3x10=30)

Question#2:

What is process scheduling? What's the difference between preemptive and non-preemptive process scheduling? Briefly explain short term, medium term, and long-term process scheduling.

Question#3:

What is a semaphore? What's the difference between binary and counting semaphore? A system of cooperating processes consists of three processes P1, P2, P3, and five binary semaphores S1, S2, S3, S4, S5 initialized with 0. Place the wait and signal operations of the semaphores in the codes of the processes, so that the instructions in the processes are executed in the order A1, C1, B1, C2, B2, A2.

P1	P2	P3
⋮	⋮	⋮
A1	B1	C1
⋮	⋮	⋮
A2	B2	C2

Question#4:

What is a system call and its use? Explain the use of fork() and pipe() system calls with the help of an example. Also write the reasons of failure of these system calls.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. I have encrypted with the private key of the Sender Which of the security features we are ensuring using RSA Encryption?

2. Ciphertext "TIIAOEGEPGGSEINODTETGHSNNUGBSNWEAIEETNHRNROIOHSTG", using 1st Keyword of "ANALYST". Decrypt using **Double Columnar Transposition.**

3. Decrypt the Ciphertext (ULLECPVGHTGLOILGRCGWUXHUPAVZ) using Playfair Cipher; using 5*5 matrix and the Decryption key is: SHALIMAR

4. Users A and B use the **Diffie-Hellman key exchange** technique with a common prime $q = 71$ and a primitive root $a = 7$. If user A has private key $XA = 5$, what is A's public key YA? If user B has private key $XB = 12$, what is B's public key YB? What is the shared secret key?

5. What is **GF(2)[x]** in AES? What is its role in the AES MixColumn step? Explain and elaborate.

6. We have Two IP Addresses one is Transparent and the other is in Tunneling Mode which one is closest to the VPN technique? Justify Your Answer with Arguments.

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

1. Can we use the same IP address for Kerberos tickets? How does Kerberos protect from Eavesdropping and replay attacks?

2. (a)I have the following Plaintext "FA%$Hh33ededed". Can I encrypt it using Playfair Cipher? if Yes Perform Encryption. If No Justify with arguments.

    (b)Explain Digital signatures for authentication with the help of a Diagram.

3.Current state matrix is **59 77 6F 20 4F 6E 65 20 4E 69 6F 65 20 54 77 6F** and Key is **54 68 61 74 73 20 6D 79 2N 4B 75 6N 67 20 46 75** Now find using AES algorithm:

1. Write in 4*4 matrix
2. Perform Sub-Bytes
3. Perform Shift Rows
4. Perform Mix Column

Rcon Constants (Base 16)			
Round	Constant(Rcon)	Round	Constant(Rcon)
1	01 00 00 00	6	20 00 00 00
2	02 00 00 00	7	40 00 00 00
3	04 00 00 00	8	80 00 00 00
4	08 00 00 00	9	1B 00 00 00
5	10 00 00 00	10	36 00 00 00

```
02 03 01 01
01 02 03 01
01 01 02 03
03 01 01 02
```

S-Box Lookup Table

	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
0	63	7C	77	7B	F2	6B	6F	C5	30	01	67	2B	FE	D7	AB	76
1	CA	82	C9	7D	FA	59	47	F0	AD	D4	A2	AF	9C	A4	72	C0
2	B7	FD	93	26	36	3F	F7	CC	34	A5	E5	F1	71	D8	31	15
3	04	C7	23	C3	18	96	05	9A	07	12	80	E2	EB	27	B2	75
4	09	83	2C	1A	1B	6E	5A	A0	52	3B	D6	B3	29	E3	2F	84
5	53	D1	00	ED	20	FC	B1	5B	6A	CB	BE	39	4A	4C	58	CF
6	D0	EF	AA	FB	43	4D	33	85	45	F9	02	7F	50	3C	9F	A8
7	51	A3	40	8F	92	9D	38	F5	BC	B6	DA	21	10	FF	F3	D2
8	CD	0C	13	EC	5F	97	44	17	C4	A7	7E	3D	64	5D	19	73
9	60	81	4F	DC	22	2A	90	88	46	EE	B8	14	DE	5E	0B	DB
a	E0	32	3A	0A	49	06	24	5C	C2	D3	AC	62	91	95	E4	79
b	E7	C8	37	6D	8D	D5	4E	A9	6C	56	F4	EA	65	7A	AE	08
c	BA	78	25	2E	1C	A6	B4	C6	E8	DD	74	1F	4B	BD	8B	8A
d	70	3E	B5	66	48	03	F6	0E	61	35	57	B9	86	C1	1D	9E
e	E1	F8	98	11	69	D9	8E	94	9B	1E	87	E9	CE	55	28	DF
f	8C	A1	89	0D	BF	E6	42	68	41	99	2D	0F	B0	54	BB	16

E Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	01	03	05	0F	11	33	55	FF	1A	2E	72	96	A1	F8	13	35
1	5F	E1	38	48	D8	73	95	A4	F7	02	06	0A	1E	22	66	AA
2	E5	34	5C	E4	37	59	EB	26	6A	BE	D9	70	90	AB	E6	31
3	53	F5	04	0C	14	3C	44	CC	4F	D1	68	B8	D3	6E	B2	CD
4	4C	D4	67	A9	E0	3B	4D	D7	62	A6	F1	08	18	28	78	88
5	83	9E	B9	D0	6B	BD	DC	7F	81	98	B3	CE	49	DB	76	9A
6	B5	C4	57	F9	10	30	50	F0	0B	1D	27	69	BB	D6	61	A3
7	FE	19	2B	7D	87	92	AD	EC	2F	71	93	AE	E9	20	60	A0
8	FB	16	3A	4E	D2	6D	B7	C2	5D	E7	32	56	FA	15	3F	41
9	C3	5E	E2	3D	47	C9	40	C0	5B	ED	2C	74	9C	BF	DA	75
A	9F	BA	D5	64	AC	EF	2A	7E	82	9D	BC	DF	7A	8E	89	80
B	9B	B6	C1	58	E8	23	65	AF	EA	25	6F	B1	C8	43	C5	54
C	FC	1F	21	63	A5	F4	07	09	1B	2D	77	99	B0	CB	46	CA
D	45	CF	4A	DE	79	8B	86	91	A8	E3	3E	42	C6	51	F3	0E
E	12	36	5A	EE	29	7B	8D	8C	8F	8A	85	94	A7	F2	0D	17
F	39	4B	DD	7C	84	97	A2	FD	1C	24	6C	B4	C7	52	F6	01

L Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		C0	19	01	32	02	1A	C6	4B	C7	1B	68	33	EE	DF	03
1	64	04	E0	0E	34	8D	81	EF	4C	71	08	C8	F8	69	1C	C1
2	7D	C2	1D	B5	F9	B9	27	6A	4D	E4	A6	72	9A	C9	09	78
3	65	2F	8A	05	21	0F	E1	24	12	F0	82	45	35	93	DA	8E
4	96	8F	DB	BD	36	D0	CE	94	13	5C	D2	F1	40	46	83	38
5	66	DD	FD	30	BF	06	8B	62	B3	25	E2	98	22	88	91	10
6	7E	6E	48	C3	A3	B6	1E	42	3A	6B	28	54	FA	85	3D	BA
7	2B	79	0A	15	9B	9F	5E	CA	4E	D4	AC	E5	F3	73	A7	57
8	AF	58	A8	50	F4	EA	D6	74	4F	AE	E9	D5	E7	E6	AD	E8
9	2C	D7	75	7A	EB	16	0B	F5	59	CB	5F	B0	9C	A9	51	A0
A	7F	0C	F6	6F	17	C4	49	EC	D8	43	1F	2D	A4	76	7B	B7
B	CC	BB	3E	5A	FB	60	B1	86	3B	52	A1	6C	AA	55	29	9D
C	97	B2	87	90	61	BE	DC	FC	BC	95	CF	CD	37	3F	5B	D1
D	53	39	84	3C	41	A2	6D	47	14	2A	9E	5D	56	F2	D3	AB
E	44	11	92	D9	23	20	2E	89	B4	7C	B8	26	77	99	E3	A5
F	67	4A	ED	DE	C5	31	FE	18	0D	63	8C	80	C0	F7	70	07

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
B	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A
C	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B
D	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C
E	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D
F	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E
G	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F
H	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G
I	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H
J	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I
K	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J
L	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K
M	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L
N	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M
O	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N
P	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Q	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
R	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
S	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
T	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
U	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
V	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
W	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
X	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Y	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Z	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y

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

(i) Write two limitations of Arrhenius theory.

(ii) What is meant by efficiency of fuel cells?

(iii) Write types of fuel cells on the basis of fuel.

(iv) What is function of salt bridge?

(v) What is transport number?

(vi) What are hydrocarbon cells?

(vii) Why ionic conductance decreases with temperature?

(viii) What is cell constant? Give its units.

(ix) What are concentration cells?

(x) Define molar and equivalent conductance.

(xi) Write difference between Galvanic and electrolytic cells.

(xii) What is meant by the ionic atmosphere?

(xiii) Why Debye-Huckel law is valid for only dilute solutions?

(xiv) Why the electrodes of conductivity cells are coated with platinum black?

(xv) Write advantages of glass electrode.

     Answer the following questions.

Q.2. (a) Define electromotive force. Determine EMF of concentration cell without transference. (7)
      (b) Write a brief note on hydrogen-oxygen fuel cell. (3)

Q.3. (a) Define activity and activity coefficient. Determine activity coefficient from the dissociation of weak electrolyte. (8)
(b) How will you determine specific conductance of a solution? (2)

Q.4.   Write down assumptions of Debye-Huckel limiting law. Derive relation between mean activity coefficient and ionic strength. (3+7)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. What are halonitrosyls? Give examples.
ii. Draw the structures of N-type and P-type semiconductors.
iii. Draw the MO energy level diagrams of O_2^{+2}
iv. Explain the effect of temperature on semiconductors.
v. Draw the non-bridged structure of $Fe_3(CO)_{12}$.
vi. How are X-rays produced?
vii. Write the formulas of the following
   (a) Dichlorobis(ethylene diammine) platinum (IV) bromide
   (b) Octa aquo – μ – dihydroxodi iron (III) sulphate
viii. Draw the structure of $[Co\ F_6]^{-3}$ on the basis of MOT.
ix. Differentiate between valence and conduction bands.
x. Define and sketch the Fermi level?
xi. What are the limitations of Crystal Field Theory?
xii. Draw the band diagram for insulators.
xiii. What is the action of heat on $Ni(CO)_4$
xiv. Calculate the CF stabilization energy for d^4 (high spin octahedral) and d^5 (tetrahedral) complexes
xv. What are the rules of inorganic nomenclature for binary acids?

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

1. Give general methods for the preparation of metal carbonyls and discuss the chemistry of $Cr(CO)_6$.
2. Differentiate between n(E) and N(E) curves and explain the difference in the conductivity of Univalent bivalent and trivalent metals.
3. Explain the d-orbitals splitting for various common geometries.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Why are tertiary amines less basic than secondary amines in water?

II.   Among formic acid and acetic acid, which is the stronger acid? Explain why

III.   For each of the following pairs of compounds, indicate which one is the stronger base and justify your answer.

a. CH_3CHCO^- or CH_3CHCO^-
     | |
     Br F

b. $CH_3CCH_2CH_2O^-$ or $CH_3CH_2CCH_2O^-$
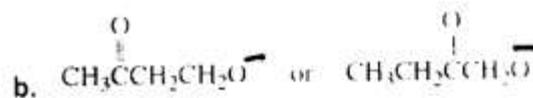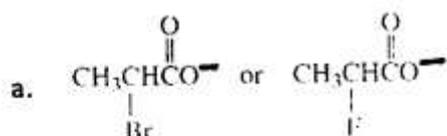
IV.   What is the difference between enantiomers and diastereomers? Provide one example of each.

V.   Spiro compounds do not have an asymmetric atom, but why are they optically active? Draw the structure of an optically active spiro compound.

VI.   How can you differentiate between a racemate and a meso compound? Provide one example of each.

VII.   Why are the protons adjacent to carbonyl groups acidic? Briefly explain with an example.

VIII.   When a methyl ketone is halogenated in basic solution, why does the halogen replace all three α-hydrogen atoms

IX.   Draw the chair conformers of *cis*-1-tert-butyl-3-methylcyclohexane and identify which conformer is more stable. Explain the reasoning behind the stability difference.

X.   Which is more acidic: phenol or alcohol? Explain why?

   Answer the following questions.

Question #2.

I.   Indicate whether each of the following structures has the R or the S configuration.   4x1.5=6

a.   (structure with OH, C, CH₃, CH₃CH₂CH₂, H)

b.   (structure with Cl, C, CH₃, CH₃CH₂, CH₂Br)

c.   (structure with H, C, CH₃, HO, CH₂Br)

d.   (structure with CH₃, H—Cl, CH₂CH₃)
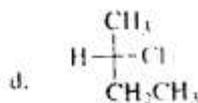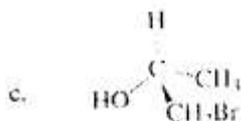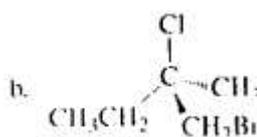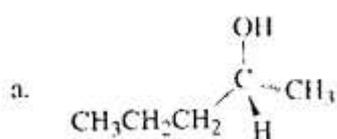
II.   Draw and label the E and Z isomers for each of the following compounds.   2+2=4

   a.   3-methyl-2-hepten

   b.   1-bromo-2-chloro-2-fluoro-1-iodoethene

Question # 3.

I. Arrange the following compounds in order of increasing acidic strength and provide a brief explanation for your reasoning. [6]
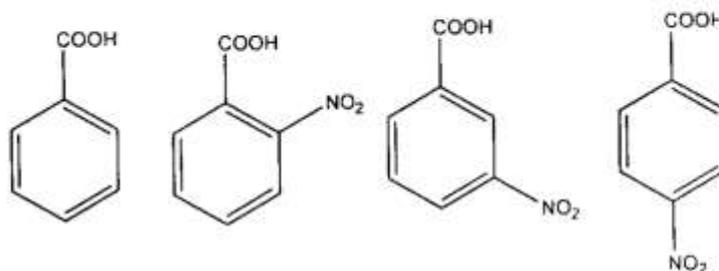
II. What does the term "Ka" represent, and how is it related to the strength of an acid? [2]

Question # 4. Complete the following reactions and provide a detailed mechanism for each step involved. [4 + 4 + 4]
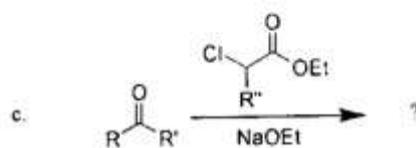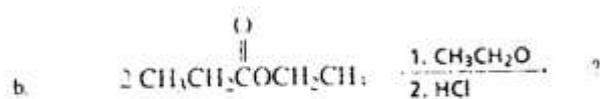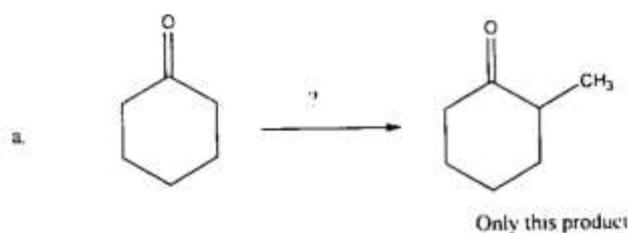
a.

Only this product

b. $2\ CH_3CH_2COCH_2CH_3$ $\dfrac{1.\ CH_3CH_2O}{2.\ HCl}$?

c.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. A concentrated solution of 37% HCl and 1.19g/ml density is provided. What is the molarity of HCl?

2. What is the difference between precision and accuracy? Give example.

3. What are classical and instrumental methods? Give examples.

4. Define standard deviation? Give its formula.

5. Differentiate between limit of detection and confidence limit?

6. What is kieselguhr? Write its uses.

7. What is f-test? Write down its formula.

8. What is the difference between normal and reverse phase chromatography?

9. What is the difference between partition and adsorption chromatography?

10. Differentiate between single and double beam spectrophotometer?

11. What are chromophores and auxochromes, give examples?

12. What is the difference between bathochromic and hypsochromic shift?

13. Differentiate between prism and diffraction grating?

14. What is a calibration curve? Explain.

15. Define sampling?

     Answer the following questions.

Q1 (a): Define student t-test? What are the significance of Q-test? (5)

(b) What are quality control charts? Write down their significance? (5)

Q2 (a): Why TLC is superior over paper chromatography? What are different types of locating reagents used in TLC? (5)

(b) What is the difference between wet and dry packing? What are different types of adsorbents used in column chromatography? (5)

Q3 (a): What are different types of electronic transitions occur in UV/Visible spectroscopy? (5)

(b) What are different types of detectors used in UV/Visible spectroscopic technique? (5)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is Marketing Myopia. What should sellers consider if they wish to avoid marketing myopia?
2. How might a marketer act in a socially responsible way toward the general public?
3. Differentiate between Business Objectives and Marketing Objectives.
4. Explain the concept of Marketing Intermediaries.
5. Explain the concept of brand personality.
6. What do you mean by marketing mix? What role do the four Ps play in consumer behavior?
7. If demand is elastic, will sellers consider lowering their prices?
8. Explain the concept of a price ceiling and Price Floor.
9. Services are characterized by four key characteristics. Name these four characteristics.
10. Compare product mix width, length, consistency, and depth.
11. Give Two examples of products for which marketers may use optional-product pricing.
12. How are advertising and direct marketing different?
13. Name the participants involved in the Business Buying Process.
14. Explain the advantages and disadvantages of E-Procurement and Online Purchasing.
15. Explain the concept of derived demand, giving an example of a product that has derived demand.

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

1. List and define the steps in the business buying decision process.
2. Describe the major strategies for pricing new products along with examples.
3. Name and describe the major steps in the new-product development process.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Write any two advantages and two disadvantages of Internal Researcher.

ii.   What is Problem Statement?

iii.   List out the contents of Research Proposal.

iv.   What is meant by Cross-Sectional Study?

v.   Define Variable and identify Independent and Dependent variables with example.

vi.   Elaborate Observation.

Answer the following questions.   (3x10=30)

Q2. Define Research. Explain the steps of research process in brief.

Q3. What is Hypothesis? Discuss the various types of hypotheses.

Q4. What is Sampling? Differentiate probability sampling from non-probability sampling.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What do you know about neuropsychology?
2. Name any two neurotransmitters and their primary functions.
3. Define implicit and explicit memory.
4. Which brain areas are involved in emotional expression?
5. Name two brain areas responsible for language processing.
6. What is the role of autonomic nervous system?

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

1. Explain the process of visual transduction and the neural pathways involved in vision.
2. What are neurotransmitters? Briefly explain the roles of dopamine and serotonin.
3. Write a detailed note on any two type of Aphasia.

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Fifth Semester – Spring 2025

Roll No. ....

Paper: Psychological Assessment (Theory-II)
Course Code: CPSY-312

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Write main rationale of Bender Gestalt Test.

2. What does BVRT stands for and who has developed this test?

3 Write names of the main scoring deviations of BVRT.

4 Write names of the subtests of WMS.

5 Write names of main errors done by patients of organic brain damage on BGT.

6 What is the concept of ego strength in BGT?'

7 Write names of clinical scales of MMPI

8 Write 2 validity checks of NEO-PI

9 Write two main purposes of NEO-PI.

10 Write three important main themes on which responses of Children

 Apperception Test is interpreted.

11 Write two phases and 4 steps involved in the interpretation of HTP.

12 What type of scoring is done in HTP.

13 What is main rationale of T.A.T.

14 Keeping in vie T.A.T interpretation write names of environmental

 forces the hero of stories face.

15 write about Neutral and Conflict responses of RISB.

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

1. Write a note on the subtests of Wechsler Memory Scale.

2. Write a note on the following:

   i.   Administration method of RISB

   ii. Depression and Hysteria Scale of MMPI-I

3. Write a note on factors of NEO-PI.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. State the difference between Developmental Psychopathology and Life Span Development.

2. How would you differentially diagnose between Autism Spectrum Disorder and Selective Mutism?

3. Briefly compare and contrast between DSM and ICD classification systems.

4. What are the types of Child Abuse?

5. State the diagnostic features of Intellectual Disability.

6. What are the significant developments in the field of Child Psychopathology?

Answer the following questions: (3x10=30)

1. Explain the Etiological factors of Neurodevelopmental Disorders.

2. State the History of Abnormal Psychology.

3. Explain the Differential Diagnosis between Oppositional Defiant Disorder and Conduct Disorder.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is the difference between Basic and Applied Research?

2. Briefly state Explanation goal of Research?

3. Briefly state any two scales of measurement?

4. What is Variable and how it is defined Operationally?

5. Briefly explain Inductive and Deductive reasoning?

6. What is Informed Consent and Debriefing in research?

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

1. What are the types and Characteristics of a good Hypothesis, give example?

2. What are the Probability and Non Probability Sampling methods?

3. Describe both Cross Sectional and Longitudinal Survey Design with example?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   What is the difference between descriptive and inferential statistics? Give relevant examples.

ii.   What is normal distribution and what are its main characteristics and application.

iii.   Using the following frequency distribution answer the questions given at end of the table:

X	f	cf	C%
6	2		
5	2		
4	4		
3	6		
2	4		
1	2		

a)   Find out cumulative frequency?
b)   Find out cumulative percentage?
c)   What is 80th percentile?
d)   What is percentile rank for score X=2.5.
f)   Use interpolation to find the percentile rank for X=4.

iv.   The following frequency distribution summarizes the number of absences for each student in a class of n=20:

Number of Absences (X)	f
5 or more	3
4	4
3	3
2	6
1	3
0	1

a)   What is mean and median for this data?
b)   Explain why you cannot compute the mean number of absences using the data provided in the table?

v.   A study examines the relationship between level of arousal and problem solving. Three samples are used consisting of subjects with low, moderate and high level of arousal. The researcher measures the number of problems successfully completed during a problem solving task. The data as follows:

Level of Arousal		
Low	Moderate	High
2	20	9
6	17	8
5	12	8

7	16	6
5	18	7
5	19	10
4	17	6
4	16	8
7	18	7
6	17	8

a) Compute the mean and standard deviation for each sample. Present answer in table.

b) Looking at the data how would you describe the relationship between level of arousal and task performance?

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

i. Write a note on measure of central tendency. Also give their main characteristics, examples, disadvantages and one formula for each.

ii. What are scales of measurements in statistics? Write their uses and importance in psychology. Explain with relevant examples.

iii. Write a note on different graphs available in statistics. Write their characteristics and draws shape of each graph. Explain your answer with examples.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Write difference between session cookies and persistent cookies.

ii.   What is DOM?

iii.   What is java AWT label?

iv.   What is java Static keyboard?

v.   What are WML and XSL?

vi.   Difference between SGML and HTML.

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

i.   What P3P? Write its working and example.

ii.   What is inheritance in java? Write a program in JavaScript to calculate area and circumference of a circle.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Explain the concept of Intertemporal Choice and provide an example.

ii.   Differentiate between pure strategies and mixed strategies in game theory.

iii. Explain the concept of contingent commodities with a suitable example.

iv.   What is a dominant strategy in game theory? Illustrate with an example.

v.   Define envy-free allocation and its importance in fairness.

vi.   What is the role of signaling in markets with asymmetric information?

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

i.   Compare and contrast Stackelberg's model of duopoly with simultaneous price setting.

ii.   Explain Nash equilibrium with reference to the prisoners' dilemma game.

iii. Explain the inefficiency of competition in the presence of externalities using supply-and-demand analysis.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a. In what type of study we can use snowball sampling.
b. How precision can be improved in sampling
c. Explain Stratified Sampling method of data collection
d. What are the sources of random error in your research?
e. Why do most of the researchers use item analysis approach the scale construction?

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

I.   Explain various types for writing a report.

II.   What features do you think a quality research design must have?

III.   Suppose you are conducting a primary research. Which research methods and research methodology you will choose? Explain with the help of an example.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Discuss Thomas Malthus' views on population growth dynamics.

ii.   Discuss the salient features of Islamic school of thought.

iii.   Highlight the significance of studying economic history.

iv.   Compare mercantilism with physiocracy.

v.   Discuss the theory of rent.

vi.   Write a note on Feudalism.

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

i.   Critically evaluate the contributions of Karl Marx to economic thought.

ii.   Compare Keynesians and post Keynesians school of thought.

iii.   Describe the physiocracy school of thought and their policy prescriptions.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Differentiate deterministic and stochastic model.
2. Discuss statistical properties of OLS estimators.
3. Discuss causes of multicollinearity.
4. Differentiate between time series data and cross sectional data?
5. What is OLS?
6. Discuss various functional forms of regression function.

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

Q.2 The estimated model pertaining to child mortality (CM) on per capita GNP (PGNP) and the female literacy rate (FLR) for a sample of 64 countries is reported below along respective standard errors in parenthesis.

$$\hat{CM}_i = 263.6416 - 0.0056 PGNP_i - 2.2316 FLR_i$$

$$Se = (11.5932), (0.0019), (0.2099)$$

a. Is coefficient of PGNP statistically significant?
b. Is coefficient of FLR statistically significant?
c. Are both coefficients statistically significant?

Q.3 Define dummy variable. How one can avoid dummy trap? What are the uses of dummy variables in regression analysis?

Q.4 Obtain regression line (Y on X), interpret the results, calculate standard error of coefficient and comment on statistical significance of X-variable.

Y	2.75	2.15	4.40	5.50	3.20	4.30	2.31	4.30	3.70
X	29.5	26.3	32.2	36.5	27.2	27.5	28.3	30.3	28.5

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i	Discuss purchasing power parity (PPT).
ii	Why we study development economics.
iii	Differentiate Malthusian and household models.
vi	Define absolute poverty and explain its implications for social welfare.
v	Explain concept of dualism
vi.	Describe the characteristics of high-poverty groups.

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

Q.2   What are the methods for measuring income distribution and poverty? Discuss how these measurements help in understanding economic inequality in developing countries.

Q.3   What is the role of governance in development? Explain how the governance index complements the indicators like HDI and PQLI in measuring a country's progress.

Q.4   Discuss the key theories urban growth. How do these theories explain the expansion of cities in developing Countries?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Find Particular Solution of: $y''''(t) + y'''(t) + 3y''(t) + 5y'(t) + 2y = 4$

II.   Find characteristic roots of: $(r + 4)(r - 2)(r^2 - r + 1) = 0$

III.   Write complementary function of characteristic equation $(r + 4)(r - 2)(r^2 - r + 1) = 0$.

IV.   Find Particular Solution of: $y_{t+2} - 4y_{t+1} + 5y_t = 15$

V.   Find characteristic roots of: $(b - 1) \times (b + 3) \times (b + 4) = 0$

VI.   Write complementary function of characteristic equation $(b - 1) \times (b + 3) \times (b + 4) = 0$.

Answer the following questions.   (3x10=30)

Q. 2. Without finding the roots of the difference equation, check the convergence of time path. $y_{t+2} - 4y_{t+1} + 3y_t = 60$.

Q. 3.   Solve the Cobweb model, if: $Q_{dt} = 25 - 5P_t$ and $Q_{st} = -10 + 5P_{t-1}$.

Q. 4. Maximize profit function: $[\pi = 80x - 3x^2 + 72y - 2y^2 - 20]$ subject to production constraint $[x + y \leq 25]$ by applying Kuhn-Tucker conditions.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Define interactive analysis in the context of teaching.

ii. What are the components of the communication cycle in teaching?

iii. How do teachers serve as critics in assessing and improving their teaching practices?

iv. How do learners function as facilitators in collaborative learning environments?

v. Briefly explain any five skills developed through micro-teaching.

vi. What is technology in education? explain

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

i. Compare and contrast micro-teaching with traditional teaching methods.

ii. Define the communication cycle and its importance in the teaching-learning process.

iii. Explain how teachers function as performers and composers in a classroom setting and its impact on student learning.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1.   Write short answers, not more than four or five lines.   (5x6=30)

سوال نمبر1: مختصر جوابات تحریر کیجئے۔ جوابات چار یا پانچ سطروں سے زیادہ نہ ہوں۔

i.   Aligarh Movement

ii. Urdu Hindi controversy

iii. Delhi Proposals

iv. Allama Muhammad Iqbal

v.   Jinnah's Fourteen Points

i. تحریک علی گڑھ

ii. اردو ہندی تنازعہ

iii. دہلی تجاویز

iv. علامہ محمد اقبال

v. قائد اعظم کے چودہ نکات

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

سوال نمبر2:   تفصیلی جوابات تحریر کیجئے۔

i.   Write a detailed note on the Nehru Report.

ii. Critically examine the Khilafat Movement.

i. نہرو رپورٹ پر تفصیلی نوٹ لکھیں۔

ii. تحریک خلافت کا تنقیدی جائزہ پیش کریں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Briefly explain social thought and sociological theory.
2. Briefly explain Comtes law of three stages.
3. What is the relationship between social movements and the state?
4. What is the difference between capitalism and socialism?
5. What is the role of power in society?
6. How does social control occur in society?

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

1. Describe methodology of Ibn-i- Khaldoon.
2. The theory of social solidarity by Durkheim is a milestone in the subject of sociology? Discuss.
3. Define social action and discuss its types briefly.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Purposes of Measurement and Evaluation.

2. Differentiate between Aims, Goals, and Objectives.

3. Moderation of Test Item.

4. Advantages of Essay Type Test.

5. Define Reliability and enlist Types of Reliability.

6. Evaluate the Effectiveness of Distractors.

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

1. Clarify the Cognitive Domain of Bloom's Taxonomy of Educational Objectives.

2. Explicate the Rule for Constructing Multiple-Choice Questions (MCQs) with examples.

3. Explain the Factors Influencing Reliability Measures.

UNIVERSITY OF THE PUNJAB

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

Paper: Methods of Teaching English in Elementary Schools
Course Code: EDE-374

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 significance of Lesson plan?

ii.   Explain "English as second Language"

iii.   Differentiate between Skimming and scanning.

iv.   Describe the objectives of teaching of English at Elementary Level.

v.   Give Advantages of Project method in teaching.

vi.   Give suggestions to improve Vocabulary of English.

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

i.   Develop a Lesson plan for 5th class on the topic "My country"

ii.   Describe types of writing with examples.

iii.   How English is important in everyday life in present time

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1) At most how many edges can be drawn in an undirected graph with k vertices in it? (No self-loops included). Describe your answer with examples.

2) What is a minimum spanning tree of a graph? In which case two different MSTs of the same graph may have same cost?

3) What is the running time of BFS if we represent its input graph by an adjacency matrix, explain briefly how you compute it?

4) Solve the recurrence relations to find running time complexity in terms of big Oh:
   a) $T(n) = 4T(n/2) + n$
   b) $T(n) = 5T(n/2) + n^2$

5) What will be the order of nodes being traversed using DFS (depth first search) if starting point is "A".
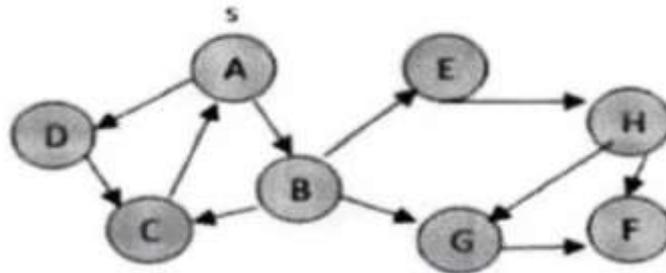
6) What is heap sort? What is running time complexity of heap sort?

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

A) Execute Dijkstra's algorithm for the following graph and write all the shortest paths and their costs for given source and destination in the table below.
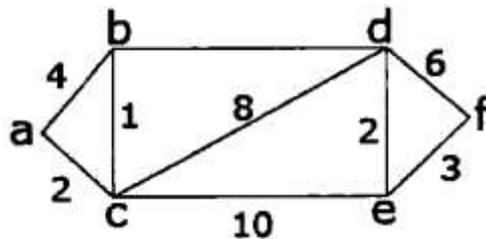
Source	Destination	Path	Cost
A	F		
A	G		
A	H		
A	C		
A	D		

B) What is the recurrence relation of algorithm to find **Fibonacci series**? Solve the recurrence and find upper and lower bounds.

C) For what types of problems, **topological sort** algorithm is used as a solution? Briefly explain the algorithm with an example.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1- What are Eliot's views about 'liberal attitude' in his essay "Religion and Literature"?

2-Briefly discuss Aristotle's "Theory of Imitation".

3 -Write a note on Arnold's idea of culture.

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

a). Explain in detail the theory of mimesis by Aristotle. 15

b) What are various kinds of poetry that Sidney discusses; and why does he consider poetry as superior form of knowledge?

c). Explain in detail the idea of culture by Mathew Arnold.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions. (Note more than 100-150 words) (3x5=15)

a). Write a note on mimesis as theorized by Plato?

b). Why are critics apologetic about poetry?

c). What should drama represent according to Dr. Johnson?

Q.2. Answer the following questions. (Note more than 200-250 words)   (3x15=45)

a). Explain in detail the theory of tragedy by Aristotle.

b) Explain the concept of poetic diction in William Wordsworth.

c). What is culture according to Mathew Arnold.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.　What similarities and differences exist between Donne's love lyrics and religious poems?

ii.　Describe Satan as portrayed by Milton in Book I.

iii.　What do the different characters in the Faerie Queene represent?

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

i.　How is John Donne a metaphysical poet?

ii.　Discuss paradise lost as an epic.

iii.　How does the Prologue to the Canterbury Tales depict a picture gallery?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) What is a picareque novel?

b) What do you like the most in Henry Fielding ?5

c) What is the role of fate and chance in Thomas Hardy?

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

a) Write a detailed note on Emma in Jane Austen.

b) Write a detailed note on the title Hard Times in Charles Dickens.

c) Write a detailed note on your favourote novelist. Give reasons for your liking.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a. Write a brief note on **Journalistic Discourse** as a field of study.

b. What is **Parallelism,** a term used by Cook (1989), explain how and where it affects **Formal and Contextual Links** in Discourse analysis?

c. What are the **Stylistic Features** of journalistic writing?

Answer the following questions.   (3x15=45)

Q.2. Discuss main features of **William Dalrymple**'s journalistic writing style after an analysis of his articles you have studied in your syllabus.

Q.3 Critically evaluate **Eqbal Ahmed**'s essay **Between Past and Future.**

Q.4 What are the basic **Thematic Concepts** of Eqbal Ahmed's article **Murder of Metropolis?**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) Define sociolinguistics and explain its significance in understanding language use in society.

b) What is code-switching, and why do bilingual speakers use it?

c) Describe what a speech community is and provide an example.

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

i) How do social factors such as class and gender influence language variation?

ii) What are pidgins, and creole and how do they develop?

iii) Explain the concept of dialects and provide examples of different dialects within a language.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Quaid-e-Azam's Address to Quetta Muncipalty reflects his harmonizing vision for the future. Discuss.
2. What were the main aspects of Two-Nation Theory by Allama Muhammad Iqbal.
3. Discuss the importance of Abraham Lincoln's the Gatsby address.

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

1. How far Religious Discourse succeeds in conveying the vision of the religious scholar.
2. Critically evaluate the value of Nelson Mandela's Release Speech.
3. Allama Muhammad Iqbal's Khutaba Allahabad became a beacon of guidance for Muslims of India. Discuss

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

i. Define "meanings" in the context of Ogden and Richards' theory of meaning.

ii. What is the difference between "synonymy" and "polysemy"? Offer examples to illustrate both concepts.

iii. Explain "contradiction" in syntactic semantics with an example.

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

i. Explain Saussure's theory of the linguistic sign. How does it relate to his view of meaning in language?

ii. Define "syntactic semantics". Discuss the concepts of contradiction, ambiguity, sematic anomaly, entailment, and presupposition with appropriate examples.

iii. Explain the concept of ambiguity in language. Discuss lexical and structural ambiguity, providing examples for each and explaining their implications in understanding meaning.

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

a. Write down **Charles A. Ferguson** definition of diglossia?

b. What is **Kachru's concept of language variation?**

c. What is the difference between **idiolect and dialect?**

Answers the following questions.   **(3x15=45)**

Q.02: What is the scope of *Sociolinguistics* as a sub field of Linguistics in modern times. Discuss

Q.03. Differentiate between **Pidgin and Creole** keeping in mind their process and characteristics

Q.04. Write a note on **Multilingualism** and how it is beneficial for the speakers?

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

i. What is DISCOURSE?
ii. Define PARALLELISM with an example.
iii. Explain the role of REPETITION in discourse.

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

i. Compare PRAGMATIC ANALYSIS and DISCOURSE ANALYSIS with examples.
ii. What is REGISTER in discourse analysis? Discuss tenor, mode, and domain.
iii. Describe the levels involved in MICRO-FUNCTIONAL ANALYSIS of discourse.

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

(i)   What does the novel *Lord of the Flies* suggest about human nature?

(ii)   How does Hemingway's writing style in his novel *The Sun also Rises* reflect the "Lost Generation" ethos?

(iii)   Write a brief critical appraisal of "The Conception of God and the Meaning of Prayer" by Allama Iqbal.

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

(i)   Muhammad Asad in his book *Islam at the Crossroads* "offers a compelling narrative on Islam's relevance in the modern era. Its discerning perspective and insightful reflections provide a profound understanding of how Islamic principles can enrich contemporary society." Discuss.

(ii)   Discuss major thematic concerns of William Golding's novel *Lord of the Flies*.

(iii)   Examine the character of Jake Barnes as Hemingway's Code hero in *The Sun also Rises*.

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

1. How does an authoritarian coaching style benefit athletes?

2. How does the relationship of a sports coach become stronger or weaker with a sports organization?

3. Define speed and how can we improve the speed of an athlete.

4. Discuss in detail the principle of overloading in sports training.

5. What are the various training methods used to improve athletic performance? Provide a detailed list.

6. What are the most important training principles to consider when creating a fitness routine for players.

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

1. Define physical fitness and also explain the components of physical fitness in detail.

2. What are the merits and demerits of warm-up in sports?

3. Why are the components of physical fitness important for success in sports, and how do they influence athletic performance?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Explain Learning and Its Types?

ii.   Highlight the Types of Hearing Impairments?

iii   Explain the Basics Causes of Visual Impairments ?

iv   Highlight the Main Functions of Communication?

V   Define Anxiety Disorder?

Vi   Explain General Causes of Disabilities?

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

i.   Define Physical Education? Also Explain the Historical Perspectives of Special Population With Special Reference to Pakistan.

ii.   Explain the Causes and Types of Emotional Behaviours Disorders.

iii   Explain the Causes and Types of Mental Disorders?

UNIVERSITY OF THE PUNJAB

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

Roll No. ....

Paper: Application of Statistics in Physical Education (Gen.7)
Course Code: HPE-304

Time: 3 Hrs.   Marks: 60

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

I. The height (in c.m) of 30 students measured at the time of registration is given by
91, 89, 88, 87, 89, 91, 87, 92, 90, 98, 95, 96, 100, 101, 96, 98, 99, 98, 100, 102, 99, 101, 105, 103, 107, 105, 106, 107, 112.
Make a frequency distribution of the height of students.

II. From the frequency distribution formed in Q#1(I),find arithmetic mean (A.M) and geometric mean (G.M) and show that $A.M \geq G.M$

III. Define coefficient of variation and from the data given below find coefficient of variation.

y	0	1	2	3	4
f	17	9	6	5	3

IV. Define the following terms (a) Difference between Type-I and Type-II error (b) Difference between probability and non-probability sampling.

V. Two random samples taken independently from normal population with an identical variance yield the following results

Sample	Size	Mean	Variance
I	$n_1 = 12$	$\bar{X}_1 = 10$	$s_1^2 = 1200$
II	$n_2 = 18$	$\bar{X}_2 = 25$	$s_2^2 = 900$

Test the hypothesis that the true difference between the population mean is at at-most 10, at 5%level of significance.
Note: Here s_1^2 and s_2^2 are the unbiased variances of population variances.

VI. The random variable X has the following probability distribution:

x	4	5	6	7
P(x)	0.2	0.4	0.3	k

Find (i) k (ii) $\mu_{\bar{x}}$ mean of sample mean. (iii) $\sigma_{\bar{x}}$ standard deviation of sample mean.

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

I. A survey of 200 families known to be regular television viewers was undertaken. They were asked which of the three-television channel they watched most during an average week. A summary of their replies is given in the following table, together with the region in which they lived

Channel	Region			
	North	East	South	West
PTV 1	29	16	42	23
PTV 2	6	11	26	7
STN	15	3	12	10

Test the hypothesis that there is no association between the channel watched most and the region using $\alpha = 0.05$.

II. Define the following terms (a) point estimator, biased and un-biased estimator.
(b) From the data given below find the best estimates of μ and σ^2

Sample-I	$n_1 = 40$	$\sum fx_1 = 807$	$\sum fx_1^2 = 16329$
Sample-II	$n_2 = 50$	$\sum fx_2 = 977$	$\sum fx_2^2 = 19177$

III. Given two random samples from two independent normal populations with

Sample	Size	Mean	Sum of squares
I	$n_1 = 11$	$\bar{X}_1 = 75$	$\sum(X_1 - \bar{X}_1)^2 = 372.1$
II	$n_2 = 14$	$\bar{X}_2 = 60$	$\sum(X_2 - \bar{X}_2)^2 = 365.17$

Find a 99% confidence interval for $\mu_1 - \mu_2$. Assume that population variances are equal.

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

I)   Draw the structure of disaccharides like sucrose.
II)   Explain the general features and importance of polysaccharides.
III)   Differentiate between the essential and non-essential amino acids.
IV)   Differentiate between Solid and Liquid fats.
V)   Briefly explain about amino acids and its structure.
VI)   Explain glycolysis in production of energy.

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

I)   Explain the role of Krebs cycle in energy production.
II)   Briefly describe and draw how fatty acids and glycerol link with each other to form fats through ester linkage.
III)   Define the amino acid, draw its structure, also explain the importance of essential and non-essential amino acids in our body.

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

سوال نمبر1:   مندرجہ ذیل سوالات کے مختصر جوابات لکھئے   (6x5=30)

i۔ جس کا اللہ تعالیٰ اور آخرت کے دن پر ایمان ہو گا وہ پڑوسی اور مہمان سے کیا برتاؤ کرے گا؟

ii۔ جو شخص اللہ تعالیٰ کے ہاں ایسا ایمان لے کر حاضر ہو گا جس میں اسے شک و شبہ نہ ہو تو اس کی فضیلت کیا ہو گی؟

iii۔ غیر مسلموں سے جنگ کب تک ہو گی؟ حدیث مبارکہ سے واضح کریں۔

iv۔ اسلام کی بنیاد پانچ باتوں پر ہے، متعلقہ حدیث مبارکہ عربی متن کے ساتھ مکمل درج کریں۔

v۔ احسان کیا ہے؟ حدیث مبارکہ کی روشنی میں وضاحت کریں۔

vi۔ ایمان کی شاخوں سے متعلق حدیث مبارکہ عربی متن کے ساتھ تحریر کریں۔

درج ذیل سوالات کے مفصل جوابات دیجیے۔   (3x10=30)

سوال نمبر2:   کتاب الجہاد کی روشنی میں جنگ کے اسلامی اصول بیان کریں۔

سوال نمبر3:   مندرجہ ذیل حدیث مبارکہ کا ترجمہ اور تشریح کیجیے:

مَنْ أَحَبَّ لِقَاءَ اللهِ أَحَبَّ اللهُ لِقَاءَهُ وَمَنْ كَرِهَ لِقَاءَ اللهِ كَرِهَ اللهُ لِقَاءَهُ

سوال نمبر4:   کتاب الزہد کا احاطہ کرتے ہوئے زبان کی حفاظت پر نٹ سپر و قلم کریں۔

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سوال نمبر1:	مندرجہ ذیل سوالات کے مختصر جوابات تحریر کریں۔	(6x5=30)

1. زکوٰۃ کا نصاب بیان کریں اور خلوت صحیحہ سے کیا مراد ہے؟

2. فقہ میں صاحبین اور شیخین سے کیا مراد ہے؟

3. الااصول اور الفصول فی لااصول کے مصنفین کے نام رقم کریں۔

4. نکاح کے انعقاد کے لیے گواہوں کی شرط کا حکم کیا ہے؟

5. اصول فقہ کی تعریف بیان کریں اور مصاہرت کا مفہوم بیان کریں۔

6. نکاح متعہ اور نکاح مؤقت میں فرق بیان کریں۔

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

سوال نمبر2:	صدقہ فطر پر تفصیلی نوٹ لکھیں۔

سوال نمبر3:	درج ذیل پر مختصر اور جامع نوٹ لکھیں۔

۱۔ شرائط نماز کتنی ہیں؟	۲۔ حج و عمرہ کی تعریف بیان کریں۔	۳۔ سنن وضو

سوال نمبر4: عبارت کا ترجمہ و تشریح اور آئمہ کرام کی آراء ذکر کریں۔

أَوَّلُ وَقتِ المَغرِب اذا غَربتِ الشمسُ وآخِرُ وَقتها مالم تغب الشفق

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(6x5=30)   سوال نمبر1:   مندرجہ ذیل سوالات کے مختصر جوابات لکھیئے

1۔ تہذیب، تمدن اور ثقافت کا مفہوم واضح کریں۔

2۔ اسلامی اور مغربی تہذیب کا فرق واضح کریں۔

3۔ خاندان کی اہمیت پر ایک قرآنی آیت اور ایک حدیث لکھیں۔

4۔ حقوق زوجین سے کیا مراد ہے۔ وضاحت کریں۔

5۔ والدین کے پانچ حقوق لکھیں۔

6۔ برائی کے خاتمے کیلئے کیا ہدایات ہیں حدیث کی روشنی میں وضاحت کریں۔

(3x10=30)   درج ذیل سوالات کے مفصل جوابات لکھیئے

سوال نمبر2۔ اسلامی معاشرہ کی خصوصیات لکھیں۔

سوال نمبر3۔ اسلامی معاشرہ میں مسجد کی اہمیت پر تفصیلی نوٹ لکھیں۔

سوال نمبر4۔ اسلامی تہذیب کا مغربی تہذیب سے موازنہ کریں۔

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Q.1.   Solve the following: **(6x5=30)**

1. Prove that $\sqrt{8}$ is irrational.

2. Prove that a sequence in R can have at most one limit.

3. State and Prove Cauchy Condensation Test.

4. Suppose f is continuous on $[a, b]$. If $f(a) > 0$ and $f(b) < 0$, then prove that there exists a point c such that $a < c < b$ and $f(c) = 0$.

5. Check the convergence or divergence of (for $n \in N$)

$$\sum_{n=1}^{\infty} \frac{1}{\sqrt{n+1}}$$

6. Calculate the Laplacian operator in spherical polar coordinates (r, θ, ϕ).

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

1. For every real number $x > 0$ and every integer $n > 0$, prove that there exists one and only one positive real number y such that $y^n = x$. Verify whether this statement is true.

2. State and Prove Young's Theorem for $f(x, y)$.

3. Let α and c be real numbers, with $c > 0$, and let f be defined on $[-1, 1]$ by:

$$f(x) = \begin{cases} x^\alpha \sin x^{-c} & \text{if } x \neq 0, \\ 0 & \text{if } x = 0. \end{cases}$$

Discuss the differentiability as well as continuity at $x = 0$.

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

(i)	State and prove Langrage's Theorem.
(ii)	Prove that the centre Z(G) of a group G is a Normal subgroup of G.
(iii)	Prove that any two sylow p-subgoups of a group G are conjugate.
(iv)	Prove that every subgroup of a cyclic group is cyclic.
(v)	Give an example of an abelian group of order 8 which is not cyclic.
(vi)	The number k of sylow p-subgroups of a finite group G is congruent to 1 mod p.

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

i.	Define involution and prove that every group of even order has at least one involution.
ii.	Define group homomorphism and prove that homomorphic image of a group and kernel of homomorphism are itself groups.
iii.	Prove that the centralizer $C_G(X)$ of a subset X of a group G is a subgroup of G. Find the centre of Dihedral group of order 8.

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

a) Find four roots of the complex polynomial $Z^4 + 16$.

b) Evaluate the integral $\int_C \frac{1}{1+z^2} dz$, where C is the part of the parabola $y = 4 - x^2$ from to $B(1, 3)$.

c) State cauchy's inequality.

d) Find all values of $Log(1 + i)$

e) Expand $f(z) = \frac{1}{Z^2+1}$ in a Laurent series in a punctured ball centered at $z = i$.

f) Let $F(Z) = u + iv$ be a function. Give conditions on u and v such that $F(Z)$ is analytic in some domain D.

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

1. Determine the points where Derivative of the function $F(z) = (x + iy)e^{(x^2+y^2)}$ exists.

2. Compute $\oint_C \frac{e^z z \, dZ}{Z^2+1}$ where $c : |Z| = \frac{3}{2}$ traversed in anticlockwise dierction.

3. State and prove Fundamental theorem of Algebra. Give some applications.

4. Find the entire linear transformation with fixed point $1 + 2i$ that maps the point i into the point $-i$.

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

i.   Evaluate $\int \vec{A} \times \frac{d^2\vec{A}}{dt^2} dt$.

ii. Determine the Conjugate metric tensor in spherical coordinates.

iii. The acceleration of the particle at any time $t \geq 0$ is given by
     $\vec{a} = 12\cos 2t\,\hat{\imath} - 8\cos 2t\,\hat{\jmath} + 16t\hat{k}$ if the velocity and displacements are zero
     at $t = 0$. Find velocity and displacement at any time.

iv. Prove that $\vec{F} = r^2\vec{r}$ is conservative.

v.   Show that any inner product of the tensors A_r^p and B_t^{qs} is a tensor of rank
     three.

vi. Differentiate between Kronecker delta and permutation symbol.

   Solve the following questions: (3x10=30)

Q. 2: State and prove Gauss divergence theorem.

Q. 3: Find the Jacobian $J\left(\frac{x_1,y_1,z_1}{u_1,u_2,u_3}\right)$ for spherical and cylindrical coordinates.

Q. 4: Write the Christoffel symbol of 1st kind for the metric:
$$ds^2 = (dx^1)^2 + [(x^2)^2 - (x^1)^2](dx^2)^2.$$

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Q.1. Solve the following: **(6x5=30)**

(i) Prove that $\overline{A} = A \cup Fr(A)$ and $A^\circ = A \setminus Fr(A)$.

(ii) In (R, τ) with the usual topology τ or R, find the interior, exterior, limit points, and boundary of the set Z of all integers.

(iii) Prove that any uncountable set X with cofinite topology is not first countable and so is not second countable.

(iv) Let $X = \{a, b, c, d\}$ and $S = \{\{a\}, \{b, c\}, \{b, d\}\}$. Find the topology on X generated by S.

(v) Show that a topological space X is disconnected if and only if X contains a non-empty subset A which is both open and closed in X.

(vi) Show that every closed subspace of a compact space is compact.

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

(a) Let $f : X \to Y, g : X \to Y$ be continuous function from a space X to a Hausdorff space Y. Then show that $A = \{x \in X : f(x) = g(x)\}$ is closed in X.

(b) Show that the following statements about a topological space are equivalent. (i) X is regular. (ii) For any open set U in X and $x \in U$, there is an open set V containing x such that $x \in \overline{V} \subseteq U$.

(c) A space X is connected if and only if there does not exist a surjective continuous function f from X onto the two point discrete space.

(d) If a Hausdorff space X has an open base whose sets are also closed then show that X is totally disconnected.

(e) Let **X** be countably compact space. Then show that every infinite subset of X has a limit point in X.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Find the equations of the tangent line, normal line, binormal line, normal plane, osculating plane, and rectifying plane of the circular helix $x = (a\cos u, a\sin u, bu)$, $u \in I = [0, \pi)$, at the point where $u = \frac{\pi}{4}$.

2. Refer to the statement of above question No. 1 and hence find the radii of curvature and torsion of the curve and that of the spherical indicatrix of unit tangent of the circular helix $x = (a\cos u, a\sin u, bu)$, $u \in I = [0, \pi)$.

3. Find the singular and non singular points of the epicycloid given by $x = 4\cos\vartheta - \cos 4\vartheta$, $y = 4\sin\vartheta - \sin 4\vartheta$ and determine its intrinsic equations.

4. Find the arc length of the curve $\alpha(t) = \left(t\sin t, t\cos t, \frac{\sqrt{8}}{3}t^{3/2}\right)$ between $t = 0$ and $t = 1$. Give its natural representation.

5. Show that there exists an infinite family of involutes for a given curve.

6. Find the evolutes of a curve $x(u) = (3u, 3u^2, 2u^3)$.

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

1. For $x(\theta, \phi) = (b + a\sin\phi)(\cos\theta)e_1 + (b + a\sin\phi)(\sin\theta)e_2 + (a\cos\phi)e_3$ where $-\infty < \theta < \infty$ and $-\infty < \phi < \infty$, show that $x(\theta, \phi)$ is a regular parametric representation of the torus of class C^∞. Find the parametric representation of the coordinate curves on the surface and the angle between them. Find the equation of the tangent plane and the normal line to the surface $x(\theta, \phi)$.

2. Show that Monge patch $x(u, v) = (u, v, h(u, v))$ is a regular surface parametric representation of class C^m if $h(u, v)$ is of class C^m. Find the expression for the mean curvature H and the Gaussian curvature K for the surface $x(u, v) = (u, v, h(u, v))$ and apply these formulas to find the vanishing conditions for the mean curvature H and the Gaussian curvature K for the surface $x(u, v) = (u, v, h(u, v))$ for $h(u, v) = u^2 - v^2$.

3. Derive the he Mainardi-Codazzi equations relating Christoffel symbols to the first and second fundamental coefficients E, F, G and e, f, g from the Gauss-Weingarten equations for x_{uu}, x_{uv}, x_{vv}, N_u and N_v.

Roll No. ....

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

سوال نمبر 1: درج ذیل اقتباسات میں سے کسی تین کا اردو ترجمہ کیجیے۔ (3x5=15)

١- پادشاہی را شنیدم کہ بکشتنِ اسیری اشارت کرد۔ بی چارہ در آن حالتِ نومیدی ملک را دشنام دادن و سقط گفتن کہ گفتہ اند: ہر کہ دست از جان بشوید، ہر چہ در دل دارد بگوید۔

٢- یکی از ملوكِ خراسان محمود سبكتگین را بخواب چنان دید کہ جملہ وجودِ او ریختہ بود و خاك شدہ، مگر چشمان او کہ ہمچنان در چشم خانہ ہمی گردید و نظر می کرد۔

٣- آوردہ اند کہ سپاہ دشمن بسیار بود و اینان اندك۔ جماعتی آہنگِ گریز کردند۔ سپہسر نعرہ بزد و گفت: "ای مردان! بکوشید یا جامہ زنان بپوشید"۔ سواران را بگفتن او تہور زیادت گشت۔

٤- بر بالین تربتِ یحییٰ پیغمبر علیہ السلام معتکف بودم در جامع دمشق کہ یکی از ملوكِ عرب کہ بہ بی انصافی منسوب بود، اتفاقاً بزیارت آمد و نماز و دعا کرد۔

٥- یکی از ملوكِ بی انصاف، پارسای را پرسید: "از عبادتہا کدام فاضل تر است"۔؟ گفت: "ترا خواب نیم روز، تا در آن یك نفس خلق را نیازاری"۔

سوال نمبر 2: درج ذیل اشعار میں سے کسی تین کا اردو ترجمہ کیجیے۔ (3x5=15)

١- شنیدم شبی در کتب خانہ من   بہ پروانہ می گفت کرمِ کتابی
باوراق سینا نشیمن گرفتم   بسی دیدم از نسخہ فاریابی

٢- بو علی اندر غبار ناقہ گم   دستِ رومی پردہ محمل گرفت
این فرو تر رفت و تا گوہر رسید   آن بگردابی چو خس منزل گرفت

٣- تو شب آفریدی چراغ آفریدم   سفال آفریدی ایاغ آفریدم
بیابان و کہسار و راغ آفریدی   خیابان و گلزار و باغ آفریدم

٤- ساحل افتادہ گفت، گرچہ بسی زیستم   ہیچ نہ معلوم شد آہ کہ من چیستم
موج ز خود رفتہ ای تیز خرامید و گفت   ہستم اگر می روم گر نہ روم نیستم

٥- طارق چو بر کنارہ اندلس سفینہ سوخت   گفتند کار تو بہ نگاہ خرد خطا است
دوریم از سوادِ وطن باز چون رسیم؟   ترك سبب ز روی شریعت کجا رواست

سوال نمبر 3: شیخ سعدی کی فارسی تصنیف "گلستان" پر جامع نوٹ تحریر کریں۔ (15)

سوال نمبر 4: علامہ اقبال کے مفصل حالاتِ زندگی تحریر کیجیے۔ (15)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a. Define Philosophy.

b. Explain empiricism as an epistemological theory.

c. Explain the significance of Socratic method in education.

d. What are the advantages of critical thinking in education?

e. **Explain virtue ethics with examples.**

f. What is moral Objectivism?

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

i.   State and examine rationalism as a theory of knowledge.

ii.   Critically analyze Utilitarianism as a moral theory.

iii.   Discuss in detail the idea of democracy.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Show that the kinetic energy of a two-particle system is

$$\frac{1}{2}M\,\dot{R}^2 + \frac{1}{2}\mu v^2$$

where $M = m_1 + m_2$, v is the relative speed, and $\dfrac{1}{\mu} = \dfrac{1}{m_1} + \dfrac{1}{m_2}$ (reduced mass).

2. A sphere of radius ρ is constrained to roll without slipping on the lower half of the inner surface of a hollow cylinder of inside radius R. Determine the Lagrange function, the equation of constraint and Lagrange's equation of motion. Find the frequency of small oscillation.

3. Explain virtual work. State D'Alembert's Principle and use it to derive the Lagrange's equation of motion

$$\frac{d}{dt}\left(\frac{\partial T}{\partial \dot{q}_i}\right) - \frac{\partial T}{\partial q_i} = Q_i\ .$$

4. Show that the transformation

$$\begin{aligned} q &= \sqrt{2P}\sin Q, \\ p &= \sqrt{2P}\cos Q, \end{aligned}$$

is canonical.

5. Find x and y as functions of time, such that the functional

$$I = \int_{t_0}^{t_1}\left[\frac{1}{2}m(\dot{x}^2 + \dot{y}^2) - mgy\right]dt$$

has stationary value.

6. Show that for a single particle with constant mass, the equation of motion implies

$$\frac{dT}{dt} = \mathbf{F}.\mathbf{v},$$

where T is the kinetic energy, $\mathbf{F}$ is the applied force vector and $\mathbf{v}$ is the velocity vector. If the mass varies with time, the corresponding equation is

$$\frac{d}{dt}(mT) = \mathbf{F}.\mathbf{p}.$$

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

1. A particle of mass m moves in a central force field with potential $-\dfrac{k}{r}$. The Lagrangian is

$$L = \frac{1}{2}m(\dot{r}^2 + r^2\dot{\theta}^2 + r^2\sin^2\theta\,\dot{\varphi}^2) + \frac{k}{r}$$

Find the momenta $(p_r, p_\theta, p_\varphi)$ conjugate to coordinates (r, θ, φ). Also find the Hamiltonian $H = H(r, \theta, \varphi, p_r, p_\theta, p_\varphi)$ and write down Hamilton's equations.

2. Find the force law for a central force field that allows a particle to move in a logarithmic spiral orbit given by $r = k\exp(\alpha\theta)$ where k and α are constants.

3. Show that the Poisson bracket obeys the Jacobi identity

$$\{A, \{B, C\}\} + \{B, \{C, A\}\} + \{C, \{A, B\}\} = 0$$

where A, B and C are arbitrary dynamical variables.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

a) Write names of crystal systems in three dimensions, number of lattices in system, symbols, and restrictions on conventional cell axis and angles.

b) Draw unit cell of NaCl structure and write atomic positions of Na and Cl basis atoms.

c) Define atomic packing fraction (APF). Calculate APF for body centered cubic lattice.

d) Write a general rule to determine Miller indices of a plane intercepting three (a, b and c) crystal axis. Draw a plane with Miller indices (200).

e) Explain the concept of direct lattice and reciprocal lattice in solid state physics.

f) Describe the origins of repulsive interaction in crystals? Give one example to explain.

g) Write an equation of Lennard-Jones Potential. Plot it to show repulsive and attractive interaction between two identical atoms.

h) What is phonon? Explain briefly the concept of quantitation of phonon wave.

i) Name and explain the interaction responsible to bind crystals of inert gas atoms?

j) Draw heat capacity versus temperature curve to show the difference in classical and Einstein model. Also, write main assumption differentiating these two models?

k) Draw (110) and (200) crystallographic planes.

l) Calculate the lattice constant of BCC iron by taking atomic radius of iron 0.124 nm.

m) Explain the inelastic interaction of photon with the lattice with the aid of diagram and write wave-vector selection rule for phonon creation and absorption in the process.

n) Discuss briefly the dependence of thermal conductivity on temperature.

o) Explain briefly to differentiate between the terms "*random stacking and polytypism*".

Answer the following questions.

Q. 2 How Ewald construction explains the concept of reciprocal lattice. Establish diffraction equation in reciprocal lattice on the basis of Ewald construction.   **(10)**

Q. 3 Derive an expression for total lattice energy of ionic crystal containing $2N$ ions.   **(10)**

Q. 4 Derive an expression for lattice heat capacity of solids on the basis of Debye model. Explain how this model fits well with the experimental observations for low temperature limit.   **(8+2)**

UNIVERSITY OF THE PUNJAB

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

Roll No. ....

Paper: Mathematical Methods of Physics - I
Course Code: PHYS-3501

Time: 3 Hrs.   Marks: 60

Q.1.   Give short answers of the following: (6x5=30)

1. Show that $g(-\omega) = g^*(\omega)$ is a necessary and sufficient condition for $f(x)$ to be real. Here $g(\omega)$ is the Fourier transform of $f(x)$

2. Starting from Hermite O.D.E $y'' - 2xy' + \lambda y = 0$, obtain the Rodrigues formula for its polynomial $H_n(x)$.

3. Derive the recurrence relation $\Gamma(z + 1) = z\Gamma(z)$ from the Euler integral.

4. Prove that the generating function for modified Bessel function $I_n(x)$ is

$$e^{\frac{x\left(t+\frac{1}{t}\right)}{2}} = \sum_{n=-\infty}^{n=+\infty} I_n(x) t^n$$

5. Find the Fourier series of $f(x) = x^2$ for $0 < x \le 2$

6. Prove the recurrence relation $(2l + 1)x\, P_l(x) = (l + 1)P_{l+1}(x) + lP_{l-1}(x)$

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

1. Derive the Jacobi-Anger expression

$$e^{i\rho\cos\phi} = \sum_{m=-\infty}^{m=\infty} i^m J_m(\rho)e^{im\phi}$$

2. For the eigen value problem $y'' + \lambda y = 0$ where $y(0) = 0$, $y(\pi) = 0$. Find out the set of eigen functions and the corresponding eigen values.

3. Find the Green function for the operator $\mathscr{L} = -a^2\frac{d^2}{dx^2} + 1$ with boundary conditions $y(0) = y(A) = 0$.

4. The 1-D neutron diffusion equation with a plane source is

$$-D\frac{d^2\varphi(x)}{dx^2} + K^2 D\varphi(x) = Q\delta(x)$$

Where $\varphi(x)$ is the neutron flux, $Q\delta(x)$ is the plane source at $x = 0$ and D and K^2 are constants. Apply Fourier transform. Solve the equation in transform space.

5. A function $f(x)$ is expanded in Legendre series $f(x) = \sum_{n=0} a_n P_n(x)$. Show that

$$\int_{-1}^{+1} [f(x)]^2 dx = \sum_{n=0}^{\infty} \frac{2a_n^2}{2n + 1}$$

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i. Write C^{++} program to print x vs y for the $y(x)=5x^3-21x^2+4x-15$ using for loop. Take x values from the user for 5 iterations.

ii. Write code to calculate and print A and V using: $A=2\pi r(r+h)$, $V=\pi r^2 h$. Take r and h from the user and implement using arrays.

iii. Write program to print the kinetic energy (KE) using: $KE= \frac{1}{2} mv^2$. Take m and v as input from the user for three iterations.

iv. Write program to calculate and print the force (F) between two masses using equation: $F=(G\times m_1 \times m_2)/r^2$. Take m1, m2, and r as input from the user for 10 iterations. Take G from user.

v. Discuss with example the operators: "+", "=" and "==" in C++?

vi. Write program to determine equivalent of n resistances connected in series and parallel. Take input values from the user.

Answer the following questions.

Q.2.	Write C^{++} program to evaluate the integral $\int_1^6 (\frac{3\sqrt{x}+8}{28})dx$ by trapezoidal rule or by Simpson's rule (with n=6) due to options 1 or 2 pressed by the user. Write program to determine force values using $f = m\ a$. Also find the average and minimum force values for the given data: take m =3. <table><tr><td>f (force)</td><td>5.4</td><td>1.5</td><td>8.1</td><td>9.7</td><td>4.3</td></tr><tr><td>a(acceleration)</td><td>6</td><td>7</td><td>5</td><td>8</td><td>3</td></tr></table>	6+4
Q.3.	Write C^{++} program which reads in a number as binary number and convert it into decimal number for 10 iterations. Suppose **U1** and **U2** be 3x3 matrices. Write C^{++} program which reads in entries of the matrices and calculate (i) **U2 - U1**, (ii) **U1 x U2** and (iii) **14 U1 + 0.5 U2**	5+5
Q.4.	What is Euler's method. Write C^{++} program to study decay of charge for a simple RC circuit using Euler's method. Take inputs from the user What is a random number? Write C^{++} program for the simulation of Brownian motion for 15 pair of points. How randomness of numbers represent Brownian motion of a pair of points (x,y).	6+4

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Give short answers of the following: **(6x5=30)**

I.   How does the Q-point variation affect the amplifier's linearity?

II.   What are the advantages and disadvantages of a half-wave rectifier compared to a full-wave rectifier?

III.   How does the gate-source voltage control the current flow in a Junction Field Effect transistor?

IV.   What factors influence the choice of a biasing method for a particular transistor amplifier circuit?

V.   How does a Light-Emitting Diode (LED) produce light, and what underlying mechanism distinguishes it from traditional incandescent bulbs?

VI.   How is a clamper circuit used for wave shaping?

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

a) How does Thevenin's theorem simplify complex circuits? Provide ar

b) Explain the principle. behind using a Zener diode as a voltage regulator. How does the Zener diode maintain a constant output voltage despite input and load resistance variations?

c) Compare different characteristics of common emitter (CE), common base (CB), and common collector (CC) amplifier configurations.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   List of political institutions in ancient Greece

ii.   Socrates' method of expressing his views

iii.   Plato's Theory of Ethics

iv.   Plato's concept of Justice

v.   The concept of polity by Aristotle

vi.   Meaning of Utopia

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

i.   Give a comparative analysis of the political philosophies of Plato and Socrates.

ii.   Explain 'Knowledge is Virtue' according to Plato.

iii.   Elaborate Aristotle's work in 'Nicomachean Ethics'.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Explain the sources of "requirement inception"?

2. Differentiate "functional requirements" and "non-functional requirements"?

3. Explain any two methods to "elaborate requirements"?

4. Define and shortly explain "Requirement reachability"?

5. Explain "graphical model" for "requirement specification"?

6. Shortly explain "requirement engineering for agile methods"?

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

1. Explain "requirements layers/levels" with examples?

2. Explain "use case modeling" for requirement engineering in details?

3. Explain "requirements validation" in details with examples?

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

    a. What is the scope of project planning?
    b. What is project cycle?
    c. What is economic impact assessment?
    d. What is Social Impact Assessment?
    e. How important is the Monitoring for project?

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

    A. Describe in detail the process of project management.
    B. Describe in detail the process of project Planning.
    C. Discuss in detail the different methods and techniques of Impact Assessment.

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Fifth Semester – Spring 2025

Roll No. ....

Paper: Introduction to National & International Org.
Course Code: SOCW-302

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Define the following with examples: **(6x5=30)**

1. Define national and international organizations with their key functions.

   قومی اور بین الا قوامی تنظیموں کی تعریف کریں اوران کے اہم کاموں کو بیان کریں۔

2. Suggest five future directions for national and international organizations.

   قومی اور بین الا قوامی تنظیموں کے لیے پانچ آئندہ کے اقدامات تجویز کریں۔

3. Discuss the significance of national organizations.

   قومی تنظیموں کی اہمیت پر تبادلہ خیال کریں۔

4. How do international organizations collaborate with national organizations for social development?

   بین الا قوامی تنظیمیں ساجی ترقی کے لیے قومی تنظیموں کے ساتھ کس طرح تعاون کرتی ہیں؟

5. Mention five major challenges faced by social welfare agencies.

   ساجی بہبود کی ایجنسیوں کو درپیش پانچ بڑے چیلنجز کا ذکر کریں۔

6. Explain how social welfare agencies act as planners.

   وضاحت کریں کہ ساجی بہبود کی ایجنسیاں کس طرح منصوبہ ساز کے طور پر کام کرتی ہیں۔

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

1. Provide a detailed overview of The United Nations Children's Fund (UNICEF).

   اقوام متحدہ کے بچوں کے فنڈ (یونیسف) کا تفصیلی جائزہ پیش کریں۔

2. Elaborate on the role of social welfare agencies in poverty alleviation with examples.

   غربت کے خاتمے میں ساجی بہبود کی ایجنسیوں کے کردار کو مثالوں کے ساتھ تفصیل سے بیان کریں۔

3. Write an analytical note on All Pakistan Women Association (APWA).

   آل پاکستان ویمن ایسوسی ایشن پر ایک تفصیلی نوٹ لکھیں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Define the following with examples: **(6x5=30)**

1. Concept of Justice in Islam
2. The code of Ethics of Human rights.
3. Universalism Human Rights.
4. Core internation Instruments of Human Rights.
5. Legal Theory of Human Rights.
6. Protection of Minorities in Islam.

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

1. Describe Human Rights also discuss in detail Human Rights and politics.
2. Discuss in detail world institution and Human Rights.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Define the following with examples: **(6x5=30)**

1. What are the curative functions of social group work?

    سماجی گروہی بہبود کے معالجہ کے افعال کیا ہیں؟

2. Differentiate between formal and informal groups with examples.

    رسمی اور غیر رسمی گروپوں میں مثالوں کے ساتھ فرق بیان کریں۔

3. What is the role of religious groups in social group work?

    سماجی گروہی بہبود میں مذہبی گروپوں کا کیا کردار ہے؟

4. Explain the role of recording in social group work.

    سماجی گروہی بہبود میں ریکارڈنگ کے کردار کو وضاحت سے بیان کریں۔

5. How are social learning theories applied in group work?

    گروہی بہبود میں سماجی سیکھنے کے نظریات کو کس طرح استعمال کیا جاتا ہے؟

6. What are the goals of social group work?

    سماجی گروہی بہبود کے مقاصد کیا ہیں؟

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

1. Explain the process of group formation and describe the stages of group development.

    گروپ کی تشکیل کے عمل کو وضاحت سے بیان کریں اور گروپ کی ترقی کے مراحل کو بیان کریں۔

2. What are the different functions of social group work (preventive, curative, and

    rehabilitative)? Give examples for each.

    سماجی گروہی بہبود کے مختلف افعال (پیشگی بچاؤ، معالجہ، اور بحالی) کیا ہیں؟ ہر ایک کے لئے مثالیں دیں۔

3. Discuss the fields of practice for social group work and explain its importance in areas like

    child welfare, medical settings, and corrections.

    سماجی گروہی بہبود کے عملی میدان پر گفتگو کریں اور بچوں کی فلاح، طبی ماحول، اور اصلاحات جیسے علاقوں میں اس کی اہمیت کو وضاحت سے بیان کریں۔

UNIVERSITY OF THE PUNJAB

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

Roll No. ....

Paper: Community Organization and Development
Course Code: SOCW-305

Time: 3 Hrs.   Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Define the following with examples: (6x5=30)

1. Describe Community Development as a direct method of Social Work.

   1: کیونٹی ڈولیپمینٹ کو سوشل ورک کے بنیادی طریقہ کار کے طور پر بیان کریں۔

2. Discuss sociological criteria of a good community.

   2: ایک اچھی کیونٹی کے ساجی معیار کو زیر بحث لائیں۔

3. What do you know about Community Organization?

   3: کیونٹی آرگنائزیشن کے بارے میں آپ کیا جانتے ہیں؟

4. Discuss "Gemeinschaft" and "Gesellschaft" community.

   4: "جمین شیفٹ" اور "گیزل شیفٹ" کیونٹی کو زیر بحث لائیں۔

5. Discuss the role of Social Worker in Community Development.

   5: کیونٹی ڈیولپمنٹ میں ایک سوشل ورکر کے کردار کو زیر بحث لائیں۔

6. Highlight the salient elements of a Community.

   6: ایک کیونٹی کے چیدہ عناصر کو اجاگر کیجے۔

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

1. Discuss in detail the process of Community Development.

   1۔ کیونٹی ڈیولپمنٹ کے عمل کو تفصیل سے بیان کریں۔

2. "Community Organization is a vehicle to Community Development". Please comment.

   2۔ "کیونٹی آرگنائزیشن کیونٹی ڈیولپمنٹ کا ایک وسیلہ ہے"۔ برائے مہربانی تبصرہ کیجے۔

3. Explain guiding principles of Community Development.

   3۔ کیونٹی ڈیولپمنٹ کے رہنما اصولوں کی وضاحت کیجے۔

UNIVERSITY OF THE PUNJAB

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

Roll No. ....

Paper: Parametric and Nonparametric Tests (Theory)
Course Code: STAT-301

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.   Discuss types of errors with examples, while making decisions in testing of hypothesis.

ii.   Explain procedure of Fisher's exact test.

iii. Ten individuals are chosen at random from a normal population and their heights were found to be in inches which are: 63, 63, 66, 67, 68, 69, 70, 70, 71 and 71. In the light of this data, discuss the suggestion that the mean height of the population is 66 inches.

iv.   Explain the terms:
a) Average Sample Number (ASN)   b) Operating Characteristic (OC)

v.   In random sample of 500 families owing television sets in city of Hamilton, Canada, it is found that 340 subscribed to HBO. Test the hypothesis that proportion of subscription is more than 70%. Use $\alpha=2.5\%$

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

i.   Two varieties of tomato were experimented with concerning their fruit producing abilities, measured in pounds, the following data were obtained

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

Test the hypothesis of no difference between fruit producing ability of two varieties.
a)   Assuming that the responses follow normal distribution.
b)   Assuming that the responses do not follow normal distribution.

ii.   Using Kolmogorov-Smirnov method, test the hypothesis that the sample: 0.36, 0.92, -0.56, 1.86, 1.74, 0.56, -0.95, 0.24, -0.15, -0.74, 0.32, 0.82, 0.70, -0.10, -1.06, 0.15, 0.55, -0.48, -0.49 is drawn from normal population with mean 0.5 and variance 1. Use $\alpha=0.05$

iii. A company wants to assess the consistency of production quality across its four manufacturing plants (Plant W, Plant X, Plant Y, and Plant Z). The company collects data on the diameter of a specific component produced by each plant, given as follows. Test whether the variances of the component diameters are equal across all four plants.

Plant	Sample Size	Sample Mean	Sample Variances
W	25	5.3	2.4
X	30	6.5	3.1
Y	28	3.8	1.8
Z	29	6.1	2.7

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Fifth Semester – Spring 2025

Roll No. ....

Paper: Design and Analysis of Experiments (Theory)
Course Code: STAT-303

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.	Local Control.
II.	Advantages of RCB design
III.	ANCOVA
IV.	Fixed and Random effect models.
V.	Assumptions of ANOVA
VI.	Disadvantages of Latin square design

Answer the following questions: (3x10=30)

Q2. A composite measure of screen quality was made on screen using four lacquer concentrations, four standing times, four acryloid concentrations (A,B,C,D) and four acetone concentrations ($\alpha, \beta, \gamma, \delta$). A Greaco Latin square was used for the analysis purpose and the following results were obtained. Find the relative efficiency of this design with:

i) Latin Square Design   ii) RCB Design   iii) CR Design

Source	Columns	Rows	Latin Letters	Greek Letters	Error	Total
Sum of Squares	25.25	85.25	4.25	26.25	10.75	151.75

Q3. If A, B and C are the three methods of teaching, and X and Y stand for original spelling performance and later spelling performance of each of the four students allocated to systems A, B and C as tabulated below, setup the table of analysis of covariance. What conclusions could be drawn of analysis of covariance set up by you?

A		B		C	
X	Y	X	Y	X	Y
3	10	4	12	1	6
2	8	3	12	2	5
1	8	3	10	3	8
2	11	5	13	1	7

Q4. An experiment was conducted to investigate the blink rates during reading. Data were recorded for four successive twenty-five-minute periods of reading. Please assume that the experiment was performed on four individuals (take them as Blocks) and four periods (take them as Treatments). The data obtained during the experiment is given below:

Blocks	Treatments			
	1	2	3	4
A	124	123	128	127
B	118	-	117	119
C	141	141	149	139
D	146	169	174	-

Estimate the missing observations on 2nd row and 2nd column, 4th row and 4th column by Yates method. Analyze the data.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i) Let A, B, C be the independent events such that $P(A) = 0.5, P(B) = 0.25$ and $P(C) = 0.1$. Find $P(A \cup B \cup C)$.

ii) Write down the three properties of the cumulative distribution function i.e. $F(x)$.

iii) State the Chebyshev's inequality and explain its significance.

iv) Write down the probability mass function and moment generating function of binomial distribution if its mean is 20 and variance is 8.

v) If A tells the truth 4 out of 5 times and B tells the truth 3 out of 4 times, what is the probability that both expressing the same fact contradict each other.

vi) If the first and second moments about origin of a random variable X are 2 and 8 respectively, then find $E(X - 1)^2$.

vii) If X is a discrete uniform distribution $P(x) = \frac{1}{N}, x = 1,2, \ldots N$. Find its mean and variance.

viii) In hyprgeometric distribution, if $N = 10, \ k = 4, \ n = 2$, then find its mean and variance.

ix) Find the value of K in Chebyshev's inequality if at least 95% of the data lies within K standard deviations from the mean.

x) When flipping an unbiased coin, determine the probability that the first head occurs on the 7th trial.

Answer the following questions.

Q.2.a) In a certain neighborhood, 90% of children fell ill due to the flu and 10% due to measles, with no other diseases reported. The probability of observing rashes for measles is 0.95 and for the flu is 0.08. If a child develops rashes, find the probability of the child having the flu.

b) A five sided die with sides numbered {1, 2, 3, 4, 5} is constructed so that 1 and 5 occur twice as often as 2 and 4 which occur three times as often as number 3. What is the probability that a perfect square occur when this die is tossed once? (5+5)

Q.3.a) Derive the moment generating function of the negative binomial distribution and use it to find its mean and variance.

b) Show that all the cumulants of the Poisson distribution are same. (6+4)

Q.4.a) Ten vegetable cans, all the same sizes, have lost their labels. It is known that 5 contain tomatoes and 5 contain corn. If 5 are selected at random, what is the probability that all contain tomatoes? What is the probability that 3 or more contain tomatoes?

b) A car hire firm has 2 cars, which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson distribution with parameter 1.5. Calculate the probability of the days on which neither car is used. Also find the probability of the day on which some demand is refused. (5+5)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i) Explain the rules for giving names to variables in SPSS.

ii) Explain how would you merge two different SPSS data files to get a single data file.

iii) Explain the restrictions on variable's naming in SPSS.

iv) If you have a variable x, then using SPSS how would to compute a new variable $y = \log(x)$?

v) Write benefits of defining value labels in SPSS data file.

vi) Write the procedure of computing spearman's rank correlation between two variables x and y.

Answers the following questions.

Q.2: Two varieties of tomato were experimented concerning their fruit-producing abilities, measures in pounds. The following data were obtained:

Location	1	2	3	4	5	6	7	8	9	10
Variety A	3.03	3.10	2.35	3.86	3.91	1.72	2.65	2.30	2.70	3.60
Variety B	2.28	3.63	2.17	3.56	3.73	1.85	1.48	1.86	2.76	2.68

Apply (i) The sign (ii) The Wilcoxon signed-rank tests to test the hypothesis that there is no difference in fruit-producing abilities of the two varieties. Use 5% level of significance.   (10)

Q.3: Over a period of 40 days the percentage relative humidity in a vegetable storage building was measured. Mean daily values were recorded as shown below:

```
60  63  64  71  67  73  79  80  83  81
86  90  96  98  98  99  89  80  77  78
71  79  74  84  85  82  90  78  79  79
78  80  82  83  86  81  80  76  66  74
```

Find the median, lower quartile, upper quartile, arithmetic mean, variance, standard deviation and coefficient of variation from above sample of observations   (10)

Q.4: The following data were collected which are related to the length of an infant X_1(cm), age X_2(days), and weight X_3(kg).   (10)

X_1	57.5	52.8	61.3	67.0	53.5	62.7	56.2	68.5	69.2
X_2	78	69	77	88	67	80	74	94	102
X_3	2.75	2.15	4.41	5.52	3.21	4.32	2.31	4.30	3.71

a) Compute all simple correlation coefficients and interpret the results.

b) Calculate all partial correlation coefficients and interpret the results.

c) Fit a multiple linear regression line X_1 on X_2 and X_3.

d) Test the overall significance of the above regression model using ANOVA table at $\alpha = 0.05$.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر1: درج ذیل سوالات کے مختصر جوابات درکار ہیں۔   (6x5=30)

1- دکنی دور کے پانچ شعرا کے نام لکھیے۔

2- ترقی پسند تحریک کے کسی ایک شاعر کا تعارف کروائیے۔

3- جرات و انشا کے عہد کے شعرا کی وجہ شہرت کیا ہے؟

4- رومانوی تحریک سے وابستہ کسی ایک افسانہ نگار کا تعارف کروائیں۔

5- دبستان لکھنؤ کے معروف شاعر جرات کے شعری موضوعات پر مختصر نوٹ لکھیے۔

6- غالب و مومن کے دور پر مختصر نوٹ لکھیے۔

سوال نمبر2: درج ذیل سوالات کے تفصیلی جوابات درکار ہیں۔   (3x10=30)

1- اردو شعر و ادب کی ترویج میں قطب شاہی دور کے کردار پر روشنی ڈالیے۔

2- ترقی پسند تحریک کے تنقیدی نظریات کا احاطہ کریں۔

3- جدید اردو نظم کی نشوونما میں حلقہ ارباب ذوق کا کیا کردار ہے۔ تفصیلی نوٹ لکھیے۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

۱۔ انتظار حسین کے علامتی افسانوں میں تہذیبی شعور کی مثالیں فراہم کیجیے؟

۲۔ "آگ کا دریا" میں مذکور مختلف تہذیبی دھاروں کا مختصر تقابل پیش کیجیے۔

۳۔ پریم چند کے کسی افسانے کا تہذیبی مطالعہ پیش کریں۔

۴۔ "خون جگر ہونے تک" کی تاریخی و تہذیبی اہمیت واضح کریں۔

۵۔ نصوح کی اصلاح پسندی کا تہذیبی تناظر میں تجزیہ کیجیے۔

۶۔ "ذات شریف" کے حوالے سے مصاحب کے کردار کی عمومی خصوصیات پر تبصرہ کریں۔

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

ا۔ فکشن میں تاریخی اور تہذیبی شعور سے کیا مراد ہے؟ مفصل تحریر کیجیے۔

ب۔ 'توبۃ النصوح' کا اس طرح تنقیدی جائزہ لیں کہ اس کی تہذیبی کشمکش نمایاں ہو جائے۔

ج۔ "زادِ راہ" کو مدنظر رکھتے پریم چند کے تاریخی اور تہذیبی شعور کا جائزہ لیں۔

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Briefly mention causes, transmission, incubation, symptoms and ~~treatment~~ of *Entamoeba histolytica*.

ii.   Discuss damage, economic importance and control strategies of mango and citrus fruit pests.

iii. Discuss Human Itch Mites infection, sign symptoms, causes and control measures.

iv.   Define lac culture? Briefly mention uses of lac and its properties.

v.   Write a short note on cattle ticks and methods of control.

vi.   Draw and describe life cycles of *Aedes aegypti*

Answer the following questions.   (3x10=30)

Q. 2   Write a detailed essay on apiculture. How Beekeeping offers a feasible way to help rural people?

Q. 3   What is aquaculture? Discuss its role, various systems and briefly mention characteristics of commercially important fish species of Pakistan.

Q. 4   What do you know about sericulture? Describe various silkworm species, culture requirements and production of silk on commercial scale.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

i.   Ketone bodies

ii.   Feeder pathways in Glycolysis

iii.   Conversion of pyruvate to Acetyl CoA

iv.   Prostaglandins

v.   Decarboxylation of amino acids to biological amines

vi.   Deamination and Transamination

Answer the following questions.   (3x10=30)

Q. 2   Write a detailed description on citric acid cycle.

Q. 3   Give a comprehensive note on beta oxidation of fatty acid.

Q. 4   Describe pentose phosphate pathway in detail.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I. Write a note on fixed membrane receptor mechanism of Hormones action.

II. How does intracellular Ca+ control the release of neurotransmitters

III. How does T-tubules system enhance action potential penetration into the myocytes?

IV. Briefly describe the relationship between arterial pressure and blood volume

V. Write a note on body response to high altitude hypoxia.

VI. Describe the pancreatic juice composition and control.

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

1. Write a detailed note on resting membrane potential, action membrane potential and transfer of nerve impulse through the membrane.

2. Explain the self-excitability and autorhythmic of myogenic heart.

3. Briefly describe the regulation of gut motility through nervous and endocrine system.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are the main steps of the phosphorus cycle?
2. Define land pollution also give its sources and management.
3. Define ecological niche with suitable example
4. Briefly explain ecotones and interpopulation interactions.
5. Write a short note on the forest and range management.
6. What are the major causes of global warming and ozone depletion?

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

1. Write a detailed explanation of the carbon cycle?
2. Write a note on the ecosystem and explain its types in detail.
3. Discuss the laws of thermodynamics and their relevance to energy flow in ecosystems.

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

I.   Define EVOLUTION.

II.   Define ALLELE?

III.   Define CONVERGENCE EVOLUTION.

IV.   How MIGRATIONS cause evolution?

V.   What is MUTATION-SELECTION BALANCE?

VI.   What is difference between MIGRATION and FOUNDER EFFECT?

VII.   How Isolation facilitates the morphological divergence in the populations?

VIII.   Why did natural selection not remove all bad genes from the population?

IX.   Why GROUP can not be a level of selection?

X.   What are CONDITIONS REQUIRED for the work of NATURAL SELECTION?

XI.   What is ADAPTIVE RADIATIONS?

XII.   How DIRECTIONAL SELECTION effect the fitness of a character in the population?

XIII.   Define FITNESS?

XIV.   Describe Lamarck Theory of Evolution.

XV.   What is role of Population size on the magnitude of GENETIC DRIFT?

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

i.   Describe factors that play role in MICROEVOLUTION.

ii.   What are LEVELS OF SELECTION? Discuss in detail.

iii.   Describe the THEORIES OF SEXUAL SELECTION in detail.