



UNIVERSITY OF THE PUNJAB

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

Paper: Fundamentals of Psychology

Course Code: APSY-111

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. Briefly explain Neurons and its Functioning.
2. Write a short note on Experimental Method.
3. Define Memory. Write a short note on the Memory Processes.
4. Differentiate between Classical and Operant Conditioning.
5. Write a short note on tools of Thinking.
6. Differentiate between Aptitude and Achievement with examples.

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

1. Define Psychology. Write a detailed note on the Application of Psychology with reference to Pakistan.
2. Write a detailed note on the Structure and Function of the Ear.
3. Define Emotions. Write detailed notes on any Two Theories of Emotions.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

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

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

- i. Explain the principles of Classical Conditioning.
- ii. What are the factors that can affect motivation?
- iii. Explain forgetting and its causes.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Arabic-I

Course Code: ARB-101

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 1	درج ذیل سوالات کے مختصر جوابات تحریر کریں۔ ۱۔ کلمہ کی تعریف کرتے ہوئے اس کی اقسام مثالوں کے ساتھ تحریر کریں۔ ۲۔ ہمزۃ الوصل اور ہمزۃ القطع کا فرق مثال دے کر تحریر کریں۔ ۳۔ جمع کی اقسام دو دو مثالوں کے ساتھ تحریر کریں۔ ۴۔ مبتدأ اور خبر میں کتنی باتوں میں مطابقت ہوتی ہے؟ تحریر کریں۔ ۵۔ مونث قیاسی اور سماعی کا فرق تحریر کریں اور دو دو مثالیں بھی تحریر کریں۔ ۶۔ حروف جارہ کا اسم پر کیا اثر ہوتا ہے؟ کوئی سے تین حروف جارہ مثالوں کے ساتھ تحریر کریں۔	(6x5=30)
سوال 2	درج ذیل عبارت کا اردو میں ترجمہ کریں۔ وَمَا بَلَغَ إِبْرَاهِيمَ مِثْرًا، أَرَادَ أَنْ يَنْذِيحَ إِسْمَاعِيلَ - وَاضْطَلَعَ إِسْمَاعِيلُ عَلَى الْأَرْضِ - وَأَزَادَ إِبْرَاهِيمُ أَنْ يَنْذِيحَ فَوَضَعَ السَّيِّئِينَ عَلَى خَلْفِهِمْ إِسْمَاعِيلَ - وَلَكِنَّ اللَّهَ يُحِبُّ أَنْ يَرَىٰ هَلْ يَفْعَلُ خَلِيلُهُ مَا يَأْمُرُهُ، وَهَلْ يُحِبُّ اللَّهُ أَكْثَرَ أَوْ يُحِبُّ ابْنَهُ أَكْثَرَ - وَنَجَّحَ إِبْرَاهِيمُ فِي الْامْتِحَانِ - فَأَرْسَلَ اللَّهُ جَنِّيًّا يَكْنُبُ مِنَ الْجَنَّةِ، وَقَالَ: اذْذِيحْ هَذَا وَلَا تَذِيحْ إِسْمَاعِيلَ۔	10
سوال 3	درج ذیل کا اردو میں ترجمہ کریں۔ ۱۔ أَفَهُ الْعِلْمُ النَّسِيَانُ۔ ۲۔ لَيْسَ الْكَلْبُ كَالْأَسَدِ۔ ۳۔ هَلْ قَاطِمَةُ قَائِمَةٌ؟ ۴۔ إِنَّ الْمَرْءَ الصَّالِحَةَ جَالِسَةً۔ ۵۔ نَعَمْ، هُنَّ مُجْتَهِدَات۔	2x5=10
سوال 4	درج ذیل کا عربی میں ترجمہ کریں۔ ۱۔ آج بادشاہت کس کی ہے؟ ۲۔ عثمان محنتی طالب علم ہے۔ ۳۔ یہ نہر لمبی ہے۔ ۴۔ ظالم بادشاہ پر اللہ کا غضب ہے۔ ۵۔ دو حامد کے لڑکے کی لڑکی ہے۔	2x5=10



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Answer the following short questions:

(6x5=30)

Q.1. Choose the correct word:

السؤال الأول: اختر الكلمة الصحيحة :

1. قلمك (جديد، جديدة)
2. اسم الولد (عالية، علي، اعلي)
3. نحن (مسافر، مسافرون، مسافرة)
4. حديقة (هذه، هذا، هذان)
5. هل الاستاذ (ذهب، ذهب، ذهبت)

Q.2. Arrange the following words:

السؤال الثاني : رتب الكلمات التالية :

1. أنت — السقف — تحت
2. شهر — مبارك — رمضان
3. كرسي — صغير — ذلك
4. هذا — واسع — شارع
5. لون — أخضر — العلم

Q.3. Give plural form of the following singular nouns:

السؤال الثالث : هات الجموع للمفردات التالية :

- | | | |
|---------|---------|--------|
| ١- هذا | ٢- اسم | ٣- علم |
| ٤- جاهل | ٥- كتاب | |

Q.4. Point out the demonstrative pronouns and attached pronouns:

السؤال الرابع : ميز بين الضمير المتصل و المنفصل :

ه هي أنت ها ك

Q.5. Correct the following sentences:

السؤال الخامس : صحح الجمل الآتية :

- ١- هذا كراسة الولد-
- ٢- هو معلمة -
- ٣- هذا حديقة -
- ٤- هذه علم -
- ٥- هل ذلك سبورة ؟

Q.6. Write the past conjugation from the verb "فتح".

السؤال السادس : أكتب تصريف الماضي للمعروف عن " فتح "

Answer the following questions.

(3x10=30)

Q.7. Translate the following Hadith into Urdu language.

السؤال السابع : ترجم الحديث التالي إلى اللغة الأردية :

قال رسول الله صلى الله عليه وسلم : " لا يدخل الجنة من كان في قلبه مثقال حبة من كبر - فقال رجل : إن الرجل يحب أن يكون ثوبه حسنا و نعله حسنا - قال : إن الله جميل يحب الجمال ، الكبر بطر الحق و غمط الناس "

Q.8. Translate into Urdu language.

السؤال الثامن : ترجم إلى اللغة الأردية :

يا رب أنت خالقي	و أنت أنت رازقي
خلقت أمي و أبي	و كل من في نسبي
فالشكر يا رب لك	والحمد ما دار الفلك
الكون ما صنعتها	و الهدى ما هديته
فسدد الخطو إلى	رضاك يا رب العلا

Q.9. Answer in Arabic language.

السؤال التاسع : أجب باللغة العربية :

- ١- ما إسمه ؟
- ٢- من هذه ؟
- ٣- ما إسم الأستاذة ؟
- ٤- ما لون الورد ؟
- ٥- كيف حالها ؟
- ٦- هل كتابك جديد ؟
- ٧- هل لغة العرب لغة القرآن ؟
- ٨- هل ولده طيب ؟
- ٩- أين هو ؟
- ١٠ - هل تلك ساعة جميلة ؟



UNIVERSITY OF THE PUNJAB

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

Paper: Introduction to Business

Course Code: BBA-101

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following questions:

(6x5=30)

- I. Rights of Partners in Partnership
- II. Types of business risk
- III. Methods of Sales Promotions
- IV. Export Promotion Bureau.
- V. Type of Combinations
- VI. Meetings of Joint Stock Company.

Answer the following questions.

(3x10=30)

Q.No.2: Explain the different types of business ownership with examples.

Q.No.3: Write a detailed note on a Kinds of Insurance.

Q.No.4: Explain the function and kinds of Channels of distributions.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is significance of Bryophytes? How this group is different from Pteridophytes?
2. Explain life cycle of *Oscillatoria*. Why it is important globally?
3. What are the distinguishing features of *Chlamydomonas* that identify it as a green alga?
4. Discuss the significance of *Physcia* as bioindicator of air quality. Describe its thallus structure.
5. What are the distinguishing features of *Riccia* that aid in its identification?
6. What are characteristic features of *Psilopsida*? Describe sporophyte of *Psilotum*.

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

1. How do RNA viruses differ from DNA viruses? Describe structure and economic importance of Tobacco Mosaic Virus (TMV).
2. What are differences between prokaryotic and eukaryotic cells? Describe bacterial life cycle in detail.
3. Draw and explain life cycle of *Marsilea*.



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

- i. What are Fimbriae & Pili
- ii. Differentiate Conjugation & Transduction in bacteria
- iii. Differentiate Saxicolous & Terricolous lichens?
- iv. Mention two differences between *Mucor* and *Penicillium*.
- v. How many types of rhizoids are in Bryophytes? Mention names.
- vi. Name different groups of plants according to evolutionary point of view.
- vii. What are Deuteromycetes fungi.
- viii. What do you mean by Seed habit?
- ix. Differentiate between Haplostele and Protosteles
- x. What are triads? In which group of plants are these structures present?
- xi. Why *Riccia* genus is in Liverworts?
- xii. What is fossilization?
- xiii. How fungi are different from Algae regarding cell structure?
- xiv. Draw and label different parts of *Agaricus* including its fertile part.
- xv. Write two distinguishing features of *Ectocarpus*.

Answer the following questions. (3x10=30)

1. Explain different parts of Lichen and methods of reproduction in different Lichens.
2. Give detailed account of reproductive structures of *Chara*.
3. Write general characters of Pteridophytes. Explain life cycle of *Selaginella*.



UNIVERSITY OF THE PUNJAB

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

Paper: Botany-I (Plant Diversity)

Course Code: BOT-105

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. What are lichens? What are its different types?
2. What are the main modes of reproduction in angiosperms? What roles do pollinators play in this process?
3. What are heterocysts, and how do they function in nitrogen fixation in cyanobacteria.
4. What are the distinguishing features of *Pinus* that aid in its identification?
5. What are characteristic features of *Psilopsida*? Describe sporophyte of *Psilotum*.
6. Describe the unique features of the sporophyte in *Anthoceros*.

Q.2. Answer the following questions.

(3x10=30)

1. What are differences between prokaryotic and eukaryotic cells? Describe bacterial life cycle in detail.
2. Draw and explain life cycle of *Marsilea*.
3. Explain life cycle of *Pinnularia*.



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Q.1. Answer the following short questions:

(6x5=30)

1. Differentiate between gram positive and gram negative bacteria. Write a note on their importance.
2. What are the main characteristics of *Chara* that make it easily recognizable?
3. Describe the symbiotic relationship between the fungal and algal or cyanobacterial partners in lichens. What is importance of this symbiosis?
4. Discuss the effects of *Ustilago* species on crop production. How this fungus be controlled?
5. What are the angiosperms' features of the *Ephedra* plant? Explain.
6. What is significance of Bryophytes? How this group is different from Pteridophytes?

Q.2. Answer the following questions.

(3x10=30)

1. Describe the life cycle of *Puccinia*, including its alternation of hosts and economic importance.
2. Describe the process of double fertilization in angiosperms and also write differences between angiosperms and gymnosperms
3. (a): Draw and describe basic structure of Tobacco Mosaic Virus (TMV).
(b): Differentiate between lytic and lysogenic viral cycle.



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

Q.1. Answer the following short questions:

(5x6=30)

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

i. Describe the significance of communication.

i. ابلاغ کی اہمیت واضح کریں۔

ii. In what ways can cultural differences act as barriers to effective communication? Provide strategies to overcome these barriers.

ii. ثقافتی فرق مؤثر ابلاغ میں رکاوٹ ہے۔ ان رکاوٹوں کو دور کرنے کے لائحہ عمل بیان کریں۔

iii. Write a short note at the leading newspapers in Pakistani society. Please also share the most frequent content of these newspapers.

iii. پاکستانی معاشرہ میں نمایاں اخبارات بارے میں لکھیں۔ اردو اخبارات کے مندرجات پر نوٹ لکھیں۔

iv. Explain the nature and functions of mass communication, focusing on Information, Education, Opinion Formation, Entertainment and Development.

iv. ابلاغ کے نمایاں کردار معلومات، تعلیم، آگاہی، تفریح اور تعمیر کے بارے میں مفصل لکھیں۔

v. Write a brief note at the role of social media to enlighten the youth about climate crisis.

v. ماحولیاتی تبدیلی کے بارے میں سوشل میڈیا کیسے نوجوانوں کو آگاہ کر رہا ہے؟ لکھیں۔

Q.2. Answer the following questions.

(3x10=30)

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

i. Do you agree with an assumption that social media gradually squeeze the traditional mainstream media viewership? Explain it with comparison between traditional media and social media regarding their penetration in society?

i. سوشل میڈیا تیزی سے مقبول ہو رہا ہے۔ سوشل میڈیا اور روایتی میڈیا کے درمیان تقابلی جائزہ پیش کریں۔

ii. Conduct a comparative study of two different mass media, analyzing their components, functions and effects on society. Provide examples to support your analysis?

ii. دو مختلف ذرائع ابلاغ کا تقابلی جائزہ لیں۔ ان کے عناصر اور معاشرتی اثرات بیان کریں۔

iii. Define and discuss the role of mass media in agenda setting. Provide examples of how media influences public opinion through agenda setting.

iii. ذرائع ابلاغ کیسے ایجنڈا سیٹنگ کرتا ہے؟ مثالوں سے عوامی رائے سازی میں میڈیا کے کردار پر بحث کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a) What is supporting evidence in writing an essay?**
- b) How do you define cause and effect essay?**
- c) What is extensive reading? Give examples**
- d) What is the last step in writing process?**
- e) Differentiate between revision and proof reading.**
- f) What is the importance of feedback in communication?**

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

- a) What is critical reading? Explain each type of reading in detail.**
- b) Elaborate the mechanisms of a good essay.**
- c) Highlight and explain the strategies for good oral presentations.**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is science? Write about an application of science in our daily lives.
2. What do you know about geocentric model?
3. Define Biotechnology. Give one application.
4. What are the main inventions in the period of China Civilization?
5. How do classical and modern physics describe time?
6. What does modern science look like today?
7. Write any two differences between bacteria and viruses?
8. What is covalent bond? Give example.
9. Differentiate between Physical and Biological science?
10. Write any two applications of Chemistry?
11. State Law of Conservation of Energy?
12. Define Astrophysics and Cosmology.
13. Define Newton's Law of Gravitation and explain its significance.
14. What is cell theory?
15. What is the primary focus of biology as a science?

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

1. Describe the modern scientific method and apply its steps to discuss the impact of the COVID-19 virus, which has affected the world.
2. What is the theory of relativity, and how does it differ from Newton concept of gravity?
3. Explain the kinetic molecular theory and how it explains the behavior of gases at different temperatures and pressures.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- a. Write any three important roles of education and media in shaping human behavior.
- b. Briefly explain class system in Pakistan?
- c. What is legitimacy?
- d. Differentiate between formal and informal economy.
- e. Write three types of economic system.
- f. Define ethnicity.

Q.2. Answer the following questions.

(3x10=30)

- a. What is informal economy? How it functions? Briefly discuss its negative impacts.
- b. Write a detailed note on colonial histories and their present..
- c. Explain modernity and highlights its importance with social sciences in detail.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(15x2=30)

i). Evaluate $\frac{3}{5} \times \frac{2}{3} + \frac{3}{4}$

ii) Convert 24 feet to inches where 1 foot=12 inches.

iii) Convert 50K temperature to degree Celsius.

iv) Simplify $(6.4 \times 10^5) - (3.4 \times 10^4)$ and express the answer in scientific notation.

v) Convert the following fractions to decimal form to the nearest hundred

a) $\frac{86}{32}$

b) $\frac{224}{26}$

vi) If a dr. Prescribe a treatment with 30mg per kilogram of amoxicillin. Find the dose for a 13kg child.

vii) $\frac{(xy+y)}{(xy-2y)}$ for $x=-2$ and $y=4$.

viii) If two third students in a class of 75 students are girls. What is the numner of boys in the class?

ix) Solve by quadratic formual $2x^2-6x+1=0$.

x) Your purchase a shirt with a labeled price of Rs.1700. The local sale tax rate is 5%. What is the final price (with tax) of the shirt?

xi) If Asad saves $\frac{2}{5}$ of his salary and Bilal saves $\frac{3}{10}$ of his salary. Who saves more from his salary?

xii) Simplify $18x + 5 - [7(x-2)+4]$.

xiii) Farhan deposits Rs. 4500 into his bank accout each month. How much amount will he save in one year?

xiv) Write in scientific notation

a) 0.00000245

b) 891200000000

xv) Find circumferenc of a circle with radius 4 meters.

Answer the following questions.

(3x10=30)

Q.2 a) From 1989 to 1990, the number of applicants to a college increased to 15% to 5060. How many applicants were there in 1989?

b) Amjad earns 50% more than Bilal. How many times larger is Amjad income than Bilal's?

Q.3 a) Solve for x : $\frac{3}{x+3} = \frac{5}{2x+6} + \frac{1}{x-2}$

b) Solve by Factorizing: $x^2 = 8x - 15$.

Q.4 a) A reatangular field is twice as long as it is wide. If the perimeter is of field is 300 meters, what are its dimensions?

b) Divide profit of Rs. 32000 among three partners Asad, Bilal and Saeed in ratio 2:4:6.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Fables, Wisdom Literature and Epic

Course Code: BSU-105

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

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

- (الف) حکایت کسے کہتے ہیں؟ اپنے الفاظ میں بیان کریں۔
- (ب) ایک مکڑا اور مکھی میں کون سا اخلاقی سبق پوشیدہ ہے؟
- (ج) ایک گائے اور بکری کا خلاصہ لکھئے۔
- (د) تمثیل کسے کہتے ہیں؟ شامل نصاب متن سے دو مثالیں دیجئے۔
- (ه) درج ذیل حکایت کا اردو میں ترجمہ کریں۔
- "پادشاہے بکشتن اسیرے اشارت کرد گفت اے فلک موجب خشمے کہ ترا برمن ست آزار خود مجوی کہ این عقوبت برمن بیک نفس سر آبدو بزہ آن برتو جاوید بماند"
- (و) کلیلہ و دمنہ کے عنوان کے وضاحت کریں۔

(3x10=30)

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

- (الف) کلیلہ و دمنہ کی شامل نصاب حکایت "دوستوں کی یک دلی کے فائدے" میں کن اخلاقی اصولوں پر بحث کی گئی ہے، نوٹ لکھئے۔
- (ب) شامل نصاب حکایت "زابدے مہمان پاشا ہے بود" کا فکری حوالے سے جائزہ لیجئے۔
- (ج) "میر آشوب مرحلے" کا کرداری حوالے سے جائزہ لیجئے۔



UNIVERSITY OF THE PUNJAB

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

Paper: Chemistry-I (Physical Chemistry)

Course Code: CHEM-101

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 rate of reaction? How is it different from rate of consumption of reactant and rate of formation of product?
- ii. What is difference between true solution and colloidal solution?
- iii. Give types of adsorption.
- iv. What is surface tension? Give SI units of surface tension?
- v. Derive relation between Gibbs energy change, enthalpy change and entropy change.
- vi. Briefly describe the process of dialysis for purification of colloidal system.

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

- i. What is heat capacity? Discuss heat capacities of gases in detail.
- ii. Derive kinetic equation for first order reaction and give its implications.
- iii. What is adsorption isotherm? Derive and discuss Langmuir adsorption isotherm.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(15x2=30)

- i. Predict shape of H_2O on the basis of VSEPR model/theory.
- ii. How acid base indicator changes color with regard to change in pH?
- iii. Can pH be zero? If yes then give an example of acid having pH zero.
- iv. What are double salts? Give examples
- v. Why ammonia is strong ligand than water?
- vi. What are electron deficient compounds? Give examples
- vii. Define the term electronegativity.
- viii. What is difference between hybrid and molecular orbitals?
- ix. Differentiate between soft acid and hard acid
- x. What are outer transition elements?
- xi. Why iodide has more polarizability than chloride?
- xii. What is diagonal relationship?
- xiii. What is Pearson principle of SHAB concept.
- xiv. What is the drawback of CFT?
- xv. Define the term chelate

Q.2. Answer the following questions.

(3x10=30)

- A. What is isomerism? Discuss different types of isomerism in coordination compounds
- B. Discuss and elaborate the soft hard acid base concept with suitable examples
- C. Define the term electronegativity? Discuss its different scales.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(15x2=30)

- i. Predict shape of SO_2 on the basis of VSEPR model/theory.
- ii. How methyl orange changes color when pH is changed?
- iii. Sketch the structure of phenolphthalein.
- iv. Write two uses of chelates?
- v. Phenolphthalein is a weak acid. How does it change color when medium becomes basic?
- vi. What is leveling effect?
- vii. Define the term electronegativity.
- viii. How does CFT is superior to VBT?
- ix. Differentiate between Lewis acid and base
- x. What are outer transition elements?
- xi. Why polarizability increases down the group?
- xii. What is Pauling scale for electronegativity?
- xiii. Bi-S bond is relatively more stable than Bi-N bond. Give reason on the basis of HSAB concept.
- xiv. What is the main failure of CFT?
- xv. Which of the following is more soft acid and why
 - i. Na
 - ii. K

Answer the following questions.

(3x10=30)

Q.2 Describe the structures of following compounds/complexes on the basis of VBT and MOT

- i. $[\text{Fe}(\text{CN})_6]^{4-}$
- ii. $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$

Q.3 What is diagonal relationship? Discuss it with suitable examples

Q.4 What is SHAB (soft and hard acid base) concept? Discuss its applications in various fields of chemistry.

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

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

- i. What is accrual basis of accounting?
- ii. Describe the term inventory shrinkage?
- iii. What is meant by cost principle in accounting?
- iv. Define Accounting?
- v. Define scrap value of an asset?
- vi. What is window dressing?
- vii. Describe the term realization principle.
- viii. What are different classes of assets?
- ix. Enlist financial statements.
- x. What is going concern assumption?

Answer the following questions. (3x10=10)

Q. 2 Style Company began its operations in July and completed following transactions during the first month.

July 1	The owner invested \$80,000 cash in the business.
2	The company rented office and paid \$700 cash for July rent.
3	The company purchased equipment for \$5,000 paying \$1,000 cash and agreeing to pay \$4,000 balance in 30 days.
6	The company purchased office supplies for \$600 cash.
8	The company completed work for a customer and immediately collected \$7,600 cash for the work.
10	The company purchased \$2,300 of equipment on credit.
15	The company completed work for a customer on credit for \$8,200.
17	The company paid \$2,300 cash for equipment purchased on July 10.
28	The company received \$8,200 cash for the work completed on July 15.
31	The company paid \$295, cash for this month utility bills.

Required: Show the effect of above transactions in accounting equation.

(10)

Q. 3 Following transactions related to a consulting business:

- a. The owner invested \$90,000 cash and office equipment valued at \$10,000 in the company.
- b. The company purchased \$150,000 building to use as an office. It paid \$40,000 in cash and signed a note payable promising to pay the \$110,000 balance over the next 10 years.
- c. The company purchased office equipment for cash \$25,000.
- d. The company purchased \$1,200 of office supplies and \$1,700 of office equipment on credit.
- e. The company paid a local newspaper \$750 cash for printing an announcement of the office's opening.

- f. The company completed a financial plan for a client and billed that client \$2,800 for the service.
- g. The company designed a financial plan for another client and immediately collected a \$4,000 cash fee.
- h. The owner withdrew \$11,500 cash from the company for personal use.
- i. The company received \$1,800 cash from the client described in transaction f.
- j. The company made a payment of \$700 cash on the equipment purchased in transaction d.

Required: Prepare general journal entries, ledger and trial balance for above-mentioned transactions.

(10)

Q. 4 The trial balance of Star Travels Company on 31st December 2023 follows:

Cash	\$ 49,600	Account payable	\$ 26,200
Account receivable	4,500	Unearned service revenue	900
Supplies	1,400	Capital	56,200
Prepaid rent	6,000	Service revenue	14,000
Furniture & Fixtures	33,000		
Salary expense	1,900		
Utilities expense	900		
Total	97,300	Total	97,300

Additional information:

- i. Prepaid rent expired, \$2,000.
- ii. Accrued service revenue, \$500
- iii. Supplies on hand, \$800
- iv. Service revenue earned, \$300
- v. Depreciation on furniture, \$550
- vi. Accrued salary expense, \$1,900

Required: Journalize the adjustments and prepare income statement and balance sheet.

(10)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a) Define the purpose of a hard disk drive (HDD).
- b) Discuss the benefits of using Filters in MS Excel. How do they enhance data exploration?
- c) What is computer memory, and why is it important?
- d) What is the purpose of PivotTables in MS Excel? How can they simplify data analysis?
- e) What is the function of a scanner in a computer system?
- f) Discuss the various page layout options in MS Word. How can they be customized for specific document types?

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

- a) Discuss the various page layout options available in MS Word. How can they enhance document presentation?
- b) Describe the evolution of computers from the first to the fifth generation.
- c) Explain the concept of Relationships in MS Access. How do they contribute to database integrity?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is computer language? Differentiate between high level language and low level language.
2. Describe the steps/procedure/process to shut down the computer?
3. Explain the term of references with respect to MS-Word?
4. Describe the characteristics/advantages of Internet.
5. How to add comments in MS-Excel?

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

1. What is software? Discuss the types of software in detail.
2. Define these terms
 - MS-Access
 - MS-Word
 - Networking Essentials
3. How to create tables and add pictures in MS-PowerPoint write procedure?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1) What are the five basic operations performed by any computer system?
- 2) What are different types of networks? What are the different topologies used in networks?
- 3) Define primary storage and secondary storage with examples.
- 4) What is operating system? Explain basic functions of operating system.
- 5) Define system software and application software with examples?
- 6) List down five, five input and output devices. Explain one of each.
- 7) List down the computer generations.
- 8) Write down any three usage of MS EXCEL.
- 9) Write down any three functions of control unit.
- 10) Define RAM.

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

- 1) Consider the following sheet of Microsoft Excel. Write formulas for the following questions.

	A	B	C	D	E	F	G
1	Payroll						
2	Date:	1/1/2011					
3	EMPL Number	EMPL Name	Hourly Rate	Hours Worked	Gross Pay	S.S Tax	Net Pay
4	E00001	Ford	7.5	35	?	?	?
5	E00002	Mino	8	30	?	?	?
6	?	Bell	6.5	25	?	?	?
7	?	Davis	9	40	?	?	?
8	?	Turro	10	39	?	?	?

- a) Calculate the Gross Pay for employee; write a formula to multiply Hourly Rate by Hours Worked. (Write formula only).
 - b) Calculate the Social Security Tax (S.S Tax), which is 6% of the Gross Pay; write a formula to multiply Gross Pay by 6%. (Write formula only).
 - c) Calculate the Net Pay; write a formula to subtract Social Security Tax from Gross Pay. (Write formula only).
- 2) Draw a block diagram to illustrate the basic organization of computer system and also highlight each component. Explain each component separately.
- 3) Differentiate between LAN, MAN, WAN on the basis of the following parameters (Name, Network range, Number of users, Speed, Devices, and Examples).



UNIVERSITY OF THE PUNJAB

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

Paper: Computer (Introduction and Applications)

Course Code: COMP-111

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Question#1: Answer the following short questions.

(6x5=30)

- a) Explain the use of BIOS and cache memory in a computer system.
- b) What is a computer port? Explain the difference between serial port and parallel ports.
- c) What is operating system? Discuss the major functions of operating systems.
- d) What are biometric devices and embedded systems?
- e) What is a network protocol, and network topology?
- f) Briefly explain web browser, web portal, and search engine.

Answer the following questions.

(3x10=30)

Question#2:

What is a computer program, software, and programming languages? Write a note on various types of software, and programming languages.

Question#3:

Compare and contrast between printer and scanner. Discuss different types of printers and scanners along with their quality characteristics.

Question#4:

Describe the utilization or purpose of MS Word, MS Excel, and MS PowerPoint. Discuss formatting styles, formulas, and animations of MS Word, MS Excel, and MS PowerPoint respectively.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Differentiate between Desktop computers and Laptop computers
- ii. Differentiate between guided and unguided transmission.
- iii. What are source data entry devices? Explain any two.
- iv. Explain search engine?
- v. Explain VPN, its advantages and disadvantages
- vi. How we can apply custom animation on Slide?

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

1. Explain network topologies and its types in detail.
2. What is Spreadsheet Software? Explain ~~Nested-IF~~ Nested-IF function with the help of example.
3. What is Memory? Explain types of memory.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Principles of Micro Economics

Course Code: ECON-101

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a. Point elasticity
- b. Ordinal utility approach
- c. Budget line of consumer.
- d. Real prices vs nominal price
- e. Show that indifference curve has negative slope

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

- i. Why it is important to study microeconomics?
- ii. Explain the Law of Equi-Marginal Utility
- iii. Show graphically the impact of the following on the equilibrium price and quantity when:
 - i) Supply increases and demand falls in equal proportion
 - ii) Demand increases and supply falls in equal proportion



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a. Indifference Curve
- b. Monopoly and monopsony
- c. Marginal utility and total utility
- d. Difference between elasticity and slope.
- e. Differentiate between explicit cost and implicit cost

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

- i. Why the short run average cost curve is U-shaped?
- ii. Explain Law of Increasing Return to scale with the help of graph.
- iii. Show graphically the impact of the following on the equilibrium price and quantity when:
 - A. Demand increases and supply falls in equal proportion
 - B. Supply increases more than increase in demand



UNIVERSITY OF THE PUNJAB

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

Paper: Fundamentals of Economics

Course Code: ECON-111

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Briefly explain the following concepts:

(6x5=30)

- i. Microeconomics vs Macroeconomics
- ii. Law of supply with the help of schedule and graph.
- iii. Total, average, and marginal revenue
- iv. Perfect competition
- v. Real vs. nominal GDP
- vi. Monetary Policy

Q.2. Answer the following questions.

(3x10=30)

1. Define the expansion and contraction, rise and fall in demand with graph.
2. Explain law of Equi-Marginal Utility in detail with the help of schedule and diagram along with its assumptions and limitations.
3. Define price elasticity of demand. How is it measured? Explain with the help of schedule and diagram



UNIVERSITY OF THE PUNJAB

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

Paper: Basic Economics-I

Course Code: ECON-121

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Explain the concept of elasticity of supply.
- ii. Define Indifference curve, and write down the properties of Indifference curve.
- iii. Differentiate between law of demand and elasticity of demand.
- iv. Elaborate relationship of Marginal and total utility.
- v. Explain the concept of scarcity and definition of economics.
- vi. What is meant by Consumer equilibrium?

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

- i. Explain the law of Equi-Marginal utility with the help of schedule diagram.
- ii. Define elasticity of supply. How is it measured? Explain with the help of schedule and diagram
- iii. Explain market equilibrium with the help of table and diagram



UNIVERSITY OF THE PUNJAB

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

Paper: Pakistan Studies

Course Code: EDE-102

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answer the following short questions.

(5X6=30)

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

I. Sir Syed Ahmad Khan

I۔ سر سید احمد خان

II. Lucknow Pact

II۔ لکھنؤ پیکٹ

III. Tashkent Agreement

III۔ معاہدہ تاشقند

IV. Six Points?

IV۔ چھ نکات

V. Tahrcek-i-Mujahideen

V۔ تحریک مجاہدین

Answer the following questions.

(2x15=30)

مندرجہ ذیل سوالات کے جواب دیجئے۔

Q. No. 2. What do you know about the TWO- NATION theory?

سوال نمبر 2۔ آپ دو قومی نظریہ کے بارے میں کیا جانتے ہیں؟

Q. No. 3. Explain the Salient features of Z.A. Bhutto Era.

سوال نمبر 3۔ ذوالفقار علی بھٹو کی نمایاں خصوصیات بیان کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Why could George not serve dinners to Al and Max?
- ii. What does Max ask George to say if anybody comes there to get food?
- iii. Why did Ustad Mangu like the news regarding new constitution?
- iv. What was Ustad Mangu told about new constitution in the police station?
- v. Describe the life-style of the happy prince before his death?
- vi. Why did the swallow not like boys?
- vii. Why was the boy waiting impatiently for his uncle in Araby?
- viii. What was the reason of boy's chasing the girl while going to school?
- ix. Why did the narrator kill the old man on the 8th night in The Tell Tale Heart?
- x. Why could the killer not conceal his crime?
- xi. Why was Popova not able to return the money immediately due on her late husband?
- xii. How did Popova argue to prove that men are not faithful in love?
- xiii. Who is Luka?
- xiv. What was the Christmas gift for Lady Redchester?
- xv. Why did the Wolf return all the gifts to the Sydneys?

Answer the following questions.

Q.2. Explain ONE of the following with reference to the context: 10 Marks

- a) "That's why I never did like, and don't like now, to have to talk to women. I'd rather sit on a barrel of gunpowder than talk to a woman"
- b) "By the way, are you an American crook? They rather specialise in swagger cracksmen over there."

Q.3. Use any FIVE of the following in your own sentences: (5 X 2) 10 Marks

- i. Put off, ii. Cry over spilt milk, iii. A black sheep, iv. A piece of cake, v. Bring about
- vi. Be on the same page, vii. Once in a blue moon

Q.4. Write an essay on ONE of the following topics: 10 Marks

- i. Aim in Life, ii. Dearness, iii. Life of A Doctor



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

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

- ۱۔ زبان کی اہمیت و افادیت پر پانچ نکات تحریر کیجیے۔
 - ۲۔ داستان سے کیا مراد ہے؟ داستان کے اجزائے ترکیبی کے نام لکھیے۔
 - ۳۔ تلمیح سے کیا مراد ہے۔ ایک شعر لکھیے جس میں صنعت تلمیح کا استعمال ہوا ہو۔
 - ۴۔ ڈرامہ کا مفہوم بیان کرتے ہوئے ڈرامہ کے اجزائے ترکیبی کے نام لکھیے۔
 - ۵۔ طنز اور مزاح میں فرق واضح کرتے ہوئے تین معروف مزاح نگاروں کے نام لکھیے۔
 - ۶۔ درج ذیل شعر کی تشریح کیجیے۔ نیز شاعر کا نام بھی لکھیے۔
- باز پچہ اطفال ہے دنیا مرے آگے
ہوتا ہے شب و روز تماشا مرے آگے

(3x10=30)

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

- ۱: اشفاق احمد کے افسانہ ”گلد ریا“ کا نثری و فنی جائزہ لیجیے۔
- ۲: ”اردو کمپیوٹر کی زبان“ کے موضوع پر مفصل مضمون تحریر کیجیے۔
- ۳: اردو زبان کے فروغ میں درپیش مشکلات کا جائزہ لیتے ہوئے ان کے حل کے لیے تجاویز پیش کیجیے۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Content Elective (Geography – I)

Course Code: EDE-155

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. Enlist the names of planets of our solar system in sequence.
- ii. Differentiate between rotational and revolutionary movements of the earth.
- iii. Define Metamorphic Rock and give an example of such rock.
- iv. Write in short about the Equatorial Low-Pressure Belt.
- v. What is River Meandering?
- vi. Write in short about Ox-Bow Lake.

Answer the following questions.

(3x10=30)

- Q2.** Discuss in detail precipitation and its forms.
- Q3.** Define Precipitation and describe its different forms.
- Q4.** Write a note on the landforms formed by glacier action.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Content Elective A-1 (Political Science)

Course Code: EDE-163

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 Political Science.
- ii. Relationship between State and Society.
- iii. Define Sovereignty.
- iv. Define Liberty.
- v. Write down fundamental Human Rights.
- vi. Define Islamic Concept of Law.

Q.2. Answer the following questions.

(3x10=30)

- i. Write down utility of Political Science.
- ii. Write down kinds of Sovereignty.
- iii. Define Law and write down its sources.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6X5=30)

1. How does language shape our perception of the world.
2. Utility and application of Sociology
3. Functions of primary and secondary groups
4. Types of cooperation with suitable examples
5. Mechanism of social control
6. Social status and its types

Q.2. Answer the following questions.

(3x10=30)

1. Define social stratification and explain the different systems of social stratification.
2. Define sociology and its relationships with other social sciences.
3. Explain the concept of socialization and discuss its role in the formation of identity.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answer the following short questions.

(6X5=30)

سوال نمبر ۱: مندرجہ ذیل سوالات کے مختصر جواب دیجئے۔

i. Write the names of two commentators of the era of the Sahaba and the era of Tabieen.

i. صحابہ اور تابعین کے دور کے دو مفسرین کے نام لکھیں۔

ii. Write five lines about the sanctity of Riba (interest).

ii. ربوا (سود) کی حرمت کے بارے میں پانچ سطریں لکھیں۔

iii. Write the gardaan of the present tense of verb.

iii. فعل امر حاضر کی گردان لکھیں۔

iv. How much is the widow's period? Write a Quranic verse or its translation about it.

iv. بیوہ کی عدت کتنی ہے؟ اسکے بارے میں قرآنی آیت یا اسکا ترجمہ لکھیں۔

v. What do you know about Harut and Marut? Write briefly.

v. ہاروت اور ماروت کے بارے میں آپ کیا جانتے ہیں؟ مختصراً لکھیں۔

vi. Briefly explain the purpose of Jihad.

vi. جہاد کے مقصد سے متعلق مختصراً وضاحت کریں۔

Q.2. Answer the following questions.

(3x10=30)

سوال نمبر ۲: مندرجہ ذیل سوالات کے جواب دیجئے۔

i. Write a detailed note on Infaq-fi-Sabeel Allah.

الف) انفاق فی سبیل اللہ کے موضوع پر ایک جامع مضمون لکھیں۔

ii. Write complete details about types and rulings of Divorce.

ب) طلاق کی اقسام اور احکام سے متعلق مکمل تفصیل لکھیں۔

iii. Translate and write a complete description of the fosterage.

ج) ترجمہ کریں اور رضاعت سے متعلق مکمل تفصیل تحریر کریں۔

وَالْوَالِدَاتُ يُرْضِعْنَ أَوْلَادَهُنَّ حَوْلَيْنِ كَامِلَيْنِ لِمَنْ أَرَادَ أَنْ يُتِمَّ الرَّضَاعَةَ



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

1. Write Levels of social interaction?

1. سماجی تعلقات کی سطحیں لکھیں؟

2. Write the meaning of and types of socialization?

2. سماجی کاری کے معنی اور اقسام لکھیں؟

3. Discuss the role of school as a hub for community services?

3. کیونٹی خدمات کے مرکز کے طور پر اسکول کے کردار پر تبادلہ خیال کریں؟

4. What is culture? Describe cultural trait, cultural complex, cultural lag and cultural diversity?

4. ثقافت کیا ہے؟ ثقافتی خاصیت، ثقافتی کمپلیکس، ثقافتی وقفہ اور ثقافتی تنوع بیان کریں؟

5. Write a short note on the impact of education on society?

5. معاشرے پر تعلیم کے اثرات پر ایک مختصر نوٹ لکھیں؟

6. Define technology. Write the impact of technology on school and society?

6. ٹیکنالوجی کی وضاحت کریں۔ اسکول اور معاشرہ پر ٹیکنالوجی کے اثرات لکھیں؟

Q.2. Answer the following questions.

(3x10=30)

1. Critical analyze of the role of social institutions in the development of the country?

1. ملک کی ترقی میں سماجی اداروں کے کردار کا تنقیدی تجزیہ؟

2. Write the roles of schools and teachers in developing social interaction for peace, harmony, and tolerance in society?

2. معاشرے میں امن، ہم آہنگی اور رواداری کے لیے سماجی روابط کو فروغ دینے میں اسکولوں اور اساتذہ کا کردار لکھیں؟

3. Describe culture and explain the cultural elements of Pakistani communities?

3. ثقافت کی وضاحت کریں اور پاکستانی کمیونٹیز کے ثقافتی عناصر کی وضاحت کریں؟



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

1. What is the role of computer networks in education? Explain with examples.
2. Describe the importance and uses of multimedia in teaching and learning.
3. What are the differences between output devices and storage devices? Provide examples of each.
4. Discuss the requirements for teachers when planning lessons for online classes.
5. Discuss the advantages and challenges of using online collaboration tools in education.
6. Describe the applications of statistical software in educational research.

Q.2. Answer the following questions.

(3x10=30)

1. What is cloud computing? Explain its applications and benefits in education.
2. What is a web application? Discuss the features of different educational web applications and their impact on learning.
3. What role does technology play in enhancing the learning process in online classes? Provide examples of tools that support this role.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- Name different types of conjunctions and provide examples.
- Provide examples of interjections used to express emotions or exclamations.
- Explain when to use the definite article "the" in a sentence.
- Differentiate between simple sentence, compound sentence and complex sentence.
- How do you decide whether to use "a" or "an" before a word?
- What are some of the techniques for engaging an audience during a presentation?

Q.2 Answer the following questions.

1. Read the following passage carefully and answers the questions given at the end. (5x2=10)

The Punjab University Library had a very modest beginning with the acquisition of about 2,000 volumes in 1873 at a cost of Rs. 2500. These volumes belonged to Sir Donald Frieled Mcleod, Lieutenant Governor of the Punjab (1865-70) and were purchased for the Punjab University College, which developed into a university under the Punjab University Act of 1882. One of the oldest library in Pakistan, not much attention seems to have been paid to the management and augmentation of this collection till 1903 when Mr. (later Dr.) A.C. Woolner, Registrar and Principal of the Oriental College, Lahore, was appointed honorary librarian.

The present building situated at 1-Alberuni Road, Lahore, was designed by Bhai Ram Singh, Principal, Mayo School (now National College) of Arts, Lahore, and was built on a site acquired in 1910 in proximity to the Senate Hall. Its foundation-stone was laid by the Chancellor, Sir Louis Dane, on February 27, 1911, and the two-storey structure was completed in February, 1917, at a cost of Rs. 1,60,000.

A noticeable feature of the library, now having about 3,00,000 books (including more than 18,000 manuscripts), is that about one-fifth of its holdings consist of private collections of published books and/or manuscripts received by way of donations or purchased from the owners or their heirs. The Library contains a rich research collection of printed books, especially on the humanities and social sciences. It is particularly rich in old and rare editions.

Questions:

- How did the Punjab University Library come into being?
- From whom were, these volumes purchased?
- What is the contribution of Mr. (later Dr.) A.C. Woolner to the growth of the library?
- What designed the building of the Punjab University Library?
- What are the more noticeable features of Library?

2. Write a well-structured paragraph on the topic "Co-Education". (10)

3. Translate the following passage into English. (10)

سائنس کو پاکستان میں پھیلانے کے لئے جن صحافیوں، مصنفین اور ناشرین نے کام کیا ہے ان کو انگلیوں پر گنا جاسکتا ہے۔ ضرورت اس بات کی ہے کہ اس سلسلہ میں کام کرنے والوں کو سہولتیں دی جائیں اور ان کی حوصلہ افزائی کے لئے پروتار طریقوں کو تلاش کیا جائے۔ اخبارات میں اور ریڈیو اور ٹیلی ویژن پر جو لوگ اچھی کارکردگی کا مظاہرہ کریں ان کو انعامات دیئے جانے چاہئیں۔ ایسے تاجر جو کارخانوں کے مالک ہیں ان کو بھی اس سلسلہ میں آگے آنا چاہئے۔ ملک میں اگر سائنسی معاشرہ قائم ہو گا تو سائنس ترقی کرے گی۔ سائنس کی ترقی سے ملک کی ترقی وابستہ ہے۔ اسلام میں علم کے حصول پر زور دیا گیا ہے۔ اس سے مسلمان دور نہیں رہ سکتا۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. Give salient features of metaphysical poetry.
- ii. Write a brief note on Restoration Drama.
- iii. What are the main features of Morality plays?
- iv. Give the main argument of 'Paradise Lost'.
- v. Give salient features of Augustan Satire.
- vi. Period of Romanticism is also known as the age of Revolution. Discuss briefly.

Q.2. Answer the following questions. Give quotations where necessary. (3x10=30)

- i. Throw light on Cavalier poets and Metaphysical poets and their arguments in some of their literary works.
- ii. Discuss Christopher Marlowe as true representative of the Renaissance Age in England.
- iii. Discuss the theme of nature in the poetry of the English Romantic poets.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What is linguistics, and why is it important in understanding human communication?
2. Define phonology and explain its role in studying the sounds of language.
3. How does syntax organize and structure sentences in a language?
4. What is semantics, and how does it relate to the meaning of words and sentences?
5. Describe morphology and its significance in analyzing the structure of words.
6. How do linguists analyze the phonetic semantics properties of speech sounds?

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

1. Discuss in detail the long vowels with the help of Cardinal vowels. Draw a diagram to explain.
2. What is the difference between inflectional and derivational morphology?
3. What are sense relations in? Discuss.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q1) Give Answers of the following short questions:

(5 x 6 = 30)

- Explain adjectives and give at least three examples.
- What are speaking skills? Explain briefly.
- Explain the various kinds of "text types" with example.
- Explain the structure of paragraph writing.
- What is Gothic Literature? Explain

Q2) Write a paragraph of at least 120 words on any one of the following topics. (10)

- Women Empowerment
- Begging
- Social Evils

Q3) Explain the following GAT words.

(5)

Appall, Beneath, Conflict, Deter, Empathy

Q4) Read the text below and answer the questions given at the end. The answer must be in your own words. (15)

Through the break between the trees, she looked into one of the lighted windows above the shop. She could see the cartons of biscuits neatly piled near the far wall. Against her conscious wishes Cissy's salivary glands started pumping fluid into her mouth. She felt her heart beating strongly from the top of her throat into the back of her mouth. "There is nobody", she thought. "I can dash in and take a box and dash out again. I know it is a sin but the Lord will not punish us if we are so hungry".

Question

- What was Cissy's reaction when she saw the biscuit cartons? **(3)**
- Why did her heart beat strongly? **(3)**
- What thought occurred to her? **(3)**
- Make a precis of the passage and given it a suitable title. **(3)**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. What is Causative Sentence? Explain with two examples.
- ii. Define Reflexive Pronoun with at least two examples.
- iii. Discuss Transitive Verb with a suitable example.
- iv. What is the difference between Compound and Complex Sentences?
- v. How do you define Active Voice and Passive Voice?
- vi. What is the process of Listening Skill?

Q.2. Answer the following questions.

(3x10=30)

- i. Mention the steps for preparing effective Oral Presentation.
- ii. Write a paragraph of not more than 200 words on any ONE of the following topics.
 - a. Smog
 - b. Contribution of technology in education
 - c. Role of youth in nation building
- iii. Translation from Urdu to English

دہشت گردی بہادری نہیں بلکہ بزدلی ہے۔ ہم سمجھ نہیں سکتے کہ کس طرح ایک انسان کسی بھی وجہ سے عام لوگوں کو ہم یا کسی اور ہتھیار سے مار ڈالنے کا فیصلہ کرتا ہے۔ ہمارے عزیز ملک کے بہت سے بے گناہ شہری ہم کے دھماکوں میں ہلاک ہو چکے ہیں۔ اسلام میں ایک بے گناہ آدمی کا قتل ساری انسانیت کے قتل کے برابر ہے۔ خدا کسی قاتل کو کبھی معاف نہیں کرے گا۔



UNIVERSITY OF THE PUNJAB

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

Paper: English-I (Functional English)

Course Code: ENG-117

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- Define Articles? Explain with three examples.
- What is a Verb? What are three forms of verb?
- What are the 8 Parts of Speech?
- What is the importance of Punctuation in a sentence?
- Change the voice of the following sentence.
"Aslam is writing a letter"
- What is an Adjective?

Answers to the following questions

(3x10=30)

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

Global warming is one of the most pressing challenges of our time. It refers to the long-term rise in Earth's average surface temperature due to human activities, primarily the burning of fossil fuels like coal, oil, and natural gas. This increase in temperature leads to melting polar ice caps, rising sea levels, and extreme weather conditions such as hurricanes, droughts, and heat waves. The consequences of global warming are far-reaching and affect ecosystems, human health, and the economy.

Addressing global warming requires urgent action to reduce greenhouse gas emissions, transition to renewable energy sources, and implement policies aimed at sustainable development.

Additionally, individuals can contribute by reducing waste, conserving energy, and supporting environmental conservation efforts. If left unchecked, global warming will continue to have devastating effects on the planet, making it imperative for governments, industries, and individuals to take collective action.

- What is global warming, and what causes it?
- How does global warming impact the planet's ecosystems and weather patterns?
- What are some of the economic and health consequences of global warming?
- What actions are necessary to combat global warming?
- How can individuals contribute to mitigating global warming?

Q.3. Write a paragraph on one of the following.

- Government Hospitals
- A visit to remember
- Examination System

Q.4. Translate the following passage into English.

پاکستان کرکٹ ٹیم دنیا کی چند بہترین ٹیموں میں سے ایک ہے۔ شاہد آفریدی اور شعیب ملک جیسے کھلاڑیوں نے پاکستان کا نام دنیا بھر میں روشن کیا ہے۔ پاکستانی ٹیم کسی بھی ٹیم کو شکست دے کر ٹرافی جیت کر پاکستان لانے کی صلاحیت رکھتی ہے۔ مناسب تربیتی اکیڈمیوں کے ذریعے بہترین کھلاڑیوں کو میدان میں لانا حکومت وقت کی ذمہ داری ہے۔



UNIVERSITY OF THE PUNJAB

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

Paper: Writing Workshop (IT)

Course Code: ENG-121

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- i. Write a concise note on Principles of communication.
- ii. Compare Verbal and Non-verbal communication with examples.
- iii. Discuss the Process of Communication.
- iv. Identify any three communication barriers.
- v. Write a note on Audience Analysis.
- vi. Audio-visual aids make presentation more attractive. How?

Q.2. Answer the following questions.

(3x10=30)

i. Write a memo reminding employees of your Business firm about IT targets that you want to be achieved within next 3 months.

ii. Write an Essay on any **ONE** of the following topics: (250 - 300 words)

- Smog: An Environmental Challenge and Our Responsibilities
- Human Rights Violations
- A Memorable Excursion

iii. Write a story starting with this sentence: "I became most dissatisfied and disgruntled when I saw"



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a. What are the benefits of **outlining** for writing?
- b. What is a **comma splice** and what is its role in writing?
- c. Write a note on '**Writing as a product**'?
- d. What is a **hook** and what should be included in it?
- e. What is the role of complex and complex compound sentences for an **argumentative essay** prove your answer with suitable example?
- f. What is **agreement** in English grammar?

Answer the following questions.

Q. 2: Write a paragraph of 150 words on any one of the following topics: 12

- a. Academic environment is rotten b. Writing is a challenging activity
- c. Role of an institution in personal grooming

Q. 3: What techniques should be employed in an **expository essay so that it should fulfil its main purpose, give examples? 08**

Q. 4: People are divided in considering writing as: difficult or easy task, what do you think, it is an easier task or difficult, give your reasons for your answer? 10



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Environmental Science

Course Code: GC-116

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Discuss Briefly Sustainable development.
- ii. Discuss briefly the term “Consumers” concerning the Eco-system.
- iii. Define ecosystem services and their main types.
- iv. Write a brief note on the Carbon Cycle.
- v. Differentiate between the environmental Determinism and Possibilism.
- vi. Suggest measures for protecting the urban forest resources of Pakistan.

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

- i. What is meant by Global Warming? Briefly suggest six measures to control the speed and scale of the phenomena.
- ii. Explain the term environment and write in detail its various types.
- iii. What is meant by water pollution, and how can we protect the water resources of Pakistan?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Write down the any two names of eminent Greek Philosopher's?
- ii. Write down the any two names of Islamic Political theorists?
- iii. Write down the Paul Janet's definition of Political Science?
- iv. When and in which book David Easton presented System Approach?
- v. Write down the name of book written by Almond and Powel?
- vi. When and who established City State of Median?
- vii. Write down the Bluntschli s definition of state?
- viii. "We will look after a person who is without guardian "who says this?
- ix. Write down the two aspects of sovereignty?
- x. When and in which book John Austin presented his concept of sovereignty?
- xi. Wrote down any two organs of Government?
- xii. Name the two countries where the upper legislative Chambers have certain Judicial Powers?
- xiii. What is meant by Unicameral Legislature?
- xiv. What is meant by single (Solitary) executive?
- xv. Write down the name of any two counties where Federal Form of Government?

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

1. Explain the Utility of study of Political science?
2. Evaluate the Concept of Legitimacy in Political Science?
3. Discuss the Characteristics of Sovereignty?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- a) What is the purpose of the BIOS in a computer system?
- b) What are the primary functions of an operating system?
- c) Define cloud computing and list its advantages.
- d) Describe the difference between a LAN and a WAN.
- e) Define SQL and explain its role in database management.
- f) Differentiate between OCR and OMR scanners.

Q.2. Answer the following questions.

(3x10=30)

- a) Explain the concept of computer memory hierarchy and its significance in data storage.
- b) Differentiate between various types of computers including mainframes, desktops, laptops, and mobile devices, discussing their respective uses and advantages.
- c) Explore different e-commerce business models, including business-to-consumer (B2C), consumer-to-consumer (C2C), and business-to-government (B2G) transactions.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

1. What is importance of choice of words and tone in a report essay?
2. What are anaphoric and cataphoric essay techniques?
3. What are the features of an explanation essay?
4. What are the different types of visual use in presentations?
5. What are the differences between applications and letters?
6. Why should be the first and last paragraphs be short in a letter?

Q.2. Answer the following questions.

(3x10=30)

1. Write a letter to your friend and shared an incident that your life in significant way.
2. Write an essay on "The influence of technology on your life and hobbies".
3. Write a story on "when the hero and his friends found a dead body in their hostel basement". Use description and dialogues effectively.



Q.1. Answer the following short questions:

(15x2=30)

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

1. How many verses did the first revelation consist of?
2. How long did The Fitrah al-Wahi last?
3. What surahs are meant by Mu'awzteen?
4. What is the relation between the Qur'an and Laylat-ul-Qadr?
5. Write down the four expenses of Zakat?
6. Write the reason for the fame of Ghaar-e-Hira?
7. What do you mean by 'Uqaba-e-Ola'? And when did it happen?
8. When did the Battle of Uhud take place and how many Muslims and infidels were there in it?
9. Write the names of the daughters of the Holy Prophet.
10. Write types of hadith?
11. How many companions were involved in the conquest of Makkah?
12. What is meant by Islamic jurisprudence?
13. Write the literal and semantic meaning of ijtihad.
14. Write down the four characteristics of the political system of Islam.
15. Write a translation of a hadith on the sanctity of usury.

- 1- پہلی وحی کتنی آیات پر مشتمل تھی سورت کتاتم بتائیں؟
- 2- فترۃ الوحی کتنی مدت تک رہی؟
- 3- معونتین سے کون سی سورتیں مراد ہے؟
- 4- قرآن اور لیلة القدر کا تعلق بیان کریں؟
- 5- زکوٰۃ کے چار مصارف لکھیں؟
- 6- غار حرا کی وجہ شہرت لکھیں؟
- 7- بیعت عقبہ اولیٰ سے کیا مراد ہے؟ اور یہ کب ہوئی؟
- 8- غزوہ احد کب ہوا اور اس میں مسلمانوں اور کافروں کی تعداد کتنی تھی؟
- 9- حضور ﷺ کی بیٹیوں کے نام لکھیں۔
- 10- حدیث کی اقسام لکھیں؟
- 11- فتح مکہ میں کتنے صحابہ اکرام شامل تھے۔
- 12- اسلامی فقہ سے کیا مراد ہے؟
- 13- اجتہاد کے لغوی اور اصطلاحی معنی لکھیں۔
- 14- اسلام کے سیاسی نظام کی چار خصوصیات لکھیں۔
- 15- سود کی حرمت پر کسی ایک حدیث کا ترجمہ لکھیں۔

Answer the following short questions:

(3x10=30)

مندرجہ ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

Question 2: Write a note on the importance of hadith.

Question 3: Highlight the economic policy of Islam.

Question 4: Write a detailed note on Ijtihad?

- سوال نمبر 2: حدیث مبارکہ کی اہمیت پر نوٹ لکھیں۔
- سوال نمبر 3: اسلام کی معاشی پالیسی پر روشنی ڈالیں۔
- سوال نمبر 4: اجتہاد پر مفصل نوٹ لکھیں؟

ETHICS (For Non-Muslim Candidates)

(3x20=60)

نوٹ: مندرجہ ذیل سوالات کے جواب تحریر کیجئے۔

- سوال نمبر 1: مسیحیت کی اخلاقی تعلیمات پر تفصیل سے نوٹ لکھیں۔
- سوال نمبر 2: معاشرے کی اخلاقی اقدار کی ترقی کے لئے ریاست کے کردار پر جامع نوٹ لکھیں۔
- سوال نمبر 3: اسلام اور ہندومت کی اخلاقی تعلیمات کا موازنہ کریں۔



UNIVERSITY OF THE PUNJAB

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

Subject: Pakistan Studies

Paper: GE-165

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answer the following short questions.

(5X6=30)

سوال نمبر: مندرجہ ذیل سوالات کے مختصر جواب دیجئے۔

I. War of Independence 1857

I۔ جنگ آزادی 1857

II. Lahore Resolution

II۔ قرارداد لاہور

III. Early Problems of Pakistan

III۔ پاکستان کے ابتدائی مسائل

IV. Geography of Pakistan

IV۔ پاکستان کا جغرافیہ

V. Line of Control

V۔ لائن آف کنٹرول

Answer the following questions.

(2x15=30)

مندرجہ ذیل سوالات کے جواب دیجئے۔

Q. No. 2. What do you know about Sir Syed Ahmad Khan and his Aligarh Movement?

سوال نمبر 2۔ آپ سر سید احمد خان اور ان کی علی گڑھ تحریک کے بارے میں کیا جانتے ہیں؟

Q. No. 3. Write a note on 1973 constitution.

سوال نمبر 3۔ 1973 کے آئین پر نوٹ لکھیں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

1. What are modals?
2. What do you understand from skimming and scanning?
3. How can you understand the meaning of a word without using the dictionary?
4. What are cohesive devices?
5. What is a topic sentence?
6. What are the different parts of speech?

Q.2. Answer the following questions.

(3x10=30)

1. What is Reported Speech and how do we change it?
2. What are the different parts of speech? Define each and give examples.
3. What are the two kinds of clauses used in daily language? How are subordinate conjunctions used? Elaborate with examples.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Pakistan Studies

Course Code: GEN-1002

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(5X6=30)

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

I. Aligarh Movement

I۔ تحریک علی گڑھ

II. Nehru Report

II۔ نہرو رپورٹ

III. Indus Basin Treaty

III سندھ طاس معاہدہ

IV. Salient features of 1962 Constitution

IV۔ 1962 کے آئین کے نمایاں خصوصیات

V. Z. A. Bhutto

V۔ زیڈ اے بھٹو

Answer the following questions.

(2x15=30)

مندرجہ ذیل سوالات کے جواب دیجئے۔

Q. No. 2. Describe the historical significance of Khilafat Movement.

سوال نمبر 2۔ تحریک خلافت کی تاریخی اہمیت بیان کریں۔

Q. No. 3. Discuss Pakistan's geographical significance.

سوال نمبر 3۔ پاکستان کی جغرافیائی اہمیت پر بحث کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

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

۱۔ درج ذیل آیت کا ترجمہ کریں۔

لا يكلف الله نفسا الا وسعها لهما ما كسبت و عليهما ما اكتسبت

۲۔ درج ذیل آیت کا ترجمہ کریں۔

لقد كان لكم في رسول الله اسوة حسنة لمن كان يرجو الله واليوم الاخرة وذكر الله كثيرا

۳۔ درج ذیل آیت کا ترجمہ کریں۔

ما كان محمد ابا احد من رجالكم ولكن رسول الله و خاتم النبيين و كان الله بكل شيء عليما

۴۔ درج ذیل حدیث کا ترجمہ لکھیں۔

قال رسول الله ﷺ من يرد الله خيرا يفرقه في الدين

۵۔ درج ذیل آیت کا ترجمہ کریں۔

و عباد الرحمن الذين يمشون على الارض هونا و اذا خاطبهم الجاهلون قالوا سلما

۶۔ درج ذیل حدیث کا ترجمہ کریں۔

قال رسول الله ﷺ التاجر الصدوق الامين معي النبيين و الصديقين و الشهداء

(3x10=30)

مندرجہ ذیل سوالات کے تفصیلی جوابات تحریر کریں۔

سوال نمبر ۲۔ خطبہ حجۃ الوداع پر مفصل نوٹ لکھیں۔

سوال نمبر ۳۔ صلح حدیبیہ کے اسباب، واقعات اور نتائج لکھیں۔

سوال نمبر ۴۔ اسلامی تہذیب کے خدوخال واضح کریں۔

ETHICS (For Non-Muslim Candidates)

Note: Answer the following questions.

(3x20=60)

نوٹ: مندرجہ ذیل سوالات کے جواب تحریر کیجئے۔



UNIVERSITY OF THE PUNJAB

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

Paper: Gender Studies-I (MAS)

Course Code: GEND-111

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 do you know about sex disaggregated data? Give an example in Pakistani context?
- ii. How society plays an important role in setting the boundaries for both men and women in an society while choosing their careers?
- iii. What was the status of women in Hunting and gathering age?
- iv. Describe the difference between the terms Matriarchy and patriarchy?
- v. Write about the roles and responsibilities of women from early societies?
- vi. What is “Access” and “Control over Resources”, how it make marginalized a woman?

Q.2. Answer the following questions.

(3x10=30)

- i. What is gender mainstreaming, write the importance of Gender Mainstreaming in policies?
- ii. Why Gender studies is considered a multidisciplinary in nature? And write down its importance in today's world, give example in Pakistani context?
- iii. Write brief note on any TWO:
 - a) Gender Socialization
 - b) Industrialization
 - c) Gender Discrimination



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6x5=30)

- 1: Differentiate the sex and gender?
- 2: What is gender lens and why it is important?
- 3: How nursery rhymes unconsciously set roles of girls and boys in their childhood?
- 4: Explain women empowerment? Why it is essential for the development of a country?
- 5: What is the difference between Gender equality and equity?
- 6: What do you know about Gender Mainstreaming?

Q.2. Answer the following questions.

(3x10=30)

- 1: Discuss how various discriminatory customary practices against girls and women negatively portray Pakistan image in world?
- 2: What is the difference between Gender Studies and Women Studies, Give a detailed answer while elaborating the major differences?
- 3: Elaborate in detail any 1 topic given below:
 - Gender Analysis
 - Pakistan: A patriarchal society



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Give short answers of the following:

(6x5=30)

1. What are the four types of Feminism?
2. Explain the causes of Global feminism?
3. Write the summary of first wave feminism?
4. Why is postmodernism attractive to some feminists?
5. Why is it important to correct pay equity gaps?
6. What is wage inequality?

Q.2. Answer the following questions.

(3x10=30)

- 1: Write a brief note on struggle for rights around the Globe and part of different feminist movement?
- 2: Explain the concept and meaning of feminism and its historical roots?
- 3: Write down the starting of Suffrage campaign in Britain and its work for different rights for women?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Write down the Objectives of Physical Education?
- ii. Explain Physical Education as a Profession?
- iii. Highlight Challenges in Physical Education?
- iv. Explain Qualities of a Good Leader?
- V. Explain Recreation and Its Types?
- Vi. Highlight the Importance of Physical Education in Light of Islam?

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

- i. Define Physical Education? Also Explain the Scope of Physical Education?
- ii. Explain Relationship of Physical Education with Realism Philosophy?
- iii. Explain Sociological and Psychological Interpretation of Physical Education?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Games-I (Badminton, Basketball & Football)

Course Code: HPE-102

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1)What is the definition and types of Games and Sports?
- 2)Explain the different types of Badminton strokes?
- 3)Write any five rules in Football?
- 4)Write down the Scoring and service system of Badminton?
- 5)Draw sketch of 4 teams of Basketball game using single league system?
- 6)What is the Free kick, corner kick and penalty kick in Football?

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

- 1)Write down the Officiating, Coaching Points and Techniques of Badminton?
- 2)Explain the rules and fouls of basketball?
- 3)Draw the Football court and mention the players position and their roles?



UNIVERSITY OF THE PUNJAB

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

Paper: Athletics-I (Sprint Races)

Course Code: HPE-103

Roll No.

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(6X5=30)

1. what are the definition and types of sports?
2. what is the 100 m hurdle race?
3. Describe the changing zone in relay race and its importance in baton exchanges.
4. what is the stagger distance among 9 lanes in 400 m race.
5. write down the rules and fouls of 200 m race.
6. what is the difference between 400 meter and high jump.

Q.2. Answer the following questions.

(3x10=30)

1. What is the correct structure for organizing track events in an Athletics championship?
2. write down the Officiating, Coaching Points and Techniques of 4x100 meter relay race.
3. Draw the standard track of 400 m.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answers any FIVE of the following questions.

(5x2=10)

سوال نمبر 1: مندرجہ ذیل سوالات میں سے پانچ اجزاء کے مختصر جواب دیجئے۔

- Write a verse in Arabic or its translation about the Seal of prophecy.
- Write the name of four famous Angels.
- What is the meaning of *Muttaqeen* (متقین)?
- What is the meaning of *Eeman bil-Ghaib* (ایمان بالغیب)?
- Explain the two reasons for Muslim migration to Abyssinia.
- Who else sends *SALAT* upon the holy Prophet Muhammad (pbuh) except angels?
- Write down the name of four revealed Books.

الف۔ ختم نبوت کے بارے میں ایک آیت یا اس کا ترجمہ تحریر کیجئے۔

ب۔ چار مشہور فرشتوں کے نام تحریر کریں۔

و۔ ہجرت حبشہ کی دو وجوہات بیان کیجئے۔

ج۔ "متقین" سے کیا مراد ہے؟

و۔ ایمان بالغیب سے کیا مراد ہے؟

ز۔ چار آسمانی کتب کا نام تحریر کیجئے۔

Q.2. Translate and explain any TWO of the following parts.

(10+10=20)

سوال نمبر 2: مندرجہ ذیل میں سے دو اجزاء کا ترجمہ و تشریح کیجئے۔ (ہر ترجمہ کے 6 اور تشریح کے 4 نمبر ہیں)

(الف) وَعِبَادُ الرَّحْمَنِ الَّذِينَ يَمْشُونَ عَلَى الْأَرْضِ بَوْنًا وَإِذَا خَاطَبَهُمُ الْجَاهِلُونَ قَالُوا سَلَامًا وَالَّذِينَ يَبِيتُونَ لِرَبِّهِمْ سُجَّدًا وَقِيَامًا.

(ب) ذَلِكَ الْكِتَابُ لَا رَيْبَ فِيهِ هُدًى لِّلْمُتَّقِينَ الَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ وَيُقِيمُونَ الصَّلَاةَ وَمِمَّا رَزَقْنَاهُمْ يُنْفِقُونَ وَالَّذِينَ يُؤْمِنُونَ بِمَا أُنْزِلَ إِلَيْكَ وَمَا أُنْزِلَ مِنْ قَبْلِكَ وَبِالْآخِرَةِ هُمْ يُوقِنُونَ.

(ج) يَا أَيُّهَا الَّذِينَ آمَنُوا لِمَ تَقُولُونَ مَا لَا تَفْعَلُونَ كَبُرَ مَقْتًا عِنْدَ اللَّهِ أَنْ تَقُولُوا مَا لَا تَفْعَلُونَ إِنَّ اللَّهَ يُحِبُّ الَّذِينَ يُقَاتِلُونَ فِي سَبِيلِهِ صَفًا كَانَتْهُمْ بَلَيَاتٌ مَّرصُوصًا.

(د) أَلَمْ يَأْتِ الْوَيْلَ الْأَوَّلَ بِالْمُؤْمِنِينَ مِنْ أَنْفُسِهِمْ وَأَزْوَاجِهِ أُمَّهَاتِهِمْ وَأُولُوا الْأَرْحَامِ بَعْضُهُمْ أَوْلَى بِبَعْضٍ فِي كِتَابِ اللَّهِ مِنَ الْمُؤْمِنِينَ وَالْمُهَاجِرِينَ إِلَّا أَنْ تَفْعَلُوا إِلَى أُولِيكُمْ مَعْرُوفًا. كَانَ ذَلِكَ فِي الْكِتَابِ مَسْطُورًا.

Q.3. Translate and explain any ONE of the following hadith.

(10)

سوال نمبر 3: مندرجہ ذیل میں سے کسی ایک حدیث کا ترجمہ و تشریح کیجئے۔ (ہر ترجمہ کے 6 اور تشریح کے 4 نمبر ہیں)

(الف) عن عثمان بن عفان رضى الله عنه عن النبي ﷺ قال: خيركم من تعلم القرآن وعلمه -

(ب) مَنْ رَأَى مِنْكُمْ مُنْكَرًا فَلْيُغَيِّرْهُ بِيَدِهِ فَإِنْ لَمْ يَسْتَطِعْ فَبِلِسَانِهِ فَإِنْ لَمْ يَسْتَطِعْ فَبِقَلْبِهِ وَذَلِكَ أَضْعَفُ الْإِيمَانِ.

Q.4. Write note on any ONE of the following topic.

(10)

- Battle of Badr
- Hudaibia Pact.

سوال نمبر 4: درج ذیل میں سے کسی ایک پر نوٹ لکھئے۔

(الف) غزوہ بدر (ب) صلح حدیبیہ

Q.5. Write note on any ONE of the following topic.

(10)

- a) Write the salient features of Islamic Scientific Movement
- b) A comparison of Salient features of Islamic and Western Civilization

سوال نمبر 5: درج ذیل میں سے کسی ایک پر نوٹ لکھئے۔

(الف) اسلام کی علمی تحریک کے امتیازات و خصائص (ب) اسلامی و مغربی تہذیب کے خصائص کا موازنہ

ETHICS (For Non-Muslim Candidates)

Note: Answer the following questions.

(3x20=60)

نوٹ: مندرجہ ذیل سوالات کے جواب تحریر کیجئے۔

سوال نمبر 1: خدمت خلق کے بارے میں مختلف مذاہب کے نظریات بیان کیجئے۔

Describe viewpoint of different religions regarding human welfare.

سوال نمبر 2: ہندومت کا تعارف کروائیں۔

How many facets of ethical teachings have on human life.

سوال نمبر 3: اسلام اور ہندومت کی اخلاقی اقدار کا موازنہ کیجئے۔

Give a comparative analysis of moral values of Islam and Hinduism.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

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

- i. معارف القرآن کے مؤلف کا نام اور تفسیر کی دو خصوصیات تحریر کیجئے۔
- ii. تفسیر تدبر قرآن کی چار اہم خصوصیات تحریر کیجئے۔
- iii. "وَاحِلَّ اللَّهُ الْبَيْعَ وَحَرَّمَ الرِّبَا" کا مفہوم واضح کیجئے
- iv. "ایلاء" سے کیا مراد ہے؟
- v. "يُولِجُ اللَّيْلُ فِي النَّهَارِ وَيُؤَلِّجُ النَّهَارُ فِي اللَّيْلِ" کا ترجمہ تحریر کیجئے۔
- vi. "وَجَعَلْنَكُمْ سُعُوبًا وَقَبَائِلَ لِّتَعَارَفُوا" کا ترجمہ تحریر کیجئے۔

(3x10=30)

درج ذیل سوالات کے تفصیلی جواب تحریر کیجئے۔

سوال نمبر ۲۔ درج ذیل آیت کریمہ کا ترجمہ اور مدلل تفسیر بیان کیجئے نیز خط کشیدہ کلمات کے معانی الگ سے تحریر کیجئے۔
يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَسْخَرُوا قَوْمًا مِّن قَوْمٍ عَسَىٰ أَن يَكُونُوا خَيْرًا مِّنْهُمْ وَلَا نِسَاءً مِّن نِّسَاءٍ عَسَىٰ أَن يَكُنَّ خَيْرًا مِّنْهُنَّ وَلَا تَلْمِزُوا أَنْفُسَكُمْ وَلَا تَنَابَزُوا بِالْأَلْقَابِ بِئْسَ الْأَسْمُ الْفُسُوقُ بَعْدَ الْإِيمَانِ وَمَن لَّمْ يَتُبْ فَأُولَٰئِكَ هُمُ الظَّالِمُونَ۔

سوال نمبر ۳۔ قرآن و سنت کی روشنی میں حق مہر کی شرعی حیثیت پر جامع نوٹ تحریر کیجئے۔

سوال نمبر ۴۔ سورۃ بقرہ کی روشنی میں روزہ کی اہمیت و فضیلت پر روشنی ڈالئے۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

(6x5=30)

سوال نمبر 1: درج ذیل سوالات کے مختصر جواب دیجئے۔

- 1۔ صحیح مسلم کا تعارف پیش کریں۔
- 2۔ "کتاب الایمان" کا خلاصہ بیان کریں۔
- 3۔ حدیث کی حجیت پر چھ دلائل لکھئے۔
- 4۔ "کتاب الصیام" کی روشنی میں روزہ کے احکام لکھئے۔
- 5۔ جامع الترمذی کا تعارف پیش کریں۔
- 6۔ حدیث جبریل کا خلاصہ بیان کریں۔

سوال نمبر 2: مندرجہ ذیل سوالات کے جواب دیجئے۔

(10)

1۔ حدیث و سنت کا معنی و مفہوم بیان کریں اور حدیث کی اقسام لکھئے۔

(6+4=10)

2۔ درج ذیل حدیث کا ترجمہ و تشریح کریں۔

عَنْ أَبِي هُرَيْرَةَ رَضِيَ اللَّهُ عَنْهُ، عَنِ النَّبِيِّ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ قَالَ «الْإِيمَانُ بِضْعٌ وَسِتُّونَ شُعْبَةً، وَالْحَيَاءُ شُعْبَةٌ مِنَ الْإِيمَانِ»

(6+4=10)

3۔ درج ذیل حدیث کا ترجمہ و تشریح کریں۔

جَابِرُ بْنُ عَبْدِ اللَّهِ، قَالَ: قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ: "أُعْطِيتُ خَمْسًا لَمْ يُعْطَهُنَّ أَحَدٌ مِنَ الْأَنْبِيَاءِ قَبْلِي: نُصِرْتُ بِالرُّعْبِ مَسِيرَةَ شَهْرٍ، وَجُعِلَتْ لِي الْأَرْضُ مَسْجِدًا وَطَهُورًا، وَإِنَّمَا رَجُلٌ مِنْ أُمَّتِي أَدْرَكْتُهُ الصَّلَاةَ فَلْيُصَلِّ، وَأُحِلَّتْ لِي الْغَنَائِمُ، وَكَانَ النَّبِيُّ يُبْعَثُ إِلَى قَوْمِهِ خَاصَّةً، وَبُعِثْتُ إِلَى النَّاسِ كَافَّةً، وَأُعْطِيتُ الشَّفَاعَةَ"

- Roll No.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

سوال نمبر 1: مندرجہ ذیل سوالات کے مختصر جواب دیں۔ (6x5=30)

- 1۔ قرآن اور حدیث سے عقیدہ توحید کی وضاحت کریں؟
- 2۔ اسلام کا تصور طہارت کیا ہے؟ نماز کے لحاظ سے اس کی وضاحت کریں؟
- 3۔ عقیدہ آخرت کے انسانی زندگی پر اثرات بیان کریں؟
- 4۔ نماز قصر سے کیا مراد ہے؟
- 5۔ غیر مسلموں کے اسلام میں کیا حقوق ہیں؟
- 6۔ تکفین اور تدفین کی تعریف کریں اور طریقہ لکھیں؟

سوال نمبر 2: مندرجہ ذیل سوالات کے جواب تفصیل سے بیان کریں۔ (3x10=30)

- 1۔ اسلام کے قانون طلاق کی تفصیلات بیان کریں؟
- 2۔ اسلام میں تقویٰ کا تصور کیا ہے؟ اس کے انسانی زندگی پر کیا اثرات مرتب ہوتے ہیں؟
- 3۔ مسلمانوں کی سائنسی کی خدمات پر نوٹ لکھیں؟



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. What are the main components of the CPU?
2. Differentiate between SRAM and DRAM.
3. Define binary code and explain its significance in computing.
4. What is the difference between open-source and proprietary software?
5. What is the purpose/use of HTTPS?
6. What is the role of an OS in managing hardware resources?
7. What is a Bug? How does it effect the working of a computer program?
8. What are the advantages of cloud storage?
9. Differentiate between analog and digital signals in data transmission.
10. What is the difference between the World Wide Web (WWW) and the Internet?
11. Define phishing and how can we avoid falling victim to phishing attacks?
12. What is desktop publishing, and how does it differ from word processing?
13. What are the benefits of using cell formatting in a spreadsheet?
14. How do you manage system updates in Windows? Why is it important?
15. What are the common threats to cybersecurity?

Q.2. Answer the following questions.

i.

- a) Discuss the impact of information technology on society. [5]
- b) Discuss the importance of cybersecurity in the digital age, and how can organizations protect themselves from cyber threats? [5]

ii.

- a) What are the advantages and disadvantages of using a computer network? [5]
- b) Explain the concept of data mirroring and data striping with RAID. [5]

iii.

- a) Write a program that inputs a number from the user and prints its multiplication table in reverse order. [5]
- b) Create an HTML page that displays: [5]
 1. A Header image.
 2. A paragraph of text with an image.
 3. A footer image.

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

1. Show that $\lim_{x \rightarrow \pm\infty} \left(1 + \frac{1}{x}\right)^x = e$ as x approaches infinity while taking on positive or negative real values.
2. Let $f(x) = \begin{cases} x \sin\left(\frac{1}{x}\right) & \text{if } x \neq 0 \\ 0 & \text{if } x = 0 \end{cases}$. Examine the continuity of f at $x = 0$.
3. Show that if f is differentiable at a point $a \in \text{Dom } f$, then f is continuous at a .
4. Compute the integral $\int \frac{\cos^6 2\theta}{\sin^8 2\theta} d\theta$.
5. Evaluate the integral $\int_{-2}^2 |x| dx$.
6. Show that if u, v are two functions of x , then

$$\int uv \, dx = u \int v \, dx - \int \left[\frac{du}{dx} \left(\int v \, dx \right) \right] dx.$$

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

1. If $f(x) = \ln(1 + \sqrt{1-x})$, prove that $4x(1-x)f''(x) + 2(2-3x)f'(x) + 1 = 0$, where prime indicates the derivative with respect to x .
2. Evaluate $I = \int \sqrt{\frac{1-\cos\theta}{\cos\alpha-\cos\theta}} d\theta$, α is a constant and $0 < \alpha < \theta < \pi$.
3. Let $I_n = \int_0^\infty x^n e^{-x} dx$, where n is a positive integer. Prove that $I_n = nI_{n-1}$. Hence show that $I_n = n!$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- (a) Evaluate the integral $\int 3x\sqrt{x^2+1}dx$.
- (b) Position function of the particle is, $s = 1 + 5t - 2t^2$ (where s is in meters and t is in seconds). Find average velocity over the interval $[2, 3]$ and velocity at $t = 2$.
- (c) For what value of ' a ', function $f(x) = \begin{cases} x^2 - 1 & \text{if } x < 3 \\ 2ax & \text{if } x \geq 3 \end{cases}$ is continuous at $x = 3$.
- (d) Express $3 < x < 7$ in modulus notation.
- (e) Evaluate $\int_2^{\infty} \frac{1}{x(\ln x)^3} dx$.
- (f) Find $\lim_{x \rightarrow 3} \frac{3-x}{|x-3|}$.

Solve the following:

(5x6=30)

- Q. 2. If $y = (\sin^{-1} x)^2$ then prove that $(1-x^2)y^{(n+2)} - (2n+1)xy^{(n+1)} - n^2y^{(n)} = 0$.
- Q. 3. Use Mean Value Theorem to show that $|\tan x + \tan y| \geq |x + y|$ for all real numbers x and y in the interval $(-\frac{\pi}{2}, \frac{\pi}{2})$.
- Q. 4. Solve the inequality $x^2 - x - 2 \geq 0$.
- Q. 5. Find the asymptotes of the graph $y = \frac{x^2-3}{2x-4}$.
- Q. 6. Evaluate $\int \frac{1}{\tan x - \sin x} dx$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- (i) Evaluate the determinant $\begin{vmatrix} 5 & -2 & -4 \\ 3 & -1 & -3 \\ -2 & 1 & 2 \end{vmatrix}$.
- (ii) Solve $x^2 - x = 2$.
- (iii) Find A^{-1} if possible for $A = \begin{bmatrix} 3 & -6 \\ 2 & -5 \end{bmatrix}$.
- (iv) Evaluate $\lim_{t \rightarrow \infty} \left(1 - \frac{3}{t}\right)^t$.
- (v) Find third derivative of $y = 4x^3 - \cos x$ with respect to x .
- (vi) Write the first five terms of the sequence whose n th term is
- $$a_n = \frac{n}{2n+1}.$$

Solve the following:

(3x10=30)

Q. 2 Solve the system of linear equations by any appropriate method

$$\begin{aligned} 2x - y + z &= 8 \\ x + 2y + 2z &= 6 \\ x - 2y - z &= 1. \end{aligned}$$

Q. 3 Show that $y = \frac{\ln x}{x}$ has maximum value at $x = e$.

Q. 4 Evaluate $\frac{\partial^2 g}{\partial x \partial y}$ and $\frac{\partial^2 g}{\partial y \partial x}$ for $g(x, y) = x^y + y^x$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- (i) If $\vec{r} = \vec{a}e^{3t}$, where $\vec{a}, \vec{b}$ are constant vectors, then show that $\frac{d^2\vec{r}}{dt^2} - 9\vec{r} = 0$.
- (ii) If $\vec{r}$ is the position vector of a point, then show that $\nabla r^n = nr^{n-2}\vec{r}$.
- (iii) A force of 20 N is acting on a block makes angle of 30° with x-axis. Find its resolved parts along coordinate axes (x-axis and y-axis).
- (iv) Prove that the magnitude of the resultant of two concurrent forces $\vec{P}$ and $\vec{Q}$ acting at an angle α is $\sqrt{P^2 + Q^2 + 2PQ\cos\alpha}$.
- (v) Find the least force to drag a particle of mass m on a rough horizontal plane of coefficient of friction μ .
- (vi) State and prove principle of virtual work for a single particle.

Q.2. Solve the following:

- (a) If $\vec{A} = x^2y\hat{i} - 2xz\hat{j} + 2yz\hat{k}$, find, find curl curl $\vec{A}$.

(7 marks)

- (b) Three forces P, Q, R act along the sides BC, CA, AB respectively of a triangle ABC . Prove that if $P\cos A + Q\cos B + R\cos C = 0$, then the line of action of the resultant passes through the circumcentre of the triangle.

(7 marks)

- (c) A light ladder is supported on a rough floor and leans against a smooth wall. How far up the ladder can a man climb without slipping taking place?

(8 marks)

- (d) Four equal uniform rods are smoothly jointed to form a rhombus $ABCD$, which is placed in a vertical plane with AC vertical and A resting on a horizontal plane. The rhombus is kept in shape, with the measure of angle BAC equal to θ , by a light string joining B and D . Find the tension in the string.

(8 marks)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

1. Solve for x , $|6x - 7| = |3 + 2x|$.
2. Solve the equation by using quadratic formula $9x^2 - x - 8 = 0$.
3. If α , and β are the roots of $x^2 - px - p - c = 0$, prove that $(1 + \alpha)(1 + \beta) = 1 - c$.
4. Find the 9th term of the harmonic sequence: $\frac{1}{3}, \frac{1}{5}, \frac{1}{8}, \dots$
5. Find n , when $C_{10}^n = \frac{12 \times 11}{2!}$
6. Simplify $(a + ib)^3$.

Q.2. Solve the following:

(3x10=30)

1. Determine the middle term of the following: $\left(2x - \frac{1}{2x}\right)^{2m+1}$.
2. Use Mathematical induction to prove that:
$$1^2 - 2^2 + 3^2 - 4^2 + \dots + (-1)^{n-1} \times n^2 = \frac{(-1)^{n-1} \times n(n+1)}{2}$$
3. If $\alpha + \beta + \gamma = 180^\circ$, show that:
$$\cot \alpha \cot \beta + \cot \beta \cot \gamma + \cot \gamma \cot \alpha = 1.$$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- (i) Solve $\frac{1}{x+2} + \frac{2}{x-2} = \frac{1}{x^2-4}; x \neq \pm 2$.
- (ii) Solve the matrix equation to find the matrix A :
$$\begin{bmatrix} 4 & 3 \\ 2 & 2 \end{bmatrix} A - \begin{bmatrix} 2 & 3 \\ -1 & -2 \end{bmatrix} = \begin{bmatrix} -1 & -4 \\ 3 & 6 \end{bmatrix}$$
- (iii) How many words can be formed from the letters of the word **MATHEMATICS**.
- (iv) A shop offers successive discounts of 10% and 5% on a product marked at \$1,500. What is the final selling price.
- (v) Obtain the sum of all integers in the first 1000 integers which are neither divisible by 5 nor by 2.
- (vi) Find the four numbers in arithmetic progression (A.P.) whose sum is 32 and the sum of whose squares is 135. Find the numbers.

Q.2. Solve the following.

(3x10=30)

- (a) Solve the equation: $x^4 - 3x^3 + 4x^2 - 3x + 1 = 0$.
- (b) If $A = \begin{bmatrix} 2 & -1 & 3 & 0 \\ 1 & 0 & 4 & -2 \\ -3 & 5 & 2 & -1 \end{bmatrix}$ then find AA^t and A^tA .
- (c) Show that $\begin{vmatrix} 2a & 2b & 2c \\ a+b & 2b & b+c \\ a+c & b+c & 2c \end{vmatrix} = 0$



UNIVERSITY OF THE PUNJAB

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

Paper: Fundamentals Application of Algebra (Compulsory 3)

Course Code: MATH-115

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

(i)	Simplify and separate into real and imaginary parts $\frac{3-4i}{5-5i}$
(ii)	Prove that $\begin{vmatrix} a-b & b-c & c-a \\ b-c & c-a & a-b \\ c-a & a-b & b-c \end{vmatrix} = 0$
(iii)	Solve $\frac{1}{x+5} + \frac{2}{x-7} = 1$, $x \neq -5, 7$.
(iv)	Show that the roots of equation $x^2 + (mx+c)^2 = a^2$ are equal if $c^2 = a^2(1+m^2)$.
(v)	If α, β are the roots of $ax^2 + bx + c = 0$, $a \neq 0$, Find the value of $\alpha^2 + \beta^2$.
(vi)	Find the term involving x^5 in the expansion of $\left(\frac{3}{2}x - \frac{1}{3x}\right)^7$.

Q.2. Solve the following:

(5x6=30)

(a)	Solve the system of linear equations $x - 2y + z = -4$, $2x - 3y + 2z = -6$, $2x + 2y + z = 5$
(b)	Prove that $\begin{vmatrix} \frac{a^2+b^2}{c} & c & c \\ a & \frac{b^2+c^2}{a} & a \\ b & b & \frac{c^2+a^2}{b} \end{vmatrix} = 4abc$
(c)	Solve $\sqrt{x+7} + \sqrt{x+2} = \sqrt{6x+13}$
(d)	Prove that $\begin{vmatrix} 0 & c & b \\ c & 0 & a \\ b & a & 0 \end{vmatrix}^2 = \begin{vmatrix} b^2+c^2 & ab & ac \\ ba & a^2+c^2 & bc \\ ca & cb & b^2+a^2 \end{vmatrix}$
(e)	Prove the identity $\cos \theta + \tan \theta \sin \theta = \sec \theta$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

1. Explain why $\lim_{x \rightarrow 0} \frac{|x|}{x}$ does not exist.
2. For the functions $f(x) = 2x + 3$, find the area $A(x)$ between the graph of f and the interval $[a, x] = [-1, x]$, and find the derivative $A'(x)$ of this area function.
3. Evaluate the integral $\int \sin^n(a + bx) \cos(a + bx) dx$, assuming that n is a positive integer and $b \neq 0$.
4. Evaluate the integral by any method $\int_0^{\sqrt{\pi}} 5x \cos(x^2) dx$.
5. If $y = a^x$, then $\frac{dy}{dx} = a^x \ln a$.
6. Let $f(x) = \begin{cases} x^2 & \text{if } x \leq 1 \\ x & \text{if } x > 1 \end{cases}$. Does the mean value theorem hold for f on $[\frac{1}{2}, 2]$?

Q.2. Solve the following:

(3x10=30)

1. Prove that $f(x) = |x|$ is not differentiable at $x = 0$ by showing that the limit does not exist at $x = 0$.
2. Calculate the integral $I = \int \frac{x dx}{(x^2 - 2x + 2)\sqrt{x - 1}}$.
3. Let $f(x) = \begin{cases} 3 & \text{if } x \leq -2 \\ -\frac{1}{2}x^2 & \text{if } -2 < x < 2 \\ 3 & \text{if } x \geq 2 \end{cases}$, find $\lim_{x \rightarrow \pm 2^+} f(x)$ and $\lim_{x \rightarrow \pm 2^-} f(x)$.



UNIVERSITY OF THE PUNJAB

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

Paper: Concepts of Education

Course Code: MCED-203

Roll No.

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- 1: Discuss the strengths and weaknesses of the integrated curriculum.**
- 2: Differentiate Core and Peripheral curriculum.**
- 3: Differentiate Aims, Goals, and Objectives with examples.**
- 4: Discuss the importance of educational measurement.**
- 5: Discuss the validity and reliability of the test.**
- 6: What are the principles of Educational Administration?**

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

- 1: Discuss the University curriculum process in Pakistan?**
- 2: Discuss the types of Teacher Education?**
- 3: Discuss National Professional Standards for Teachers in Pakistan.**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following questions.

(10x3=30)

1. From suitable properties of union and intersection deduce the following

$$A \cup (A \cap B) = A \cap (A \cup B)$$

2. Let $f(x) = \sqrt{x+4}$. Find domain and range of f .

3. Given $f(x) = x^3 - ax^2 + bx + 1$. If $f(2) = -3$ and $f(1) = 0$, find the values of a and b .

4. Evaluate $\lim_{x \rightarrow 0} \frac{1 - \cos x}{\sin^2 x}$.

5. Draw the graph of $f(x) = \sqrt{x^2 - 4}$.

6. If $A = \begin{bmatrix} 1 & -1 \\ a & b \end{bmatrix}$ and $A^2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, find the value of a and b .

7. Show that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$.

8. Find the inverse of $B = \begin{bmatrix} 1 & 2 & -1 \\ 0 & -1 & 3 \\ 1 & 0 & 2 \end{bmatrix}$.

9. Show that $\tan\left(\frac{3\pi}{2} + \theta\right) = -\cot \theta$.

10. Find the center and radius of the circle having equation,

$$x^2 + y^2 + 4x - 6y - 3 = 0.$$

Q.2. Solve the following questions.

(5x6=30)

1. Prove that $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = e$.

2. Find the centre, foci, eccentricity, vertices and directrices of the ellipse whose equation is $x^2 + 4y^2 = 16$.

3. Solve the system of linear equations by Cramer's rule.

$$3x_1 + x_2 - x_3 = -4$$

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

$$-x_1 + 2x_2 - x_3 = 1.$$

4. Show that $\frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta} + \frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta} = \frac{2}{1 - 2 \sin^2 \theta}$.

5. Find the values of m and n , so that the given function is continuous:

$$f(x) = \begin{cases} mx, & \text{if } x < 3 \\ n, & \text{if } x = 3 \\ -2x + 9, & \text{if } x > 3. \end{cases}$$



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

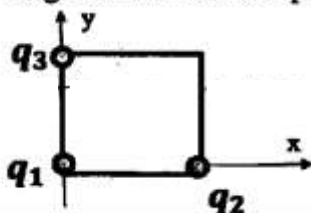
1. Is charge a continuous quantity?
2. What is field? Define and draw electric field due to a point charge.
3. Describe the result of placing a dipole in an electric field.
4. According to Gauss's law what is the electric flux through a hollow spherical shell of charge q .
5. How electric potential and electric field are related?
6. Define electric current.
7. Differentiate between ohmic and non ohmic materials.
8. State Hall effect.
9. If two current carrying conductors have current in the same direction, will they attract each other?
10. Does Lenz's law obey law of conservation of energy?
11. Write the conditions for reflection.
12. By what means we can convert light single source to two sources.
13. What is maxima?
14. Is light a wave or particle?
15. Can refractive index be negative?

Solve the following questions.

Question no 2

(6+4)

- I. Derive the expression for the electric force due to a ring of positive charge q , placed along the z -axis at distance z from the test charge. What happens if the ring had negative charge on it? Also explain the limiting cases ($z = 0$ and $z \gg R$).
- II. In figure below, three charged particles lie on the three corners of a square. q_1 is fixed at the origin. Find the total electrostatic force on q_1 . Where length of each side of square is $a = 40\text{cm}$ and $q_1 = q_2 = q_3 = +3\mu\text{C}$



Question no 3

(6+4)

- I. What are the natural phenomena showing diffraction. Give the details of double slit diffraction.
- II. A ray of light traveling through glass with an index of refraction $n_1 = 1.5$ strikes the interface of the glass-water. Let the index of refraction of water be $n_2 = 1.33$. At what angle, the ray does not enter the water?

Question no 4

(6+4)

- I. Determine the magnetic force on moving charge when placed in a uniform magnetic field, explain in detail how to find its direction for negative and positive charge.
- II. Two conductors are made of the same material and have the same length. Conductor A is a solid wire of diameter D . Conductor B is a hollow tube of outside diameter $3D$ and inside diameter D . Find the resistance ratio, R_A/R_B measured between their ends.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- Consider a Little League team that has 15 players on its roster. How many ways are there to select 9 players for the starting lineup?
- It is known that 30% of a certain company's washing machines require service while under warranty, whereas only 10% of its dryers need such service. If someone purchases both a washer and a dryer made by this company, what is the probability that both machines need warranty service?
- The random variable X , representing the number of cherries in a cherry puff, has the following probability distribution:

X	4	5	6	7
$P(X = x)$	0.2	0.4	0.3	0.1

Find the mean $\mu_{\bar{X}}$, and the variance $\sigma^2_{\bar{X}}$ of the mean $\bar{X}$ for random samples of 36 cherry puffs?

- Find the probability of getting two heads when five coins are tossed.
- The joint p.d.f of (X, Y) is given by $f(X, Y) = \begin{cases} \frac{1}{4}(1 + xy), & |x| < 1, |y| < 1 \\ 0, & \text{otherwise} \end{cases}$. Show that X and Y are not independent?
- The sum of 10 values is 100 and the sum of their squares is 1090. Find out the coefficient of variation?

Solve the following.

(3x10=30)

Q.2.

A maker of a certain brand of low-fat cereal bars claims that their average saturated fat content is 0.5 gram. In a random sample of 8 cereal bars of this brand the saturated fat. Content was 0.6, 0.7, 0.7, 0.3, 0.4, 0.5, 0.4, and 0.2. Would you agree with the claim? Assume a normal distribution.

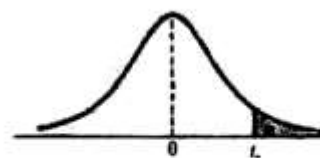
Q.3.

Only 1 in 1000 adults is afflicted with a rare disease for which a diagnostic test has been developed. The test is such that when an individual actually has the disease, a positive result will occur 99% of the time, whereas an individual without the disease will show a positive test result only 2% of the time. If a randomly selected individual is tested and the result is positive, what is the probability that the individual has the disease?

Q.4.

The accompanying data on x = current density (mA/cm^2) and y = rate of deposition ($\mu\text{m}/\text{min}$) appeared in the article "Plating of 60/40 Tin/Lead Solder for Head Termination Metallurgy" (Plating and Surface Finishing, Jan. 1997: 38–40). Do you agree with the claim by the article's author that "a linear relationship was obtained from the tin-lead rate of deposition as a function of current density"? Explain your reasoning.

x	20	40	60	80
y	0.24	1.20	1.71	2.22

Table A.4 Critical Values of the *t*-Distribution

<i>v</i>	α						
	0.40	0.30	0.20	0.15	0.10	0.05	0.025
1	0.325	0.727	1.376	1.963	3.078	6.314	12.706
2	0.289	0.617	1.061	1.386	1.886	2.920	4.303
3	0.277	0.584	0.978	1.250	1.638	2.353	3.182
4	0.271	0.569	0.941	1.190	1.533	2.132	2.776
5	0.267	0.559	0.920	1.156	1.476	2.015	2.571
6	0.265	0.553	0.906	1.134	1.440	1.943	2.447
7	0.263	0.549	0.896	1.119	1.415	1.895	2.365
8	0.262	0.546	0.889	1.108	1.397	1.860	2.306
9	0.261	0.543	0.883	1.100	1.383	1.833	2.262
10	0.260	0.542	0.879	1.093	1.372	1.812	2.228
11	0.260	0.540	0.876	1.088	1.363	1.796	2.201
12	0.259	0.539	0.873	1.083	1.356	1.782	2.179
13	0.259	0.538	0.870	1.079	1.350	1.771	2.160
14	0.258	0.537	0.868	1.076	1.345	1.761	2.145
15	0.258	0.536	0.866	1.074	1.341	1.753	2.131
16	0.258	0.535	0.865	1.071	1.337	1.746	2.120
17	0.257	0.534	0.863	1.069	1.333	1.740	2.110
18	0.257	0.534	0.862	1.067	1.330	1.734	2.101
19	0.257	0.533	0.861	1.066	1.328	1.729	2.093
20	0.257	0.533	0.860	1.064	1.325	1.725	2.086
21	0.257	0.532	0.859	1.063	1.323	1.721	2.080
22	0.256	0.532	0.858	1.061	1.321	1.717	2.074
23	0.256	0.532	0.858	1.060	1.319	1.714	2.069
24	0.256	0.531	0.857	1.059	1.318	1.711	2.064
25	0.256	0.531	0.856	1.058	1.316	1.708	2.060
26	0.256	0.531	0.856	1.058	1.315	1.706	2.056
27	0.256	0.531	0.855	1.057	1.314	1.703	2.052
28	0.256	0.530	0.855	1.056	1.313	1.701	2.048
29	0.256	0.530	0.854	1.055	1.311	1.699	2.045
30	0.256	0.530	0.854	1.055	1.310	1.697	2.042
40	0.255	0.529	0.851	1.050	1.303	1.684	2.021
60	0.254	0.527	0.848	1.045	1.296	1.671	2.000
120	0.254	0.526	0.845	1.041	1.289	1.658	1.980
∞	0.253	0.524	0.842	1.036	1.282	1.645	1.960

Table A.4 (continued) Critical Values of the t-Distribution

ν	α						
	0.02	0.015	0.01	0.0075	0.005	0.0025	0.0005
1	15.894	21.205	31.821	42.433	63.656	127.321	636.578
2	4.849	5.643	6.965	8.073	9.925	14.089	31.600
3	3.482	3.896	4.541	5.047	5.841	7.453	12.924
4	2.999	3.298	3.747	4.088	4.604	5.598	8.610
5	2.757	3.003	3.365	3.634	4.032	4.773	6.869
6	2.612	2.829	3.143	3.372	3.707	4.317	5.959
7	2.517	2.715	2.998	3.203	3.499	4.029	5.408
8	2.449	2.634	2.896	3.085	3.355	3.833	5.041
9	2.398	2.574	2.821	2.998	3.250	3.690	4.781
10	2.359	2.527	2.764	2.932	3.169	3.581	4.587
11	2.328	2.491	2.718	2.879	3.106	3.497	4.437
12	2.303	2.461	2.681	2.836	3.055	3.428	4.318
13	2.282	2.436	2.650	2.801	3.012	3.372	4.221
14	2.264	2.415	2.624	2.771	2.977	3.326	4.140
15	2.249	2.397	2.602	2.746	2.947	3.286	4.073
16	2.235	2.382	2.583	2.724	2.921	3.252	4.015
17	2.224	2.368	2.567	2.706	2.898	3.222	3.965
18	2.214	2.356	2.552	2.689	2.878	3.197	3.922
19	2.205	2.346	2.539	2.674	2.861	3.174	3.883
20	2.197	2.336	2.528	2.661	2.845	3.153	3.850
21	2.189	2.328	2.518	2.649	2.831	3.135	3.819
22	2.183	2.320	2.508	2.639	2.819	3.119	3.792
23	2.177	2.313	2.500	2.629	2.807	3.104	3.768
24	2.172	2.307	2.492	2.620	2.797	3.091	3.745
25	2.167	2.301	2.485	2.612	2.787	3.078	3.725
26	2.162	2.296	2.479	2.605	2.779	3.067	3.707
27	2.158	2.291	2.473	2.598	2.771	3.057	3.689
28	2.154	2.286	2.467	2.592	2.763	3.047	3.674
29	2.150	2.282	2.462	2.586	2.756	3.038	3.660
30	2.147	2.278	2.457	2.581	2.750	3.030	3.646
40	2.123	2.250	2.423	2.542	2.704	2.971	3.551
60	2.099	2.223	2.390	2.504	2.660	2.915	3.460
120	2.076	2.196	2.358	2.468	2.617	2.860	3.373
∞	2.054	2.170	2.326	2.432	2.576	2.807	3.290

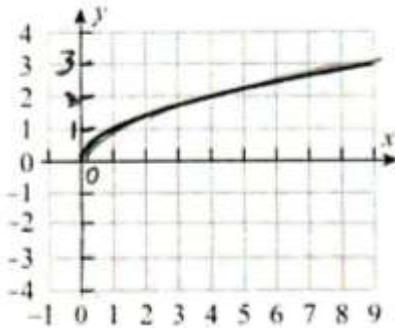


THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

- I. Find the tangent slope to the curve in the following graph at origin point? Also explain that is it average rate of change or instantaneous rate?



- II. Find all values of x , if any, at which f is not continuous?

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

- III. Find the equation of tangent line to $f(x) = (8 - x^2)(1 + x + x^2)$ at $x = -2$?

- IV. Evaluate $\lim_{x \rightarrow 5} \frac{x^2 - 3x - 10}{x^2 - 10x + 25}$

- V. Evaluate the integral $\int (x+1) \cot(x^2 + 2x) dx$?

- VI. Find parametric equations of the line passing through $(1, 2, -3)$ and parallel to $\mathbf{v} = 4\mathbf{i} + 5\mathbf{j} - 7\mathbf{k}$?

Q.2. Solve the following.

(3x10=30)

i.

- a) Find all values of x at which the tangent line to the given curve satisfies the stated property: $y = (x+3)/(x+2)$; Perpendicular to line $y = x$.
b) Find x and y -intercepts of the line that is tangent to the $y = x^3$ at the point $(-2, -8)$?

ii.

Find the intervals on which function is increasing and decreasing, Also, identify the local extreme points of the function, if any. $g(x) = x^{\frac{1}{3}}(x^2 - 4)$

iii.

- a) Find an equation of the plane that contains the point $(2, 0, 3)$ and the line $x = -1 + t, y = t, z = -4 + 2t$?

- b) Find $\lim_{x \rightarrow 0} \frac{x^2 e^x}{\sin^2 3x}$?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

1. Does the center of mass of solid object necessarily lie within the object? If not, give example.
2. What do you understand by gravitational P.E?
3. What is interferometer?
4. State and prove Torricelli's Theorem.
5. Explain briefly the relation between torque and angular momentum.
6. How the swing is produced in a moving cricket ball?
7. At what angle of projection the range and height of a projectile becomes equal?
8. How is power related to velocity?
9. What is the impulse experienced by a ball hitting a wall?
10. Define limiting friction.
11. How do you evaluate the work done by a vector field along a curve?
12. How is the curl of a vector field calculated?
13. Define the horizontal range of a projectile.
14. What is a black hole?
15. What is a geostationary orbit?

Answer the following questions.

Q.2 (a) Define divergence of a vector field. State and prove the Gauss's divergence theorem. (07)
(b) A block is at rest on an inclined plane making an angle θ with horizontal. The block start sliding down as the angle of inclination becomes greater than 15° . What is the coefficient of static friction between the block and inclined plane? (03)

Q.3. (a) Discuss the concept of projectile motion and derive the equations of motion for an object undergoing projectile motion under the influence of gravity. (07)
(b) State and prove the equation of continuity. (03)

Q.4. (a) Explain the concept of a conical pendulum, describing its motion, the forces involved, and the factors that affect its period. Discuss how the conical pendulum differs from a simple pendulum in terms of motion and the forces at play." (07)

(b) A slit of width 'a' is illuminated by white light. For what value of 'a' you would observe the first minima for red light having wavelength $\lambda = 650 \text{ nm}$ fall at $\theta = 15^\circ$? (03)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

1. Write down two conditions for which torque is zero.
2. The vector sum of three vectors gives a zero resultant. What can be the orientation of the vectors?
3. Vector $\vec{A}$ lies in the xy-plane. For what orientation will both of its rectangular components be negative? For what orientation will its components have opposite signs?
4. If one of the rectangular components of a vector is not zero, can its magnitude be zero?
5. Can a body rotate about its centre of gravity under the action of its weight?
6. What is the difference between uniform and variable velocity?
7. Which will be more effective in knocking a bear down?
(i) A rubber bullet or
(ii) A lead bullet of the same momentum
8. What is the effect on the speed of a fighter plane chasing another when it opens fire? What happens to the speed of pursued plane when it returns the fire?
9. When rocket re-enters the atmosphere, its nose cone becomes very hot. Where does this heat energy come from?
10. An object is thrown vertically upward. Discuss the sign of acceleration due to gravity, relative to velocity, while the object is in air.
11. A person holds a bag of groceries while standing still, talking to a friend. A car is stationary with its engine running. From the stand point of work, how are these two situations similar?
12. A ball of mass m is held at a height h_1 above a table. The table top is at a height h_2 above the floor. One student says that the ball has potential energy mgh_1 but another says that it is $mg(h_1 + h_2)$. Who is correct?
13. What are the factors upon which drag force acting upon a small sphere of radius r , moving down through a liquid, depend?
14. Why fog droplets appear to be suspended in air?
15. A person is standing near a fast moving train. Is there any danger that he will fall towards it?

Answer the following questions.

(3x10=30)

- Q.2:** (a)-Discuss vector addition of a number of coplanar vectors by rectangular component method.
(b)-Two forces of magnitude 10 N and 20 N act on a body in directions making angles 30° and 60° , respectively with x-axis. Find the resultant force.
- Q.3:** (a)-Define velocity? Explain average, instantaneous, uniform and variable velocities.
(b)-Calculate the work done in kilo joules in lifting a mass of 10 kg (at a steady velocity) through a vertical height of 10m.
- Q.4:** (a)-What is terminal velocity? Show that terminal velocity is directly proportional to the square of the radius of spherical body falling in a viscous medium.
(b)-A tiny water droplet of radius 0.010 cm descends through air from a high building. Calculate its terminal velocity. Given that η for air = $19 \times 10^{-6} \text{ kg m}^{-1} \text{ s}^{-1}$ and density of water $\rho = 1000 \text{ kg m}^{-3}$.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- Define and briefly explain damped harmonic motion.
- Explain the characteristics of transverse and longitudinal waves.
- Which raindrops, if either fall faster: small ones or larger ones?
- Define power and show that $P = F.V$.
- A swimmer moves through a water at a speed of 0.22m/s. the drag force opposing this motion is 110N. How much power is developed by the swimmer?
- What do you mean by center of mass system?
- What is ballistic trajectory? Show that angle of inclination is directly proportional to momentum.
- In baseball, a base runner gets to a base quicker by running than by sliding. Explain why this is so, why slide then?
- When a wet dog shakes itself, people standing nearby tend to get wet. Why does the water fly outward from the dog in this way?
- Determine gravitational potential energy of a system.
- Two vectors in yz-plane are given as $A = -2.9 j + 2.2 k$ and $B = 4.3j - 1.70i$. Find the dot product.
- What is difference between rotational and translational motion.
- What minimum initial speed must a projectile have at the earth's surface, if it is to escape from earth? Ignore atmospheric friction and earth rotation.
- What do you mean by Jerk? Give formula and units.
- Explain how an air-bag in an automobile may help to protect a passenger from serious injury in case of collision.

Answer the following questions.

- Q.2** a) Discuss forced oscillations and resonance. (07)
b) The sun radiates energy at the rate of $4 \times 10^{26} \text{ W}$. How many tons of sunlight does earth intercept in 1-DAY? (03)
- Q.3a)** Describe the variation of energy in simple harmonic motion and find the total energy.(7)
b) Calculate the energy possessed by a stone of mass 10kg kept at a height of 5m if 19600J of energy were used to raise a 40kg boy above the ground, how high would he be raised? (03)
- Q.4** Write note on any TWO of the followings. (05+05=10)
i) Work energy theorem ii) Law of conservation of angular momentum iii) Conical Pendulum

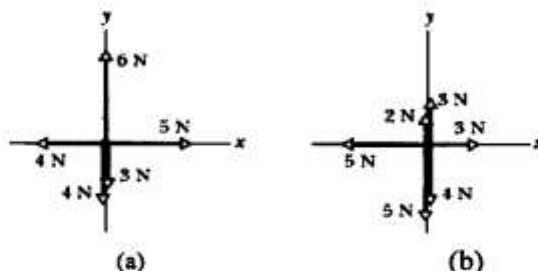


THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- Differentiate between static friction and kinetic friction?
- How would you differentiate between inertial and non-inertial frames?
- Fig. gives the free-body diagram for four situations in which an object is pulled by several forces across a frictionless floor, as seen from overhead. In which situations does the acceleration a of the object have (a) an x component and (b) a y component? (c) In each situation, give the direction of a by naming either a quadrant or a direction along an axis.

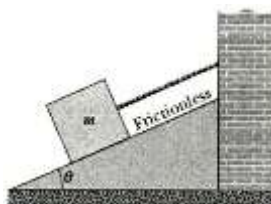


- What kind of kinetic energies rolling object can have?
- State work- kinetic energy theorem?
- What is difference between elastic and inelastic Collision?
- Define isolated system
- A stone of mass m is moving in a circle of radius r with constant speed v . Calculate the work done by the force over half of the circle?
- A ball of mass 10g hits a hard vertical surface with a speed of 5m/s and rebounds with the same speed. The ball remains in contact with the surface for 0.01sec. Calculate the average force exerted by the surface on the ball?
- Distinguish between equilibrium and static equilibrium.
- What is rotational inertia?
- How would you calculate the angular momentum of system of particles?
- What do you understand by conservation of angular momentum?
- How would you define positive work and negative work?
- Does the center of mass of a solid object necessarily lie within the object? If not, give examples.

Answer the following questions.

Q. 2. (i) When work is done on a system by external force with friction involved. Relate that work to the changes in kinetic energy, potential energy and thermal energy. (5 Marks)

(ii) In given fig. let the mass of the block be 8.5 kg and the angle θ be 30° . Find (a) the tension in the cord and (b) the normal force acting on the block. (c) If the cord is cut, find the magnitude of the resulting acceleration of the block. (5 Marks)



Q3. (a) For an isolated system in which only conservative forces act, apply the conservation of mechanical energy to relate the initial potential and kinetic energies to the potential and kinetic energies at a later instant. (5 Marks)

(ii) The object shown in figure consists of two particles, of masses m_1 and m_2 , connected by a light rigid rod of length L and negligible mass. (a) Find the rotational inertia I of this system for rotations of this object about an axis perpendicular to the rod and a distance x from m_1 . (b) Show that I is a minimum when $x=x_{cm}$ (5 Marks)



Q4. (a) State and prove Kepler's law of periods of planetary motion. (5 Marks)

(b) Explain in detail how smooth rolling can be considered as a combination of pure translation and pure rotation. (5 Marks)



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- a) Describe the terms: Dichroism, standing waves, optical aberrations, light Polarization, and simple harmonic motion.
- b) Discuss and graphically express the mechanism behind the formation of Beats.
- c) Derive a mathematical relation for the Beat frequency.
- d) Graphically illustrate that longitudinal wave travel as pressure fluctuations. Also derive the relevant mathematical expression.
- e) Give details of a grating spectrograph and a diffraction grating.
- f) Derive an expression for the resolving power of a grating spectrograph.

Q.2. Answer the following questions.

(3x10=30)

- a) Derive law of refraction using Huygen's and Fermat's principle.
- b) Explain the construction and working principles of simple magnifier, microscope and telescope. Also derive expressions for their angular magnification.
- c) How does the relative motions of source and listener affect the frequency heard by the listener?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Write short answers to the following: (5x4=20)

- i. What is preposition? Give examples.
- ii. What is noun and describe its types.
- iii. What is conjunction?
- iv. What is topic sentence and give its examples.
- v. Write about interrogative sentences.

Q.2. Change the following from active voice sentences into passive voice sentences. (5x2=10)

- i. His sudden visit surprised me.
- ii. I brought him in.
- iii. I don't see him these days.
- iv. Did he help you with money?
- v. Did she iron the clothes?

Q.3. Write a paragraph. (120 – 150 words) on any ONE of the following topics. (15)

- i. Save Earth.
- ii. Where there is will, there is a way.
- iii. Knowledge is power.
- iv. Poverty in Pakistan.

Q.4. Read the following passage and answer the following questions given below. (3x5=15)

Mankind has undoubtedly progressed since medieval times. The earliest men lived like brutes. The individual fought among themselves and the strong destroyed the weak for that is the law of jungle the law of irrational life. In fact, man was not an animal. He possessed rational faculties. These faculties gradually developed and appeared in his action and man gave up the laws of the jungle and evolved his own rational laws. Man saw that the law of physical strength were not applicable to their daily lives. They realized they had souls that can consist in variety of capabilities other than the power to hack and hew and tear and bite. For example a man can be strong in reasoning tools, or in controlling the actions of other rational beings by power of songs and speech. Thus man realized that they should not be fighting among themselves instead should develop their respective strength. This was the first step in man's progress. By this means men gained such control over the force of nature and made each other so much wiser and more comfortable that they were convinced that they were the best creation of God.

Questions:

- i. How did earliest men live?
- ii. What is law of the jungle?
- iii. Make a precis of the passage.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Islamic Studies / Ethics

Course Code: PS-101

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

(6x5=30)

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

1. قرآن مجید کی پانچ خصوصیات لکھیں؟
2. نبی کریم ﷺ نے کن چار چیزوں سے پناہ مانگی؟
3. السبع الموبقات سے کیا مراد ہے اور السبع الموبقات کے نام لکھیں؟
4. جنگ فجار سے کیا مراد ہے اور یہ کن قبائل کے درمیان ہوئی، اور اس وقت آپ ﷺ کی عمر مبارک کتنی تھی؟
5. عہد صدیقی کی ابتدائی مشکلات لکھی؟
6. اجماع کا لغوی اور اصطلاحی معنی اور اس کی اقسام کا مفہوم لکھیں؟

(3x10=30)

درج ذیل سوالات کے جواب تحریر کریں۔

- سوال نمبر 2: درج ذیل حدیث کا ترجمہ اور تشریح لکھیں؟
 عَنْ أَبِي هُرَيْرَةَ رَضِيَ اللَّهُ عَنْهُ قَالَ قَالَ رَسُولُ اللَّهِ ﷺ كَانَتْ بَنُو إِسْرَائِيلَ تَسُوسُهُمُ الْأَنْبِيَاءُ كُلَّمَا هَلَكَ نَبِيٌّ خَلَفَهُ نَبِيٌّ وَإِنَّهُ لَا نَبِيَّ بَعْدِي وَسَيَكُونُ خُلَفَاءُ فَيَكْتُلُونَ
- سوال نمبر 3: صلح حدیبیہ پر مفصل نوٹ لکھیں؟
- سوال نمبر 4: فقہ اسلامی کے ماخذ بیان کرتے ہوئے قیاس کا مفہوم اور اس کی اہمیت پر مفصل نوٹ لکھیں؟

ETHICS (For Non-Muslim Candidates)

(3x20=60)

نوٹ: مندرجہ ذیل سوالات کے جواب تحریر کیجئے۔

- سوال نمبر 1: مسیحیت کی اخلاقی تعلیمات پر تفصیل سے نوٹ لکھیں۔
- سوال نمبر 2: معاشرے کی اخلاقی اقدار کی ترقی کے لئے ریاست کے کردار پر جامع نوٹ لکھیں۔
- سوال نمبر 3: اسلام اور ہندومت کی اخلاقی تعلیمات کا موازنہ کریں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Political Science-I

Course Code: PS-102

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answer the following short questions:

(6x5=30)

- (1) علم سیاسیات کا مفہوم لکھئے۔
i) Write down the meaning of Political Science.
- (2) عدلیہ سے کیا مراد ہے؟
ii) What is meant by Judiciary?
- (3) سیاسیات اور معاشیات میں کیا فرق ہے؟
iii) What is the difference between Political Science and Economics?
- (4) مقامی حکومت سے کیا مراد ہے؟
iv) What do you mean by Local Government?
- (5) عاملہ کے دو فرائض لکھئے۔
v) Write down two functions of Executive.
- (6) سیاسی اقتدار سے کیا مراد ہے؟
vi) What do you mean by Political Sovereignty?

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

Q.2. Answer the following questions.

(3x10=30)

- (1) علم سیاسیات کی اہمیت لکھئے۔
i) Write down the significance of Political Science.
- (2) طاقت کے مجسم عناصر پر بحث کیجئے۔
ii) Discuss the tangible elements of Power.
- (3) مقتضہ کے اختیارات و فرائض بیان کیجئے۔
iii) Write down the Powers and functions of Legislature.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following:

(6x5=30)

(i) Separate into real and imaginary parts (write as a simple complex number)

$$\frac{2-7i}{4+5i}$$

(ii) Find the determinant of the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 5 & 2 & 6 \\ -2 & -1 & -3 \end{bmatrix}$.

(iii) Solve the equation $3x^2 + 4x + 1 = 0$.

(iv) Find the arithmetic mean (A.M.) of $x - 3$ and $x + 5$.

(v) Using the binomial theorem, expand $(a + 2b)^5$.

(vi) What is the length of the arc intercepted on a circle of radius 14 cm by the arm of a central angle 45° ?

Solve the following:

(3x10=30)

Q.2 Solve the system

$$\begin{aligned} x + 4y + 2z &= 2, \\ 2x + y - 2z &= 9, \\ 3x + 2y - 2z &= 12. \end{aligned}$$

Q.3 Find the three cube roots of unity.

Q.4 Find three consecutive numbers in G.P. whose sum is 26 and their product is 216.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

(6x5=30)

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

(الف) نظم اور غزل میں کیا فرق ہے؟ مثالوں سے واضح کریں۔

(ب) خارجیت سے کیا مراد ہے؟

(ج) ترجمہ نویسی میں کن باتوں کا خیال رکھنا ضروری ہے۔

(د) استعارہ کی تعریف کریں اور اس کی دو مثالوں سے وضاحت کریں۔

(ه) لف نثر مرتب اور لف نثر غیر مرتب میں کیا فرق ہے؟

(و) حقیقت نگاری سے کیا مراد ہے؟

(3x10=30)

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

(الف) اصطلاحات سازی سے کیا مراد ہے؟ یہ کیسے بنائی جاتی ہیں۔

(ب) سوشل میڈیا کے فوائد پر دو دوستوں کے درمیان مکالمہ تحریر کریں۔

(ج) انٹرویو نویسی پر مفصل نوٹ لکھیں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Human Rights, Philosophy and History

Course Code: PS-106

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- a. Explain the concept of human rights.
- b. Explain the idea of human dignity in human rights.
- c. Explain the principle of universality in human rights.
- d. What is the principle of inalienability in human rights?
- e. Explain two violations of the rights of children in Pakistan.
- f. Are human rights universal?

Q.2. Answer the following questions.

(3x10=30)

- i. Discuss freedom as one of the fundamentals of human rights in detail.
- ii. Critically examine the Universal Declaration of Human Rights.
- iii. Which human rights are violated in Pakistan?



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Pakistan Studies

Course Code: PST-111

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Write short note on the following.

(6x5=30)

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

i. Two Nation Theory

(الف) دو قومی نظریہ

ii. Scientific Society

(ب) سائنٹیفک سوسائٹی

iii. Indus Basin Treat

(ج) سندھ طاس معاہدہ

iv. Salient features of 1962 Constitution

(د) 1962ء کے آئین کے نمایاں خصوصیات

v. EBDO

(ه) ایبڈو

Q.2. Answer the following questions.

(2x15=30)

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

i. Explain the services of Allama Muhammad Iqbal.

(الف) علامہ محمد اقبال کی خدمات بیان کریں۔

ii. Analyze Pakistan's relations with China.

(ب) پاکستان کے چین کے ساتھ تعلقات کا جائزہ لیں۔



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Pakistan Studies

Course Code: PST-112

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Write short note on the following.

(5x6=30)

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

i. Two Nation Theory

(الف) دو قومی نظریہ

ii. Refugees Crisis

(ب) مسئلہ مہاجرین

iii. 3rd June Plan

(ج) تین جون پلان

iv. MRD

(د) ایم آر ڈی

v. Ayub Khan

(ه) ایوب خان

Q.2. Answer the following questions.

(2x15=30)

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

i. Write a note on Aligarh Movement.

(الف) تحریک علی گڑھ پر نوٹ لکھیں۔

ii. Discuss the salient features of Legal Framework Order.

(ب) لیگل فریم ورک آرڈر کے نمایاں خدوخال پر بحث کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- (i) Distribute 68 camels among three brothers in the ratio of $\frac{1}{9} : \frac{1}{3} : \frac{1}{2}$.
- (ii) Verify associative law of union for the following sets:
 $A = \{1, 2, 3, \dots, 8\}$, $B = \{1, 3, 5, 7, 9\}$, $C = \{2, 4, 6, 8, 10\}$.
- (iii) If the sale price of a basket is Rs. 360 with 20% profit. Find the purchase price.
- (iv) Solve the following system of equations:
$$2x - y = 5$$
$$4x + 3y = 15.$$
- (v) Evaluate $\sin 45^\circ \times \cos 30^\circ + \cos 45^\circ \times \sin 30^\circ$.
- (vi) Solve the quadratic equation $2x^2 - 5x + 3 = 0$.

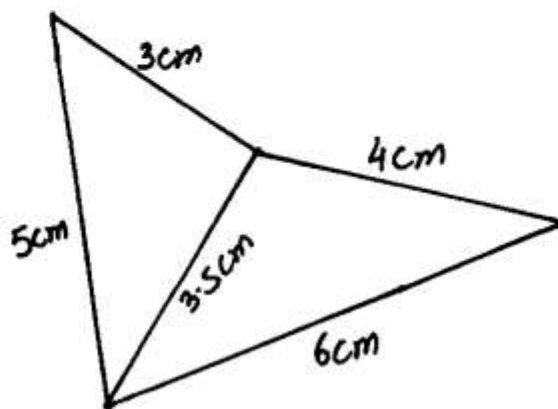
Answer the following questions.

(3x10=30)

Q.2 Saud and Ammar started a business with capitals of Rs. 56,000 and Rs. 64,000 respectively. After one year, they earned a profit of Rs. 22,500. Find the share of each one.

Q.3 The marks obtained out of 10 in a test by 15 students of a class are as follows: 3, 5, 7, 10, 7, 9, 3, 7, 5, 4, 6, 8, 7, 5, 2. Find Mean, Median and Mode.

Q.4 Find the perimeter and area of the indicated region:





THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- (i) Draw the Four figures of Syllogism.**
- (ii) Construct a Truth table for “Implicative Proposition.”**
- (iii) Define the standards of critical thinking.**
- (iv) Describe the function of language as persuasive.**
- (v) What is difference between convertend and converse.**
- (vi) With reference to the Traditional Square of Opposition discuss contradictories.**

Answer the following questions. (3x10=30)

Q.No.2: Discuss contraposition as an immediate inference. Also state whether the contraposition is logically equivalent or not?

Q.No.3: Define fallacy. Discuss the fallacies of Ambiguity and Grammatical Analogy.

Q.No.4 Construct Venn Diagram to determine the validity of the following Syllogism. Name the fallacy, if committed.

- (i) AAI-1 (ii) AEE-2**



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions.

(15x2=30)

- 1) What is a proposition?
- 2) Define the evaluative use/function of language.
- 3) What is the fallacy of Amphiboly?
- 4) Write the obverse of: 'Some animals are vegetarians'.
- 5) According to the Traditional Square of Opposition what will be the status of E proposition if I is true.
- 6) What is the difference between minor term and major term of a syllogistic argument?
- 7) What is the definition of **quality** of any categorical proposition?
- 8) Separate the subject term and predicate term of the following: **All universities are good institutes for learning.**
- 9) What is the mood of any syllogistic argument?
- 10) What is the Existential fallacy in syllogism?
- 11) Write down four (4) premise indicators.
- 12) Which term (subject/predicate) is not distributed in I Proposition?
- 13) Why AAA-4 is an invalid syllogistic argument?
- 14) State the fallacy of exclusive premises.
- 15) According to the Traditional Square of Opposition what will be the status of I proposition if O is false.

Answer the following questions.

Question #2

(10)

Discuss *Contraposition* as a form of immediate inference with examples.

Question #3

(4x2.5=10)

Use Venn diagrams to determine the validity of the following syllogistic arguments

- 1) EAI-2
- 2) AAA-1
- 3) EAE-3
- 4) AOO-4

Question #4

(2x5=10)

Determine the validity of the following symbolised arguments by using truth table technique.

- 1) $(P \supset Q) \supset (P \vee Q)$
 $P \supset Q \qquad \therefore Q \supset P$
- 2) $[(P \supset \sim Q) \cdot \sim Q]$
 $\sim Q \vee R \qquad \therefore \sim Q \vee R$



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Sociology-I (MAS)

Course Code: SOC-111

Time: 3 Hrs. Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Define the following Terms.

(6x5=30)

- i. Society
- ii. Status & Role
- iii. Culture Diversity
- iv. Conflict
- v. Norms & Values
- vi. Reference group

Q.2. Answer the following questions.

(3x10=30)

- i. Define Sociology with reference to different sociologists. Explain the scope and significance of sociology.
- ii. What is Socialization? Discuss the agents of socialization with examples.
- iii. Define culture? Explain the components of culture with reference to Pakistani society.



UNIVERSITY OF THE PUNJAB

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

Roll No.

Paper: Introduction to Social Work

Course Code: SOCW-101

Time: 3 Hrs.

Marks: 60

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

Q.1. Answer the following short questions:

(6x5=30)

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

- Highlight the importance of social work in a school setting.
اسکول کے ماحول میں سماجی بہبود کی اہمیت کو اجاگر کریں۔
- What type of services is being provided for the welfare of women?
پاکستان میں خواتین کے فلاح، بہبود کے لیے کس قسم کی خدمات فراہم کی جا رہی ہیں؟
- Define social work and elaborate its objectives.
سماجی بہبود کی تعریف کریں اور اس کے مقاصد کی وضاحت کریں۔
- Explain Social Case Work with examples.
انفرادی سماجی بہبود کے طریقہ کار کی وضاحت کریں اور مثالوں کے ذریعے بیان کریں۔
- What is the role of Medical Social Worker in a hospital?
ہسپتال میں طبی سماجی بہبود کے کارکن کا کیا کردار ہوتا ہے؟
- Describe the types of Social Group.
سماجی گروہ کی اقسام بیان کریں۔

Q.2. Answer the following questions.

(3x10=30)

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

- What are the problems of older people in Pakistan, also describe the services being rendered for them?
پاکستان میں عمر رسیدہ افراد کو کن مسائل کا سامنا ہے؟ اور ان کو مہیا کی جائے والی سماجی خدمات تفصیلاً بیان کریں۔
- Define social group work and explain its principles.
گروہی سماجی بہبود سے کیا مراد ہے؟ تفصیلاً بیان کریں اور اس کے بنیادی اصولوں کی وضاحت کریں۔
- What is meant by community development? Elaborate its phases in detail.
اجتماعی ترقی کی تعریف بیان کریں؟ اور اجتماعی ترقی کے عمل میں مختلف مراحل کی تفصیل سے وضاحت کریں۔



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- (i) Define population and sample.
- (ii) Define tabulation. What are the necessary parts of a table?
- (iii) For which type of data, the Geometric mean and harmonic mean are suitable?
- (iv) The mean of 10 numbers is 18. If an eleventh number is included, the mean becomes 20. What is the value of the eleventh number?
- (v) Define the term dispersion. Write any three absolute measures of dispersion.
- (vi) Differentiate between symmetry and skewness.
- (vii) If mean and variance of 10 observations is 80 and 16 respectively, what will be the standard deviation and coefficient of variation?
- (viii) Differentiate between simple and composite index numbers.
- (ix) Differentiate between un-weighted index and weighted index number.
- (x) Differentiate between the term regression and correlation.
- (xi) What is the relationship between regression coefficients and correlation coefficients? Find the correlation coefficient, if the regression coefficients are 1.2 and 0.80.
- (xii) What is meant by coefficient of determination?
- (xiii) Define the term rank correlation; also write down the formula of rank correlation.
- (xiv) Define the term time series. Write down the components of a time series.
- (xv) Differentiate between cyclical variations and sessional variations.

Solve the following questions.

- Q:2 (a)** The following table gives the frequency distribution of heights recorded to the nearest inch of 100 students of a college. Find the mean, median and mode of the distribution.
(6+4=10)

Height (in)	60-62	63-65	66-68	69-71	72-74
Number of Students	5	18	42	27	8

- (b)** An analysis of the monthly wages paid to workers in two firms A and B belonging to the same industry gives the following results:

	Firm A	Firm B
No. of wage earners	125	140
Average monthly wages (Rs.)	38620	39540
Variance of wages	125	140

- (i) Which firm A or B pays the larger amount of monthly wages?
- (ii) In which firm A or B is there greater relative variability in individual wages?

Q:3 (a) Calculate the coefficient of correlation from the following data:

X	4	5	6	7	8	9	10	11	12	13
Y	18	20	22	19	17	16	13	10	6	14

(4+6=10)

(b) Construct index numbers from the following data by applying (i) Laspeyre's method (ii) Paasche's method.

Commodities	2020		2021	
	Prices	Quantities	Prices	Quantities
A	8	40	12	36
B	4	60	6	60
C	15	112	18	120
D	10	30	12	24

Q:4 (a) Compute Seasonal Indices by link-relative method from the following data.

(6+4=10)

Year	Quarters			
	I	II	III	IV
2018	112	125	129	110
2019	119	132	147	115
2020	120	142	150	118
2021	128	151	162	125

(b) Fit a Straight line $y = a + b.x$ from the following results

$$\sum x = 0, \sum y = 438.9, \sum x^2 = 110.$$

$$\sum xy = -84.4$$

for the year 1988-98 (Both inclusive). Find out the estimated trend values for 2000 and 2001.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- Differentiate between Biased error and Unbiased errors.
- Explain: Cross Sectional Data and Pooled Data.
- What is Trimmed and Winsorized mean.
- What is Variance also write down its properties.
- Write Notes on: Negatively skewed distribution, Positively skewed distribution.
- Explain Theoretical Tests which an ideal index number should follow.

Solve the following questions.

Q.2. (a) Construct histogram for the following data: (05)

Class	27-29	30-34	35-39	40-44	45-49	50-59	60-74
Frequency	3	15	23	35	21	21	15

b) For the following distribution find, median. (05)

Group	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Frequency	6	14	23	37	45	25	12	8

Q.3. The following table represent the set of examination marks.

Marks	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79
No. of Students	2	3	8	24	27	40	11	5

Calculate: a) Mean Deviation b) Bowley's Coefficient of skewness also interpret. (10)

Q.Q.4 Construct the weighted aggregative Price index number for the year 1995 taking 1990 as base year using (i) Laspeyre's (ii) Passche's formula (iii) Marshall-Edgeworth formula. (10)

Commodities	Quantity		Value (Rs.)	
	1960	1961	1960	1961
A	270	276	17280	20700
B	124	118	4960	5310
C	130	121	2340	2541
D	185	267	10730	18156



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- a) The Gallup organization conducted a telephone survey with a randomly selected national sample of 1005 adults, 18 years and older. The survey asked the respondents "How would you describe your own physical health at this time?" Response categories were Excellent, Good, Only Fair, Poor, and No Opinion.
- Describe the population of this study?
 - What was the sample?
 - Are the data qualitative or quantitative?
 - Indicate the measurement scale of this data
- b) Explain the concept of biased and unbiased measurement error
- c) When the Geometric Mean is more appropriate average than that of Arithmetic mean and Harmonic mean?
- d) Which is easier to interpret, standard deviation or variance, and why?
- e) Differentiate between Skewness and Kurtosis
- f) Define the coefficient of correlation. Also write the properties of coefficient of correlation.

Solve the following questions. (3x10=30)

Q.2

A marketing director from a major mobile phone company collected data from a random sample of 25 subscribers who are on the company's low-end plan, which allows 250 peak minutes per month. The data of minutes used by each subscriber in the sample during one month are given as

271	236	252	237	252	278	252	287	253	242
253	244	274	263	264	263	246	263	247	294
247	247	248	245	278					

Create a frequency distribution to assist the marketing director in developing a more effective strategy. Additionally, using the frequency distribution, determine how many subscribers used their mobile phone within the guideline of their plan.

Q.3

Public transportation and the automobile are two methods an employee can use to get to work each day. Samples of times recorded for each method are shown. Times are in minutes.

Public Transportation: 28 29 32 37 33 25 29 32 41 34

Automobile : 29 31 33 32 34 30 31 32 35 33

- Compute the sample mean time to get to work for each method.
- Compute the sample standard deviation for each method
- On the basis of your result from part(i) and part(ii), which method of transportation should be preferred? Explain

Q.4

A survey of magazine subscribers showed that 45.8% rented a car during the past 12 months for business reasons, 54% rented a car during the past 12 months for personal reasons, and 30% rented a car during the past 12 months for both business and personal reasons. What is the probability that a subscriber rented a car during the past 12 months

- for business or personal reasons
- neither for business nor for personal reasons
- for business reason but not for personal reasons
- only for personal reasons



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- I. Define different types of symmetry?
- II. Define Mendel's Law of Segregation?
- III. Differentiate between Acoelomate and Pseudocoelomate?
- IV. Differentiate between Test cross and Back cross?
- V. What are nematocysts?
- VI. What are proglottids?

Answer the following questions. (3x10=30)

Question: 2.. Describe ABO blood grouping system as an example of multiple alleles.

Question: 3.. Write a note on Mollusca classification.

Question: 4.. Write a note on different body forms in sponges.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions:

(6x5=30)

- i. Name the major groups of protozoans and give an example of each.
- ii. What is the significance of binary fission in protozoans?
- iii. Name three key features of cnidarians.
- iv. Name the major protostome groups.
- v. What are nematodes commonly known as?
- vi. Define a trochophore larva and its role in the life cycle of mollusks.

Answer the following questions.

(3x10=30)

Question: 2 Discuss the ecological significance of sponges in marine ecosystems and the consequences of their decline.

Question: 3 Compare the characteristics and classification of Platyhelminthes and Nematoda, focusing on their anatomy and ecological roles.

Question: 4 Describe the phylogenetic relationships among protozoans, parazoans, radiates, and protostomes, emphasizing evolutionary trends.



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Differentiate between trophozoites and merozoites?
- ii. Differentiate open and close circulatory system with example?
- iii. Differentiate oral and aboral surfaces?
- iv. Differentiate between saprozoic and saprophytic nutrition in protozoans?
- v. What is Colloblasts, and its function?
- vi. What is compound eye and role of ommatidia in it?

Answer the following questions. (3x10=30)

Question.2. Discuss various types of canal systems in Porifera?

Question.3. Discuss in detail classification of Platyhelminthes?

Question.4. What are various modes of locomotion in Annelida?



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

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

- i. Differentiate between ametabolous metamorphosis and Paurometabolous Metamorphosis?
- ii. Differentiate between binary and multiple fission in protozoans.
- iii. Differentiate between determinate and indeterminate cleavage?
- iv. Differentiate between endo and ecto parasites in invertebrates?
- v. Differentiate between food vacuole and contractile vacuole in protozoans?
- vi. What is metameric segmentation?

Answer the following questions. (3x10=30)

Q.2 Discuss in detail classification and important characteristics of Phylum Mollusca

Q.3 Write detail notes on phyletic lineage and its types, and discuss its role in phylogenetic systematics?

Q.4 What are various modes of locomotion in Protozoan?