UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Applied Chemistry (Sp. Theory-I)
Course Code: CHEM-434   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

(Short Questions)

Q No. 02   Give short answers of the following questions   (2 x 10)

(i)   Enlist the name and their sources of any four vegetable oils.

(ii)   Distinguish between primary petrochemical and intermediate petrochemicals. Give examples.

(iii)   Write down the process and significance of 'Singeing' of cotton.

(iv)   Name different processes used for the conversion of polymers to fibres.

(v)   State the role of catechol and pyrogallol in vegetable tanning

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

(vii)   Write down the chemical reactions involved in manufacturing of cellulose acetate.

(viii)   Describe the role of liming in chrome tanning.

(ix)   State the need of salting in manufacturing of leather.

(x)   Define Fiber. Give the attributes of fiber.

(Long Questions)

Q No. 03   Give the brief description of the different steps involved in the conversion of skin to leather.   (10)

Q No. 04 (a)   Describe different steps involved in the manufacturing of vegetable ghee.   (5)

(b)   Write a concise note on the extraction of oil by solvent extraction method.   (5)

Q No. 05 (a)   Write down the process manufacturing of viscose rayon with flow sheet diagram   (6)

(b)   Write down the chemistry of naphthalene and its importance as petrochemical.   (4)

Roll No. in Fig. ....

Roll No. in Words. ....

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Signature of Supdt.:

Q.1.   Encircle the correct option.   **(10x1=10)**

i)   _____ process involves the addition of phosphoric acid and lime to hot cane juice for clarification.
   a) Phosphatation
   b) Phosphitation
   c) Sulphitation
   d) Carbonation

ii)   _____ is preferably used in confectionary items for sweetness
   a) Cane sugar
   b) Beet Sugar
   c) Fructose
   d) Glucose

iii)   Which of the following fraction of coal is used a reducing agent in Iron metallurgy.
   a) Coal tar
   b) Coal gas
   c) Coke
   d) All of these

iv)   Surcose content can be measured in cane juice by polarimetry because it contains
   _____
   a) Achiral center(s)
   b) Chiral Center(s)
   c) Polar carbon atoms
   d) Optically active hydrogen atom

v)   Important byproduct(s) of sugar industry are
   a) Molasses
   b) Filter Mud
   c) Bagasse
   d) All of these

vi)   Which of the following   polymer is not an Addition Polymer.
   a) Terylene
   b) Polyester
   c) Nylon 6,6
   d) All of these

P.T.O.

vii)   Water gas is also known as a gas having colour
   a)   White
   b)   Red
   c)   Pink
   d)   Blue

viii)   The technique in which the polymer is soluble in a suitable solvent is known as
   a)   Suspension polymerization
   b)   Emulsion polymerization
   c)   Bulk Polymerization
   d)   Solution polymer

ix)   Which of the following is the Fabrication technique of polymer processing?
   a)   Solution Polymerization
   b)   Injection Moulding
   c)   Bulk Polymerization
   d)   All of these

x)   The Lowest rank of coal is
   a)   Anthracite
   b)   Lignite
   c)   Bituminous
   d)   Polyvinyl chloride

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Applied Chemistry (Sp. Theory-II)
Course Code: CHEM-435   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2   Short Questions   2x10 = 20

   i.   What do you mean by quenching of coal?

   ii.   How crystallization of sugar is carried out?

   iii. Compare Themro- and Thermosetting polymers. Give examples.

   iv.   Give important applications of Molasses and Filter mud.

   v.   Compare the Calorific value of LPG and CNG.

   vi.   What are Epoxy resins? Give their important applications.

   vii. What are the main applications of polystyrene?

   viii. What do you mean by Coking of Coal? How it is carried out?

   ix.   Describe Sulphitation of sugar cane juice.

   x.   What are Syndiotactic polymers? Give example.

Q.3   Extensive Questions   6 x 5 = 30

   a)   What is Coordination Polymerization? Explain its mechanism.

   b)   Describe Extraction, Collection, Purification and Distribution of Natural gas.

   c)   With the help of Flow sheet diagram, explain the manufacturing of raw sugar from sugar cane.

   d)   Discuss application of various polymers in daily life.

   e)   Give the Chemistry involved in the synthesis of Producer gas.

   f)   Explain any two Moulding techniques for fabrication of plastics.

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Bio Chemistry (Sp. Theory-I)
Course Code: CHEM-437   Part – I (Compulsory)

Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   (10x1=10)

1. The serum calcium normal range is :

(a) 5-7 mgs %   (b) 7-9 mgs %   (c) 9-11 mgs %   (d) 11-13 mgs %

2. Zinc is required as a cofactor :

(a) Akaline phosphate   (b) Carboxy peptidase   (c) Carbonic anhydrase   (d) All of above

3. Pyrimidine nucleus carbon atoms are contributed by :

(a) CO_2 & Aspartate   (b) CO_2 & Glutamate   (c) CO_2 & Glutamine   (d) CO_2 & Asparagine

4. Iron deficiency causes which one of anemia :

(a) Megaloblastic anemia   (b) Microcytic amemia   (c) Normocytic anemia   (d) Pernicious anemia

5. The following are protein amino acids in Urea cycle except :

(a) Ornithine   (b) Arginine   (c) Citrulline   (d) Arginosuccinate

6. Commonly used vinegar has acetic acid :

(a) 4%   (b) 6%   (c) 8%   (d) 10%

7. Proteins are digested by all enzymes except :

(a) Tyrosinase   (b) Chymotrypsin   (c) Lipase   (d) Aminopeptidases

8. Non-oxidative deamination is facilitated by following except :

(a) Dehydrases   (b) Desulfhydrases   (c) Histidase   (d) Dehydrgenases

9. The favorable temperature for *L . bulgaricus* is :

(a) 25-35°C   (b) 35-40°C   (c) 45-50°C   (d) 50-55°C

10. The optimal alcohol concentration for Ethanol fermentation is :

(a) 5-10%   (b) 10-15%   (c)15-20%   (d) 20-25%

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Bio Chemistry (Sp. Theory-I)
Course Code: CHEM-437   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q-2 Questions with short answers :   (10x2)

1. Differentiate between oxidative and non-oxidative Deamination?

2. Write down the names of sulfur containing amino acids?

3. Write down salient features of Transamination?

4. Which enzyme is involved in the Salvage pathway of pyrimidine?

5. What are the inhibitors of Purine synthesis?

6. How intestinal enzyme play role in digestion of proteins?

7. Write down the uses of lactic acid?

8. What is Saccharine material?

9. Write down the dietary requirement for Iron?

10. Write down the factors inhibiting Calcium absorption?

Q-3 Questions with Brief answers :

1. (a) Write a note on Urea Cycle? (7)

   (b) What are the functions of Magnesium? (3)

2. (a) What are the metabolic defects of branched chain amino acids? (5)

   (b) Write down the disorders of Purine metabolism? (5)

3. Write a note on Ethanol Fermentation? (10)

Roll No. in Fig. ....

Roll No. in Words. ....

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Signature of Supdt.:

Q.1.   Encircle the correct option.   **(10x1=10)**

1. The pH of pure water is neutral, the best explanation for this is:

a.   The pH of pure water is 7
b.   In Pure water the concentration of H+ and OH- are same
c.   Water do not contain free H+ or OH – ions
d.   Water will never ionize

2. As pKa of an acid increases, the acid will be:
   a. More weaker   b. More Stronger
   c. Converted to Neutral Solution   d. Converted to basic solution

3. Detoxification of amino acid occur in:
   a. Kidney   b. Liver   c. gall bladder   d. Nephrons

4. Which of the following is the best description of Homeostasis:
   a. Maintenance of body function
   b. Maintenance of body function at the optimum level at all times
   c. Multiple systems working cooperatively to maintain body function at an optimum level
   d. Multiple systems working cooperatively to maintain body function within normal limits

5. The codon that is responsible for chain termination is:
   a. AUG   b. UAG   c. AAA   d. UAA

6. Which of the following statement is false about DNA?
   a. Located in chromosomes
   b. Carries genetic information from parent to offspring
   c. Abundantly found in cytoplasm
   d. There is a precise relationship between amount of DNA and number of sets of chromosomes per cell

P.T.O.

7. **Anticancer drugs weaken host defense by:**
   a. Damaging respiratory and gut epithelia
   b. Inducing granulocytopenia
   c. Altering resident microbial flora
   d. Both " A and B' are correct

8. **Lytic cycle of bacteriophage is also known as:**
   a. Temperate phage   b. virulent phage   c. DNA phage   d. cyclic phage

9. **Definite results proving DNA to be genetic material was given by:**
   a. Fredrick Griffith   b. Hershey and Chase
   c. Avery, Macleod and Mac Carty   d. Meselson and Stahl

10. ----------- **are cancer causing genes:**
    a. Mutagens   b. Meta stasis   c. Oncogenes   d. Carcinogens

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Bio Chemistry (Sp. Theory-II)
Course Code: CHEM-438   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

2.   Questions with short answers. Attempt all Questions.   2x10

  1. What are the benefits of mutation and protoplast fusion in cultures?
  2. What is the difference between plasmids and bactriophages?
  3. Write down detoxification function of kidney?
  4. Name some weak Acids and weak Bases?
  5. Differentiate Constitutive, repressed and induced enzymes?
  6. Name some antiviral drugs?
  7. How drugs are biochemically transformed?
  8. Write down gross classification of microorganisms?
  9. Differentiate between replication and recombination?
  10. How water is ionized?

3. Questions with brief answers

  1. Write down the Chemistry and Mechanism of Action of Antimalarial Drugs? (10)
  2. Define Culture Media? What should be their composition? How their growth is measured by using various methods?   (10)
  3. How Muscles are contracted and relaxed?   (5)
  4. Write down the methods for recombinant DNA?   (5)

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. in Fig. ....

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Signature of Supdt.:

Paper: Applied Economics
Course Code: ECON-406   Part – I (Compulsory)   **Time: 15 Min. Marks: 10**

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   **Encircle the correct option.**   **(10x1=10)**

i.   Which of the following is short command to take print in MS word:
   a)   Ctrl + P   b)   Shift + P   c)   Alt +P

ii.   You cannot close MS Word application by:
   a)   Choosing file menu and then Exit submenu
   b)   Alt +F4
   c)   Click X button on the title bar
   d)   None of the given

iii.   Portrait and Landscape are:
   a)   page orientation   b)   paper size   c)   Both a and b

iv.   The short key to insert footnote in MS word is:
   a)   Alt+ Ctrl +F   b)   Alt+ Ctrl +N   c)   Alt + shift+ F

v.   Parametric tests are:
   a)   Correlation   b)   Regression   c)   Both a and b

vi.   The short key to copy anything in MS word is:
   a)   Ctrl +X   b)   Ctrl +F
   c)   Ctrl +C   d)   None of the given

vii.   Which of the following short cut key is used to open a new file of MS word:
   a)   Ctrl+N   b)   Shift+N12
   c)   Ctrl + F   d)   Shift + F

viii.   Which one of the following is operating system?
   a)   Windows   b)   MS Office
   c)   Window media player   d)   None of the given options

ix.   The short key to insert endnote in MS word is:
   a)   Alt+ Ctrl +D   b)   Alt+ Ctrl +E   c)   Alt + shift+ T

x.   When two or more independent variables are correlated it is known as:
   a)   Autocorrelation   b)   Standard error
   c)   Multicollinearity   d)   Hetrosekdasity

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Applied Economics
Course Code: ECON-406   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   **Write short answers of the following questions.**   **(4 X 5 =20)**

(i)   Explain Vector Auto Regressive model

(ii)   What is the coefficient of determination?

(iii)   Explain the process of hypothesis testing

(iv)   Explain how the problem of multicollinearity can be deducted?

(v)   List down the steps to estimate simple linear regression model in SPSS

Write answers of the following questions.   **(3 X 10 =30)**

Q.3.   What is Cobb-Dougles production function and how it is estimated in Eviews?

Q.4.   Explain simultaneous equation model and how it is estimated in Eviews.

Q.5.   What is the significance of software like SPSS and E-views in Applied Economics?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Islamic Economics
Course Code: ECON-407   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   (10x1=10)

i.   The role of Price Mechanism is almost Zero in:
   a.   Capitalism   b. Socialism   c. Islamic Economy   d. None

ii.   Islamic Economics is a normative science because of:
   a.   Zakat   b. Profit   c. High moral Standards d. None

iii.   Zakat and Ushr Ordinance was implemented in:
   a.   1947   b. 1980   c. 1999   d. 2005

iv.   Basic requirement (Nisab) for Zakat is:
   a.   50 Tolas Silver   b. 7.5 Tolas Gold   c. Both a & b   d. None

v.   Islamic Economics is different from traditional economics because of:
   a.   Profit base   b. Self Interest c. Morality   d. None

vi.   Islamic Modes of financing are related to:
   a.   Islamic Banking   b. Wage Policy c. Behaviour of consumer   d. None

vii.   Al-Quran and Al-Sunnah are the:

   a. Tools of Tax Policy   b. Mode of consumption
   c. Tools of Public Policy   d. Source of Islamic Economics

viii.   Kitab ul Ammwaal is written by:
   a.   Imam Abu Yousaf   b. Imam Abu Ubaid   c. Naeem Siddiqui   d. None

ix.   Zakat can be given for:
   a.   Construction of Masjid   b. Social Uplift c. Generate Revenue   d. None

x.   The sources of Legislation in Islam is:
   a.   Quran   b. Hadis   c. Ijma   d. All three

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Islamic Economics
Course Code: ECON-407   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q. No. 2 Give short answers to the following questions: 4x5=20

    a.   What do you mean by Welfare State?

    b.   List the sources of revenue of Bait-ul_Maal.

    c.   Define Islamic Economics.

    d.   Define Trade based modes of financing in Islamic Perspective.

Q. No. 3 Write a detailed note on the behavior of Muslim Producer.   10

Q. No. 4 Compare Islamic Economic and Western Economics.   10

Q. No. 5 State measures against accumulation of personal wealth in Islam.   10

Roll No. in Fig. ....

Roll No. in Words. ....

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Paper: Fiscal Policy
Course Code: ECON-409   Part – I (Compulsory)   Time: 15 Min. Marks: 10

Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

i.   Public goods include

    a) fresh air   b) knowledge   c) national defense

    d) all of the previous options   e) none of the options

ii.   The most important source of public revenue is

    a) license fee   b) interest   c) tax

    d) all of the previous options   e) none of the options

iii. A tax charged at higher rates when income increases is called

    a) progressive tax   b) degressive tax   c) proportionate tax

    d) indirect tax   e) none of the options

iv.   Which of the following is not fiscal policy?

    a) decrease in interest rates   b) decrease in sales tax   c) deficit financing

    d) increase in income tax   e) none of the options

v.   Tax is

    a) Paid by choice   b) A compulsory contribution   c) A type of fine

    d) A type of fee for citizenship   e) None of the above

vi.   In a proportional tax system, the rate of tax

    a) increases with income   b) decreases with income   c) always remains the same

    d) is higher for the poor   e) None of the above

vii. Custom duties encourage

    a) important substitution   b) use of machinery   c) the importers

    d) international trade   e) international organizations

viii. Which of the following is a tool of fiscal policy?

    a) change in supply of money   b) increase in the interest rate   c) Increase in taxes

    d) devaluation of currency   e) none of the options

ix.   Ricardian Equivalence Theorem was first presented by

    a) Ricardo   b) Marshal   c) Smith

    d) Robbins   e) Barro

x.   According to Ricardian Equivalence Theorem what remains equal over generations

    a) Investment   b) Consumption   c) Taxes

    d) all of the previous options   e) none of the options

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Fiscal Policy

Time: 2 Hrs. 45 Min.   Marks: 50

Course Code: ECON-409   Part – II

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

(2) Provide short answers (maximum 10 sentences per answer).   (5x4=20)

   i. What is meant by the term TAX?

   ii. Why is external debt of Pakistan high and increasing?

   iii. Explain the concept of Balance budget Multiplier with examples.

   iv. What are the objectives of Fiscal policy?

   v. What is the Ricardian equivalence model about?

(3) Answer the following briefly.   (3x10=30)

   a. What are different types of tax systems? Which one is better in your opinion?

   b. How external and internal debt is used to stabilize the economy?

   c. Discuss each of Local water supply, medical education & national defense as being a public good or private good? Why?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Educational Management and Leadership
Course Code: EDU-405   Part – I (Compulsory)   Time: 15 Min. Marks: 10

Roll No. in Fig. ....

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.   **(10x1=10)**

1. **Leader involves.**
   a) Establishing vision
   b) Sharing vision
   c) Providing information that vision
   d) All of these

2. **Management is the art of getting things done through:**
   a) Command
   b) Others
   c) Control
   d) Planning

3. **All of the following are traits of managers who exhibit openness to experience except**
   a) Imaginative
   b) Narrow-minded
   c) Curious
   d) Artistically sensitive

4. **How many types of Educational Planning:**
   a) 5
   (b) 3
   (c) 4
   (d) 2

5. **Trait theory is also called in psychology:**
   a) Dispositional Theory
   b) Situational Theory
   c) Behavioral Theory
   d) Contingency Theory

6. **"Management is the art of getting things done through" by.**
   a) Parker   b) Henry   c) Louis   d) Michel

7. **Setting a new direction and vision for the followers is.**
   a) Management   b) Leadership   c) Controlling   d) None of above

8. **This style of leadership is includes sharing of ideas.**
   a) Headship
   b) Laissez-faire leadership style
   c) Autocratic leadership style
   d) Democratic leadership style

9. **Documented proof of transaction that is routinely done by a school is.**
   a) Record   b) Register   c) Public record   d) Book

10. **Laissez-faire leadership style also known.**
    a) Headship
    b) Courageous leadership style
    c) Delegative leadership style
    d) competent leadership style

Paper: Educational Management and Leadership
Course Code: EDU-405   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Write briefly. Attempt all questions.   (5x4=20)

i.   Differentiate between leadership and management?
ii. Define POSDCORB?
iii. Define "Human Resources"?
iv. Describe the advantages of Autocratic leadership style?
v.   What is code of ethics?

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

i.   لیڈرشپ اور مینیجمنٹ میں فرق واضح کریں۔

ii. POSDCORB کی تعریف تحریر کریں۔

iii. "ہیومن ریسورس" کی تعریف بیان کریں۔

iv. آٹوکریٹک لیڈرشپ اسٹائل کے فوائد تحریر کریں۔

v.   کوڈ آف ایتھکس کیا ہے؟

Q.3. Give extensive answer of the following questions.   (3x10=30)

i.   Discuss the democratic leadership style with suitable examples?
ii. Briefly discuss the role of planning in management process?
iii. What are the types of school records? Discuss its importance in any educational organization.

سوال نمبر 3:   درج ذیل سوالات کے تفصیلی جواب تحریر کریں۔

i.   ڈیموکریٹک لیڈرشپ اسٹائل کی وضاحت موزوں مثالوں سے تحریر کریں۔

ii. منصوبہ بندی کے مینجمنٹ کے عمل میں کردار کی وضاحت کریں۔

iii. سکول ریکارڈ کی کتنی اقسام ہیں؟ سکول ریکارڈز کی افادیت اور اہمیت تعلیمی ادارے کے حوالے سے بیان کریں۔

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

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Roll No. in Words. ....

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
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This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

1. Conservation" is sometimes used synonymously with ....
   a) Nature studies
   b) Protection
   c) Environmental education
   d) none of the above

2. The pollutants produced through reaction between primary pollutants and normal atmospheric compounds are called as
   a) primary pollutants   b) secondary pollutants   c) tertiary pollutants   d) none

3. Making something unfit for a particular use through the introduction of undesirable material is   known as..............
   a) contamination
   b) toxicology
   c) carcinogen
   d) none of the above

4. The content of heavy metals in our bodies is known as
   a) body burden   b) heavy body   c) body infection   d) body injury

5. Infant deaths per thousand live births are
   a) Infant mortility
   b) infant death rate
   c) Crude birth and death rate
   d) infant doubling time

6. Thal, cholistan and thar fall under
   a) Forest ecosystem
   b) Aqyatic ecosystem
   c) Desert ecosystem
   d) All of the above

7. A national teach-in about environmental problems – paved the way for the modern environmental education movement the first Earth Day on
   a)   April 22, 1970 b) April 22, 1980   c) April 22, 1990   d) April 22, 2000

8. There is gross inequilities between health, wealth and quality of ....
   a) food   b) life   c) shelter   d) dress

9. Fishes are the .... food
   a) Aqua marine
   b) terrestrial food
   c) Both of these
   d) None of these

10. The first population era was ....
    a) machine   b) Mechanical   c) Hunters and gatherers   d) none

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Environmental Education
Course Code: EDU-406   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q#2: Explain the short questions   **(5*4= 20)**

1. Name the 1st book written on environmental issues mentioning the adverse effects off DDT, due to this book DDT was banned all over the world?

2. Define the concept of recycling resource?

3. What is smog, also write down any two of its hazards?

4. Write down elements of environment?

5. What is the concept of body burden of chemicals in human body?

Subjective Part-III

Q#3: Essay type Question   **(3*10=30)**

1. Describe polar amplification, explain in detail that how climate change is an international issue and what can be done to resolve this issue through environmental education?

    10

2. What are water crises and their relationship with the sustainable development of a country? Also discuss the importance of dams for the development of country?

    10

3. Write down a Comprehensive Note on "What is Human Exposure to different types pollution and how it can be solved".

    10

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

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Signature of Supdt.:

Paper: School Management
Course Code: EDU-406-N   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

1. The power delegated throughout an organization is_____.

    a. Command
    b. Centralization
    c. Decentralization
    d. Control

2. Every staff member at school should know the_____.

    a. Safety policy
    b. Admission policy
    c. Assessment policy
    d. Grading policy

3. A choice made between two or more alternatives is called_____.

    a. Assumption
    b. Decision
    c. Reporting
    d. All of the above
    e. None of the above

4. _____is referred to as the process of making judgment.

    a. Budgeting
    b. Evaluation
    c. Demonstration
    d. All of the above
    e. None of the above

5. _____ ensures the care and control of students at a school.

    a. Security system
    b. Record keeping system
    c. Safety system
    d. Discipline system

6. New laboratories and libraries can be established under_____.

    a. Development budget
    b. Non-development budget
    c. Both a and b
    d. All of the above
    e. None of the above

P.T.O.

7. A program of activities which is designed to attain educational ends is called_____
_____.

a. Curriculum
b. Syllabi

c. Instruction
d. Learning

8. Change, conflict and _____are major elements of decision making.

a. Outcome
b. Risk
e. None of the above

c. Alternatives
d. All of the above

9. New knowledge is welcomed through_____.

a. Transformational leadership
b. Leadership

c. Stress management
d. Conflict management

10. People, task and organizational values can fall under the area of_____.

a. Leadership
b. Management

c. Both a and b
d. None of the above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: School Management
Course Code: EDU-406-N   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Answer the following questions briefly.   (5x4=20)

1. How is communication important for head teachers?
2. What is meant by school registers?
3. Enlist the elements of management?
4. Briefly describe why delegation of power is necessary in an organization?
5. What is meant by appraisal criteria?

Q No. 3. Analysing the current scenario of Governmental elementary schools, there is a tension between the teachers and head teacher. How would you like to describe their professional relationship? Discuss it in detail.   15 Marks

Q No. 4. The quality of teaching and learning is at risk due to lack of finance at Pakistani PublicElementary Schools. Propose solutions for this issue.   8 Marks

Q No. 5. What are the qualities of head teachers as manager?   7 Marks

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Test Development and Evaluation
Course Code: EDU-407-N   Part – I (Compulsory)   Time: 15 Min. Marks: 10

Roll No. in Fig. ....
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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

1. Evaluation that monitors learning progress is
   a. Placement Evaluation
   b. Diagnostic evaluation
   c. Formative evaluation
   d. Summative evaluation

2. Formal and systematic procedure of getting information is?
   a. Test
   b. Measurement
   c. Assessment
   d. Evaluation

3. Which is from the following **NOT** a formal assessment?
   a. Assignment
   b. Paper
   c. Quiz
   d. Discussion

4. The quality of test that measures "what it claims to measure" is
   a. Validity
   b. differentiability
   c. Objectivity
   d. Reliability

5. Objective type questions have advantage over essay type because such questions;
   a. are easy to prepare
   b. are easy to solve
   c. are easy to mark
   d. none of above

6. What is the purpose of a table of specifications?
   a. To help choose the content to be taught
   b. To specify what an Evaluation should measure
   c. To demonstrate teacher effectiveness
   d. To make sure that affective objectives are included

7. The purpose of the evaluation is to make?
   a. decision
   b. prediction
   c. Judgement
   d. Opinion

P.T.O.

8. The teacher announces that in two weeks, a test worth 50% of the semester grade will be administered. What type of test is this teacher planning to give?
    a. Maximum performance
    b. Minimum performance
    c. Typical performance
    d. Formative performance
9. Which is an example of an informal assessment?
    a. A homework assignment.
    b. A quiz on a social studies chapter.
    c. An externally mandated achievement test.
    d. A behavioural observation.
10. An instructional objective is sound if it
    a. lists teacher behaviour.
    b. uses verbs like "know" or "learn."
    c. uses verbs like "match" or "differentiate."
    d. uses multiple adjectives.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Test Development and Evaluation
Course Code: EDU-407-N   Part – II

Roll No. ....

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Attempt All Questions

Part II

Q # 2

i. What are the objectives of evaluation? (5)

ii. Write the uses of summative evaluation in teaching process. (5)

iii. What important steps should keep in mind for assembling the test? (5)

iv. Define reliability and explain with two examples (5)

Part III

Q.3 What is difference between objective type and subjective type test? Give their merits and demerits (10)

Q.4 Explain nature of Multiple Choice Items. Describe advantages and limitations of Multiple Choice Items. (10)

Q.5 Find the arithmetic mean, median and mode of Urdu test scores of 10 students (10)

47	43	64	51	42
40	48	36	55	46

SECTION – A

Answer the following short questions.

Q.1.   Briefly discuss the theme of ESCAPE in "The Balcony" by Jean Genet.   (05)

Q.2.   The story "Ward NO.6" engages in the theme of CLASS STRUGGLE through various characters. Give short answer.   (05)

Q.3.   What is the CENTRAL IDEA of "Song from the Highest Tower" by Arthur Rimbaud.   (05)

SECTION – B

Give detailed answers the following questions.

Q.4.   "Man is condemned to be free," observes Jean Paul Sartre. Discuss his novel Nausea in the light of this statement.   (15)

Q.5.   Delineate the symbolic significance of Gregor's METAMORPHOSIS into an insect in "Metamorphosis" by Kafka.   (15)

Q.6.   Trace the elements of CLASSICAL GREEK TRAGEDY in Strindberg's Miss Julie.   (15)

Note:　Attempt All Questions.

Section A

Q.1.　Discuss in detail Tariq Rahman's characterization of the main character in *The Professor*.　　　　05

Q.2.　Critically comment on the literary devices used in Shadab Zeest Hashmi's poem *Fatima Jinnah Enters Her Brothers Study*.　　　　05

Q.3.　Examine the role of the title of Sara Suleri's novel *Meatless Days* and how the customs mentioned affect her household and memory.　　　　05

Section B

Q.4.　"In *Twilight in Dehli*, Ahmed Ali shows us both the negative and positive aspects of Muslim cultural life in the subcontinent". What in your opinion is the role and significance of these representations?　　　　15

Q.5.　Analyze in detail the major features which render Allama Muhammad Iqbal's artistic work *Cordoba* a poetic masterpiece.　　　　15

Q.6.　Write a critical appraisal of the major thematic concerns and conflicts in Tahira Naqvi's collection of short stories *Attar of Roses*.　　　　15

Note: Attempt All Questions with relevant examples.

Section A (15 Marks)

I.   Briefly answer the following questions:

a. What is the importance of 'learning objectives' while designing a lesson plan? (5)

b. How can 'group work' improve the students' spoken skills? (5)

c. What is 'Reflective teaching'? (5)

Section B (45 Marks)

II.   How is the teaching and learning of the English language happening at the 'Higher Education Level' of Pakistan? Is there a difference in the public and private sector in this regards? Illustrate your answer with relevant examples. (15)

III.   What are the qualities of a good lesson plan? Develop a lesson plan for teaching Writing Skills to Grade 8, using a short story. (15)

IV.   How beneficial is 'Peer Observation' for the professional development of the teachers? In what way do you think it can help Pakistan's school teachers? (15)

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. in Fig. ....

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Signature of Supdt.:

Paper: Network Security
Course Code: IT-406   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.   **(10x1=10)**

1. Message_____ means that the data must arrive at the receiver exactly as sent.
   A. Confidentiality
   B. Authentication
   C. Integrity
   D. None of Above

2. Message _____ means that the receiver is ensured that the message is coming from the intended sender, not an imposter.
   A. Confidentiality
   B. Integrity
   C. Authentication
   D. None of Above

3. If _____ is needed, a cryptosystem must be applied over the scheme.
   A. Integrity
   B. Confidentiality
   C. Nonrepudiation
   D. Authentication

4. A digital signature needs a
   A. Private-key system
   B. Shared-key system
   C. Public-key system
   D. All of them

5. One way to preserve integrity of a document is through use of a
   A. Eye-Rays
   B. Finger Print
   C. Biometric
   D. X-Rays

6. Which of the following is not a factor in securing the environment against an attack on security?
   A. The education of the attacker
   B. The system configuration
   C. The network architecture
   D. The business strategy of the company
   E. The level of access provided to employees

7. Which of the following pieces of information can be found in the IP header?
   A. Source address of the IP packet
   B. Destination address for the IP packet
   C. Sequence number of the IP packet
   D. Both (A) and (B) only.

8. Why would a hacker use a proxy server?
   A. To create a stronger connection with the target.
   B. To create a ghost server on the network.
   C. To obtain a remote access connection.
   D. To hide malicious activity on the network.

9. Encryption and decryption provide secrecy, or confidentiality, but not
   A. Authentication
   B. Integrity
   C. Privacy
   D. All of above

10. Digital signature provides ___.
   A. Authentication
   B. Both (A) and (B)
   C. Nonrepudiation
   D. None of it

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Question #2.   **(4*5=20)**

   Write the short answers of the following question.

1. Describe the Block Cipher Principles and The Data Encryption Standard?

2. Discuss the role of Ticket Granting Server (TGS) in inter realm operations of Kerberos?

3. Explain the Advanced Encryption Standard, Evaluation Criteria For AES?

4. Explain the viruses, Trojan horse and Worms?

5. Discuss and explain The Strength of Des and Differential and Linear Cryptanalysis?

(Long Questions)   **(3x10=30)**

Question #03

Explain the Firewall Design Principles, Firewall Characteristics, Types of Firewalls and Firewall deployment with diagrams?

Question #04

a) Describe the Key Management, Distribution of Public Keys and its following general schemes like Public announcement, Publicly available directory, Public-key authority, Public-key certificates?

b) Briefly explain RSA?

Question #05

Describe the Intruders, Intrusion Techniques and Intrusion Detection in detail?

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. in Fig. ....

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Signature of Supdt.:

Paper: Software Quality Assurance
Course Code: IT-407   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

1. _____ Testing is performed by Developer?
   A. White BOX
   B. Black BOX
   C. Grey BOX
   D. UNIT testing

2. Internal details are hide in _____ Testing
   A. White
   B. Black
   C. Red
   D. Grey

3. Which statement is not True about SQA?
   A. Audits and reviews to be performed by the team
   B. Amount of technical work to be performed
   C. Evaluation to be performed
   D. Documents that are produced by the SQA team

4. Select the people who identify the document and verifies the correctness of the software.
   A. Project manager
   B. SQA team
   C. Project team
   D. All of the mentioned

5. Which of the following is not an External failure costs?
   A. Testing
   B. Helpline support
   C. Warranty work
   D. complaint resolution

6. Component testing is responsible of which of the person
   A. software tester
   B. designer
   C. developer
   D. User

7. The level of testing used to identify the defects
   A. Acceptance testing
   B. Integration testing
   C. Unit testing
   D. System testing

8. Test level is performed in which level.
   A. It depends on nature of a project
   B. Unit, System, Integration ,Acceptance
   C. Unit, Integration, Acceptance, System
   D. Unit, Integration, System, Acceptance

9. Choose which effort is required for locating and fixing an error in operational program
   A. Efficiency
   B. Usability
   C. Maintainability
   D. Testability

10. Is the 100% Quality of a Software is achievable?
    A. Yes
    B. No
    C. Depend on tester
    D. Environment factor involve

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Short Questions (Marks 20)

Each question is of 5 marks:

1. Write 3 difference between White Box and Black Box testing?
2. Why do we use Regression Testing?
3. What you understand from the term PROCESS Quality?
4. Differentiate 'validation' and 'verification'?

Subjective Questions (Marks 30)

Question 1: (10 Marks)

Explain in details the difference between "Quality Assurance" and "Quality Control" by taking relevant examples?

Question 2: (10 Marks)

Define heretical and non-heretical model. it in details?

Question 3: (10 Marks)

What is meant by Testing? How many types of testing are there? Define Alpha and Beta Test.

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Introduction to Economics
Course Code: IT-408   Part – I (Compulsory)

Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

1. Human wants are
   a) One thousand
   b) Few
   c) Innumerable
   d) None of three

2. The shape of average cost curves in short period is:
   a) Vertical
   b) Horizontal
   c) Positively sloping
   d) Like English alphabet U

3. When marginal utility is positive, TU
   a) Increases
   b) Decreases
   c) Is constant
   d) Is zero

4. Transfer payments are included in:
   a) GDP
   b) GNP
   c) NNP
   d) PI

5. Monopolist firm in long run:
   a) Always faces loss
   b) Usually faces loss
   c) Earns normal profit
   d) Always earns abnormal profit

6. Demand for necessities of life is:
   a) Less elastic
   b) More elastic
   c) Perfectly elastic
   d) Perfectly inelastic

7. When inflation occurs due to increase in factor price,it is
   a) Demand pull inflation
   b) Cost push inflation
   c) Stagflation
   d) None of three

8. Main elements of circular flow of national incomes are:
   a) Households
   b) Firms
   c) Both (a) & (b)
   d) None of three

9. Situation when workers choose not to work at current wage rate is:
   a) Frictional unemployment
   b) Seasonal unemployment
   c) Voluntary unemployment

10. Indifference curves must be
    a) Concave to origin
    b) Convex to origin
    c) Upward sloping
    d) None of three

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Introduction to Economics
Course Code: IT-408   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q2 Write short answers to the following questions.   **(2x10)=20**

(i) Define Economics. Write down difference between Micro and Macro Economics.

(ii) State Law of Diminishing Marginal Utility.

(iii) What is Consumer Equilibrium?

(iv) Write down the concept of Perfect Competition.

(v) What is the difference between supply and stock?

(vi) Differentiate between Total & Marginal Utility.

(vii) How can inflation be controlled in Pakistan?

(viii) What is the difference between GNP & GDP?

(ix) What is fiscal policy? Write down its objectives.

(x) What is Output method to measure National Income

Q3: What is Elasticity of Demand? Explain income and cross elasticity of demand.   **(10)**

Q4:   (a) Define Unemployment. Discuss different types of Unemployment.   **(7)**

   (b) Explain any three properties of Indifference Curves.   **(3)**

Q5: Define National Income. Explain circular flow of National income with the help of diagram.

(10)

Roll No. in Fig. ....

Roll No. in Words. ....

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Signature of Supdt.:

سوال نمبر 1:   کسی ایک جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب غلط شمار کیا جائے گا۔   (10x1=10)

1. تفسیر تدبر قرآن کے مولف کا نام ہے؟

(الف) سید مودودی   (ب) مولانا امین احسن اصلاحی   (ج) مفتی محمد شفیع

2. عراق کے تفسیری مکتب کے بانی ہیں؟

(الف) حضرت ابن عباس رضی اللہ عنہ   (ب) حضرت ابن مسعود رضی اللہ عنہ   (ج) حضرت ابن عمر رضی اللہ عنہ

3. نزہۃ الاعین النواظر فی علم الوجوہ والنظائر کے مولف ہیں؟

(الف) ابن جوزی   (ب) مقاتل بن سلیمان   (ج) امام دامغانی

4. الاتقان فی علوم القرآن کی انواع کی کل تعداد ہے۔

(الف) 40   (ب) 47   (ج) 80

5. فنون الافنان فی عیون علوم القرآن کے مولف ہیں؟

(الف) امام زرکشی   (ب) امام ابن جوزی   (ج) امام سیوطی

6. سر سید احمد خان کی تفسیر کا شمار ہوتا ہے۔

(الف) تفسیر بالماثور میں   (ب) تفسیر بالرائے میں   (ج) تفسیر اشاری میں

7. مولانا تقی عثمانی کی کتاب کا نام ہے۔

(الف) علوم القرآن   (ب) مباحث فی علوم القرآن   (ج) برھان القرآن

8. فرقہ اسماعیلیہ کا دوسرا نام ہے۔

(الف) فرقہ باطنیہ   (ب) فرقہ ظاہریہ   (ج) فرقہ شیعہ

9. تفہیم القرآن کی کل جلدیں ہیں؟

(الف) 6   (ب) 7   (ج) 8

10. حضرت مجاہد کس صحابی کے شاگرد ہیں؟

(الف) حضرت ابن عباس رضی اللہ عنہ کے   (ب) حضرت ابن مسعود رضی اللہ عنہ کے   (ج) حضرت ابی بن کعب رضی اللہ عنہ کے

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Sciences of Quran
Course Code: ISE-405   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

سوال نمبر 2: درج ذیل سوالات کے مختصر جوابات تحریر کریں۔ (10x2=20)

i. تفسیر بالرائے کی اصطلاحی تعریف لکھیں۔

ii. مطلق اور مقید میں فرق واضح کریں۔

iii. علوم القرآن پر دو عربی کتب کے نام تحریر کریں۔

iv. امام رازی کی تفسیر کا نام لکھیں۔

v. حقیقت اور مجاز میں کیا فرق ہے؟

vi. تفسیر القرآن بالقرآن کی ایک مثال دیں۔

vii. اسرائیلیات سے متعلق شریعت کا کیا حکم ہے؟

viii. اصول تفسیر پر شاہ ولی اللہ کی کتاب کا نام لکھیں۔

ix. علم وجوہ کی تعریف کریں۔

x. الدخیل فی التفسیر سے کیا مراد ہے؟

سوال نمبر 3: درج ذیل سوالات کے جامع جواب تحریر کریں۔ (10x3=30)

i. تفسیر اشاری پر جامع مقالہ قلمبند کیجیے۔

ii. عام اور خاص میں کیا فرق ہے؟ نیز ان دونوں اصولوں کی قرآنی امثلہ سے وضاحت کیجیے۔

iii. تفسیری ادب میں انحرافی رجحانات کا جائزہ لیں۔

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. In Fig. ....

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Signature of Supdt.:

Paper: Fiqh-III
Course Code: ISE-406   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

سوال نمبر 1:   کسی ایک جواب کا انتخاب کیجیے۔کاٹ کریامٹاکرلکھاگیاجواب غلط شمار کیاجائے گا۔   (10X1=10)

۱) سرمایہ نقد ہونا ضروری ہے: (۱) شرکت میں   (ب) مضاربت میں   (ج) مزارعت میں

۲) بیع "المقاصۃ" کا تعلق کس بیع سے ہے؟   (۱) صحیح   (ب) مکروہ   (ج) فاسد

۳) بیع بالخیار کی مدت ہے: (۱) دودن   (ب) تین دن   (ج) چاردن

۴) بدائع الصنائع کس کی تصنیف ہے؟   (۱) القرضاوی   (ب) الجزیری   (ج) الکاسانی

۵) "وجوہ" اور "اعمال" کا تعلق ہے۔   (۱) شرکت سے   (ب) مضاربت سے   (ج) مزارعت سے

۶) اگر دو شخص ملکِ مطلق پر گواہ قائم کریں اور ان میں تاریخ بیان کرنے میں اختلاف ہوتو فیصلہ کس کے حق میں ہوگا؟   (۱) مقدم تاریخ بتانے والے کے لیے   (ب) مؤخر تاریخ بتانے والے کے لیے   (ج) دونوں کے حق میں باطل ہوجائے گا

۷) "سلف" کس بیع کا دوسرا نام ہے؟   (۱) بیع ملامسہ   (ب) بیع سلم   (ج) بیع وضعیہ

۸) رب المال سے کیا مراد ہے؟   (۱) عروض   (ب) دراہم و دنانیر   (ج) کوئی نہیں

۹) "مدعٰی علیہ" کون ہوتا ہے؟   (۱) دعوی کی گئی چیز   (ب) کسی چیز کو اپنی طرف منسوب کرنے کے لیے جھگڑنے والا   (ج) جس پر خصومت کو پیش کیا جائے

۱۰) نفع اور نقصان کے بغیر لاگت پر چیز فروخت کرنا کہلاتا ہے: (۱) بیع مرابحہ   (ب) بیع تولیہ   (ج) بیع وضعیہ

۱۱) مشتری کو اندھیرے میں رکھ کر چیز فروخت کرنے کا خیار کہلاتا ہے: (۱) خیار تدلیس   (ب) خیار تعیین   (ج) خیار غبن

۱۲) نفسِ عقد سے کیا مراد ہے؟   (۱) ایجاب و قبول کے خلاف ہو   (ب) ایجاب و قبول کے موافق ہو   (ج) صرف ایجاب ہو قبول نہ ہو

۱۳) تازہ کھجوروں کی بیع کی جاتی ہے۔   (۱) بیع مرابحہ میں   (ب) بیع عرایا میں   (ج) بیع مزابنہ میں

Paper: Fiqh-III
Course Code: ISE-406   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

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(حصہ دوم)(Subjective Type)

سوال 2: ذیل میں دیے گئے کوئی سے دس سوالات کے مختصر جوابات دیں۔ (20)

۱) بیع سلم کے ارکان لکھیں۔

۲) بیع استصناع کی تعریف کریں اور مثال دیں۔

۳) خیار رؤیت سے کیا مراد ہے؟

۴) خیار شرط کی مدت میں ائمہ کا اختلاف تحریر کریں۔

۵) فاسد شرکت کی ایک مثال تحریر کریں۔

۶) بیع اور تجارت میں فرق تحریر کریں۔

۷) بیع میں "خیار نقد" کسے کہتے ہیں؟

۸) "رب السلم" کے کیا اختیارات ہوتے ہیں؟

۹) بیع میں معقود علیہ کی دو شرائط کا ذکر کریں۔

۱۰) "سادہ سلم" اور "سلم متوازی" میں کیا فرق ہے؟

۱۱) وہ کون سی اشیاء ہیں جن پر منکر سے قسم نہیں لی جاتی؟

۱۲) مضاربت کی صحت کی کوئی سی دو شرائط تحریر کریں۔

۱۳) شرکتِ وجوہ کسے کہتے ہیں؟

سوال 3: کسی ایک پر نوٹ لکھیں۔ (15)

(۱) کتاب الدعوی   (۲) کتاب الشرکۃ

سوال 4: فقہی عبارت کا بامحاورہ ترجمہ کریں، بیع دعوی کی شرائط کا اور اس کے متعلق امور پر جامع نوٹ قلمبند کریں۔ (15)

و أما الشرائط المصححة للدعوی فانواع منها عقل المدعی و المدعی علیه فلا تصح دعوی المجنون و الصبی الذی لا یعقل

یا

درج ذیل فقہی عبارت کا بامحاورہ ترجمہ کریں، اعراب لگائیں اور جامع مانع تشریح کریں۔

و أما رکن العقد فا الأیجاب و القبول وذلك بالألفاظ تدل علیهمافالأیجاب هو لفظ المضاربة و المقارنة و المعاملة و ما یؤدی معانی هذه الألفاظ بان یقول رب المال خذ هذا المال مضاربة علی ان ما رزق الله عز و جل أو اطعم الله تعالی منه من ربح فهو بیننا علی کذامن نصف أو ربع أو ثلث أو غیر ذلك من الاجزاء المعلومة ۔

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Paper: Comparative Study of Religions-II
Course Code: ISE-407   Part – I (Compulsory)

Time: 15 Min. Marks: 10

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حصہ معروضی

سوال نمبر 1: دس سوالات کے ممکنہ جوابات تحریر کیجیئے

1- وہ کون سے پیغمبر ہیں جن کو قرآن میں امت قرار دیا گیا ہے ؟

(ا) حضرت محمدؐ   (ب) حضرت اسماعیلؑ   (ج) حضرت ابراہیم

2- تالمود کس مذہب کا لٹریچر ہے؟

(ا) عیسائیت   (ب) جین مت   (ج) یہودیت

3- حضرت موسیٰؑ کو کس قوم سے جنگ کرنے کا حکم دیا ؟

(ا) قوم عاد   (ب) قوم ثمود   (ج) قوم عمالقہ

4- غیر تبلیغی مذہب کونسا ہے؟

(ا) بدھ مت   (ب) یہودیت   (ج) عیسائیت

5- بائبل میں رسول اللہ ﷺ کا کیا نام آیا ہے ؟

(ا) تارح   (ب) فارقلیط   (ج) آزر

6- بنی اسرائیل صحرائے سینا میں کتنے سال سرگرداں رہے ؟

(ا) 45 سال   (ب) 40 سال   (ج) 43 سال

7- رسم بپتسمہ کس مذہب میں ہے؟

(ا) ہندو مت   (ب) عیسائیت   (ج) بدھ مت

8- دنیا کے کس ملک میں یہود کی تعداد زیادہ ہے؟

(ا) امریکہ   (ب) جرمنی   (ج) اسرائیل

9- حضرت عیسیٰ علیہ السلام کے حواریوں کی تعداد کتنی تھی ؟

(ا) 20   (ب) 12   (ج) 08

(ا) انجیل مرقس   (ب) انجیل برنباس   (ج) متی

10- کس یہودی کو بابائے صیہونیت کا خطاب دیا گیا؟

(ا) تھیوڈر ہرزل   (ب) مارٹن لوتھر   (ج) پولوس

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حصہ انشائیہ

سوال نمبر 2: کوئی سے دس سوالات کے مختصر جوابات تحریر کیجئے   (20)

1۔ تقابل ادیان کے موضوع پر کوئی دو عربی کتب اور ان کے مصنفین کے نام تحریر کریں۔

2۔ اللہ کے نزدیک دین کونسا ہے؟ آیۃ مبارکہ تحریر کریں۔

3۔ بائبل کے کن دو حصوں کے مجموعہ کا نام ہے؟

4۔ "عہد فسح" سے کیا مراد ہے؟

5۔ تسع آیات سے کیا مراد ہے؟

6۔ عیسائیت کے تین بڑے فرقوں کے نام تحریر کریں۔

7۔ ختم نبوت کا عقیدہ کیا ہے؟ واضح کریں۔

8۔ کن دو بڑے مذاہب میں تثلیث کا تصور پایا جاتا ہے؟

9۔ وحی کی تین صورتیں کونسی ہیں؟

10۔ جدید تحریک صیہونیت کے کوئی سے چار اہداف تحریر کریں

11۔ اسلام کی عالمگیریت پر ایک آیۃ مبارکہ تحریر کریں۔

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

الف۔ حضرت ابراہیم کا سامی مذاہب میں مقام و مرتبہ اور ان کی آزمائش زندگی پر تفصیلی مقالہ لکھیں۔

ب۔ مسیحی عقائد و تعلیمات کا اسلام کی روشنی میں ناقدانہ جائزہ پیش کریں۔

ج۔ آنحضورﷺ کو ہادیان عالم پر جو فوقیت و برتری حاصل ہے اس پر شذرہ قلمبند کیجئے۔

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سوال نمبر 1: کسی ایک جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب غلط شمار کیا جائے گا۔

1- "اسلام کا اقتصادی نظام" کے مصنف کا نام تحریر کریں۔

(الف) ڈاکٹر نجات اللہ صدیقی   (ب) حفظ الرحمن سیوہاروی   (ج) ڈاکٹر نور محمد غفاری

2- اسلام نے وصیت کی تحدید کی ہے۔

(الف) نصف ترکہ تک   (ب) تہائی ترکہ تک   (ج) چوتھائی ترکہ تک

3- زکوٰۃ کے مصارف ہیں؟

(الف) پانچ   (ب) چھ   (ج) آٹھ

4- کتاب "دولت اقوام" تحریر کی۔

(الف) لارڈ کینز   (ب) ایڈم سمتھ   (ج) کارل مارکس

5- خراج کے معنی ہیں۔

(الف) کرایہ   (ب) اجرت   (ج) مالیہ

6- حضرت ابو سعید خدری رضی اللہ عنہ کی روایت کے مطابق کتنے اوقیہ سے کم چاندی پر زکوٰۃ نہیں ہے۔

(الف) پانچ اوقیہ   (ب) دس اوقیہ   (ج) بیس اوقیہ

7- محنت کا معاوضہ ہے۔

(الف) لگان   (ب) اجرت   (ج) نفع

8- غیر مسلم مالکان زمین سے وصول کیا جاتا ہے۔

(الف) عشور   (ب) جزیہ   (ج) خراج

9- کتاب الخراج کے مصنف کا نام ہے۔

(الف) امام ابو عبید   (ب) امام ابو یوسف   (ج) ابن خلدون

10- کنز کے معنی ہیں۔

(الف) مال کو خزانہ بنا کر جمع رکھنا   (ب) ذخیرہ اندوزی کرنا   (ج) مال وصول کرنا

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

: Roll No. .... :

Paper: Islamic Economics-II

Course Code: ISE-408   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

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سوال نمبر 2:   درج ذیل سوالات کے مختصر جوابات درکار ہیں۔

(4x5=20)

i.   اسلامی ریاست کے کوئی چار ذرائع آمدن تحریر کیجیے۔

ii.   سود کے اسلامی متبادلات لکھیں۔

iii.   زکوٰۃ سے متعلق مصارف ثمانیہ والی آیت اور اس کا ترجمہ تحریر کریں۔

iv.   اسلام میں ٹیکس عائد کرنے کے اصول تحریر کریں۔

v.   موانع میراث کون کون سے ہیں؟

سوال نمبر 3:   درج ذیل سوالات کے جامع جواب درکار ہیں۔

(10x3=30)

i.   سود کی حرمت پر دلائل دیجیے، نیز سود کی اقسام اور معاشی نقصانات تحریر کریں۔

ii.   بیت المال کے ذرائع آمدن پر نوٹ لکھیں۔

iii.   معاشی ترقی کا مفہوم لکھیں۔ نیز اسلام میں معاشی ترقی کے تصورات تحریر کریں۔

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Measure Theory and Lebesgue Integration
Course Code: MATH-416   Part – I (Compulsory)   Time: 30 Min. Marks: 10

Roll No. in Fig. ....

Roll No. in Words. ....

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Q.1.   Encircle the correct option.   **(10x1=10)**

(i) Let $E = (0,1]$ and $f_n(x) = \begin{cases} n, & if\ x \in \left(0, \dfrac{1}{n}\right] \\ 0, & if\ x \in \left(\dfrac{1}{n}, 1\right] \end{cases}$ then the value of $\lim_n \int_E f_n = $ --------

(a) 0   (b) 2   (c) ∞ (d) None of these

(ii) The limit superior of the sequence $\left\{1 + (-1)^n\right\}$ is ----------

(a) 0   (b) 1   (c) ∞ (d) None of these

(iii) A set G is said to be G_δ set if it is the countable ---------- sets.

(a) intersection of open   (b) intersection of closed

(c) union of open   (d) union of closed

(iv) The Lebesgue outer measure of the set $\mathbb{Q} \times \mathbb{Q}$ is ----------

(a) 0   (b) 1   (c) $\aleph_0$ (d) None of these

(v) Let $I_n = \left(x_n - \dfrac{1}{2^{n+1}}, x_n + \dfrac{1}{2^{n+1}}\right)$ then $\sum_{n=1}^{\infty} l(I_n) = $ ----------

(a) $\mathbb{R}$ (b) 0   (c) 1   (d) $(0,1)$

(vi) Let f be a non-negative function such that $\int_\mathbb{R} f < \infty$ then $m\left(\left\{x \in \mathbb{R} : f(x) = \infty\right\}\right) = $ ----------

(a) ∞ (b) 0   (c) 1   (d) None of these

P.T.O.

(vii) Let $F = \bigcup_{k=1}^{\infty} \left\{ x \in R : 0 < x < \dfrac{1}{3^k} \right\}$ then $m(F) = $ --------

(a) $\dfrac{1}{2}$ (b) $\dfrac{1}{3}$ (c) $\dfrac{1}{6}$ (d) None of these

(viii) Let $\{ x : f(x) \geq \alpha \} = $ --------

(a) $\bigcap_{n=1}^{\infty} \left\{ x : f(x) < \alpha - \dfrac{1}{n} \right\}$ (b) $\bigcap_{n=1}^{\infty} \left\{ x : f(x) > \alpha - \dfrac{1}{n} \right\}$

(c) $\bigcup_{n=1}^{\infty} \left\{ x : f(x) < \alpha - \dfrac{1}{n} \right\}$ (d) None of these

(ix) Let $f(x) = -1$ then the set $\{ x \in \mathbb{R} : f(x) > -1 \} = $ -------- set

(a) Borel set and G_δ (b) Borel set but not G_δ

(c) not Borel set but G_δ (d) None of these

(x) Let $f(x) = \begin{cases} -2, & \text{if } x \in \mathbb{Q}' \cap (-5,5) \\ 3, & \text{if } x \in \mathbb{Q} \cap (-5,5) \end{cases}$

then the Lebesgue integration of $\int_{-5}^{5} f \, dm = $ --------

(a) $\mathbb{R}$ (b) $\{-1\}$ (c) $\{\ \}$ (d) None of these

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B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Measure Theory and Lebesgue Integration
Course Code: MATH-416   Part – II

Time: 2 Hrs. 30 Min.   Marks: 50

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SECTION-II

SHORT QUESTIONS

Q. 2

(i) Find the limit superior and limit inferior of the sequence $\{(-1)^n\}$.   (4)

(ii) Define the Cantor set C and Prove that it has Lebesgue measure zero.   (4)

(iii) Let f be real valued function defined on a measurable domain D and F be a closed set in $\overline{\mathbb{R}}$. Prove that f is Measurable if and only if $f^{-1}(F)$ is measurable.   (4)

(iv) Let f be a function with measurable domain D. Then f is measurable if and only if the   (4)

function $g(x) = \begin{cases} f(x), & \text{if } x \in D \\ 0, & \text{if } x \notin D \end{cases}$ is measurable.

(v) Let $\{f_n\}$ be sequence of Measurable function defined on a measurable set E of finite   (4)
measure and $f_n \to f$ in measure a.e. Then prove that $f_n \to f$ in measure.

SECTION-III

Q.3   Show that the Lebesgue outer measure of an interval is its length.   (6)

Q.4   Prove that every Lebesgue measurable set with positive measure has a non-Lebesgue   (6)
measurable subset.

Q.5   Let $f : R \times R \to R$ be a Measurable function and $g : R \times R \to R$ be a Borel Measurable   (6)
function. Show that $g \circ f$ is a Measurable function.

Q.6   State and Prove the Bounded Convergence theorem.   (6)

Q.7   Let g be integrable on E and $\{f_n\}$ be sequence of Measurable function such that $|f_n| \leq g$ (6)

on E. Suppose that $\underset{n}{Lim} f_n(x) = f(x)$ a.e on E. Then show that $\underset{n}{Lim} \int_E f_n = \int_E \underset{n}{Lim} f_n$.

Give a counter example that this result fails to hold if $\{f_n\}$ is unbounded?

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Methods of Mathematical Physics
Course Code: MATH-417   Part – I (Compulsory)

Time: 30 Min. Marks: 10

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(10x1=10)

Q.1.   Encircle the correct option.

(i) $L\{e^{3t}f(t)\} =$
  (a) $F(s-3)$ (b) $F(s+3)$ (c) $F'(s)$ (d) $F'(3)$

(ii) $L^{-1}\{e^{-as}F(s)\} =$
  (a) $f(t-a)U(t-a)$ (b) $f(t)U(t-a)$ (c) $f(t-a)U(t)$ (d) $f(t)U(t)$

(iii) $L^{-1}\{H(s)G(s)\}$
  (a) $L\{g(t)\}*L\{h(t)\}$ (b) $L\{h(t)\}L\{g(t)\}$ (c) $g*h$ (d) $h*g$

(iv) $x^3 - \varepsilon x - 1 = 0, \varepsilon \to 0$ is a
  (a) regular perturbation problem (b) singular perturbation problem (c) co-ordinate perturbation problem (d) none of these

(v)   The Fourier transform $F\{f(x)e^{ax}\} =$
  (a) $F(k+a)$ (b) $F(k-a)$ (c) $F(k+ai)$ (d) $F(k-ai)$

(vi) $L\{\sin(t-a)U(t-a)\} =$
  (a) $\dfrac{e^{-as}}{s^2+1}, \ a>0$ (b) $\dfrac{e^{as}}{s^2+1}, \ a>0$ (c) $\dfrac{se^{-as}}{s^2+1}, \ a>0$ (d) $\dfrac{se^{as}}{s^2+1}, \ a>0$

(vii)   The Fourier transform $F\{(h*g)\} =$
  (a) $\dfrac{G(k)}{H(k)}$ (b) $\dfrac{H(k)}{G(k)}$ (c) $h(x)g(x)$ (d) $G(k)H(k)$

(viii)   Euler-Lagrange equation for $I[x] = \int F(y,x,x')dy$ is
  (a) $\dfrac{\partial F}{\partial x} + \dfrac{d}{dy}\left(\dfrac{\partial F}{\partial x'}\right) = 0$ (b) $\dfrac{\partial F}{\partial y} - \dfrac{d}{dx}\left(\dfrac{\partial F}{\partial y'}\right) = 0$ (c) $\dfrac{\partial F}{\partial y} = 0$ (d) $\dfrac{d}{dx}\left(\dfrac{\partial F}{\partial y'}\right) = 0$

(ix) $\varepsilon x^3 - x + 1 = 0, \varepsilon \to 0$ is a
  (a) regular perturbation problem (b) singular perturbation problem (c) co-ordinate perturbation problem (d) none of these

(x)   The second derivative of Green's function $G(x,t)$ at $x=t$, $\dfrac{d^2 G(x,t)}{dx^2} =$
  (a) $\dfrac{1}{(x-t)^2}$ (b) $(t-x)^2$ (c) $x-t$ (d) $\delta(x-t)$
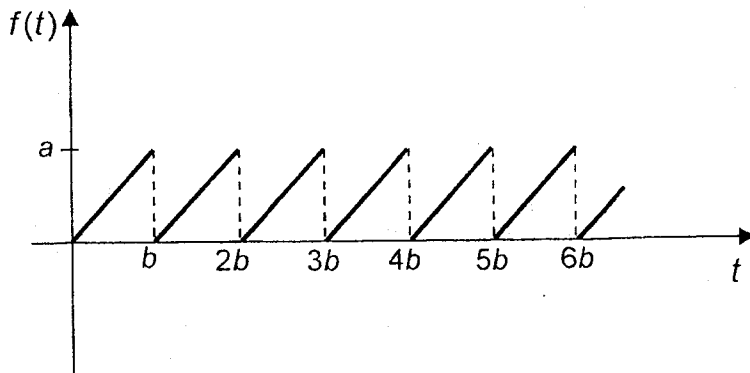
UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Methods of Mathematical Physics
Course Code: MATH-417   Part – II

Time: 2 Hrs. 30 Min. Marks: 50

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Q.2 Solve the following Short Questions: (4 × 5 = 20)

(i) Evaluate $L^{-1}\left\{\dfrac{1}{(s-3)(s-5)}\right\}$.

(ii) Find the Laplace transform of the given periodic function.

(iii) If $f(x) \to 0$ as $x \to \infty$, then show that $f_s\{f'(x)\} = -kf_c(k)$.

(iv) Let $f(x,\varepsilon) \sim \sum_{m=0}^{\infty} a_m(x)\delta_m(\varepsilon)$ be an asymptotic expansion of a function f(x) in terms of perturbation parameter ε as $\varepsilon \to 0$. Define the uniformity and non-uniformity of the above expansion. Also find the uniformly valid expansion of $\sin(x+\varepsilon)$.

(v) Calculate Green's function associated with the problem
$$y'' = f(x), \quad y(0) = 0, \quad y(l) = 0$$

Subjective Questions   (3 × 10 = 30)

Q.3 Using the Laplace transform solve
$$u_{tt}(x,t) = a^2 u_{xx}(x,t) - 2$$
$$u(x,0) = u_t(x,0) = 0 \; ; \; u(0,t) = 0 \; ; \; \lim_{x \to \infty} u_x(x,t) = 0$$

Q.4 Solve the following perturbed differential equation using regular perturbation method up to first order correction in ε as $\varepsilon \to 0$.
$$\frac{d^2u}{dt^2} - \varepsilon(1-u^2)\frac{du}{dt} + u = 0$$

Q.5 Find the extremal of the functional
$$I[y(x)] = \int_0^{\pi/2} (y''^2 - y^2 + x^2)dx$$
and the boundary conditions: $y(0) = 1, \; y(\pi/2) = 0, \; y'(0) = 0, \; y'(\pi/2) = 1$

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This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

(i).   For the Calculation of Derivative at a point near the end of data we use:
  (a). Forward Difference Formula
  (b). Backward Difference Formula
  (c). Central Difference Formula
  (d). Lagrange's Formula

(ii).   The formula $\int_{x_0}^{x_0+nh} f(x)dx = \frac{h}{2}\left((y_0 + y_n) + 2(y_1 + y_2 + \cdots + y_n)\right)$ is known as:
  (a). Rectangular Rule
  (b). Trapezium Rule
  (c). Simpson's 1/3 Rule
  (d). Boole's Rule

(iii).   To derive Simpson's 1/3 Rule from Newton-Cote's formula, the value of 'n' is taken:
  (a). 1
  (b). 2
  (c). 3
  (d). 4

(iv).   The Integrating factor of differential equation $\frac{dy}{dx} = x + y$ is:
  (a). e^x
  (b). e^{-x}
  (c). x
  (d). $-x$

(v).   An equation which involves a difference operator or shift operator is called:
  (a). Difference Equation
  (b). Differential Equation
  (c). Quadratic Equation
  (d). None of these

(vi).   The degree of the equation $y_{k+3} - 9y_{k+2} + 9y_k = 3x + 2$ is:
  (a). 0
  (b). 1
  (c). 2
  (d). 3

(vii).   The difference equation $y_{k+1}^2 \cdot y_{k+2}^3 - y_{k+1}y_k - y_k^2 = k$ is:
  (a). Homogeneous
  (b). Non-Homogeneous
  (c). Both (a) &(b)
  (d). None of these

(viii).   The formula $y_{n+1} = y_n + \frac{1}{6}[k_1 + 2k_2 + 2k_3 + k_4]$ is R.K Method of Order:
  (a). 2
  (b). 4
  (c). 6
  (d). None of these

(ix).   The formula $y_{n+1} = y_n + hy_n' + \frac{h^2}{2!}y_n''$ is Taylor Series method of order:
  (a). 1
  (b). 2
  (c). 3
  (d). 4

(x).   The formula $y_{n+1} = y_n + hf\left(x_n + \frac{h}{2},\ y_n + \frac{h}{2}f(x_n, y_n)\right)$ is known as:
  (a). Euler's Method
  (b). Heun's Method
  (c). Taylor Series Method
  (d). R.K. Method

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Numerical Analysis-II

Time: 2 Hrs. 30 Min.   Marks: 50

Course Code: MATH-418   Part – II

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

$4 \times 5 = 20$

Q.2. Solve the following Short Questions:

(i).   Prove that:

$$D^n = \frac{1}{h^n}\left[\sum_{k=1}^{\infty}(-1)^{k+1}.\frac{\Delta^k}{k}\right]^n,$$

where $D = d/dx$, Δ is the Forward Difference Operator & h is the interval difference.

(ii).   Use Trapezoidal Rule to evaluate the definite Integral $\int_0^1 \{^1/(1+x^2)\}dx$ with h = 0.2 & hence obtain an approximate value of π.

(iii).   Solve the Difference Equation:

$$y_{k+2} - 4y_{k+1} + 4y_k = 9.4^k$$

(iv).   For $\frac{dy}{dx} = x + y$ where, $y(0) = 1$ and $h = 0.2$, Find $y(0.4)$ by Euler's Method and compare the result with Exact solution.

LONG QUESTIONS $5 \times 6 = 30$

Q.3. Find the first three derivatives of the function $f(x)$ given in the form of the table at $x = 2.2$

x	0	1	2	3	4
y	2	4	16	40	82

Q.4. Use Gauss's Quadrature formula for two points to evaluate:

$$\int_0^1 \frac{\sin x}{x}dx$$

Q.5. Solve the Difference Equation:

$$y_{k+2} - 4y_{k+1} + 4y_k = 3^k(k^2 + 1)$$

Q.6. Solve the following system of difference equation

$$y_{n+1} - y_n + z_n = 3^n$$
$$3z_{n+1} + 2z_n + y_n = 5$$

Q.7. Solve the following second order differential equation using Runge-Kutta method of fourth order

$$\frac{d^2y}{dx^2} + y^2\frac{dy}{dx} - x^3 = 0, \quad y(1) = 1, y'(1) = 1$$

for y(1.4) with h=0.2.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

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Paper: Mathematical Statistics-II
Course Code: MATH-419   Part – I (Compulsory)

Time: 30 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1. Encircle the correct option.

(i)	The parameters of the regression model are estimated by **(a)** normalization **(b)** integration **(c)** differentiation **(d)** none of these
(ii)	For F distribution by increasing the values of degrees of freedom, its skewness .... **(a)** decreases **(b)** constant **(c)** increases **(d)** none of these
(iii)	The range of multiple correlation is **(a)** −1 to +1 **(b)** 0 to ∞ **(c)** 0 to 1 **(d)** none of these
(iv)	For a chi square distribution mean is .... to its variance. **(a)** equal **(b)** lesser **(c)** greater **(d)** none of these
(v)	If the correlation coefficient $\gamma = 0.6$ The proportion of variation for Y explained by X is **(a)** 0.36 **(b)** 0.49 **(c)** $\sqrt{0.6}$ **(d)** 0.6
(vi)	The t-distribution is a continuous distribution ranging from; **(a)** −∞ to ∞ **(b)** 0 to ∞ **(c)** −∞ to 0 **(d)** none of these
(vii)	When degree of freedom in t-distribution is greater than or equal to 2, then mean is **(a)** 2 **(b)** 0 **(c)** 1 **(d)** 3
(viii)	The method of least squares minimizes sum of squares of; **(a)** Units **(b)** Errors **(c)** Constants **(d)** Regressors
(ix)	Mode for chi-square distribution is **(a)** $\upsilon + 1$ **(b)** $\upsilon - 1$ **(c)** $\dfrac{\upsilon}{\upsilon+1}$ **(d)** None of these
(x)	If unexplained variation between variables x and y is 0.40 then y^2 is; **(a)** 0.40 **(b)** 0.60 **(c)** 0.75 **(d)** None of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Mathematical Statistics-II

Time: 2 Hrs. 30 Min. Marks: 50

Course Code: MATH-419 Part – II

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

SECTION – II

Q. 2	SHORT QUESTIONS	
(i)	Write the partitioning and additive properties for Chi-square distribution.	(4)
(ii)	If $M(n) = (1 - 2n)^{-\frac{\vartheta}{2}}$ is moment generating function of a chi-square distribution then find mean and variance of the distribution.	(4)
(iii)	If X is t-distributed random variable with n degrees of freedom, then show that $\frac{1}{\left(1+\frac{x^2}{n}\right)}$ has a β-distribution	(4)
(iv)	If λ,μ are the deviations of the random variables X and Y from their respective means. Then show that $r = 1 - \frac{1}{2N}\sum\left(\frac{\lambda_i}{\sigma_x} - \frac{\mu_i}{\sigma_y}\right)^2$	(4)
(v)	Show that coefficient of correlation is independent by change of origin and scale.	(4)

SECTION – III

	LONG QUESTIONS	
Q.3	The variables have in pairs simple correlation coefficient given by $\gamma_{12} = 0.8$, $\gamma_{13} = -0.7, \gamma_{23} = -0.9$. Find $\gamma_{12.3} = ?$ and $R_{1.23} = ?$	(10)
Q.4	If the joint probability density of X_1 and X_2 is given by $f(x_1,x_2) = \begin{cases} 4x_1x_2, & for\ 0 < x_1 < 1\ and\ 0 < x_2 < 1 \\ 0 & elsewhere \end{cases}$ Find the probability density function of $Y_1 = X_1^2$, $Y_2 = X_1X_2$	(10)
Q.5	Prove that χ^2-distribution tends to normal distribution as the number of degree of freedom n approaches to infinity.	(10)

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Theory of Modules
Course Code: MATH-423   Part – I (Compulsory)   Time: 30 Min. Marks: 10

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Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1. Encircle the correct option.

(i)   A subset N of an R module M is a sub module of M iff

(a) $\alpha x+\beta y\in N$ (b) $\alpha x+\beta y\in M$ (c) $\alpha x+\beta y\in R$ (d) None of these

(ii) Every R- module is isomorphic to a -------------------- of a free R-module

(a) Direct summand   (b) quotient module

(c)Isomorphism   (d) equivalent

(iii)   Let A , B and C be sub modules of an R module M such that $A⊆C$. Then

(a) $A∩(B∩C)=(A∩B)∩C$ (b) $A∩(B+C)=(A∩B)+C$ (c) $A+(B∩C)=(A+B)∩C$ (d) None

(iv)   According to Dedikind Module law ....

(a) $(A\cup B)+C=(A\cap B)+C$ (b) $A\cup(B+C)=(A+B)\cup C$

(c) $A+(B\cup C)=(A+B)\cup C$ (d) $A+(B\cap C)=(A+B)\cap C$

(v)   Sub module of $C(R)$ will be

(a) $R(I)$ (b) $I(R)$ (c) $R(X)$ (d) $R(R)$

(vi)   If $x\neq 0$, $y\neq 0$ are elements of a ring R such that $xy=0$. Then x and y are called

(a) Multiplicative inverse   (b) Zero Divisor

(c) Additive Inverse   (d) Identity

(vii)   A mapping f is said to be monomorphism iff f is

(a) Homomorphism   (b) one one   (c) onto   (d) a & b

(viii)   A root is polynomial equations over the field of rational numbers is called

(a) Integer   (b) Algebraic Number (c) Rational Integer (d) Algebraic Integer

(ix)   The identity in quotient R- module $\frac{M}{K}$ is

(a) M   (b) N   (c) K   (d) 1

(x)   If K and L are sub-modules of an R-module M, then ----------

(a) $(K+L)/K\cong L/(L\cap K)$ (b) $(K-L)/K\cong L/(L\cap K)$

(c) $(K+L)/K\cong L/(L\cup K)$ (d) $(KL)/K\cong L/(L\cap K)$

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Theory of Modules

Course Code: MATH-423   Part – II

Time: 2 Hrs. 30 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

(4 × 5 = 20)

Q.2   Solve the following Short Questions:

(i)   If M is an irreducible R-modole prove that either M is cyclic or that for every

$m \in M$ and $r \in R$, $rm = 0$

(ii)   Let M be a module over an integral domain R. Then the set T of all torsion elements of M

is a submodule of M and quotient module M/T is torsion free.

(iii)   Show that every finitely generated R-module is homomorphic image of Free R-module.

(iv)   Every vector space V over a field F is torsion free F-Module.

SECTION-III

Q.1   State and prove third isomorphism theorem of modules.   **3×10 = 30**

Q.2   Let R be a ring and M be an R module and f:M→M be a module homomorphism

such that $f^2=f$. Show that M =Kerf $\oplus$ Imf

Q.3   Let N be a submodule of an R – module M. show that if N and M/N are FG,

then M is FG.

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B.S. 4 Years Program / Eighth Semester – 2019

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Paper: Number Theory-II
Course Code: MATH-424   Part – I (Compulsory)   Time: 30 Min. Marks: 10

Q.1.   Encircle the correct option.   **(10x1=10)**

(i)	$LR_{17}(31) =$ a) 11 b) -3 c) 17 d) Not given
(ii)	The integer 7 is a Quadratic non- residue of a) 11 b) 13 c) For both 11 and 13 d) Not for both 11 and 13
(iii)	For primes p and q with a is any integer, the Legender symbol, $\left(\dfrac{a}{pq}\right) =$ a) $\left(\dfrac{a}{p}\right)+\left(\dfrac{a}{q}\right)$ b) $\left(\dfrac{a}{p}\right)-\left(\dfrac{a}{q}\right)$ c) $\left(\dfrac{a}{p}\right)\left(\dfrac{a}{q}\right)$ d) $\left(\dfrac{a}{q}\right)$
(iv)	For a prime modulo $p =17$, there are exactly -----roots of the congruence $x^4 \equiv 1$ a) at most 4 b) 16 c) exactly 4 d) Neither
(v)	P: Every rational number is an algebraic. Then a) P is true b) P is false c) Both(a & b) d) Neither
(vi)	The number of integral solutions of the Diophantine equation $x^5 + y^5 = z^5$ a) 6 b) 3 c) 1 d) 0
(vii)	The Product of two primitive polynomials is a) Reduced Polynomial b) Non-primitive c) Primitive d) Neither
(viii)	An infinite dimensional vector space is a) R b) C c) R^n d) Both)a and)b e) Not given
(ix)	The dimension of a zero vector space is a) 1 b) Infinity c) 0 d) -1
(x)	The number $2^{\sqrt{2}}$ is a) An algebraic number b) Rational Number c) TranscidentalNumber d) None

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q. 2	Short Questions (4x5 = 20 Marks, Time 45min)(SECTION-II)
(i)	Define Legendre and Jacobi symbols and evaluate $\left(\dfrac{-168}{11}\right)$
(ii)	Solve the quadratic congruence $x^2 + 5x + 4 \equiv 0 \pmod{7}$.
(iii)	Find the minimal polynomial for the algebraic number $\sqrt{5 + \sqrt{7}}$
(iv)	Prove or disprove that in an *n*-dimensional vector space, all basis contain *n* elements .
(v)	Prove that the product of two quadratic residues of a prime number is again a quadratic residue.

	Long Questions (6x5 = 30 Marks, Time 70 min) (Section-III)
Q.3	Does the congruence $x^2 \equiv 631 \pmod{1093}$ has a solution. If yes, find its solution.
Q.4	Let p be an odd prime and a an integer co-prime to p. If m denote the number of least positive integers in the set $\{a, 2a, \ldots, \frac{p-1}{2}a\}$ that exceed $\frac{p}{2}$. Then prove that $\left(\dfrac{a}{p}\right) = (-1)^m$.
Q.5	Prove that if ϑ is an algebraic number over a field F. Then it has a unique minimal polynomial.
Q.6	Prove the existence of transcendental numbers.
Q.7	For $\alpha, \beta \in R[\theta]$, Show that $N\alpha\beta = N\alpha N\beta$, where N is the norm of the algebraic number.

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Q.1.   Encircle the correct option.   **(10x1=10)**

i.   The triple operation is used in _____ algorithm
    (a)   Floyd's   (b)   Spanning tree
    (c)   Dijkstra's   (d)   None

ii.   In dynamic programming, the increase in _____ is referred as problem of dimensionality.
    (a)   Alternatives   (b)   Stages
    (c)   States   (d)   None

iii.   The maximum flow algorithm is based on finding the
    (a)   Maximum flow at each node
    (b)   Maximum capacity at each node
    (c)   Breakthrough paths
    (d)   None

iv.   In parametric linear programing, the feasibility of LP problem can be affected by parametric changes in:
    (a)   z- coefficient only   (b)   R.H.S of constraints only
    (c)   Both z- coefficient and R.H.S of constraints
    (d)   None

v.   _____ algorithm is most appropriate to find shortest distance between cities in road system.
    (a)   Dijkstra's   (b)   Branch and bound
    (c)   Maximum flow   (d)   None of them

vi.   An arc in directed network from a node to itself is called:
    (a)   Multiple arc   (b)   Isolated arc
    (c)   Loop   (d)   None

vii.   The following are integer programming algorithm except.
    (a)   Branch & bound algorithm   (b)   Revised simplex algorithm
    (c)   Cutting plane algorithm   (d)   Mixed cut algorithm

viii.   The simplex multiplier M in revised simplex method with B basis, P_k pivot column and C_B cost vector is calculated as:
    (a) $B^{-1}C_B$ (b) $P_k B^{-1}$
    (c) $C_B B^{-1}$ (d)   None

ix.   All the variables in _____ algorithm must be considered as integers
    (a)   Cutting plane algorithm   (b)   Mixed cut algorithm
    (c)   Branch and bound algorithm   (d)   None

x.   The term stage in dynamic programming represents.
    (a)   Amount of all resources   (b)   Products
    (c)   Amount of product   (d)   None

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Operations Research-II
Course Code: MATH-428   Part – II

Time: 2 Hrs. 30 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Short Questions.   **(5x4=20)**

i.   Write some applications of shortest route algorithm.

ii.   Write steps of linear parametric algorithm

iii.   Describe the cutting plane algorithm with the help of following LP model (only one iteration)

$$\text{Max: } z = 7x_1 + 10x_2$$
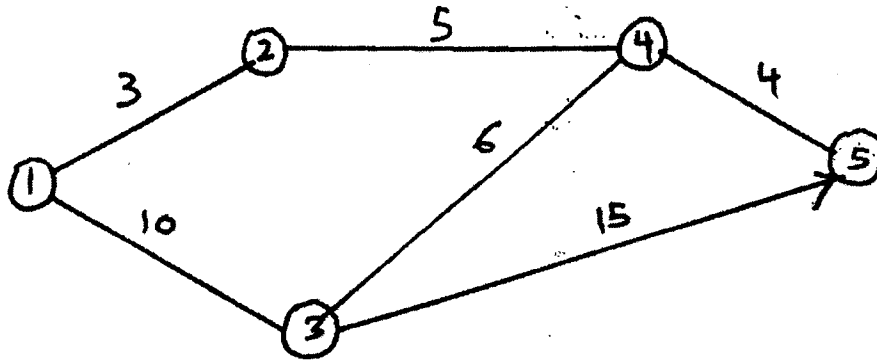
Subject to

$$-x_1 + x_2 \leq 6$$
$$7x_1 + x_2 \leq 35$$
$$x_1, x_2 \geq 0 \text{ and integers}$$

iv.   Write a note on maximum flow problem.

Q.3.   Long Questions.   **(3x10=30)**

i.   Find the shortest route between any two nodes of the following network. The distances are given on the arcs Arc (3,5) is directional so that no traffic is allowed from node 5 to node 3. All other arcs allow two-way traffic.

ii.   Solve the following LP model by dynamic programming

$$\text{Max: } z = x_1 x_2 x_3$$

Subject to

$$x_1 + x_2 + x_3 = 10$$
$$x_1, x_2, x_3 \geq 0$$

iii.   Use revised simplex algorithm to find optimal solution of the following LP model

$$\text{Maximum } z = 6x_1 - 2x_2 + 3x_3$$

Subject to

$$2x_1 - x_2 + 2x_3 \leq 2$$
$$x_1 + 4x_3 \leq 460$$
$$x_1, x_2, x_3 \geq 0$$

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Theory of Approximation and Splines-II
Course Code: MATH-429   Part – I (Compulsory)   Time: 30 Min. Marks: 10

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Division of marks is given in front of each question.
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Q.1. Encircle the correct option.   **(10x1=10)**

1. In control point form if we put $k=4$, then we get
   a) Ball form   b) Bernstein Bezier form   c) Timer form
   b) d) Normal form

2. The Bernstein Bezier quadratic rational form represents the ....
   a) Ball form   b) Bernstein Bezier form   c) Timer form
   d) Conic section

3. Affine invariance property is satisfied by
   a) Cubic Hermite form   b) Bernstein Bezier form   c) Polar form
   d) none of these

4. Bernstein Bezier polynomials of degree $n = 4$ is

   a) $B_i^4(\theta) = \binom{4}{i}(\theta-1)^{4-i}\theta^{i-1}$ b) $B_i^4(\theta) = \binom{4}{i}(1-\theta)^{4-i}\theta^{i}$

   c) $B_i^4(\theta) = \binom{4}{i}(\theta-1)^{4+i}\theta^{i-1}$ d) $B_i^4(\theta) = \binom{4}{i}(\theta-1)^{4-i}\theta^{i+1}$

5. In $N_i^k(t) = \int_{t-1}^{t} N_i^{k-1}(\hat{t})\, d\hat{t}$ degree of spline is

   a) k   b) k+1   c) k-1   d) k-2

6. $N_2^3(t) = $ ....
   a) $N_0^3(t+2)$ b) $N_0^3(t-2)$ c) $N_0^3(t)$ d) $N_0^3(t-1)$

7. $\dfrac{d}{d\theta}([\theta E + (1-\theta)I]^n \vec{b}_0) = $ ....

   a) $n\sum_{i=0}^{n-1} B_i^{n-1}(\theta)(\vec{b}_{i+1} - \vec{b}_i)$ b) $n^2\sum_{i=1}^{n-1} B_i^{n-1}(\theta)(\vec{b}_{i+1} - \vec{b}_{i+2})$

   c) $n\sum_{i=0}^{n-1} B_i^{n-1}(\theta)$ d) $\sum_{i=0}^{n-1} B_i^{n}(\theta)(\vec{b}_{i+1} - \vec{b}_i)$

8. Bernstein Bezier polynomials of degree $n = 4$ are ....

   a) Linearly dependent   b) linearly independent

9. Bernstein Bezier polynomials of degree n can be expressed in terms of Bernstein Bezier polynomials of degree ....
   a) $n+1$ b) $n-1$ c) $2n+1$ c) None of these

10. Bernstein Bezier form of degree n ----------------------- first and last control points.

   a) Interpolates   b) approximates   c) Both a) and b)   d) None of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Theory of Approximation and Splines-II
Course Code: MATH-429   Part – II

Roll No. ....

Time: 2 Hrs. 30 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q2. Solve the following short questions   (4x5=20)

1. Let $t(x) = \sum_{i=0}^{n} a_i x^i + \sum_{i=0}^{k} c_i (x - x_i)_+^n.$

   Determine whether $t^{(n)}(x_i^+) = t^{(n)}(x_i^-)$, $i = 0,1,2,...,k$

2. Show that $\theta = \sum_{i=0}^{n} B_i^n(\theta) \dfrac{i}{n}$

3. Calculate new control points for Bernstein Bezier cubic form for the interval $[\frac{2}{3}, 1]$ using subdivision algorithm.

4. Expand $\left[\dfrac{1}{3}E + (1 - \dfrac{1}{3}I)\right]^3 \underline{b_0}$.

Q3. Solve the following **Long Questions.**   (3x10=30)

1. For the control point form,

   $\underline{P(\theta)} = (1-\theta)^2(2\theta - k\theta + 1)\underline{b_0} + k(1-\theta)^2\theta\underline{b_1} + k(1-\theta)\theta^2\underline{b_2} + \theta^2(-2\theta + k\theta + 3 - k)\underline{b_3}$.

   Show that $k=3$ is the Bernstein Bezier cubic form. Also show that $\underline{P(\theta)}$ satisfy the convex hull property.

2. Derive the degree raising algorithm to express $\underline{P(\theta)} = \sum_{i=0}^{n} B_i^n(\theta)\underline{b_i}$, $\theta \in [0,1]$ as

   $\underline{P(\theta)} = \sum_{i=0}^{n+1} B_i^{n+1}(\theta)\underline{b_i}^*$, $\theta \in [0,1]$

3. Find the cubic spline $S(x)$ that passes (1,4), (2,0.7), (3,6) and (4,3.75) with the boundary conditions $S'(1) = 4$, $S'(4) = -3.5$.

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(10x1=10)

Q.1. Encircle the correct option.

i. Which of the following is used to print text on the graph:
   a) print text   (b) disp ('text')   (c) gtext('text')   (d) ginput('text')

ii. To find out polynomial from the roots:
   a) find()   (b) roots()   (c) root()   (d) poly()

iii. To remove linear trend of a signal we use:
   (a) deletetrend   (b) removetrend   (c) detrend   (d) notrend

iv. Which of the following is not used to print out value of g such that g =125;
   a) >>g   (b) >>display(g)   (c) >>disp(g)   (d) >>g;

v. If x =[7 2 2 9 8] for [v1,v2] = max(x); the value of (v1,v2) is:
   (a) (9,4)   (b) (4,9)   (c) (9,3)   (d) (3,9)

vi. If a & b are vectors, which of the following is used for element by element operations.
   a) a .^ b   (b) a .* b   (c) a ./ b   (d) all of them

vii. If x =[7 0 2 0 8] then for output [49 0 4 0 64] which one is not true:
   (a) x*x   (b) x.^2   (c) power(x,2)   (d) x.*x

viii If x =[3 0 0 1 6] then for z = all(x) what is true :
   (a) 1   (b) 0   (c) [1 0 0 1 1]   (d) [0 1 1 0 0]

ix The following command cannot change limits of the graph axis:
   (a) axes( )   (b) axis( )   (c) xlim( )   (d) ylim( )

x Which of the following is equal to output of z = factorial(5):
   (b) prod(1:5)   (b) sum(1:5)   (c) 121   (d) all

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Computational Physics-II

Course Code: PHY-422   Part–II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.	i.	Write short answers of the following Questions: Give simple example to find zero index of values in an array?	2
	ii.	Write syntax with example for the following in MATLAB: (a) ginput() (b) dsolve() (c) gtext() (d) input(),	8
	iii.	Write MATLAB program code segment for the following: (a) to generate and plot 20 x 20 matrix of numbers (b) to give one example to find out cumulative sum of [2 5 8 7] (c) to find integral of a polynomial: $5x^2 - 2x + 20$ (d) to calculate the roots of a polynomial (e) to multiply two polynomial and determine derivative	10
Q.3.		Suppose A be a 3x3 matrix. Write **MATLAB** program which reads in random numbers as entries of the matrix A and calculate (i) sum and average of the all matrix elements, (ii) transpose of the matrix A (also plot the matrix), (iii) also check whether the Matrix A is an identity matrix? (iv) Also sort the matrix elements, (v) divide matrix rows by its row average. Write MATLAB program for a half wave rectifier circuit.	6+4
Q.4. (a) (b)		Write MATLAB program for the forced harmonic motion (FHM) of a mass attached with a spring using Euler's method under the following conditions: (g=9.8 m/s², initial position zero and velocity 15 m/s, time step 0.1 sec. and maximum time 15 sec., k = 1 N/m, m=1kg, damping coefficient = 0.5 N/ms, ω =0.01 s⁻¹ and f_0=1.5N.). Calculate and print with proper labels the values of time against position, velocity and acceleration. How you can change the same program for the Simple H.M., Damped. H.M. The necessary equations are as follows: A = (-k x – b v + f_0 cos (wt))/ m, x = x + v h, v = v + a h, t = t + h, Also draw estimate output graphs with proper curve labels, x & y labels and title. How randomly generated points can be used to show Brownian motion? Write MATLAB program to simulate Brownian motion of a particle for 31 collisions. Also calculate the distance traced by the particle. Note: Plot estimate graph if any.	6+4
Q.5. (a) (b)		Write MATLAB program to calculate and print out factorial of a number taken from the user by using two methods. Implement your program using functions. Calculate and print the series and sum of S, such that: $S = 77 \sum_{k=1}^{20} k^3$ How you can improve the answer to evaluate $\int_0^{\pi} \sin(x)dx$	10

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Classical Electrodynamics-II
Course Code: PHY-423   Part – I (Compulsory)   Time: 15 Min. Marks: 10

Roll No. in Fig. ....

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   (10x1=10)

i.   Equation of continuity in covariant form is_____ . (where $\Im$ is four vector current density).

(a) $\frac{\partial \Im_\nu}{\partial x_\nu} = 1$ (b) $\frac{\partial \Im_\nu}{\partial x_\nu} = 0$ (c) $\frac{\partial \Im_\nu}{\partial x_\nu} < 1$ (d) $\frac{\partial \Im_\nu}{\partial x_\nu} > 1$

ii.   The vector $\dot{E} + \partial A/\partial t$ has a zero curl, then which one from the following is correct:

(a) $E + \partial A/\partial t = \varphi$ (b) $E + \partial A/\partial t = B$ (c) $E + \partial A/\partial t = -\nabla\varphi$ (d) None of these

iii.   The transmittance will be treated as absorptance in_____ media.

(a) Non conducting   (b) Conducting   (c) Dielectric   (d) All

iv.   In plasma, the magnetic energy density $B^2/2\mu_0$ is known as

(a) Electric pressure (b) Fluid pressure   (c) Magnetic pressure (d) None of these

v.   The basic mechanism causing pinch effect is the interaction of

(a) Current with its own magnetic field   (c) Current with the external magnetic field
(c) Electric and magnetic fields   (d) None of these

vi.   For any pair of non conducting media, the reflectance R and transmittance T satisfy

(a) $R + T > 1$ (b) $R + T < 1$ (c) $R + T = 1$ (d) $R + T = 0$

vii.   With the external magnetic field B, the drift motion in plasma occurs due to the presence of

(a) Electric field E (b) Electric current I (c) Both E and I (d) None of these

viii.   The criterion for the reflection of plasma in magnetic mirror is

(a) $sin^2\theta_0 = B_0/B_m$ (b) $sin^2\theta_0 > B_0/B_m$ (c) $sin^2\theta_0 < B_0/B_m$ (d) None of these

ix.   On the basis of exhibiting magnetic behavior, plasma is

(a) Paramagnetic   (b) Ferromagnetic   (c) Diamagnetic   (d) None of these

x.   Which pair is correct

(a) $D = E/\epsilon$, $H = \mu B$ (b) $D = B/\epsilon$, $H = \mu E$ (c) $D = \epsilon E$, $H = B/\mu$ (d) None of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Classical Electrodynamics-II
Course Code: PHY-423   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Answer the following questions: (4+5+3+4+4=20)

i.   Differentiate between a neural gas and a plasma.   4

ii.   Discuss briefly the circular and elliptical polarizations.   5

iii. What are the three criteria for an ionized gas to be a plasma?   3

iv.   Disauss briefly the few applications of laser?   4

v.   Calculate the frequency of sea water if skin depth is $\delta = 1$, $\mu = \mu_0$ and
      conductivity $= 4.3 S/m$.   4

Q.3 What are plasma oscillations? Calculate plasma frequency by using the
        linearization process.   (10)

Q.4 Discuss the construction and working of PN junction laser.   (10)

Q.5 Define skin depth. Discuss in detail the propagation of plane monochromatic waves
        in conducting media.   (10)

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Nuclear Physics-II
Course Code: PHY-424   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

i.   The spin of ground state of all _____ nuclei is zero.

   a) even-odd   b) even-even   c) odd-odd   d) odd-even

ii.   The reason for providing the thermal shielding in a fission reactor is to

_____.

   a) Absorb the fast neutrons

   b) Protect the operating personnel from exposure to radiations

   c) Prevent the reactor wall from getting heated

   d) All of the above

iii.   The mass distribution of fission fragments must be _____ about the center.

   a) Symmetric   b) Anti symmetric c) both a and b   d) None of these

iv.   According to Liquid Drop model, the condition for a nucleus to undergo

spontaneous fission is _____.

   a) $\frac{Z}{A} > 47$ b) $\frac{Z^2}{A} > 47$ c) $\frac{Z}{A^2} > 47$ d) $\frac{Z^2}{A} < 47$

v.   The material used to decelerate fast moving neutrons is called _____.

   a) Controller   b) Coolant   c) Moderator   d) Reactor

vi.   In D-D reaction, the product proton or neutron has _____ % of the available

energy.

   a) 80   b) 75   c) 85   d) 70

P.T.O.

vii. _____ source can give approximately mono-energetic neutrons.

   a) Photo-neutron   b) Nuclear reactions c) Reactor   d) Radioactive

viii. In γ induced reactions, change in nucleon number is _____.

   a) Definite   b) Increased by 1   c) Decreased by 1   d) Zero

ix. Which of the following is not fissionable?

   a) Thorium   b) Uranium   c) Plutonium   d) Iron

x. The compound nucleus model works best for _____.

   a) Low incident energies   b) Heavy nuclei

   c) Medium weight nuclei   d) All of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Nuclear Physics-II
Course Code: PHY-424 Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q 2: Write down short answers of the following: (2x10=20)

i) Write limitations of nuclear shell model.

ii) Why do the reaction with Q>0 have neither threshold nor double valued behavior?

iii) Write down the basic principle of proton neutron counter for the detection of fast neutrons.

iv) What are the difficulties in achieving a self-sustained fusion reaction in laboratory?

v) In what ways are FISSION and FUSION reactions similar?

vi) In what ways are fission and fusion reactions different?

vii) What do you mean by activation energy in a nuclear fission?

viii) Define total nuclear cross-section.

ix) Differentiate between stripping and picking up reactions.

x) What do you mean by quasi stationary states?

P.T.O.

Q # 3

    a) Show that the reduction in energy 'ΔE' of a neutron in an elastic collision with a nucleus of mass number 'A' is :

$$\Delta E = E \left(1 - \left(\frac{A-1}{A+1} \right)^2 \right)$$

    Where 'E' is the initial energy of neutron. **(6)**

    b) What is a Thermo-Nuclear Fusion reaction? Write proton-proton cycle to discuss the fusion of four hydrogen nuclei. **(8)**

Q # 4

    a) Outline the compound nucleus theory for a nuclear reaction. Give one piece of example as an evidence of this theory. **(8)**

    b) Why do nuclei undergo fission? Write down the expression for the Coulomb barrier that inhibits the fission process. **(8)**

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Particle Physics-III
Course Code: PHY-427   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.   (10x1=10)

(i) The combination $u\bar{d}$ belongs to an

    (a) isospin doublet   (b) isospin triplet

    (c) isospin singlet   (d) none of them

(ii) The rank of SU(3) group is

    (a) 3   (b) 1

    (c) 8   (d) 2

(iii) In scattering problem, if $\eta_l = 1$, then

    (a) inelastic scattering occurs   (b) symmetric potential is present

    (c) elastic scattering occurs   (d) none of them

(iv) The unified Electromagnetic and Weak force can be explained by

    (a) SU(3)   (b) SU(2) × U(1)

    (c) U(1)   (d) SU(3) × U(1)

(v) The plane wave solution in asymptotic region is a superposition of

    (a) two spherical waves   (b) four spherical waves

    (c) infinite partial waves   (d) none of them

(vi) The general formula to find number of generators of SU(n) is

    (a) $n^2 - n$ (b) n^2

    (c) $n^2 - 1$ (d) $n^2 + 1$

P.T.O.

(vii) When δ_l is positive, then potential is

    (a)   attractive   (b)   symmetric

    (c)   repulsive   (d)   non central

(viii) The full width half maximum of resonance curve is related to

    (a)   life time of the state   (b)   energy

    (c)   momentum   (d)   all of these

(ix) In a weight diagram multiplicity decreases until —— layer is reached

    (a)   single point   (b)   triangular

    (c)   hexagonal   (d)   rectangular

(x) The action of I_+ produces change of

    (a) $\Delta Y = 0, \ \Delta I_3 = 1$ (b) $\Delta Y = 0, \ \Delta I_3 = -1$

    (c) $\Delta Y = 0, \ \Delta I_3 = +1/2$ (d) $\Delta Y = 0, \ \Delta I_3 = -1/2$

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Particle Physics-III
Course Code: PHY-427   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Question 2:   (2 × 10 = 20)

Give short answers of the following questions.

(i) Define H-type and E-type generators.

(ii) Verify standard form of Lie algebra of SU2 group by showing $[H_1, E_+] = +1E_+$.

(iii) Show that differential cross section has dimension of area.

(iv) What is hadron spectroscopy?

(v) State optical theorem.

(vi) What is Grand Unification Theory?

(vii) Using $[\lambda_i, \lambda_j] = 2i f_{ijk} \lambda_k$, find value of f_{345}.

(viii) Define elastic and inelastic scattering.

(ix) What is phase shift and how is it related to potential?

(x) What is Standard model of Particle Physics?

Question 3:   (10)

Derive the following Breit Wigner formula for elsatic scattering of spinless particles. Also explain in detail its importance/use in Particle Physics.

$$\sigma_{el}(E) = \frac{4\pi}{k^2}(2l + 1)\frac{\Gamma^2/4}{(E - E_R)^2 + \Gamma^2/4}$$

Question 4:   (5 + 5 = 10)

a): Using fundamental representations of SU(3), evaluate $3 \otimes 3 \otimes 3$ product representation and reduce it to the irreducible representation.

b): For an elastic scattering between spinless particles, the scattering amplitude is

$$f(\theta) = \sum_l \frac{(2l + 1)}{2ik}(e^{2i\delta_l} - 1)P_l(\cos\theta)$$

Use this to calculate the differential cross section.

Question 5:   (10)

Find out the matrix representation of the generators of SU(3). Relate the obtained set of generators with Gell-Mann matrices.

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

Question 1: $(1 \times 10 = 10)$

Each question has four possible answers. Select the correct answer and encircle it.

(i) $Tr I =$

    (a)   0   (b)   4

    (c)   1   (d)   None of the above

(ii) In term of anti-symmetric field strength tensor, Maxwell's equations take the compact form

    (a) $\partial_\mu F^{\mu\nu} = 0$ (b) $\partial_\mu A^\mu = j^\nu$

    (c) $\partial_\mu F^{\mu\nu} = j^\nu$ (d) $\partial_\mu A^\mu = 0$

(iii) Schrodinger equation is used for _____ particles.

    (a)   Non-relativistic   (b)   Relativistic

    (c)   Both (a) & (b)   (d)   None of the above

(iv) According to Feynman rules, spin 0 boson propagator is

    (a) $\frac{1}{p^2+m^2}$ (b) $\frac{i}{p^2-m^2}$

    (c) $\frac{1}{p^2-m^2}$ (d) $\frac{i}{p^2+m^2}$

(v) $e^- e^+ \to \gamma\gamma$ is the _____ process.

    (a)   Pair creation   (b)   Pair annihilation

    (c)   Scattering   (d)   None of the above

(vi) The fine structure constant α is

    (a) $4\pi e^2$ (b) $4\pi/e^2$

    (c) $e^2/4\pi$ (d) $e^2/4\pi^2$

(vii) In a non-relativistic limit _____.

    of

    (a) $\underline{p} \to 0$ (b) $|\underline{p}| \to 0$

    (c) $m \to 0$ (d) Both (b) & (c)

P.T.O.

(viii) Which of the following is Lorentz gauge condition

    (a) $\partial_\mu A_\mu = 0$ (b) $\partial^\mu A^\mu = 0$

    (c) $\partial^\mu A_\mu = 0$ (d)   None of the above

(ix) The lowest order invariant amplitude of electron scattering by electromagnetic field has _____ vetex factor(s).

    (a)   zero   (b)   one

    (c)   two   (d)   three

(x) "t" is a Mandelstam variable which is defined as_____.

    (a) $(P_A + P_B)^2$ (b) $(P_A - P_C)^2$

    (c) $(P_A - P_D)^2$ (d) $(P_A - P_B)^2$

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Particle Physics-IV
Course Code: PHY-428   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Question 2:

Give short answers of the following questions.

(i) For a scattering process $AB \rightarrow CD$, show that $s + t + u = m_a^2 + m_B^2 + m_C^2 + m_D^2$. (3)

(ii) Write an expression for decay rate of the process $A \rightarrow 1 + 2 + 3 + 4$. (2)

(iii) Define lab frame of reference. (2)

(iv) Prove that $Tr(\gamma_5) = 0$. (3)

(v) Write $\bar{u}(k)\gamma u(k)$ in terms of components of a matrix. (2)

(vi) Differentiate b/w real and virtual particles. (2)

(vii) Draw lowest order Feynman diagrams for Moller scattering scattering. Also write the invariant amplitude follows from Feynman rules. (3)

(viii) Using equation of motion, write down the propagator for the relativistically moving spin-1/2 particle. (3)

Question 3: (10)

In the center-of-mass frame for the process $AB \rightarrow CD$

$$dQ = \frac{1}{4\pi^2} \frac{p_f}{4\sqrt{s}} d\Omega. \qquad F = 4p_i\sqrt{s}$$

and hence the differential cross section is

$$\frac{d\sigma}{d\Omega}\Big|cm = \frac{1}{64\pi^2 s} \frac{p_f}{p_i} |\mathcal{M}|^2,$$

where $d\Omega$ is the element of solid angle about p_C, $s = (E_A + E_B)^2$, $|p_A| = |p_B| = p_i$ and $|p_C| = |p_D| = p_f$.

Question 4: (10)

Use the Feynman rules to obtain the invariant amplitude for spin-1/2 process $e^- e^+ \rightarrow \mu^- \mu^+$ and write this amplitude in terms of Mandelstam variables.

Question 5: (10)

Prove that the unpolarized amplitude for $e^- \mu^- \rightarrow e^- \mu^-$ in extreme relativistic limit is

$$|\overline{\mathcal{M}}|^2 = \frac{8e^4}{q^4}[(k'.p')(k.p) + (k'.p)(k.p')]$$

by using $|\overline{\mathcal{M}}|^2 = L_{e^-}^{\mu\nu} L_{\mu\nu}^{muon}$ with $L_{e^-}^{\mu\nu} = \frac{1}{2}Tr[(\not{k}' + m)\gamma^\mu(\not{k} + m)\gamma^\nu]$, where m is the mass of electron, k and k' are the momentum of incident and scattered electron respectively.

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.   **(10x1=10)**

I. In PN junction device that exhibits negative resistance is called;

  (a) IMPATT diode   (b) Zener diode

  (c) Tunnel diode   (d) LED

II. In MESFET transistor consists of;

  (a) Unipolar device   (b) Bipolar device

  (c) Majority carrier device   (d) Minority Carrier device

III. In LED the major phenomena occur due to;

  (a) Diffusion   (b) Drift

  (c) Thermal   (d) Generation-Recombination

IV. MODFET is device having;

  (a) Element semiconductor   (b) Compound Semiconductor

  (c) Silicon   (d) GaAs

V. Most common transistor used for trigger sweep is;

  (a) IMPATT diode   (b) Zener diode
  (b) Tunnel diode   (d) UJT

VI. Radio-waves frequency varies from;

  (a) 1 to 100 kHz   (b) 30 to 300 kHz

  (c) kHz to MHz   (d) MHz to THz

VII. Less noise is produce in ;

  (a) AM   (b) FM

  (c) Angle modulation   (d) Vestigial side band modulation

VIII. Superhetrodyne receivers are used to ;

  (a) Reduce intermediate frequency   (b) increase intermediate frequency

  (c) To set standard   (d) increase skip distance

IX. Microwave power is almost remain the same;

  (a) In optical fiber   (b) in copper cable

  (b) In air   (d) thick sheet of metal

X. Megnetron tube is used to produce;

  (a) amplification   (b) oscillation

  (c) switching action   (d) modulation and demodulation

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Advanced Electronics-III (Theory)
Course Code: PHY-431   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Answer the following short questions;

a. Mention the characteristics of Gunn diode.

b. Mention the difference between Tunnel and IMPATT diode.

c. Indicate the formation of Ionospheric layer during day and night time.

d. Mention the principle of Phase-locked loop.

e. Mention the way to measure microwave power.

Q.3. What is the difference between LED and Laser diode in term of fabrication, characterization?

Q.4. Mention the working of UJT and also explain the circuit to generate basic and triggered sweep.

Q.5. Explain Ground wave propagation and also discuss the skip distance.

Roll No. in Fig. ....

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   **Encircle the correct option.**   **(10x1=10)**

A)   According to classical model of specific heat capacity of solids, C_v of all solids

i) depends on temperature   ii) do not depend on temperature   iii) exhibits infinite value   iv) none of these

B)   Einstein model of heat capacity fits well with experimental results for

i) low temperatures   ii) high temperatures   iii) low and high temperatures   iv) infinite temperatures   v) none of these

C)   According to Debye model of heat capacity, C_v approaches to zero as

i) T^4 ii) T^3 iii) T^2 iv) T   v) none of these

D)   Which of the following models enumerates the density of states to calculate specific heat capacity of a material C_v?

i) Classical model   ii) Einstein model   iii) Debye model
iv) Heisenberg model   v) none of these

E)   At high frequencies, the dipolar and ionic contribution into total polarizability is

i) zero   ii) small   iii) large   iv) infinite   v) None of these

F)   Which of the following combination of quantities are dimensionless?

i) Dielectric constant and electric susceptibility   ii) Dielectric constant and dipole moment   iii) Dielectric constant and electric field   iv) Dielectric constant and polarization   v) none of these

G)   For a given shape of a dielectric material, the depolarization factor is always

i) positive   ii) negative   iii) infinite   iv) equal to zero   v) none of these

H)   In semiconductors, the electrical conductivity

i) decreases with temperature   ii) increases with temperature   iii) does not depend on temperature   iv) none of these

I)   The electric dipole moment per unit electric filed is defined as?

i) Polarizability   ii) Dipolar field   iii) Polarization   iv) Dielectric constant

J)   The depolarization field is

i) in same direction to polarization   ii) opposite to polarization   iii) always in random direction   iv) none of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Solid State Physics-III
Course Code: PHY-439 Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2 Give to the point answer / short description of each question. **(4 × 5 = 20)**

a) Discuss briefly free electron approximation in magnetic fields.

b) Explain De Haas van Alphan effect in solids.

c) Differentiate between inter-band and intra-band transitions.

d) What is meant by Polarons? Explain briefly.

e) Explain quantum Hall effect briefly?

Q.3

Discuss electron-phonon interactions in solids and derive an expression for Hamiltonian of such interaction by considering periodicity of lattice. **(10)**

Q.4

Discuss semi-classical model of conduction in metals? Derive Boltzmann transport equation and explains the terms appearing in it. **(10)**

Q.5

Discuss Pauli paramagnetism of conduction electrons and derive an expression for Pauli spin magnetization of conduction electrons. **(10)**

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Solid State Physics-IV
Course Code: PHY-440   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

A)   Cobalt single crystal has easy direction of magnetization along

   i) a-axis   ii) b-axis   iii) c-axis   iv) basal plane   v) none of these

B)   Inelastic scattering of neutron by a magnetic structure results in the

   i) absorption of a neutron   ii) creation of phonon wave   iii) creation of spin wave
   iv) creation of electro-magnetic wave   v) none of these

C)   Ferromagnet in its ground state has all spins parallel with exchange integral J always

   i) positive   ii) negative   iii) positive and negative integral values   iv) none of these

D)   Possible orientations of spin 1/2 nuclei when placed in magnetic field are?

   i) 0   ii) 1   iii) 2   iv) 3   v) none of these

E)   Due to interaction between excited nucleus and magnetic field caused by nuclei in molecules moving around in the sample, the relaxation process occurs which is named as?

   i) Spin-lattice relaxation   ii) Spin-spin relaxation   iii) Spin-orbit relaxation
   iv) None of these

F)   Iron has Curie temperature around

   i) 1170 °C   ii) 1070 °C   iii) 970 °C   iv) 770 °C   v) none of these

G)   For antiferromagnetism to occur, exchange integral J (according to *Heisenberg's Model*) is always

   i) positive   ii) negative   iii) infinite   iv) equal to zero   v) none of these

H)   Magnetic susceptibility χ in antiferromagnetic materials

   i) decreases with temperature   ii) increases with temperature   iii) does not depend
   on temperature   iv) none of these

I)   The difference between the magnetic field necessary for resonance in the sample and in some arbitrary chosen compound is which of the following?

   i) Filed shift   ii) Matrix effects   iii) Chemical shift   iv) Resonance shift

J)   Which of the following materials exhibit negative value of magnetic susceptibility χ?

   i) ferromagnets   ii) paramagnets   iii) diamagnets   iv) antiferromagnets
   v) none of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Solid State Physics-IV
Course Code: PHY-440   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2 Give to the point answer / short description of each question.   **(4 × 5 = 20)**

a) Develop a mathematical relation between magnetic permeability μ and magnetic susceptibility χ of a magnetic material.

b) How magnetization varies as a function of magnetic field strength in diamagnetic, paramagnetic, ferromagnetic and antiferromagnetic materials? Give graphical representation only in each case.

c) What is meant by magnon? Is magnon wave quantized? Explain briefly to support your answer.

d) Discuss briefly how magnetic susceptibility χ in diamagnetic, ferromagnetic and paramagnetic materials depend on temperature T. Explain χ-T behavior graphically in each case?

e) What is meant by magnetic anisotropy? Explain the origin of magnetic anisotropies in magnetic materials?

Q.3

Derive magnon dispersion relation for anti-ferromagnet by taking into account the nearest neighbor interactions only and discuss its behavior for long wavelength limit.   **(10)**

Q.4

Calculate an expression for domain wall energy σ_{dw} and minimum wall thickness δ_{dw} required to overcome the magnetostatic effects in cubic ferromagnetic crystal, assuming N atoms in the transition layer.   **(10)**

Q.5

Discuss nuclear magnetic resonance (NMR) and ferromagnetic resonance (FMR) phenomenon in detail. Explain for what kind of diagnostics the NMR and FMR techniques are used?   **(5+5)**

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Local Government in Pakistan
Course Code: POL-407   Part – I (Compulsory)   Time: 15 Min. Marks: 10

Roll No. in Fig. ....
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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   True/False, Tick the True one.   **(10x1=10)**

i.	Local government is a government at provincial level.	T/F
ii.	There is no difference between local government and local self government.	T/F
iii.	Provincial government influences the performance of local institutions.	T/F
iv.	Lack of political awareness among people is a major problem of local government.	T/F
v.	Local government depends upon provincial government for financial resources.	T/F
vi.	Local Government works at local level.	T/F
vii.	Local Government creates awareness among people at local level.	T/F
viii.	Local Government system in Pakistan was introduced by Ayub Khan.	T/F
ix.	Devolution Plan was given by Pervaiz Musharraf.	T/F
x.	Local government coordinates with provincial government.	T/F

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Local Government in Pakistan
Course Code: POL-407   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Questions with short answers.   (5x4=20)

i.   Define meaning and nature of local government.

ii.   What is scope of local government?

iii. Discuss devolution of power.

iv.   Difference between local government and Central government.

v.   What is difference between centralization and decentralization.

Q.3.   Questions with brief answers.   (3x10=30)

i.   Explain Evolution of local government system in Pakistan.

ii.   Discuss functional structure of local government during Pervez Musharraf era.

iii. Explain various problems in the way of local government of Pakistan.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Public International Law-II
Course Code: POL-408   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   True/False, Tick the True one.   **(10x1=10)**

i.	Hugo grotius is father of modern international law.	T/F
ii.	There is no difference between international law and municipal law.	T/F
iii.	Individual is not a subject of international law.	T/F
iv.	Arbitration is a peaceful method to resolve dispute.	T/F
v.	There is no difference between neutral and neutralized states.	T/F
vi.	Territorial Asylum is an exercise of territorial sovereignty.	T/F
vii.	Diplomatic relations are established by mutual agreements.	T/F
viii.	Treaty is a significant Source of international law.	T/F
ix.	International law deals only with the individuals of state.	T/F
x.	De Jure recognition is a permanent recognition.	T/F

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Public International Law-II
Course Code: POL-408   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Questions with short answers.   **(5x4=20)**

i.   What is nationality?

ii.   Define the concept of neutral state.

iii.   What is diplomatic envoys?

iv.   Define the term Asylum.

v.   What is extradition?

Q.3.   Questions with brief answers.   **(3x10=30)**

i.   Explain various coercive means of settlement of international disputes

ii.   Discuss in detail international humanitarian law.

iii.   Write a comprehensive note on Asylum.

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: International Organizations
Course Code: POL-409   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

Q.1.   True/False, Tick the True one.   **(10x1=10)**

i.   United Nations was established after _____ war.
   a)   1st world war   b)   2nd world war   c)   Korean war

ii.   The Headquarter of UNO is in _____.
   a)   New York   b)   The Heague   c)   London

iii.   UNO has _____ official languages.
   a)   03   b)   06   c)   07

iv.   The preamble of UN charter was signed by _____ countries.
   a)   55   b)   51   c)   49

v.   United Nations does not have permanent _____.
   a)   Army   b)   Secretariat   c)   Building

vi.   In General Assembly every member state has _____ vote.
   a)   One   b)   two   c)   three

vii.   The annual session of General Assembly starts in _____.
   a)   Mid-August   b)   Mid-September   c)   Mid-November

viii. Security Council has _____ members.
   a)   15   b)   16   c)   17

ix.   Each member of United Nations Social & Economic Council serves for _____.
   a)   05 years   b)   04 years   c)   03 years

x.   ICJ settles legal disputes between _____.
   a)   Individuals   b)   States   c)   Organizations

P.T.O. for Urdu Version

سوال نمبر 1: کسی ایک جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب غلط شمار کیا جائے گا۔

1- اقوام متحدہ .... جنگ کے بعد بنائی گئی؟

(الف) پہلی جنگِ عظیم (ب) دوسری جنگِ عظیم (ج) کوریائی جنگ

2- اقوام متحدہ کا صدر دفتر .... میں ہے۔

(الف) نیو یارک (ب) ہیگ (ج) لندن

3- اقوام متحدہ کی .... سرکاری زبانیں ہیں۔

(الف) تین (ب) چھ (ج) سات

4- اقوام متحدہ کے چارٹر کا دیباچہ پر .... ممالک نے دستخط کیے۔

(الف) 55 (ب) 51 (ج) 49

5- اقوام متحدہ کی کوئی مستقل .... نہیں ہے۔

(الف) فوج (ب) سیکریٹیریٹ (ج) عمارت

6- جنرل اسمبلی میں ہر رکن ملک کو .... ووٹ حاصل ہے۔

(الف) ایک (ب) دو (ج) تین

7- جنرل اسمبلی کا سالانہ اجلاس .... میں شروع ہوتا ہے۔

(الف) اگست کے درمیانی ہفتہ (ب) ستمبر کے درمیانی ہفتہ (ج) نومبر کے درمیانی ہفتہ

8- سلامتی کونسل کے .... ممبران ہیں۔

(الف) 15 (ب) 16 (ج) 17

9- اقوام متحدہ کی معاشی اور معاشرتی کونسل میں ہر ممبر .... خدمات انجام دیتا ہے۔

(الف) پانچ سال (ب) چار سال (ج) تین سال

10- بین الاقوامی عدالتِ انصاف .... کے درمیان قانونی جھگڑوں کا فیصلہ کرتی ہے۔

(الف) افراد (ب) ریاستوں (ج) تنظیموں

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: International Organizations

Time: 2 Hrs. 45 Min.   Marks: 50

Course Code: POL-409   Part – II

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

(5x4=20)

Q.2.   Questions with short answers.

i.   Write down the objectives of United Nations?

ii.   What is idealist's perception about the development of international organizations?

iii.   Highlight the differences between league of Nations and United Nations?

iv.   Discuss the importance of Security Council?

v.   Discuss the Realistic Perspective about International Organizations?

سوال نمبر2:   مختصر جواب دیں۔

.i   اقوام متحدہ کے مقاصد تحریر کریں؟

.ii   بین الا قوامی تنظیموں کے فروغ میں مثالیت پسندوں کا نقطۂ نظر بیان کریں۔

.iii   انجمن اقوام اور اقوام متحدہ کے درمیان فرق کی وضاحت کریں۔

.iv   سلامتی کونسل کی اہمیت بیان کریں۔

.v   بین الا قوامی تنظیموں کے بارے میں حقیقت پسندانہ نقطۂ نظر کی وضاحت کریں۔

(3x10=30)

Q.3.   Questions with brief answers.

i.   What is the concept of Collective Security, and how United Nation is working under this concept?

ii.   According to the performance of UNO, analyze its future?

iii.   What are the future challenges of the UN?

سوال نمبر3:   جامع جواب دیں۔

.i   اجتماعی تحفظ کیا ہے اور اقوام متحدہ اس تصور کے ساتھ کیسے کام کر رہی ہے ؟

.ii   اقوام متحدہ کی پرفارمنس کو دیکھتے ہوئے اس کے مستقبل کا جائزہ لیں؟

.iii   اقوام متحدہ کو مستقبل میں کیا چیلنجز پیش آسکتے ہیں؟

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Roll No. in Words. ....
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Signature of Supdt.:

Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

i: SAARC is an organization of ------------------------------------- countries.

    a) Five   b) Seven   c) Eight

ii   Which organization is a major partner of ASEAN

    a) Shanghai Cooperation Organization   b) SAARC   c) ECO

iii   : OIC adopted the "Cairo Declaration on Human rights" in Islam in

    a) 1980   b) 1990   c) 2000

iv   : Which of the following country is one of the founding members of NATO?

    a) Spain   b) Greece   c) Luxembourg

v   : SAARC secretariat is based in

    a) New Delhi   b) Kathmandu   c) Dhaka

vi: The Peninsula Shield Force is the military arm of

    a) African Union   b) GCC   c) NATO

vii :   The African Union has people over

    a) One Billion   b) Two Billion   c) One Million

viii: Most of the members of NATO are from?

    a) North America   b) Europe   c) Eurasia

ix: Which of the following organizations consisted of 21% world's population and 3.8 % of global economy?

    a) ASEAN   b) SAARC   C) African Union

X: Which of following state became the member of SAARC in 2007 after huge debate regarding definition of South Asian identity?

    a) Afghanistan   b) Bhutan   c) Maldives

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Regional Organizations
Course Code: POL-410   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.No.2: Give Short Answers. (20)

a) Describe the prospects for SAARC in South Asia briefly.
b) Briefly explain the dynamics of Shanghai Cooperation as a vehicle of competition or cooperation?
c) Write in brief the significant features of Gulf Cooperation Council?
d) Highlight the importance of ECO as a trade bloc for Central Asian states?
e) What is meant by "ASEAN Way

Q.No.3: Discuss the role and shortcomings of OIC and elaborate that how OIC can be an effective organization. (10)

Q.No.4: Assess the Role of ASEAN for regional integration in South East Asia.(10)

Q.N.5: Write a brief note on following. (5+5=10)

(i): Non-Aligned Movement (NAM)

(ii): NATO

Roll No. in Fig. ....

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

i.   Which political ideology emphasized individual rights and freedoms the most?
   a)   Conservatism   b)   Liberalism
   c)   Socialism   d)   Communism

ii.   Which ideology rejects social class differences the most?
   a)   Liberalism   b)   Communism
   c)   Fascism   d)   Socialism

iii.   Islamic Ideology is based on
   a)   Sovereignty of people   b)   Sovereignty of Allah
   c)   Sovereignty of government

iv.   Who make economic decisions under Capitalism?
   a)   Individuals   b)   Government
   c)   President   d)   None of these

v.   Iranian Revolution of 1977-79 took place under the leadership of:
   a)   Syed Qutab   b)   Hassan Rouhani
   c)   Ahmed Khomeiri   d)   Ayatollah Khomairi

vi.   French revolution drew inspirations from the ideas of:
   a)   David Hume   b)   John Stuart Mill
   c)   John Locke   d)   Jean-Jacques Rousseau

vii.   Who proposed in his famous book "The Prince" that Princes can use immoral means to achieve their ends of glory & survival?
   a)   Thomas Hobbes   b)   Machiavelli
   c)   Plato   d)   John locke

viii.   Who wrote the "Communist Manifesto" in 1848:
   a)   Lenin   b)   Karl Marx
   c)   Joseph Wedemeyer   d)   Stalin

ix.   The blood less Coup d' etat in 1688 in England is known as:
   a)   The October Revolution   b)   Industrial Revolution
   c)   2nd Industrial Revolution   d)   Glorious Revolution

x.   Muslim brotherhood (MB) was established by Hassan-al-banna in 1928 in:
   a)   Egypt   b)   Turkey
   c)   Syria   d)   Palestine

Paper: Political Ideologies
Course Code: POL-411   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Questions with short answers.   **(5x4=20)**

i.   Write down the important features of Islamic Ideology.

ii.   Describe the role of democracy in developing countries.

iii.   Describe the characteristics of Socialism.

iv.   How Nationalism is important for co-operation within state.

v.   Bolshevik revolution 1917

Q.3.   Questions with brief answers.   **(3x10=30)**

i.   .Analyze the ideology of Marxism in the present world Scenario.

ii.   Explain the benefits of Capitalism.

iii.   Write a brief note on "Nationalism" as an ideology.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Social Transformation
Course Code: SOC-406   Part – I (Compulsory)   Time: 15 Min. Marks: 10

Roll No. in Fig. ....

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.   **(10x1=10)**

i.   1- Social Change is comparatively _____ idea than cultural change.
   a) Vast   b) Small
   c) Both are same   d) None of above

ii.   Which of the following is a factor of social change
   a) Discovery   b) Invention
   c) Diffusion   d) All of above

iii. The development approach that seeks to explain underdevelopment through core-peripheral relationship in world countries is known as
   a) Modernization Theory   b) Lahore Market Theory
   c) Surplus Theory   d) World systems theory

iv.   TFR in Pakistan remained between _____ during 60s to 80s
   a) 6 & 7   b) 8 & 9
   c) 4 & 5   d) 5 & 6

v.   HDI accounts for
   a) Education   b) Per Capita Income
   c) Life Expectancy   d) All of above

vi.   Which of the following social changes tries to bring forth the core/fundamental change at large scale by use of force
   a) Revolutionary Social Change   b) Alternative Social Change
   c) Redemptive Social Change   d) None of above

vii. An economic development that is done without depleting natural resources is known as _____.
   a) Sustainable Development   b) Unnatural development
   c) Non-depleting development   d) Positive development

viii. According to 2017 Census the overall rural population in the country has _____ as compared to the past.
   a) Increased   b) Decreased
   c) Remained the same

ix.   Modernization theories define the changes based on the experiences of _____
   a) Western European countries   b) Eastern European countries
   c) Latin American countries   d) None of the above

x.   In a demographic frame social change is measured by _____
   a) Diffusion, innovation, invention
   b) Fertility, mortality, migration
   c) Conservation of environment, forestation, controlling air pollution
   d) None of the above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Social Transformation
Course Code: SOC-406   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Questions with short answers.   **(5x4=20)**

i.   Discuss types of social change.

ii.   Briefly explain three important instruments of social change.

iii. Explain the process of identifying social change.

iv.   Briefly discuss problems of development?

v.   Briefly explain the importance of availability of physical resources in economic development.

Q.3. Questions with brief answers.   **(3x10=30)**

i.   Write an essay on economic and social indicators of development.

ii.   Write note on various approaches towards development.

iii. Explain in detail the concept of resistance to social change with examples

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. in Fig. ....

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Signature of Supdt.:

Paper: Clinical Sociology
Course Code: SOC-407   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

(10x1=10)

Q.1.   Encircle the correct option.

1. Zorbaugh was a founder
    a. 1928
    b. 1930
    c. 1926
    d. 1925

2. Clinical sociology is a
    a. Humanistic
    b. Generalist
    c. Components
    d. None of the above

3. Clinical sociologists have different areas of expertise
    a. Health promotion
    b. Pubic promotion
    c. Advertise promotion
    d. None of the above

4. When sociology emerged as a discipline in the
    a. 1890s
    b. 1870s
    c. 1895s
    d. 1894s

5. Applied sociology programs at the baccalaureate level and intends to do the same
    a. graduate programs
    b. undergraduate programs
    c. postgraduate program
    d. None of the above

P.T.O.

6. Clinical sociologists are expected to have education

    a. Training

    b. Research

    c. Conflict

    d. None of the above

7. The international development of clinical sociology has been supported primarily by

    a. Three organization

    b. Two organization

    c. Four organization

    d. One organization

8. The clinical sociology division of the International Sociological Association was organized in

    a. 1983

    b. 1982

    c. 1987

    d. 1985

9. involvement in and interaction with members of a specific social system to address specific social problems

    a. population

    b. intervention

    c. mechanism

    d. none of the above

10. Clinical sociologists use existing theory to formulate models that

    a. will be helpful in identifying and understanding problems

    b. research methods and techniques

    c. intervention strategies

    d. none of the above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Clinical Sociology

Course Code: SOC-407   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

(5x4=20)

Q.2.   Define the following with examples.

i.   Mediation

ii.   Conflict resolution

iii. Preventive programming

iv.   Evaluation

v.   Assessment

(3x10=30)

Q.3.   Questions with brief answers.

i.   What are the differences between applied and clinical Sociology? Explain with examples.

ii.   Briefly describe the Ethics in clinical sociology.

iii. Explain in detail any three steps in the process of intervention.

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Roll No. in Words. ....

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option. (10x1=10)

1. Governance is a process to exercise the
   a) rules
   b) power
   c) laws
   d) none of these

2. Organizations that pursue the common interest of groups of people to influence the making and implementation of government policy are called
   a) policy communities
   b) political parties
   c) social movements
   d) none of these

3. A public interest group pursues policies that they believe will provide what to society:
   a) solidarity incentives
   b) collective benefits
   c) selective benefits
   d) none of these

4. Laws, policies and other writings made to solve the public issues is called
   a) governance
   b) public Policy
   c) both a & b
   d) none of these

5. Public policy is to provide the solutions for social
   a) development
   b) issues
   c) both a & b
   d) none of these

P.T.O.

6. Phenomenon in which a person having membership by enjoying certain rights in a political community or a state denied to others (non-citizen) is known as
   a) citizenship
   b) non-citizenship
   c) refugees
   d) none of these

7. The main actors to govern the state are
   a) legislature
   b) administration
   c) judiciary
   d) all of these

8. Theory that refers to the individuals choice that is most in line with their personal preferences is known as
   a) state centered theory
   b) rational choice theory
   c) normative theory
   d) none of these

9. State is a political institution that enjoys
   a) definite territory
   b) organized government
   c) population with sovereign power
   d) all of these

10. Public governance, global governance, non-profit governance, corporate governance, and project governance are the types of
    a) public Policy
    b) governance
    c) authority
    d) none of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Governance & Social Policy
Course Code: SOC-408   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Define the following: (5x2=10)

i.   Public Policy

ii.   Democracy

iii. Welfare State

iv.   Process of Governance

v.   Legislative Government

Q.3. Discuss the following: (3x10=10)

i.   Discuss the character of the Pakistani Welfare State and the main pillars of Pakistani social policy.

ii.   What is Globalization and how it alters the power, capacities goals and purpose of states.

iii. Define explanatory theory and distinguish between explanatory and normative theories.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. in Fig. ....

Roll No. in Words. ....

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Signature of Supdt.:

Paper: Statistical Inference-II (Theory)
Course Code: STAT-407   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct option.   **(10x1=10)**

1. If T is the MLE of θ and $\varphi(\theta)$ is one to one function of θ, then $\varphi(T)$ is MLE of $\varphi(\theta)$. This is known as the

   a) Asymptotic Normality of MLE

   b) Consistency Property of MLE

   c) Invariance Property of MLE

   d) None of the Above

2. Generally the estimators obtained by the method of moments as compare to Maximum Likelihood estimators are:

   a) Less efficient

   b) More efficient

   c) Equally efficient under certain conditions

   d) Both a) & c) are true

3. In the expression $P(C_1 < \theta < C_2) = 1 - \alpha$, constants C_1 & C_2 are called:

   a) Power limits

   b) Control limits

   c) Confidence limits

   d) All of the Above

4. Which one of the following method provides BLUE of the population parameter(s).

   a) Method of Minimum Chi-square

   b) Method of Maximum Likelihood

   c) Method of Least Squares

   d) Method of Moments

5. $\bar{X} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$ is the confidence interval for μ when

   a) $n > 30$

   b) $n < 30$

   c) $n \geq 30$

   d) Value of n does not matter.

P.T.O.

6. Suppose the confidence interval is given by $P(T_1 < \theta < T_2) = 1 - \alpha$. Then $Lenght = T_2 - T_1$ would be Minimum if it is:

a) One sided Confidence Interval

b) Two sided Confidence Interval

c) Central Confidence Interval

d) Non-central Confidence Interval

7. If a Statistical Hypothesis completely specifies the distribution, then it is called:

a) Simple Hypothesis

b) Composite Hypothesis

c) Null Hypothesis

d) Alternative Hypothesis

8. Rejection of Null Hypothesis (H_0) when alternative Hypothesis (H_1) is true , is known as:

a) Type-I Error

b) Type-II Error

c) Correct Decision

d) Wrong Decision

9. Which one of the following is used to find out the Best Critical Region (BCR)?

a) Rao-Blackwell theorem

b) Neyman-Pearson Lemma

c) Cramer-Rao Inequality

d) Neyman-Pearson Factorization theorem

10. The Joint Probability density function of sample variates is called:

a) Power Function

b) Distribution Function

c) Likelihood Ratio

d) Likelihood Function

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Statistical Inference-II (Theory)
Course Code: STAT-407   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Question No.2. Answer the following.   (4 × 5 = 20)

a) What is the rational of moment estimation? Under what situation moment estimators and maximum Likelihood estimators are equally efficient?

b) Write down the assumptions and properties of Least Squares Estimation method.

c) Differentiate between Most Powerful and Uniformly Most Powerful Tests.

d) Suppose $X_1, X_2, X_3, \dots, X_n$ constitutes a random sample from Bernoulli distribution with

$$f(x; \theta) = \theta^x (1 - \theta)^{1-x} \quad ; x = 0, 1.$$

Obtain the MCS estimator of θ.

Question No. 3. Obtain the MLE of the unknown parameter θ for the following distribution,   (12)

$$f(x; \theta) = \frac{1}{\Gamma P\, \theta^P}\, x^{P-1} e^{-x/\theta} \qquad ; x > 0$$

Where P is known. Obtain the variance of the estimator and check it for Consistency, Efficiency and Sufficiency.

Question No. 4. State and Prove Neyman-Pearson Lemma.   (10)

Question No. 5. Define pivotal quantity. Consider a random sample of size "n" from a   (08)
distribution having p.d.f $f(x; \beta) = \beta e^{-\beta x}$; $x > 0$, $\beta > 0$.
Find 95% Large sample confidence interval for β.

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   **State whether each of the following statements is true or false OR uncertain.**
(10X1=10)

(i)   The method of OLS is not applicable to estimate a structural equation in a simultaneous-equations model.

(ii)   Two stage least squares method is applicable for under identified equation.

(iii)   In the presence of a stochastic regressor(s) and an autocorrelated error term, the method of instrumental variables will produce unbiased as well as consistent estimates.

· (iv)   Underfitting a model (omitting relevant variable(s), L.S. estimators are biased as well as inconsistent.

(v)   The D.W. d test assumes that the variance of the error term is homoscedastic.

(vi)   If heteroskedasticity is present, the conventional t and F test are valid.

(vii)   Despite perfect multicollinearity, OLS estimators are BLUE.

(viii)   For quarterly data, we should define three dummy variables to check seasonality of the data.

(ix)   In Aitken Theorem, error terms of GLR model are Non Spherical.

(x)   Even though the disturbance term in the classical linear regression model is not normally distributed, the OLS estimators are still unbiased.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Applied Econometrics (Theory)
Course Code: STAT-409   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Discuss briefly the following:

    (i)   Assumptions of generalized least squares

    (ii)   Heteroskedasticity

    (iii) Instrumental variable

    (iv) Indirect Least squares method

    (v)   Geary test for Autocorrelation

(20)

Q.3. Following are the OLS residuals obtained by fitting the model
$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$
19.98, 11.50, -1.78, 0.33, -6.05,-14.83, -14.12, -14.39, -9.17, -0.36, 4.86, 1.68, 9.10, 10.32, 2.93

Test autocorrelation by Geary test and estimate first order autocorrelation Co-efficient by Cochran-orcutt two step procedure.

(10)

Q.4. Consider the model:
$$y_1 = \beta y_2 + u_1, \quad y_2 = \alpha_1 y_1 + \alpha_2 x_1 + \alpha_3 x_2 + u_2$$

Obtain consistent estimates of structural parameters $(\beta, \alpha_1, \alpha_2, \alpha_3)$, where possible, by appropriate method using the calculations.
$$\Sigma x_1^2 = 1 , \quad \Sigma x_2^2 = 20, \quad \Sigma x_1 x_2 = 0 , \quad \Sigma x_1 y_1 = 5 , \quad \Sigma x_2 y_1 = 40,$$
$$\Sigma x_1 y_2 = 10, \quad \Sigma x_2 y_2 = 20$$

(10)

Q.5. For GLR model $Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + u$ such that Var $(u_i) \propto X_{3i}$, residual SS for first 30 observations is 377.17 and residual SS for last 32 observations is 1536.80. Test the Heteroskedasticity.

(05)

Q.6. Discuss the practical consequences of Multicollinearity.

(05)

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<u>**ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.**</u>
<u>**Division of marks is given in front of each question.**</u>
<u>**This Paper will be collected back after expiry of time limit mentioned above.**</u>

Q.1. **Encircle the correct option.**   **(10x1=10)**

1. The residuals obtained from a good fitted ARMA(p,q) model will show the insignificant autocorrelations
    A. At all non-zero lags
    B. After lag p.
    C. After lag q.
    D. After lag (p+q)

2. Among the good-fitted models, the best model will have the _____ value of AIC.
    A. constant
    B. largest
    C. smallest
    D. zero

3. The forecast error _____ with an increase in lead time.
    A. remains constant
    B. decreases
    C. increases
    D. Both A and B.

4. The forecast errors at lead time one with different forecast origins are
    A. Perfectly positively correlated.
    B. Perfectly negatively correlated.
    C. Uncorrelated
    D. Both A and B.

5. Portmanteau test applied to first 'm' residuals autocorrelations resulting from an ARMA(p,q) model will have degrees of freedom equal to
    A. $p + q$
    B. $m + p + q$
    C. $m - p + q$
    D. $m - p - q$

6. In portmanteau test, 'm' must satisfy the condition:
    A. $m > p + q$
    B. $m < p + q$
    C. $m > p - q$
    D. $m < p - q$

   **P.T.O.**

7. If the autocorrelation function cuts-off to zero after lag 3 then the time series might have been generated by:
   A. MA(3) process
   B. AR(3) process
   C. ARMA(3,3) process
   D. ARIMA(0,3,0) process

8. Which of the following is not a property of autocorrelation function:
   A. It is an even function.
   B. It is bounded between -1 and +1.
   C. It is an odd function.
   D. All above.

9. Yule-Walker method is used to estimate the parameters of
   A. Random walk
   B. Autoregressive process
   C. Moving Average process
   D. Purely random process

10. The partial autocorrelation function of an AR(p) process
    A. Tails-off after lag p.
    B. Cuts-off after lag p.
    C. Exponentially increases after lag p.
    D. None of above.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Time Series Analysis-II

Course Code: STAT-413   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Note:- Attempt ALL the questions.

Q.2 Given the following time plot, autocorrelation and partial autocorrelation functions: **[6]**
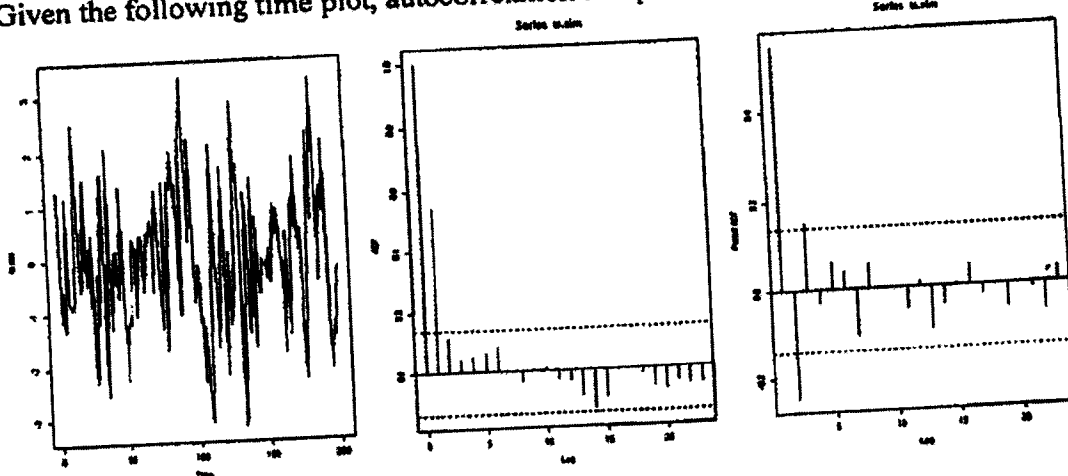
a) Discuss the graphs behavior.
b) Identify the candidate ARMA model(s).

Q.3 Given the following information, estimate the parameters of AR(2) model.   **[6]**

$$\overline{Y} = 0.21, r_1 = 0.87, r_2 = 0.83$$

Q.4 Following are the autocorrelations obtained for the residuals by fitting an ARMA(2,1) process to an observed time series with n = 200.   **[8]**

k	1	2	3	4	5
r_k	0.04	-0.13	0.25	-0.01	0.09

State the hypothesis and test the goodness of fitted model using a portmanteau test for m= 5. Use 5% level of significance.

Q.5 Given the following AR(2) process   **[10]**

$$Y_t = \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + Z_t$$

Derive the loss function for the Maximum likelihood estimation of AR parameters. Also obtain the MLEs (approximate) of ϕ_1, ϕ_2 and σ_z^2.

Q.6 Show that the minimum mean squared error forecast with origin at n and lead time l is for an AR(1) process $Y_t = \phi Y_{t-1} + Z_t$ is given by   **[10]**

$$Y_n(l) = \phi^l Y_n$$

with forecast error variance

$$var(e_n(l)) = \sigma_z^2 \left(\frac{1 - \phi^{2l}}{1 - \phi^2} \right)$$

Q.7 An AR(1) model $Y_t - 53 = 0.65(Y_{t-1} - 53) + z_t$, is fitted to an observed time series of 100 observations. Now a practitioner wants to use this model to forecast Y_{101} and Y_{102}.   **[10]**

   i. Compute the MMSE forecasts of Y_{101} and Y_{102}, if $Y_{99} = 52.7, Y_{100} = 53.5$ using (a) $\psi(B)$ polynomial. (b) $\pi(B)$ polynomial.
   ii. Suppose that Y_{101} comes out to be 51.3, update the forecast of Y_{102} by shifting forecast origin to $t = 101$.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Multivariate Analysis
Course Code: STAT-414   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   **Encircle the correct option.**   **(10x1=10)**

i.   Which of the following statistical techniques is appropriate when the variables to be analyzed are interrelated without designations as to whether they are criterion and predictor variables?
   a)   Multiple regression   b)   Multivariate analysis of variance
   c)   Discriminant analysis   d)   Factor analysis
   e)   Path analysis

ii. Which of the following statistical techniques identifies patterns underlying combinations of the original variables capable of summarizing the original set?
   a)   Factor analysis   b)   Multivariate analysis of variance
   c)   Cluster analysis   d)   Multidimensional scaling
   e)   Discriminant analysis

iii. Hotelling's T^2 statistics has the following distribution.
   a)   Chi-square   b)   Normal
   c)   F   d)   Binomial
   e)   t-distribution

iv. The number of correctly classified cases in discriminant analysis is given by the:
   a)   F statistics   b)   Cutting Score
   c)   Degrees of freedom   d)   Hit rate
   e)   None of the above

v.   A multivariate generalization of student's t-distribution is:
   a)   Hotelling T^2 b)   MANOVA
   c)   PCA   d)   None of these

vi. Discriminant analysis can be used to answer questions such as:
   a)   How much of a variation in sales can be explained by advertising expenditures, prices, and level of distribution?
   b)   In terms of demographic characteristics, how do customers who exhibit store loyalty differ from those who do not?
   c)   What are the distinguishing characteristics of consumers who respond to direct main solicitation?
   d)   Both B and C are correct

P.T.O.

vii. What does it means if the discriminant function is estimated and the square of the canonical correlation is 0.64%.
  a) 64% of the variance in the dependent variable is explained by the model.
  b) The null hypothesis is not rejected. Therefore, there is no significant discrimination between groups.
  c) 64% of the explained variance is accounted for.
  d) Both B and C are correct

viii. A technique for the study of interrelationships among variable, usually for the purposes of data reduction and the discovery of underlying constructs or latent dimensions is known as:
  a) Multiple Regression   b) Discriminant analysis
  c) Factor analysis   d) Canonical analysis

ix. To determine which variables related to which factors, a researcher would use:
  a) Factor Loadings   b) Communalities
  c) Eigen values   d) None of these

x. Which of the following can be used to determine how many factors to take from a factor analysis.
  a) Eigen values   b) Scree Plot
  c) % of variance   d) All of these

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Multivariate Analysis
Course Code: STAT-414   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

SHORT QUESTIONS

Q2. Define the following: (5 marks each)

i)   Common Factors and Specific Factors
ii)   Fisher's Discrimination Rule
iii) Canonical Correlations Analysis
iv)   Principal Component Analysis for Standardized Variables

SUBJECTIVE

Q3. Derive the distribution of Hotelling T^2-statistic for testing $H_0 : \mu = \mu_0$.   (10)

Q4. Discuss the principal components from equal correlation matrix $\rho = \begin{bmatrix} 1 & 0.6 & 0.6 \\ & 1 & 0.6 \\ & & 1 \end{bmatrix}$ (06)

Q5. Suppose that **X** is a multinomial random variable which comes either from P_1 with multinomial probabilities $\alpha_1, \alpha_2, ..., \alpha_k$ or from P_2 with multinomial probabilities $\beta_1, \beta_2, ..., \beta_k$ where $\sum_{i=1}^{k} \alpha_i = \sum_{i=1}^{k} \beta_i = 1$ and $\sum_{i=1}^{k} x_i = n$. Discuss the maximum likelihood discriminant rule.   *(06)*

Q6. The covariance matrix for four standardized variables Z_1, Z_2, Z_3, Z_4 is,

$$\rho = \begin{bmatrix} 1 & 0.4 & 0.5 & 0.6 \\ & 1 & 0.3 & 0.4 \\ & & 1 & 0.2 \\ & & & 1 \end{bmatrix}$$

Let $Z_1' = \begin{bmatrix} Z_1 & Z_2 \end{bmatrix}$ and $Z_2' = \begin{bmatrix} Z_3 & Z_4 \end{bmatrix}$. Find canonical correlation between Z_1' & Z_2'. Also find the first pair of canonical variates.   *(08)*

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

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Paper: Total Quality Management
Course Code: STAT-415   Part – I (Compulsory)   Time: 15 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

1. Defective product or material that cannot be repaired, used or sold is called -------------.
   - A. Waste
   - B. Rework
   - C. Scrap
   - D. None of the above

2. Social and related skills that help manager to relate to others effectively are called ----------
   skills.
   - A. Conceptual
   - B. Administrative
   - C. Technical
   - D. Human

3. There are --------------- basic functions of management
   - A. Two
   - B. Three
   - C. Four
   - D. five

4. The Define phase of six sigma project is considered to be the ------------- phase of the project.
   - A. Contract
   - B. Measure
   - C. Analyze
   - D. Improve

5. The philosophy of TQM is ------------------------
   - A. Cost saving
   - B. Accept the lot
   - C. Continuous Improvement
   - D. Reject the lot

6. The process of getting activities completed efficiently with and through other people is known
   as ----------------------
   - A. Management
   - B. Control charts
   - C. Benchmarking
   - D. ISO

7. ---------------------- generally directs other managers.
   - A. Lower management
   - B. Middle management
   - C. Top management
   - D. None of the above

8. Which of them is NOT a type of variable control charts:
   - A. $\bar{X}$ chart
   - B. S chart
   - C. R chart
   - D. np chart

9. _____ is intended to assess a company's performance in terms of environmental performance.
   - A. ISO 14000
   - B. ISO 9000
   - C. Six sigma
   - D. All of the above

10. Poor quality adversely affects:
    - A. Cost
    - B. Productivity
    - C. Profitability
    - D. All of the above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Total Quality Management
Course Code: STAT-415   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q. No. 2.   Write a short note on the following: **(5 each)**

     i.   Six Sigma Methodology

     ii.   Philosophy of TQM

     iii. Acceptance Sampling Plans

     iv. Internal Failure costs in TQM

Q. No. 3.   Elaborate Deming's Fourteen Points to implement TQM.   **(08)**

Q. No. 4.   What are the obstacles to implementing TQM? Also differentiate TQM with traditional approach.   **(08)**

Q. No. 5.   The following table refers to the production and number of defectives of 12 lots with a constant lot size 200.   **(06)**

Lot Number	Number of Defectives	Lot Number	Number of Defectives
1	23	7	25
2	15	8	31
3	17	9	29
4	15	10	0
5	41	11	8
6	0	12	16

  a. Compute 3-sigma control limits for the fraction defectives.

  b. Plot the data on a control chart and make a decision about rejected lots. Make revised control limits if necessary.

Q. No. 6.   Why an organization should implement ISO? Also describe the internal and external objectives of this organization.   **(08)**

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نوٹ: اس پرچے کو صرف اسی سوالیہ پرچہ پر حل کریں۔

معروضی حصہ

سوال نمبر ۱: درج ذیل میں سے درست جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب درست شمار نہ ہوگا۔   10

(1) سوئیر کی فرانسیسی کتاب کا انگریزی ترجمہ کب شائع ہوا؟

(الف) ۱۹۶۰ء   (ب) ۱۹۲۹ء   (ج) ۱۹۵۹ء   (د) ۱۹۷۱ء

(2) معنی اور تناظر کس کی تصنیف ہے؟

(الف) احمد ندیم قاسمی   (ب) ڈاکٹر وزیر آغا   (ج) عبدالحلیم شرر   (د) غلام عباس

(3) سوئیر زبان کے کس مطالعے پر زور دیتا ہے؟

(الف) یک زبانی   (ب) یک علاقائی   (ج) ساختیاتی   (د) تخیلاتی

(4) کس نے Stream of Rivers میں فرق بیان کیا؟

(الف) سوئیر   (ب) ہیلم   (ج) مارکس   (د) جوہن کلر

(5) اردو ادب میں ساختیاتی حوالے سے سب سے زیادہ مضامین کس نقاد نے تحریر کیے؟

(الف) وزیر آغا   (ب) ناصر عباس نیر   (ج) گوپی چند نارنگ   (د) گیان چند

(6) "ساختیات ایک تعارف" کس مشہور نقاد کی کتاب ہے؟

(الف) ناصر عباس نیر   (ب) غلام حسین ساجد   (ج) گوپی چند نارنگ   (د) وقار عظیم

(7) لیوی سٹراس نے ساختیات پر مضمون لکھا؟

(الف) ۱۹۴۵ء   (ب) ۱۹۴۴ء   (ج) ۱۹۴۳ء   (د) ۱۹۴۶ء

(8) ساختیات کا بانی کون ہے؟

(الف) جوہن کلر   (ب) فرڈی نان سوئیر   (ج) مشل فوکو   (د) ژاں پال ساوتر

(9) ساختیاتی تنقید کا بانی کون ہے؟

(الف) رولاں بارت   (ب) مشل فوکو   (ج) لیوی سٹراس   (د) سوئیر

(10) سوئیر کے لسانی ماڈل کا اطلاق اساطیر پر کس نے کیا۔

(الف) لیوی سٹراس   (ب) مشل فوکو   (ج) ژاں پال سارتر   (د) رولاں بات

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Naayay Tanqidi Mubahas

Course Code: URDU-406   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

نوٹ: اس پرچے کو علیحدہ سے مہیا کی گئی کاپی پر حل کریں۔

(حصہ اوّل)

درج ذیل سوالات کے مختصر جوابات تحریر کریں۔

(20=4x5)

(۱)   ساختیات پر لکھی گئی کتابوں کے نام بمعہ مصنفین تحریر کیجیے۔

(۲)   ''مثل فوکو'' کا پس ساختیات میں کردار واضح کریں۔

(۳)   سوسیئر کے فلسفہ کو مدِنظر رکھتے ہوئے زبان اور سماج میں تعلق بیان کیجیے۔

(۴)   کتاب''ساختیات ایک تعارف'' کے ابواب کی تقسیم تحریر کریں۔

(حصہ ب)

(30=3x10)

(۱)   ساختیات اور پس ساختیات کا فرق بیان کریں؟

(۲)   نئے تنقیدی مباحث کا لسانیاتی اور بین العلومی پس منظر بیان کریں۔

(۳)   پس ساختیات کے حوالے سے ''مثل فوکو'' کے نظریات بیان کریں۔

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Iqbal ka Khasoosi Mutalia (fiqri o funny mutalia aur tashery maton)
Course Code: URDU-407   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
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نوٹ: اس پرچے کو صرف اسی سوالیہ پرچہ پر حل کریں۔

سوال نمبر1: کسی ایک جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب غلط شمار کیا جائے گا۔

1- "ابلیس کی مجلسِ شوریٰ" اقبال کے کس شعری مجموعے میں شامل ہے؟
(الف) بانگِ درا   (ب) بالِ جبریل   (ج) ضربِ کلیم   (د) ارمغانِ حجاز

2- "اقبالِ کامل" کس کی کتاب ہے؟
(الف) سید عبداللہ   (ب) عبدالسلام ندوی   (ج) خلیفہ عبدالحکیم   (د) صدیق جاوید

3- "روحِ اقبال" کے مصنف کون ہیں؟
(الف) افتخار احمد صدیقی   (ب) یوسف حسین خان   (ج) رفیع الدین ہاشمی   (د) عابد علی عابد

4- اقبال کی زندگی میں کون سی تنقیدی کتاب لکھی گئی؟
(الف) اقبال   (ب) زندہ رود   (ج) اقبالِ کامل   (د) روحِ اقبال

5- "بانگِ درا" کی اشاعت کب ہوئی؟
(الف) 1920ء   (ب) 1922ء   (ج) 1924ء   (د) 1925ء

6- "بانگِ درا" کا دیباچہ کس نے لکھا؟
(الف) علامہ اقبال   (ب) شیخ عبدالقادر   (ج) خوشی محمد ناظر   (د) مولانا صلاح الدین

7- "جاویدنامہ" کا سنہِ اشاعت کیا ہے؟
(الف) 1923ء   (ب) 1932ء   (ج) 1934ء   (د) 1938ء

8- "زندہ رود" کے مصنف کون ہیں؟
(الف) علامہ اقبال   (ب) جاوید اقبال   (ج) عطیہ فیضی   (د) اعجاز احمد

9- "عروجِ اقبال" کے مصنف کون ہیں؟
(الف) عبدالسلام ندوی   (ب) افتخار احمد صدیقی   (ج) سید سلیمان ندوی   (د) ابو الحسن علی ندوی

10- اقبال کے کس اردو مجموعے میں غزلیات کی تعداد سب سے زیادہ ہے؟
(الف) بانگِ درا   (ب) بالِ جبریل   (ج) ضربِ کلیم   (د) ارمغانِ حجاز

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Iqbal ka Khasoosi Mutalia (fiqri o funny mutalia aur tashery maton)

Course Code: URDU-407   Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

نوٹ: اس پرچے کو علیحدہ سے مہیا کی گئی کاپی پر حل کریں۔

سوال نمبر 2: درج ذیل سوالات کے مختصر جوابات درکار ہیں۔　　　　(4x5=20)

i.　شعر کی وضاحت حوالہ متن کے ساتھ کیجیے۔

نہ تو زمیں کے لیے ہے نہ آسماں کے لیے

جہاں ہے تیرے لیے، تو نہیں جہاں کے لیے

ii.　شعر کی وضاحت حوالہ متن کے ساتھ کیجیے۔

سرّ دین مصطفیٰ گو یم ثرا

ہم بقبر اندر دعا گو یم ثرا

iii.　تصورِ فن کے ضمن میں اقبال کے نقطہ نظر کی وضاحت کیجیے۔

iv.　اقبال کے تصورِ مردِ کامل کو مدِ نظر رکھتے ہوئے مردِ مومن کی پانچ خصوصیات تحریر کیجیے۔

سوال نمبر 3: درج ذیل سوالات کے جامع جواب درکار ہیں۔　　　　(10x3=30)

i.　درج ذیل اشعار کی تشریح حوالہ متن کے ساتھ کیجیے اور متن کی وضاحت کرتے ہوئے فنی محاسن کی نشان دہی بھی کریں۔

آنی و فانی تمام معجزہ ہائے ہنر

کارِ جہاں بے ثباتِ کارِ جہاں بے ثبات

اوّل و آخر فنا باطن و ظاہر فنا

نقشِ کہن ہو کہ نو منزلِ آخر فنا

ii.　اقبال کے تصور عشق و عقل کی وضاحت تقابلی انداز میں کیجیے۔

iii.　خودی سے کیا مراد ہے؟ اس کے لوازم و عناصر بیان کریں اور اقبال نے تربیتِ خودی کے جو مراحل تجویز کیے ان پر روشنی ڈالیے۔

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Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

نوٹ: اس پرچے کو صرف اسی سوالیہ پرچے پر حل کریں۔

سوال نمبر ۱: درج ذیل میں سے درست جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب درست شمار نہ ہوگا۔

(i) سید عابد علی عابد کی تصنیف ہے؟
(الف) مطلوب (ب) اسلوب (ج) منصور (د) اسالیب

(ii) "دجلی سے عبدالحق تک" کے مصنف کا نام ہے؟
(الف) ڈاکٹر سید عبداللہ (ب) ڈاکٹر علی محمد خان (ج) ڈاکٹر عبداللہ نقوی (د) ڈاکٹر سید علی

(iii) "مردہ بدست زندہ" کے تخلیق کار کا نام ہے؟
(الف) عظیم بیگ چغتائی (ب) ندیم بیگ (ج) فرحت اللہ بیگ (د) سعد اللہ بیگ

(iv) "میل اور میں" میں ذکر ہے؟
(الف) خوابوں کا (ب) نصابوں کا (ج) جرابوں کا (د) کتابوں کا

(v) "نظریہ" کا تعلق صنف:
(الف) مکتوب نگاری سے ہے (ب) سفرنامے سے ہے (ج) آپ بیتی سے ہے (د) مرثیے سے ہے

(vi) جہانِ دانش ہے؟
(الف) آپ بیتی (ب) سفرنامہ (ج) مکاتیب (د) مضامین

(vii) مشتاق احمد یوسفی ہے:
(الف) خاکہ نگار (ب) مزاح نگار (ج) نقش نگار (د) نعت گو شاعر

(viii) پطرس بخاری کا نام تھا؟
(الف) محمد شاہ (ب) سعد اللہ شاہ (ج) احمد شاہ (د) عمر شاہ

(ix) شامل نصاب سرسید احمد خان کا مضمون ہے؟
(الف) نیا قانون (ب) نئی معاشرت (ج) نیا تمدن (د) نئی تہذیب

(x) "سیرت النبی" تصنیف ہے؟
(الف) مولانا حالی کی (ب) شبلی نعمانی کی (ج) سرسید کی (د) ڈپٹی نذیر احمد کی

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Urdu Nasar Kay Asaliyab: Maza Safar Nama Aap Biyti
Course Code: URDU-408   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

نوٹ: اس پرچے کو علیحدہ سے مہیا کی گئی کاپی پر حل کریں۔

(حصہ انشائی)

سوال نمبر۲: درج ذیل سوالات کے مختصر جواب لکھیے۔   (20=5x4)

(i)   سرسید احمد خان کے مضمون "نئی تہذیب" کا خلاصہ لکھیے۔

(ii)   "میبل اور میں" معاشرے کے کس رویے کی نشان دہی کی گئی ہے؟۔

(iii)   مشتاق احمد یوسفی کی مزاحیہ تحریر "موذی" پر مختصر نوٹ لکھیے۔

(iv)   مولانا شبلی نعمانی کی سیرت النبیؐ کے حوالے سے اخلاقِ نبویؐ کے نمایاں پہلو بیان کیجیے۔

سوال نمبر۳: درج ذیل سوالات کے تفصیلی جواب لکھیے۔   (30=10x3)

۱۔   آپ بیتی کے ضروری عناصر ولوازمات کی روشنی میں "جہانِ دانش" کی خصوصیات اور اسلوب پر مفصل نوٹ لکھیے۔

۲۔   "فرحت اللہ بیگ" کے اسلوب کی خصوصیات بیان کیجیے۔

۳۔   سب رس کے آخذ پر مضمون قلم بند کریں۔

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

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Paper: Urdu Adab ki Tawarikh ka Mutiala
Course Code: URDU-411   Part – I (Compulsory)   Time: 15 Min. Marks: 10

سوال (ایک) درست جواب کی نشان دہی کیجیے   ۱۰

☆ ''آب حیات'' کے مصنف کا نام ہے

۱) مولوی عبدالحق   ۲) مولانا محمد حسین آزاد   ۳) مولانا شبلی نعمانی

☆ ''مقدمہ شعر و شاعری'' تصنیف ہے

۱) غلام ہمدانی مصحفی   ۲) خواجہ میر درد   ۳) مولانا الطاف حسین حالی

☆ ''نکات الشعرا'' کے مصنف کا نام ہے

۱) میر تقی میر   ۲) قائم چاندپوری   ۳) قطب الدین باطن

☆ ''اردو ادب کی تحریکیں'' کس کی تصنیف ہے

۱) ڈاکٹر وزیر آغا   ۲) ڈاکٹر سلیم اختر   ۳) ڈاکٹر انور سدید

☆ ''سحر البیان'' کے خالق کا نام ہے

۱) دیا شنکر نسیم   ۲) میر حسن   ۳) رجب علی بیگ سرور

☆ احمد ندیم قاسمی کس رسالے کے مدیر تھے

۱) فنون   ۲) مخزن   ۳) نقوش

☆ سر سید نے اپنا تعلیمی ادارہ کس شہر میں قائم کیا

۱) لکھنؤ   ۲) دہلی   ۳) علی گڑھ

☆ ''باغ و بہار'' کا متن مرتب کیا ہے

۱) رام بابو سکسینہ نے   ۲) علی جواد زیدی نے   ۳) رشید حسن خان نے

☆ ''تاریخ ادبیات مسلمانان پاکستان و ہند'' کی طبع نو کے مدیر ہیں

۱) ڈاکٹر محمد صادق   ۲) ڈاکٹر تبسم کاشمیری   ۳) ڈاکٹر خواجہ محمد زکریا

☆ ڈاکٹر جمیل جالبی کی تاریخ ادب اردو کی کتنی جلدیں شائع ہوئیں

۱) دو   ۲) تین   ۳) چار

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Urdu Adab ki Tawarikh ka Mutiala
Course Code: URDU-411   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

٢٠

☆مختصر جواب دیجیے:

سوال نمبر دو) ادب اور تاریخ کے باہمی رشتے پر ایک مفصل مضمون لکھیں (۵)

سوال نمبر تین) ادبی تاریخ لکھنے کی ضرورت کیوں محسوس کی جاتی ہے وضاحت کیجیے (۵)

سوال نمبر چار) ایک معیاری ادبی تاریخ کی نمایاں خوبیوں کی نشان دہی کیجیے (۵)

سوال نمبر پانچ) اردو کی ادبی تاریخ لکھنے والے پانچ مصنفین کے نام بتائیے (۵)

٣٠

☆جواب دیجیے:

سوال نمبر چھ) ڈاکٹر جمیل جالبی کی تاریخ ادب اردو کی خوبیاں بیان کیجیے (۱۰)

سوال نمبر سات) ڈاکٹر محمد صادق کی ''ہسٹری آف اردو لٹریچر'' پر ایک تعارفی شذرہ تحریر کیجیے (۱۰)

سوال نمبر آٹھ) اردو ادب کے حوالے سے لکھی جانے والی ادبی تاریخوں میں سے آپ کسے قابلِ ترجیح سمجھتے ہیں اور کیوں وضاحت کیجیے(۱۰)

UNIVERSITY OF THE PUNJAB
B.S. 4 Years Program / Eighth Semester – 2019

Paper: Urdu Adab ka Mabed no Aabedyati Mutaila
Course Code: URDU-412   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

نوٹ: اس پرچے کو صرف اسی سوالیہ پرچہ پر حل کریں۔

سوال نمبر 1: کسی ایک جواب کا انتخاب کیجیے۔ کاٹ کر یا مٹا کر لکھا گیا جواب غلط شمار کیا جائے گا۔   (10x1=10)

1- اقبال کا بنیادی فلسفہ ہے۔
(الف) فلسفہ نشاط   (ب) فلسفہ خودی   (ج) فلسفہ غم   (د) فلسفہ جمالیات

2- اکبر الہ آبادی شاعر ہیں۔
(الف) رومانی   (ب) مزاحمتی   (ج) ترقی پسند   (د) اسلامی

3- ابن الوقت میں فن پر غالب ہے۔
(الف) جمالیات   (ب) ترقی پسندی   (ج) مقصدیت   (د) جدیدیت

4- اقبال نے اپنی شاعری میں مخالفت کی۔
(الف) یہودیت کی   (ب) عیسائیت کی   (ج) ترقی پسندی کی   (د) سرمایہ داری کی

5- اقبال نے تصور دیا۔
(الف) مرد بیمار   (ب) مرد کاہل   (ج) مرد کامل   (د) مرد یورپ

6- اردو کے پہلے ناول نگار ہیں؟
(الف) نذیر احمد   (ب) یلدرم   (ج) مرزا ہادی رسوا   (د) عبداللہ حسین

7- ایڈورڈ سعید کی شہرت کا سبب ہے؟
(الف) کرکٹ   (ب) ناول نگاری   (ج) افسانہ نگاری   (د) شرق شناسی

8- مولانا ظفر علی خاں کی شاعری ہے؟
(الف) سامراج شکن   (ب) دل شکن   (ج) سامراج پرست   (د) رومانی

9- نو آبادیاتی طاقتوں کا مقصد ہے؟
(الف) امن   (ب) محبت   (ج) سرمایہ   (د) مذہب

10- "ہندوستان میں انگریزی عہد" کے مصنف ہیں؟
(الف) عبداللہ یوسف علی   (ب) یوسف حسین   (ج) عبداللہ حسین   (د) علامہ اقبال

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Urdu Adab ka Mabed no Aabedyati Mutaila

Course Code: URDU-412 Part – Ii

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

نوٹ: اس پرچے کو علیحدہ سے مہیا کی گئی کاپی پر حل کریں۔

سوال نمبر 2: درج ذیل سوالات کے مختصر جوابات درکار ہیں۔ (4x5=20)

i. مولانا ظفر علی خاں نے سامراجی توسیع پسندی کی بھرپور مخالفت کی۔ مختصر تبصرہ کریں۔

ii. نو آبادیات اور مابعد نو آبادیات کے درمیان کیا فرق ہے؟

iii. برصغیر میں یورپی نو آبادیات کی تاریخ مختصراً بیان کریں۔

iv. شرق شناسی نے یورپی استعمار کے مختلف حربوں پر بخوبی روشنی ڈالی ہے۔ تائید یا تردید دیجیے۔

سوال نمبر 3: درج ذیل سوالات کے جامع جواب درکار ہیں۔ (10x3=30)

i. اکبر الہ آبادی کی شاعری مغربی استعمار کے خلاف مزاحمت کی نمائندہ مثال ہے۔ مفصل بحث کریں۔

ii. نذیر احمد کے ناول "ابن الوقت" کا مابعد نو آبادیاتی تناظر میں مفصل جائزہ لیجیے۔

iii. مغربی استعمار کے داخلی تضادات کا اقبال کی شاعری کے حوالے سے تجزیہ کیجیے۔

Roll No. in Fig. ....

Roll No. in Words. ....

....

....

Signature of Supdt.

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Division of marks is given in front of each question.
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Q.1.   Encircle the correct option.   **(0.5x20=10)**

1. Gram staining is the example
   a. Simple staining
   b. Differential staining
   c. Non differential staining
   d. Capsular staining

2. . The average size of RBC is
   a. 6-8 μm
   b. 11-12 μm
   c. 50 μm
   d. 100 μm

3. Find the mode (34, 33, 34, 34, 35, 36, 33, 34, 31).
   a. 33
   b. 34
   c. 35
   d. 31

4. _____ impurities can be separated by filtration.
   a. Insoluble
   b. Soluble and insoluble
   c. Soluble
   d. All type of impurities

5. . The percentage of agarose for making of gel is chosen, based on which property of DNA
   a. Shape
   b. Charge
   c. Size
   d. All of these

6. _____ is the running buffer for agarose gel.
   a. Tris-acetate-EDTA
   b. EDTA
   c. Ethidium bromide
   d. All of these

7. . RNA is _____ stable than DNA
   a. Less
   b. More
   c. Not known
   d. Both a and b

8. Isopycnic is a type of technique called as
   a. Distillation
   b. Ultracentrifugation
   c. Filtration
   d. None

9. The range of visible spectrum wavelength is
   a. less than 400nm-700nm
   b. more than 400nm-700nm
   c. more than 1000nm
   d. 400nm-700nm

10. _____ is used as mounting material for slides in histology.
    a. Formalin
    b. Ethyl alcohol
    c. Albumin
    d. Ether

11. How thick are paraffin embedded sections that has been cut ?
    a. 5-8 uM
    b. 5-8 nM
    c. 3-4 mm
    d. 3-4 cm

12. What is the temperature of the paraffin the tissue is placed in ?
    a. 76 c
    b. 35 c
    c. 56 c
    d. 70 c

13. SI unit of area is
    a. square meters
    c. square yards
    b. square inches
    d. square feet

P.T.O.

14. The thickness of a micron, is
   a. 10^{-6} m
   b. 10^{-12} m
   c. 10^{-3} m
   d. 10^{-9} m

15. The site in the cell at which cellular respiration occurs is the _____.
   a. Endoplasmic reticulum
   b. Golgi complex
   c. Ribosome
   d. Mitochondria

16. In gel electrophoresis, how do we make the DNA migrate through the gel?
   a. We place a negative electrode away from the wells
   b. Gravity
   c. Large fragments drift to the end of the gel
   d. We place a positive electrode away from the wells

17. What do we use to cut the DNA before gel electrophoresis?
   a. Lipase
   b. Restriction enzymes
   c. Helicase
   d. DNA polymerase

18. Which is NOT a reason for using gel electrophoresis?
   a. Organizing DNA by the shape of the backbone
   b. Organizing DNA fragments from largest to smallest
   c. Comparing two sets of DNA
   d. Organizing DNA in an order that we can see

19. The fluorescent dye such Ethidium is used for visualizing DNA. How do ethidium binds to DNA?
   a. Stacked between histone molecules
   b. Binds to the nucleotide base
   c. Intercalated between the stacked bases
   d. Binds to the phosphodiester backbone

20. Which of the following components on a light microscope should be focused first?
   a. The two eye pieces
   b. Objective lenses
   c. Condenser.
   d. Revolving nose piece

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B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Biological Techniques
Course Code: ZOOL-407   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Give short answers to following questions.   2x10=20

1. Calculate magnification of a microscope (ocular lens=20x, objective lens=40x).
2. Which embedding material is most commonly used in histological techniques?
3. Differentiate between mobile and stationary phase in chromatography.
4. Enlist some important active techniques for invertebrate sampling.
5. What is colorimetry. How it is useful in laboratories.
6. Does density gradient centrifugation play any role in cell fractionation?
7. Distinguish between visible light spectrum and ultra violet spectrum.
8. Define least count of for screw guage.
9. Why is staining used for tissues study?
10. Write working principle of thin layer chromatography.

Q.3.   Give long answers to following questions.   3x10=30

a. What is purpose and procedure of haematoxylin and eosin staining?
b. Write a comprehensive note on agarose gel electrophoresis.
c. How to write a research paper. For results section elaborate the following graphs.

Dependent (measured) variable
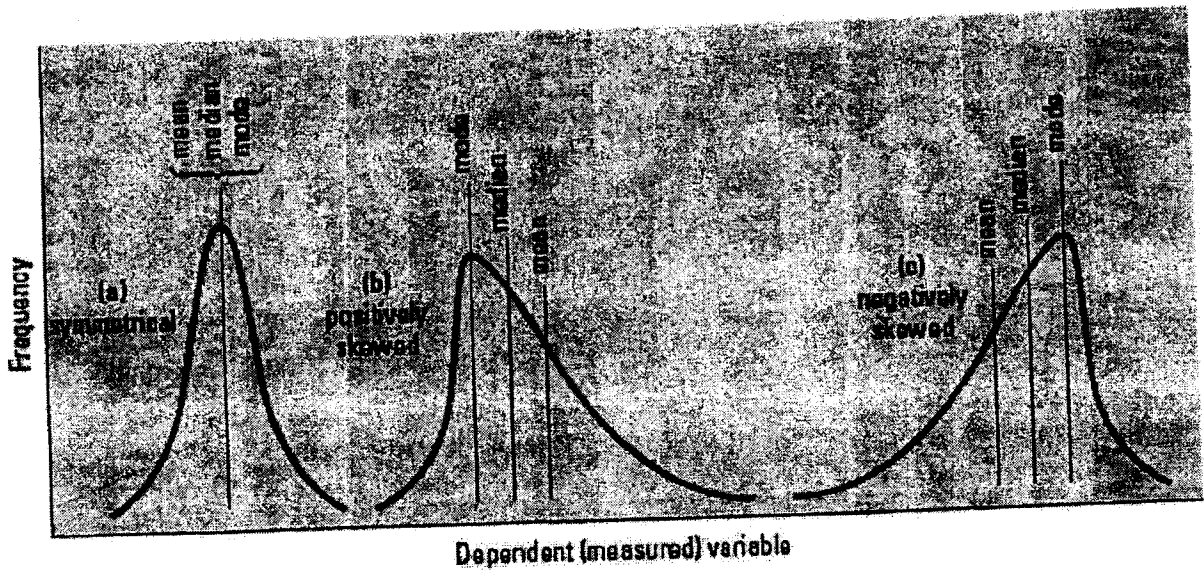
UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Zoogeography
Course Code: ZOOL-409   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   (10x1=10)

1. Islands closely grouped together are called

   a. Archipelago   b. Islet   c. Key   d. Eyot

2. Rafts are the source of distribution for animals

   a. Marine   b. Freshwater   c. Terrestrial   d. Tropical

3. Chorology is a sub branch of Zoogeography

   a. Causal   b. Descriptive   c. Applied   d. Historical

4. Great Britain is an example of Island

   a. Continental   b. Oceanic   c. Key   d. Eyot

5. EMU represents the DISTRIBUTION type called

   a. Discontinuous   b. Bipolar   c. Endemic   d. Isolated

6. Modern horse show the type of DISTRIBUTION called

   a. Discontinuous   b. Bipolar   c. Endemic   d. Cosmopolitan

7. Bermuda island is a type of island

   a. Continental   b. Ancient   c. Oceanic   d. All

8. Land bridge present between Africa and South America is

   a. Atlantic   b. Lemuria   c. Antarctica   d. a&b

9. There are no natural placental mammals in Region

   a. Nearctic   b. Ethiopian   c. Australian   d. Oriental

10. Holarctic, Ethiopian, and Oriental regions can be collectively called region

   a. Holotropical   b. Notogea   c. Arctogea   d. None of the above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Zoogeography
Course Code: ZOOL-409   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Answer the following short questions briefly: {2 x 10 = 20}

   I.   STENOHYLINE animals.

   II.   NEOTROPICAL region.

   III. ENDEMIC distributions.

   IV.   ACTIVE DISPERSAL.

   V.   PALEOGAEA.

   VI.   BIOTIC barriers.

   VII. INSULAR fauna.

   VIII. BIPOLAR Distribution.

   IX.   GEOGRAPHY of ORIENTAL REGION.

   X.   ISTHMUS of PANAMA

Q.3. Write a note on NEOTROPICAL REGION. {10}

Q.4. Write a detail note on DISCONTNUOUS DISTRIBUTION and its importance. {10}

Q.5. Write a note on NEARCTIC REGION. {10}

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Bacteriology
Course Code: ZOOL-429   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   (10x1=10)

1   Which of the following structures contains genes for enzymes and antibiotic resistance?
a) Plasmid   b) Pilus   c) Capsule   d) Plasma Membrane

2. Which of the following is the most important structure related to microbial attachment to cells?
a) Flagellum   b) Plasmid   c) Peptidoglycan   d) Glycocalix

3.   Lipopolysaccharide layers are found in:
a) all organisms   b)   all microorganisms   c) Gram +tive bacteria d) Gram tive bacteria

4.   Pasteur credited with discovery of
a) Anthrax vaccine   b) Rabies vaccine   c) Autoclave   d) all of the above

5.   Bacterial capsules are best demonstrated by
a)   Methylene blue stain b) Grams-II stain   c) Negative staining   d) Impregnation technique

6.   Following are true of Gram negative bacterial cell wall compared to Gram positive bacteria except :
a) Presence of lipopolysaccharide   b) Presence of Teichoic acid   c) Presence of sulphur containing amino acids   d) Thinner

7. Sporulation occurs in :
a) Lag phase b)   Log phase   c) Stationary phase   d) Decline phase

8. Which of the following enzyme is absent in anaerobes :
a) Catalase b) Cytochrome peroxidase c) Pyruvate carboxylase d) All of the above

9.   What is lyophilisation ?
a) Means of destroying bacteria   b)A method of sterilization   c) Freeze drying of bacteria
d) Powdering of bacteria

10. Following are sterilized by hot air oven except:
a)   Glassware   b) Swabs   c) Liquid paraffin   d) Vaccines

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2.   Give short answers of the following.   **(10x2=20)**

i.   Give the mode of action of iodine.
ii.   Differentiate between selective media and differential media.
iii.   Differentiate between disinfectant and antiseptic.
iv.   Give characteristics of ideal chemotherapeutical agent.
v.   What is meant by pathogenicity and virulence factor?
vi.   Describe the mode of action of Penicillin.
vii.   Define fractional sterilization.
viii.   How moist heat is more effective than dry heat.
ix.   What is meant by viable cell? How it count.
x.   What is meant by inoculum and mixed culture.

Long Questions   (3 x 10 = 30)

Q. 3   a   What is meant by microbial growth? How microbes control using low temperature?
       b   Discuss the methods of culture preservation.

Q. 4   a   Write about the oxygen requirements for culturing.
       b   Discuss the growth curve in detail.

Q. 5   a   Write the comprehensive note on development of drug resistance.
       b   How radiations are destructive to microorganism.

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Paper: Environmental Microbiology
Course Code: ZOOL-431   Part – I (Compulsory)   Time: 15 Min. Marks: 10

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1.   Encircle the correct option.   **(10x1=10)**

i.   The region where the soil and root make contact is designated as
         A. Rhizosphere
         B. Lithosphere
         C. Hydrosphere
         D. Xerosphere
         E. None of these

ii.   Study of flora and conditions for the life in lakes, ponds and stream
         A. Limnology
         B. Marine biology
         C. Littorology
         D. None of the above

iii.   Microorganisms also help in production of food like
         A. bread
         B. fruits and seeds
         C. vegetables
         D. pulses

iv.   The concept of putting microbes to help clean up the environment
         is called
         A. Pasteurization
         B. Bioremediation
         C. Fermentation
         D. biolistics

v.   The nonsymbiotic bacteria which fix nitrogen live in the soil
         independently are
         A. *Azotobacter*
         B. *Clostridium*
         C. considerably less important in comparison to the symbiotic
            bacteria
         D. all of the above

vi.   The population of algae in soil is _____ that of either bacteria
         orfungi.
         A. generally smaller than
         B. generally greater than
         C. equal to
         D. none of these

                                                                            P.T.O.

vii. Most spoilage bacteria grow at
    A. acidic pH
    B. alkaline pH
    C. neutral pH
    D. any of the pH

viii. The surface waters are susceptible to contamination with microorganisms from _____
    A. the air
    B. the surface runoff
    C. precipitation
    D. atmospheric water and the surface runoff

ix. The principal microorganism for yogurt is_____
    A. *Streptococcus thermophiles*
    B. *Leuconostoccitrovorum*
    C. *Lactobacillus acidophilus*
    D. *Streptococcus lactis*

x. The use of microbes to break down synthetic waste products such as polychlorinated biphenyls is called
    A. Bioinformatics
    B. Biolistics
    C. Biotechnology
    D. bioremediation

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Eighth Semester – 2019

Roll No. ....

Paper: Environmental Microbiology
Course Code: ZOOL-431   Part – II

Time: 2 Hrs. 45 Min.   Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Give short answers of the following.   (10x2=20)

i.   What is meant by mineralization? Give an example
ii. Name several genera of bacteria that are nonsymbiotic nitrogen fixer.
iii. How to collect sample to study microbes present in air.
iv. What is meant by the term upwelling and gyre?
v.   Write about competitive strategies of microorganism
vi. Blooms in lakes usually occur in the spring and fall. Why
vii. How can one distinguish among members of the coliforms?
viii. What are the attractive features of food preservation through use of radiation?
ix. Write briefly about fundamentals of microbial ecology.
x.   What information does the phosphatase test reveal about milk?

Q. 3 Outline the process of wastewater treatment which is followed in most (10) large cities. Which steps in the process depend upon microbial activity for successful performance? explain

Q. 4 Outline a procedure suitable for microbiological examination of foods   (10)

Q. 5 Write a comprehensive note on nature of microbial communities.   (10)