G 5748

Reg. No............................

Name...............................

Ph.D. COURSE WORK EXAMINATION IN LAW, JULY 2024

Course II—THEORY AND CONCEPT—LAW

(2020 Admission onwards)

Time : Three Hours
Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Write a note on Good Hart's test.

2. Compare the role of judges in Civil law system and Common law system.

3. Examine the origin of judicial review.

4. Analyse the importance of sociological approach in judicial process.

5. Explain reasoning by analogy.

6. How can judicial process serve as an instrument of social ordering ?

7. Examine the concept of judicial accountability.

8. Discuss the jurisdiction of Supreme Court under Article 136.

9. Assess the role of judges in making access to justice a reality

10. Explain Transformative Constitutionalism.

11. Discuss Activism Judicial Restraint and Judicial Overreach .

12. A case is only an authority for what it actually decides—Elucidate.

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *questions.*
The question carries 10 marks.

13. "Whoever hath an absolute authority to interpret any written or spoken law, it is he who is truly the law -giver to all intents and purposes and not the person who first wrote or spoke them' Elucidate

14. Discuss the political nature of judicial review.

$(1 \times 10 = 10 \text{ marks})$

Ph.D. COURSEWORK EXAMINATION IN MALAYALAM, JULY 2024

Course II—THEORY AND CONCEPT – MALAYALAM

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

പത്തു ചോദ്യത്തിനു രണ്ടു പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക.

ഓരോ ചോദ്യത്തിനും 4 മാർക്ക് വീതം.

1. നോം ചോംസ്കിയുടെ വാക്യഘടനാസിദ്ധാന്തം മുന്നോട്ടു വച്ച പ്രധാന ആശയങ്ങൾ എന്തെല്ലാമാണ് ?

2. മധ്യകാല മലയാള കവിതയെ നിർണ്ണയിച്ച പൊതു മാനദണ്ഡങ്ങൾ എന്തെല്ലാമായിരുന്നു ?

3. തമിഴ് സംഗീത നാടകങ്ങൾ നമ്മുടെ നാടകസാഹിത്യത്തെ ഏതെല്ലാം വിധത്തിൽ സ്വാധീനിച്ചിരുന്നു ?

4. ആധുനികാനന്തര പ്രവണതകളുള്ള ഒരു മലയാള നോവലിനെ പരിചയപ്പെടുത്തുക.

5. അനുഷ്ഠാനങ്ങളെക്കുറിച്ചുള്ള പഠനം സംസ്കാര പഠനത്തിന്റെ ഭാഗമാകുന്നത് എങ്ങനെ ?

6. പുരോഗമനസാഹിത്യം സാഹിത്യത്തെ സംബന്ധിച്ച് കൈക്കൊണ്ട നിലപാടുകൾ എന്തെല്ലാമായിരുന്നു ?

7. അന്തർവൈജ്ഞാനിക പഠനത്തിന്റെ സാധ്യതകൾ ചലച്ചിത്ര പഠനത്തിൽ പ്രസക്തമാകുന്നത് ഏപ്രകാരം ?

8. എഴുത്തച്ഛന്റെ കൃതികൾ പിൽക്കാല കവികൾക്ക് ഭാഷാപരമായ മാതൃകകാട്ടി എന്നു പറയാമോ ? വിശദ മാക്കുക.

9. ആദ്യകാല മലയാളനിരൂപണത്തെ നിർണയിച്ചിരുന്ന ഘടകങ്ങൾ എന്തെല്ലാമായിരുന്നു ? സൈദ്ധാന്തിക മായ കാഴ്ചപ്പാടിൽ അവയെ വിശദീകരിക്കാൻ കഴിയുമോ?

10. സംസ്കാരപഠനത്തിന്റെ ഉൾക്കാഴ്ചയിൽ നിന്നു കൊണ്ട് ഭാഷയെ പഠിക്കുമ്പോൾ എന്തെല്ലാം കാര്യങ്ങ ളാണ് പരിഗണിക്കേണ്ടത് ? വിശദീകരിക്കുക.

11. ലീലാതിലകം എന്ന ഗ്രന്ഥം ഭാഷാചരിത്രപഠനത്തിനു നൽകുന്ന സംഭാവന വിലയിരുത്തുക.

12. നവമാധ്യമ സാഹിത്യത്തിന്റെ സവിശേഷതകൾ എന്തെല്ലാമാണെന്ന് എഴുതുക.

$(10 \times 4 = 40$ marks)

2

G 5749

Part B

ഒരു ചോദ്യത്തിനു നാലു പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക.

ഈ ചോദ്യത്തിനു 10 മാർക്ക്.

13. ആധുനികാനന്തര മലയാള കവിതയുടെ ഉള്ളടക്കം, ആഖ്യാനം, ഭാവുകത്വം എന്നിവ കവിതയുടെ വളർച്ചയെ അടയാളപ്പെടുത്തുന്നുണ്ടോ ? നിരൂപണം ചെയ്യുക.

14. കേരള നവോത്ഥാനത്തിനു നേതൃത്വം നൽകിയ വ്യക്തികളെയും പ്രസ്ഥാനങ്ങളെയും പരിചയപ്പെടുത്തുക. ഏതേതു ദിശകളിലാണ് സംഭാവനകൾ എന്നും വിലയിരുത്തുക.

$(1 \times 10 = 10 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN MANAGEMENT STUDIES JULY 2024

Course II—THEORY AND CONCEPT—MANAGEMENT STUDIES

(2020 Admission onwards)

Time : Three Hours
Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Explain the *three* steps in Kaizen and the circular nature of the process.

2. What are the key planning issues that managers at the corporate level focus on ?

3. List and describe three reasons for a low-dividend-pay-out policy.

4. Give an example of how a corporate manager might use the capital markets in the operation of his/her corporation.

5. Describe the reasons a company would choose below-market or above-market compensation policy

6. What do you understand by the term "organizational culture" ? How does a firm transmit its culture to a new generation of employees ?

7. What is cafeteria-style benefit plan ? It is a useful motivation technique ?

8. One of the best ways to initiate or extend export activities used to be to exhibit at an overseas trade show. With the Web, it is not even necessary to attend trade shows to show one's wares. Explain how marketers are using the Web for international business.

9. In general, wholesalers are efficient in performing specific functions. List and briefly explain these functions.

10 Give four principal reasons economies of scale can occur when output increases.

11. What are the differences between heuristics, simulation, and optimization ?

12 Why do managers want to know the slack of activities ?

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13 What are the five dimensions of culture identified by Geert Hofstede ? How can an awareness of these dimensions benefit a firm in stage 5 of internationalization ?

14 Discuss the role of listening skills in the communication process. Specifically write a brief note on the less effective assertive communication style used in the workplace.

$(1 \times 10 = 10 \text{ marks})$

Ph.D. COURSEWORK EXAMINATION IN MATHEMATICS JULY 2024

Course II—THEORY AND CONCEPT - MATHEMATICS

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. If a space is second countable then prove that every open cover of it has a countable subcover.

2. Prove that the set of all rational points in the coordinate plane R^2 is countable.

3. State and prove Zorn's lemma.

4. Let A be a non-empty subset of a partially ordered set P. Show that A has at most one greatest lower bound and at most one least upper bound.

5. Show that the sequence $\{S_n\}$ where $S_n = \frac{1}{1!} + \frac{1}{2!} + \cdots + \frac{1}{n!}$ $\ast$ NEIN is convergent.

6. State and prove Maximum modulus theorem.

7. Write a note on planar graph.

8. Find the Eigen value and Eigen vector of the matrix :

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

9. Define Vector space and vector subspace. Give examples.

10. Use Charpit's method to solve the partial differential equation $\left(p^2 + q^2\right)y = qz.$

11. Solve $\dfrac{\partial^2 z}{\partial x^2 \partial y} + 18xy^2 + \sin(2x - y) = 0$.

12. Prove that there exists an uncountable set whose measure is zero.

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Prove that the set of Lebasque measurable sets is a σ - algebra.

14. Let $f : X \to Y$ be an arbitrary mapping. Define a relation X as follows : $x_1 \sim x_2$ means that

$f(x_1) = f(x_2)$. Show that this is an equivalence relation and describe the equivalence sets.

$(1 \times 10 = 10 \text{ marks})$

G 5752

Reg. No...................................

Name..

Ph.D. COURSEWORK EXAMINATION IN MUSIC, JULY 2024

Course II—THEORY AND CONCEPT – MUSIC

(2020 Admission onwards)

Time : Three Hours

Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Elucidate the importance of Raga Lakshana.

2. Write an appreciation on any one of the Navaratri compositions of Maharaja Swathi Thirunal.

3. Write briefly the contributions of Pattanam Subrahmania Iyer.

4. What are the various methodology suitable for research in Music ?

5. Explain the importance of musical iconography in research.

6. Discuss the importance of musical inscriptions at Kudumiyamalai and Thirumayam.

7. Write an appreciation of any one of The Swara jathies of Syama Sasthri.

8. What are musical stone pillars ?

9. What is the importance of oral tradition in Carnatic Music ?

10. What is a good research ?

11. Compare the musical forms Padan and Javali.

12. What are the essential components of a thesis ?

(10 × 4 = 40 marks)

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Life and philosophy in Thyagaraja krities–Discuss.

14. Write an essay on the devotional content in the compositions of trinity.

(1 × 10 = 10 marks)

G 5753

Ph.D. COURSEWORK EXAMINATION IN POLITICAL SCIENCE JULY 2024

Course II—THEORY AND CONCEPT – POLITICAL SCIENCE

(2020 Admission onwards)

Time : Three Hours

Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Explain the theory of Historical Materialism.

2. Illustrate some of the postulates of Positivism.

3. Explain the basic principles of Marxism.

4. Examine the traditions and forms of Post Colonialism.

5. Define the concept of sustainable development.

6. What Are the Effects of Neoliberalism ? Explain.

7. What are the features of critical theory ?

8. What is the political economy of global governance ? Explain.

9. What are the causes of underdevelopment according to dependency theory ? Explain.

10. Explain the concept of Secularism as the contemporary perspective on Politics and Society.

11. What is multiculturism ? Explain.

12. Write a note on the concept of civil society as the contemporary perspective on Politics and Society.

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Discuss the concept and characteristics of liberalism.

14. Analyse different dimensions of Feminism.

$(1 \times 10 = 10 \text{ marks})$

G 5754

Ph.D. COURSEWORK EXAMINATION IN PHYSICS. JULY 2024

Course II—THEORY AND CONCEPT – PHYSICS

(2020 Admission onwards)

Time : Three Hours

Maximum : 50 Marks

Part A

*Answer any **ten** questions.*
Each question carries 4 marks.

1. Briefly explain about Fermi-Dirac distribution.

2. Discuss the effective mass of electrons and holes. Explain why effective mass of hole is greater than electrons.

3. Explain Curie point and exchange integral.

4. Explain Stock shift in optical transitions of semiconductor.

5. What are radiative and nonradiative recombination mechanisms in semiconductors ? Explain.

6. What are second order and third order nonlinear phenomena ?

7. Write a short note on quark dynamics.

8. Explain the phenomenon of red shift.

9. Explain in brief the scalar tensor theory.

10. What are space-time diagrams ? Explain.

11. State and explain H-theorem.

12. Give the significance of covariance of Dirac equation.

$(10 \times 4 = 40 \text{ marks})$

Part B

*Answer any **one** question.*
The question carries 10 marks.

13. Explain relativistic field theories with suitable examples.

14. Explain in detail the important models of the universe.

$(1 \times 10 = 10 \text{ marks})$

G 5755

Ph.D. COURSEWORK EXAMINATION IN PSYCHOLOGY, JULY 2024

Course II—THEORY AND CONCEPT – PSYCHOLOGY

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Describe Eysenck's three dimensions of personality.

2. What are the main principles of humanistic psychology ? Explain.

3. How can individuals build and strengthen resilience ? Explain.

4. What are health behaviors and why are they important in health psychology ?

5. Explain the role of behavioural factors in disease.

6. Discuss the development in community psychology.

7. What strategies are effective in reducing prejudice ?

8. What is the role of neurotransmitters in neuropsychology ?

9. What are the neuropsychological effects of a traumatic brain injury ?

10. What is neuroplasticity, and why is it important ?

11. What is the primary purpose of tests of general intellectual level in psychology ?

12. What are the main steps involved in test construction ?

$(10 \times 4 = 40$ marks$)$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Critically examine the implications of social identity theory for understanding in-group favouritism and out-group discrimination.

14. Discuss the principles and goals of cognitive rehabilitation. How does it aim to improve cognitive functioning in individuals with brain injuries ?

$(1 \times 10 = 10$ marks$)$

G 5756

(Pages : 2)

Name..

Reg. No..

Ph.D. COURSE WORK EXAMINATION IN SANSKRIT, JULY 2024

Course II—THEORY AND CONCEPT—SANSKRIT

(2020 Admission onwards)

Time : Three Hours

Maximum : 50 Marks

*Answers may be written **either** in Sanskrit **or** in English.*
In writing Sanskrit, Devanagari script should be used.

Part A

*Answer any **ten** questions.*
Each question carries 4 marks.

उत्तराणि खण्डिकारूपेण लिखत :

1. वेदाङ्गानि ।

2. अद्वैतदर्शनम् ।

3. प्रक्रियासर्वस्वम् ।

4. क्रिस्तुभागवतम् ।

5. कायचिकित्सा ।

6. बृहत्संहिता ।

7. दशरूपकाणि ।

8. पुराणलक्षणम् ।

9. राघवीयम् ।

10. NLP.

11. Manuscript Libraries.

12. Parikshith Tampurab.

(10 × 4 = 40 marks)

Turn over

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. दशोपनिषत्—विवृणुत ।

14. भासनाटकान्यधिकृत्य उपन्यस्यत ।

$(1 \times 10 = 10$ marks$)$

G 5757

Ph.D. COURSEWORK EXAMINATION IN SOCIAL WORK, JULY 2024

Course II—THEORY AND CONCEPT – SOCIAL WORK

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Elaborate on Task solution focused model of social work practice.

2. Explain strategies of bottom-up approach in social work.

3. Discuss Crisis Intervention model of social work practice.

4. Explain the values and common beliefs of International Social Work.

5. What are major concerns in conceptualizing the international social work ?

6. What do you understand by indigenisation of social work ? Explain.

7. Explain social integration strategy of international social work practice.

8. Explain the general characteristics of ecological perspective in Social Work.

9. What is IASSW ? Explain its major purposes.

10. Explain Millennium Development Goals and targets.

11. What are the challenges of field work and research in international social work ?

12. Discuss the use of social work methods in multicultural contexts.

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Discuss on local and global issues of global warming and climate change.

14. Elaborate on global policies for social work education in globalised environment.

$(1 \times 10 = 10 \text{ marks})$

G 5758

Ph.D. COURSEWORK EXAMINATION IN SOCIOLOGY, JULY 2024

Course II—THEORY AND CONCEPT – SOCIOLOGY

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. How Post modernism views Sociology as a Science ?

2. Briefly explain Alfred Schutz's perspective in Phenomenology approach.

3. State the main features of structuralism.

4. Discuss the difference between modernism and Post modernism in Sociological perspective.

5. Bring out the major arguments of Jean- Francois Loytard regarding Post modern condition.

6. How Sociology is of great importance in solution of social problems ?

7. Critically evaluate the social and cultural elements of gender inequality.

8. Explain the Marxist view on education and social inequality.

9. Write a short note on the impact of New media on society

10. Identify the social consequences of globalisation on media and communication industry.

11. Critically analyse the educational migration in India.

12. Explain the main idea of Zelinsky's migration transition model

(10 × 4 = 40 marks)

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Explain Reflexive Sociology according to Pierre Bourdieu and highlight its importance in social research.

14. Most gender differences are attributed to differences in socialization, rather than genetic and biological factors. Justify it.

(1 × 10 = 10 marks)

Ph.D. COURSEWORK EXAMINATION IN STATISTICS JULY 2024

Course II—THEORY AND CONCEPT - STATISTICS

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

*Answer any **ten** questions.*
Each question carries 4 marks.

1. Define Binomial distribution. Show that when $(n+1)p$ is an integer, the Binominal distribution is bimodal.

2. Show that the power of a best critical region for testing a simple hypothesis against a simple alternative is never less than its size.

3. The joint probability density function of a two dimensional random variable (x, y) is given by

   $f(x, y) = 2; 0 < x < 1, 0 < y < x,$
   $= 0$, elsewhere

   (i) Find the marginal density functions of X and Y

   (ii) Find the conditional density function of Y given $X = x$ and conditional density function of X given $Y = y$.

4. What kind of matrices are (a) their own generalized inverses ; (b) have their transposes as generalized inverse ; and (c) having identity matrix as generalized inverse ?

5. Define Mahalanobis D^2 statistic. State its relationship with Hotellings T^2.

6. Describe orthogonality property of principal components.

Turn over

7. Let X be a random variable with distribution function

$$F(x) = \begin{cases} 0, & \text{for } x < 0 \\ \dfrac{x}{8}, & \text{for } 0 \leq x \leq 1 \\ \dfrac{2+x}{8}, & \text{for } 1 \leq x \leq 2 \\ \dfrac{9+x}{12}, & \text{for } 2 \leq x \leq 3 \\ 1, & \text{for } x \geq 3. \end{cases}$$

Calculate $P(1 \leq X \leq 2)$.

8. State Neyman-Pearson lemma. When is a critical region W said to be uniformly most powerful critical region ?

9. Explain principle of least squares.

10. Write the matrix of the quadratic form $2x_1^2 - 2x_1x_2 + x_2^2 + 4x_1x_3 - 3x_2^2$ and determine whether it is positive definite.

11. Given the matrix $A = \begin{pmatrix} 2 & \sqrt{2} & 0 \\ \sqrt{2} & 2 & \sqrt{2} \\ 0 & \sqrt{2} & 2 \end{pmatrix}$ compute its characteristic roots and vectors and determine

the orthogonal matrix reducing it to diagonal matrix.

12. What is multinomial distribution ? Give the form of its joint density.

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. (i) Derive mean and variance of Binomial distribution.

    (ii) A multiple choice test with 8 questions contains 3 answers to each question (of which only one is correct), A student answers each question by rolling a balanced die and checking the first answer if he gets 1 or 2, the second answer If he gets 3 or 4 and the third answer If he gets 5 or 6. To get a distinction, the student must secure atleast 75 % correct answers. If there is no negative marking, what is the probability that the student secures a distinction ?

14 State and prove Bernoulli's law of large numbers.

$(1 \times 10 = 10 \text{ marks})$

Ph.D. COURSEWORK EXAMINATION IN SYRIAC, JULY 2024

Course II—THEORY AND CONCEPT – SYRIAC

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Write a short note on Peshitta Old Testament.

2. What are the contributions of Jacob of Serugh ?

3. Write a paragraph on Malayalam *Carshuni* (Karshon). Give some examples.

4. Briefly describe about the relevance of Syriac language today.

5. Write a short note on Renaissance literature in Syriac.

6. "The School of Nisibis was the Centre of Syriac that produced many famous Theologians, Philosophers and Physicians" - Explain this statement.

7. Write a short note on Emergence of Syriac language.

8. Do you agree with the statement : *The Liber Graduum* records the ups and downs of a real Christian community and is not a theoretical projection ? Why?

9. Briefly evaluate on the split between East Syriac and West Syriac.

10. Which are the contributions of Bar Hebraeus, the medieval Syrian scholar ?

11. How did the Indian religions influence on St. Thomas Christians ?

12. What are the writings of Aphrahat, the Persian Sage ?

(10 × 4 = 40 marks)

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. How did the Diamper Synod affect the life of St. Thomas Christians and their Syriac Manuscripts ?

14. Which were the Syriac study centres and Malpanates in Kerala ? Explain their contributions.

$(1 \times 10 = 10 \text{ marks})$

G 5761

Ph.D. COURSE WORK EXAMINATION IN ZOOLOGY JULY 2024

Course II—THEORY AND CONCEPT—ZOOLOGY

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Write a detailed note on threats to biodiversity.

2. Write a note on DNA bar-coding.

3. Explain briefly about Genetic diversity.

4. Explain the use of sampling techniques for biodiversity assessment.

5. Discuss about the types of EIA.

6. Write a note on the methods of impact identification.

7. Write a note on the CPCSEA guidelines for animal experimentation.

8. What are the BBT guidelines for Biosafety practices to be followed ?

9. What is chromatography ? Discuss the principles and applications of HPTLC chromatography.

10. Write a note on Microphotography.

11. What is ELISA and what are its applications ?

12. Write a note on Protein sequencing.

$$(10 \times 4 = 40 \text{ marks})$$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. What is blotting techniques? Discuss the procedure and application of southern and northern blotting.

14. Explain in detail the principles and applications of Immunohistochemistry and Immunofluorescence.

$$(1 \times 10 = 10 \text{ marks})$$

G 5762

Ph.D. COURSEWORK EXAMINATION IN PHILOSOPHY JULY 2024

Course II—THEORY AND CONCEPT - PHILOSOPHY

(2020 Admission onwards)

Time : Three Hours   Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Write a note on Metaphysical Problems.

2. Discuss the Problem Mind and Body

3. Discuss the significance of the 'figure' of categorical syllogism.

4. Analyze the significance of Rules of Inference.

5. Distinguish between deductive and inductive logic.

6. Explain Absolute Ethics and Relative Ethics.

7. Discuss the ethical issues related to abortion.

8. What is the main concern of the philosophy of utilitarianism ? Explain.

9. Why does Kant call the moral law as the 'Categorical Imperative' ? Explain.

10. What are Hegel's ideas about reality ? Explain.

11. Write a note on Pluralism of Leibniz.

12. What is the theory of meaning according to Michael Dummett ? Explain.

$(10 \times 4 = 40$ marks$)$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Give an exposition of the ethical issues involved in business and media.

14. Explain in detail the theories of truth.

$(1 \times 10 = 10$ marks$)$

G 5764

Ph.D. COURSEWORK EXAMINATION, JULY 2024

Course IV—RESEARCH AND PUBLICATION ETHICS

(2020 Admission onwards)

Time : Three Hours

Maximum : 50 Marks

Part A

Answer any **ten** *questions.*
Each question carries 4 marks.

1. Define Philosophy and discuss how Philosophy influences human ethics.

2. Explain the nature of moral judgement with suitable examples.

3. Explain the term 'Salami Slicing'. Point out why authors do salami slicing.

4. Based on the COPE, explain the guidelines on good publication practices.

5. With the help of suitable examples, explain how SHERPA can help researchers.

6. How can we identify an appropriate journal to publish our research article? Mention any two tools.

7. What is Open Access Publishing and explain its advantages.

8. Comment upon the methods of complaints and appeals against publication misconduct.

9. What do you understand by Conflicts of Interest ?

10. Give the meaning of Authorship and Contributorship in research work ethics.

11. Comment on Scientific misconducts.

12. Elaborate the use of any *two* Plagiarism software.

$(10 \times 4 = 40 \text{ marks})$

Part B

Answer any **one** *question.*
The question carries 10 marks.

13. Explain in detail any two citation databases.

14. Explain different types of redundant publications with the help of suitable illustrations.

$(1 \times 10 = 10 \text{ marks})$

(Pages : 3)   Reg. No.............................

Name.............................

Ph.D. COURSEWORK EXAMINATION IN CHEMISTRY JULY 2024

Course II—INSTRUMENTAL METHODS OF ANALYSIS IN CHEMISTRY

(Prior to 2019 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *questions.*
Each question carries 5 *marks.*

1. a) Account for the peak at 7.24 ppm for $CDCl_3$. When used as a solvent in ^1H-NMR even though it does not have hydrogen.

    b) Why ethyl alcohol is considered as the best solvent for UV spectroscopy ?

    c) What is the selection rule for NQR spectroscopy ?

2. a) What is the principle of Auger Electron Spectroscopy ?

    b) Discuss the primary ion sources of Secondary ion mass spectrometry.

    c) Describe the instrumentation of X-ray photoelectron spectroscopy.

3. a) Discuss the various deflection-measurement methods of Atomic force microscopy.

    b) What is the difference between scanning probe microscopy and scanning tunneling microscopy ?

    c) Discuss the use of Fourier Transformation in microscopy.

4. a) Distinguish between Static force thermo-mechanical analysis and Dynamic force thermo-mechanical analysis.

    b) What are the advantages of DTA over TGA ?

    c) Discuss the steady-state method for the measurement of thermal conductivity.

5. a) What are the detectors used in HPLC ?

    b) Discuss the industrial applications of Ion Exchange Chromatography.

    c) Discuss the criteria for the choice of column for Gas chromatography.

6. a) What are the sources of X-ray diffractometer ?

   b) What is dynamic light scattering method ?

   c) What is principal of turbidimetry ?

7. a) Describe the basic instrumental components of Vapor pressure osmometry.

   b) Discuss the applications of Membrane Osmometry.

   c) What is the principle of operation of Differential refractometry ?

8. a) Why is impedance spectroscopy important ?

   b) What is meant by surface resistivity ? How is it measured ?

   c) What is the cause of dielectric loss ?

9. a) What are the compression properties of materials ?

   b) What are the different types of flexural tests ?

   c) What is creep and stress relaxation in metals ?

10. a) What Are Newtonian and Non-Newtonian Fluids ?

    b) List out the advantages and disadvantages of capillary rheometer.

    c) What is the operating principle of rotational rheometer ?

11. a) What do you mean by luminescence ?

    b) List out the instruments which use the refraction of light ?

    c) What are gloss and haze ?

12. a) What is 'g' factor in ESR spectroscopy ? What is its significance ?

    b) Which thermal analysis study is the best for the determination of glass transition temperature ? Why ?

    c) What are the advantages of using TEM ?

13. a) How creep relaxation is different from stress relaxation ?

    b) Discuss the uses of Interference Microscopy.

14. List out the different light scattering techniques used for material characterization.

15. Differentiate betweenDynamic Mechanical Analysis and Thermo Mechanical Analysis.

16. a) What are the different types of electrode impedance spectroscopy ?

     b) Discuss the applications of Secondary ion mass spectroscopy.

                                                            $(12 \times 5 = 60$ marks)

Part B

Answer any **two** *question.*
Each question carries 10 marks.

17. a) Explain the various types of ionizers used in mass spectroscopy.

     b) Explain the principle and instrumentation of differential scanning calorimetry.

18. a) What is Size Exclusion Chromatography ? Discuss its principle and applications.

     b) Explain the different types of X-ray diffraction techniques.

19. TG and DTA are complimentary. Justify the statement.

20. What are the detectors used in HPLC ? Discuss.

                                                            $(2 \times 10 = 20$ marks)