Ph.D. COURSE WORK EXAMINATION IN ENGLISH LANGUAGE AND LITERATURE, AUGUST 2021

COURSE II—DEVELOPMENTS IN LITERARY STUDIES

Time : Three Hours　　　　　　　　　　　　　　　Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Different forms of resistance to Colonialism and their role in the formation of alternate modernity.

2. Examine how Mohanty challenges readers to think in new ways about global modernity and local cultures.

3. "The disenchantment of the world means the extripation of animism" – Discuss.

4. To be modern is to be both Revolutionary and Conservative – Discuss.

5. Frederik Jameson's post-modern hypothesis.

6. Interpretation pre-supposes a discrepancy between the clear meaning of the text and the cult of interpretations it has spawned – Elaborate.

7. Influence of capitalism on art and literature according to Eagleton.

8. Trace the successive mutations that the discourse of "Scrutiny" underwent in the changing politico-cultural conjunctures of its lifetime.

9. Dalit politics of identity.

10. Foucault's concept of authorship.

11. The problem with Communication context and writing according to Derrida.

12. Anderson's understanding of Nationalism.

13. Dialectical relationship between 'reality' and 'representation' according to Rajeswari Sundar Rajan.

14. Literary allusions in Said's "Culture and Imperialism".

15. The 'in-between' spaces within and among individuals and culture.

16. The language of a novel is the system of its 'languages'. Discuss with reference to Bakhtin.

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *of the following.*
Each question carries 10 *marks.*

17. Examine in detail the contested relationship between colonialism and modernity in the context of negotiating modernity vis a vis experiences other than that of the western subject.

18. Discuss on the relatively recent developments in literary studies as an extension of modernity and beyond it.

19. Attempt a survey of those literary trends in literary studies that are associated with cultural turn.

20. Explore how our reading and understanding of literature and culture within modernity is continually about 'going beyond'.

(2 × 10 = 20 marks)

G 5894

Ph.D. COURSE WORK EXAMINATION IN BIOSCIENCE/PHARMACY/ BIOCHEMISTRY/MICROBIOLOGY/BIOTECHNOLOGY, AUGUST 2021

COURSE II—MODERN BIOLOGICAL TECHNIQUES

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Discuss the various methods of quantifying proteins.

2. Explain the use of radio isotopes in biological research.

3. Explain isoelectric focusing. What are the applications ?

4. What is the principle of FTIR ? What are the applications of FTIR ?

5. Explain Southern blotting. What are the applications ?

6. With neat diagram, explain gel filtration.

7. Differentiate between Spectrophotometer and Colorimeter.

8. Write briefly on type II restriction enzymes, citing suitable examples.

9. What is meant by molecular typing ?

10. Write a brief note on fungal cultivation.

11. Write a note on in-vitro study of antioxidants.

12. What are transgenic animals ? What are their applications ?

13. Explain disinfestations of culture rooms.

14. What are various plant transformation techniques ?

15. Discuss, how anti-cancer activities of biologicals are tested ?

16. Discuss the various staining techniques used in microbiology.

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *of the following.*
Each question carries 10 marks.

17. What are molecular markers ? What are the different types ? Discuss the application of molecule markers in plant breeding.

18. Explain the various steps involved in protein purification. How is the molecular weight determined ?

19. What is the principle of PCR techniques ? What are the different types of PCR ? What are the applications ?

20. What are the various methods of plant transformation ?

$(2 \times 10 = 20 \text{ marks})$

G 5895

Ph.D. COURSE WORK EXAMINATION IN BOTANY, AUGUST 2021

COURSE II—BIOLOGICAL TECHNIQUES

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. What are methods for protoplasts isolation ?

2. What all factors are to be taken care while designing a photobioreactor ?

3. Explain the tissue processing technique for electron microscopy.

4. What is GLC ? Explain the principle behind its working and its uses.

5. Write notes on density gradient centrifugation.

6. Derive Henderson-Hasselbalch equations.

7. Differentiate between direct and indirect immunofluorescence technique.

8. Differentiate between chondromes and plastomes.

9. Explain the method for isolation of AM spore.

10. Explain DNA bar coding based on mitochondrial DNA.

11. What is the purpose of using a flow cytometer and give its basic working principle?

12. Give a comparison between HPLC and HPTLC.

13. Give the safety aspects of using radioactive isotopes in biological experiments.

14. Give an account on Plant Growth Promoting Rhizobacteria (PGPR) and its contributions.

15. Discuss various features influencing flower induction.

16. What are the research strategies and potential applications of allelopathy in plants?

$(12 \times 5 = 60$ marks$)$

Part B

Answer any **two** *of the following.*
Each question carries 10 marks.

17. Elaborate on the principles and applications of different chromatographic techniques used.

18. Explain, how a 3D structure of a protein is studied using X-ray diffraction.

19. Describe the free radical scavenging mechanism operational in plants.

20. What is the basis on which electrophoretic separation is done ? Explain different types of electrophoresis and any three practical applications of electrophoresis.

$(2 \times 10 = 20$ marks$)$

Ph.D. COURSE WORK EXAMINATION IN MATHEMATICS AUGUST 2021

COURSE II—MODERN TRENDS IN MATHEMATICS

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Find the value of $\sqrt{i} + \sqrt{-i}$.

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

3. Prove that a discrete space is a second countable if and only if the underlying set is countable.

4. Prove that a subset of a topological space is open if and only if it is a neighbourhood of each of its points.

5. For any subset A of a space X, Prove that $\bar{A} = A \cup A'$.

6. Prove that every continuous real-valued function on a compact space is bounded and attains its extrema.

7. Prove that a bounded Function f, having a Finite number of points of discontinuity. on [a, b] is Riemann integrable on [a, b].

8. Show that the sequence {Sn} where $Sn = \frac{1}{1!} + \frac{1}{2!} + ... + \frac{1}{n!}$ * NEIN is convergent.

9. Find the image of the half plane $y > C_2$ where $C_2 > 0$, under the transformation $w = \frac{1}{2}$.

10. Find $\int \frac{e^{-z}}{c(z-1)^2} dz$.

11. Test for convergence the series $\sum \frac{n^2-1}{n^2+1} x^n$ where $x > 0$.

12. Use Charpit's method to solve the partial differential equation $z^2 = pqxy$.

13. Prove that, there exists an uncountable set whose measure is zero. Justify.

14. Prove that HK is a subgroup of G if and only if HK = KH.

15. Let $IR^{2 \times 2}$ be the real vector space of all 2×2 real matrices. For $Q = \begin{pmatrix} 1 & -2 \\ -2 & 4 \end{pmatrix}$, define a linear transformation. T on $IR^{2 \times 2}$ as T(P) = Q P. Then find the rank of T.

Turn over

16. Let $\{V_1, V_2, V_3, V_4\}$ be a basis of IR^4 and $V = a_1v_1 + a_3v_2 + a_3v_3 + a_4v_4$ where an EIR, $i = 1, 2, 3, 4$. Then find the condition that the set $\{V_1-V, V_2-V, V_3-V, V_4-V\}$ is a basis of IR^4.

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *questions of the following.*
Each question carries 10 marks.

17. Discuss the mapping Properties of Cosz and Sinz.

18. State and prove Euler's formula for plane graphs.

19. Prove that the set of Lebasque measurable sets is an σ-algebra.

20. Find $\int_r \frac{z}{(z^2+1)(z-3)^2} dz$ where $r = \{z / (z) = 2\}$ is positively oriented.

$(2 \times 10 = 20 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN HINDI, AUGUST 2021

Course II—MODERN TRENDS IN HINDI

Time : Three Hours

Maximum : 80 Marks

खण्ड क

किन्हीं **बारह** प्रश्नों के उत्तर लिखें

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1   आधुनिकतावाद से क्या तात्पर्य है ?

2   उत्तर संरचनावाद क्या है ?

3   नयी कहानी के परिप्रेक्ष्य में निर्मल वर्मा की 'परिन्दे' की आलोचना करें ।

4   बाजारवाद के परिप्रेक्ष्य में मनोहर श्याम जोशी के उपन्यासों का मूल्यांकन करें ।

5   युग बोध के परिप्रेक्ष्य में इतिहास, परम्परा और आधुनिकता के महत्व पर प्रकाश डालें ।

6   मार्क्सवाद और पारिस्थितिक दर्शन का क्या सम्बन्ध है ?

7   देरीदा के विखण्डनवाद से क्या तात्पर्य है ?

8   सुरेन्द्रवर्मा के उपन्यास 'मुझे चांद चाहिए' की आलोचना करें ।

9   उषा प्रियंवदा की कहानियों में आधुनिक स्त्री के बदलते स्वरूप का चित्रण है – 'जाले' कहानी के आधार पर स्पष्ट करें ।

10 उत्तराधुनिकतावाद और विकेन्द्रीयता का क्या सम्बन्ध है ?

11 उत्तराधुनिक विमर्श से क्या तात्पर्य है ?

12 भूमंडलीकरण क्या है ?

Turn over

13 दलित विमर्श के सन्दर्भ में 'अल्मा कबूतरी' का मूल्यांकन करें ।

14 भाषाविज्ञान में संरचनावाद के महत्व पर प्रकाश डालें ।

15 उत्तराधुनिकता की उपलब्धियों पर प्रकाश डालिए ।

16 अमर कान्त की कहानी 'दुपहर का भोजन' में कौन-कौन सी समस्यायें अंकित है ?

(12 × 5 = 60 marks)

खण्ड स

किन्हीं दो प्रश्नों के उत्तर निबन्ध रूप में लिखें

17 समकालीन हिन्दी उपन्यासों में उत्तराधुनिकता के प्रभाव की चर्चा करें ।

18 दलित विमर्श के परिप्रेक्ष्य में हिन्दी कहानियों की चर्चा करें ।

19 उत्तराधुनिकतावाद की लाक्षणिकताओं के बारे में लिखें ।

20 साहित्य और समाज पर सोशैल मीडिया के प्रभाव की चर्चा करें ।

(2 × 10 = 20 marks)

G 5899

Ph.D. COURSE WORK EXAMINATION IN COMMERCE, AUGUST 2021

COURSE II—MODERN TRENDS IN COMMERCE

Time : Three Hours

Maximum : 80 Marks

Part A

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

1. What is the difference between economic growth and economic development ?

2. Explain the features of globalization.

3. List the factors affecting capital structure

4. What do you mean by behavioural finance ?

5. Explain the concept opportunity cost of capital. Give an example.

6. What are the components of Indian financial system ?

7. What is branding ? State its objectives.

8. Explain the importance of Consumer behaviour.

9. Differentiate between job description and job specification.

10. What are the methods used for analyzing financial statement.

11. What are the motives of holding cash in business ?

12. What is productivity ? How productivity is measured ?

13. What is Supply Chain Management in business ? State its objectives.

14. Explain the benefits of Human Resource Accounting.

15. Explain IFRS.

16. What do you mean by capital reduction ?

$(12 \times 5 = 60 \text{ marks})$

Part B

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

17. Explain the gross and net concept of working capital. What are the factors determining the working capital requirement of a manufacturing firm ?

18. Explain the factors that affect the dividend policy of a firm.

19. What is compensation management ? Explain different methods used for determining employees' remuneration.

20. What is risk management ? What are the ways to manage risks ?

$(2 \times 10 = 20 \text{ marks})$

G 5900

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

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

Ph.D. COURSE WORK EXAMINATION IN ECONOMICS
AUGUST 2021

COURSE II—RECENT ADVANCES IN ECONOMIC THEORY AND POLICY

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Write a note on uncertainty and time in Walrasian model.

2. Explain Keynesian adjustment mechanisms.

3. What do you understand by Pigouvian taxes ? Explain its significance in the Indian context.

4. Examine the recent theories in risk management.

5. Explain sustainable development.

6. Write a note on Disequilibrium in economic theory.

7. What is the dependency theory ?

8. Write a note on financial institutions.

9. What is meant by common property resources ?

10. Explain financial stability.

11. Write a note on new classical economics.

12. Explain micro finance.

13. Discuss the role of FDI in retail sector.

14. Explain efficiency wage model.

15. What are the tradable permits ?

16. Write a note on social safety net programs in India.

$(12 \times 5 = 60$ marks)

Part B

Answer any **two** *of the following.*
Each question carries 10 marks.

17. Discuss the global meltdown and its impact on Indian economy.

18. Examine the financial sector reforms in India since 1991.

19. Discuss the urban negative externalities in India.

20. Discuss the schemes by Government of India for informal sector.

$(2 \times 10 = 20$ marks)

G 5901

Ph.D. COURSE WORK EXAMINATION IN HISTORY, AUGUST 2021

COURSE II—RECENT TRENDS IN HISTORY

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. What is Environment Determinism ?

2. Who authored 'The Rise of the City' and how did it promote urban history ?

3. What are the contributions of Lucien Febure to the history of Emotions ?

4. Where did the study of Structuralism gather momentum ?

5. How did the structuralism lead to post-structuralism ?

6. Examine the circumstances that led to the rise of post modernism.

7. Assess the contributions of D.D. less Kosambi as 'the patriarch of Marxist School of Indian Historiography'.

8. Bring out the views of Irfan Habib on the martyrdom of Bhagat Singh.

9. Point out the response of R.S. Sharma to Indian Feudalism.

10. How many generations of Annales were there ?

11. What were the contributions of Judith Butler to post-modern feminism ?

12. Explain the discourse analysis of Michel Focault.

13. Trace the contents of "The Age of capital" authored by Eric Hobsbawm.

14. Sketch the role of Antonio Gramsci in the genesis of subaltern studies.

15. Which book of Partha Chatterjee won her the Fukuoka Asian Culture Prize in 2009 ?

16. Did the Subaltern studies gather momentum in Kerala ?

(12 × 5 = 60 marks)

Part B

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

17. "Environmental history is the interaction between human cultures and the environment in the past". Discuss

18. How do you make your study objective and dispassionate ?

19. Estimate the importance of historical materialism.

20. Describe the fundamental ideas of total history.

(2 × 10 = 20 marks)

G 5902

Ph.D. COURSE WORK EXAMINATION IN POLITICAL SCIENCE AUGUST 2021

COURSE II—POLITICAL ANALYSIS : THEORIES AND METHODS

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Explain the Postulates of idealism.

2. Distinguish between Behaviouralism and Post Behaviouralism.

3. Define Multiculturalism.

4. Explain the meaning and importance of postmodernism.

5. What do you understand by Ethnicity ?

6. Explain the unique features of identity politics.

7. Examine the traditions and forms of Post Colonialism.

8. Write a brief note on Frankfurt school.

9. Bring out the main challenges of secularism in India.

10. Define the concept of sustainable development.

11. Examine the main postulates of Dependency Theory Expounded by A.G. Frauk.

12. Explain the unique features of New Social Movements.

13. Analyse the role of civil society in modern Period.

14. Write a critical note on Samuel Huntington's clash of Civilisation Thesis.

15. Examine liberal view of underdevelopment.

16. Bring out the impact of globalization on Third world countries.

$(12 \times 5 = 60$ marks)

Part B

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

17. Discuss the meaning, features and importance of Neo-liberalism.

18. Write an essay on the doctrines of Dialectical materialism and historical materialism expounded by Karl Marx.

19. "Multiculturalism challenges the liberal conception of individual, state, community and justice". Discuss.

20. Analyse different dimensions of Feminism.

$(2 \times 10 = 20$ marks)

Ph.D. COURSE WORK EXAMINATION IN CHEMISTRY AUGUST 2021

COURSE II—INSTRUMENTAL METHODS OF ANALYSIS IN CHEMISTRY
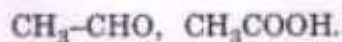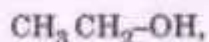
Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Name one detecting system employed in IR spectroscopy. Discuss its working.

2. What are the advantages of ICP ? Discuss.

3. An XPS electron has a kinetic energy of 1052.6 ev with Al k_x ($\lambda = 8.3393$Å) when measured in a spectrometer with work function of 27.8 ev. Calculate the binding energy of the electron.

4. Distinguish between Static SIMS and Dynamic SIMS.

5. Explain the working principle of STM.

6. AFM is commonly used in three modes. What are they ? Explain.

7. Following table summarises data about three Fe(iii) chlorides. Sketch TS curve for a sample of 25 mg of $FeCl_3$ $6H_2O$.

Compound	Molar Mass	M. P ($^\circ$C)
$FeCl_3$ $6H_2O$	270	37
$FeCl_3$ $5/2$ H_2O	207	56
$FeCl_3$	162	306

8. What are the physical changes that can yield exothermic and endothermic peaks in DTA and DSC ? Explain.

9. Predict the order in which following compounds are eluted from alumina column using *n*-hexane as eluting agent.

$CH_3 CH_2$–OH, CH_3–CHO, CH_3COOH.

10. The same polar compound was chromatographed on a very non-polar column (SE 30) and a very polar column (Carbowax) comment on $K = C_s/C_m$ on the two columns.

11. Explain the principle of neutron Scattering

12. How is differential refractometry made use of in molar mass determination ?

13. What is dielectric spectroscopy ? What is the information obtained from this technique ?

Turn over

14. What are the dynamic mechanical properties of a material ? Explain.

15. Explain working principle of Ostwald viscometer

16. Explains the term "birefringence".

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *of the following.*
Each question carries 10 marks.

17. Discuss instrumentation in AAS.

18. Discuss principles and applications of AFM.

19. Discuss instrumentation in HPLC.

20. Briefly discuss theory and applications of SIMS.

$(2 \times 10 = 20 \text{ marks})$

G 5904

Ph.D. COURSE WORK EXAMINATION IN ZOOLOGY
AUGUST 2021

COURSE II—ADVANCES IN ZOOLOGY

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. What is Fluorescence Microscopy ?

2. Write notes on DNA sequencing.

3. Explain the principles of Spectrophotometry.

4. Give an account on isoelectric focusing.

5. List applications of ELISA test.

6. Describe acid fast staining.

7. What is ultrafilteration ? Explain.

8. How will you apply molecular tools for phytogenetic studies ?

9. What are the ethical and safety aspects of animal cloning ?

10. Explain the histochemical procedure for localization of enzymes in cells.

11. Define the concept and characteristics of EIA.

12. Enumerate the methods of biodiversity estimation.

13. Describe microphotography technique.

14. Describe the principle and applications of PCR.

15. Explain briefly the principle of Microtomy.

16. Describe the various blotting techniques to separate DNA and Proteins.

$(12 \times 5 = 60 \text{ marks})$

Part B

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

17. Explain the principle and working of scanning and transmission Electron Microscope.

18. Write an essay on the theory and working of HPLC.

19. Describe the principles of Taxonomy and comment on the modern tools of Taxonomy.

20. Write an essay on CPCSEA guidelines for animal experimentation.

$(2 \times 10 = 20 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN STATISTICS
AUGUST 2021

COURSE II—MODERN TRENDS IN STATISTICS

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Define a quadratic form X'AX in n variables, $x_1, x_2, ..., x_n$: When is a quadratic form said to be (a) positive definite, (b) negative definite, (c) positive semi-definite, (d) negative semi definite.

2. Define mathematical or 'a priori' probability. Prove that the probability of complementary event of A is $1 - P(A)$.

3. What is moment generation function of a random variable x (about origin)? If x has probability function $f(x)$, deduce the formula of $M_x(t)$ (for a real parameter t) which generates the moments of X about origin.

4. Write short notes on : (i) Matrix inverse ; (ii) Rank of a matrix.

5. Give the Pillai's trace statistic used in multivariate analysis of variance. When is this statistic used ?

6. A physical therapist examining the maximal strength score of a particular muscle in a certain group of individuals, assumes that they are approximately normally distributed with a variance of 144. A sample of 15 subjects who participated in the experiment yielded a mean of 84.3. Estimate with 99 percent confidence, the mean maximal strength of the particular muscle.

7. Deduce the multivariate normal density function of p independent Normal variates with mean $\mu_i, i = 1, 2, ... p$ and variances σ_i^2.

8. The matrix of correlations among the hearing threshold measures of 4 parameters from a sample of 43 males :

$$\begin{bmatrix} 1 & 0.81 & -0.82 & -0.80 \\ & 1 & -0.91 & -0.80 \\ & & 1 & 0.86 \\ & & & 1 \end{bmatrix}$$

Extract the 1st principal component from this matrix.

Turn over

9. Discuss the various data reduction methods highlighting their applications.

10. The joint probability density function of a two random variables X and Y is given by :
$P(X=0, Y=1)\frac{1}{3}$ $P(X=1, Y=-1) = \frac{1}{3}$ and $P(X=1, Y=1) = \frac{1}{3}$. Find (i) Marginal distribution of X and Y (ii) Conditional probability distribution of X given Y = 1.

11. If T_1 and T_2 are two unbiased estimators of parameter θ with variances σ_1^2 and σ_2^2 and correlation coefficient p, then obtain the best unbiased linear combination of T_1 and T_2.

12. Find the maximum likelihood estimates of the 2 x 1 mean vector μ and the 2 x 2 covariance

matrix Σ based on the random sample X = $\begin{pmatrix} 3 & 6 \\ 4 & 4 \\ 5 & 7 \\ 4 & 7 \end{pmatrix}$ from a bivariate normal population.

13. Let p be the probability that a coin will fall head in a single toss in order to test $H_0 : p = 1/2$ against $H_1 : p = 3/4$. The coin is tossed 5 times and H_0 is rejected if more than 3 heads are obtained. Find the probability of type I error and power of the test.

14. Suppose p + q variance $[X_1' X_2']$ of some multidimensional population have been divided so

that the covariance matrix has the partitioned form given as $\Sigma = \begin{bmatrix} \Sigma_{11} & \Sigma_{12} \\ \Sigma_{21} & \Sigma_{22} \end{bmatrix}$. If the sample

covariance matrix S can also be partitioned in conformance with Σ as $S = \begin{bmatrix} S_{11} & S_{12} \\ S_{21} & S_{22} \end{bmatrix}$ then

deduce the form of canonical correlations and give the basic assumptions in the derivation.

15. Describe the Wilks $\wedge$ criterion for multivariate analysis of variance.

16. Define the invariance property of a consistent estimator and establish it.

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any two questions from the following.
Each question carries 10 marks.

17. (i) What do you mean by determinant of a matrix ? State the important properties of determinants.

(ii) Explain what do you mean by a Generalised inverse of a matrix.

18. (i) What are principal components ?

(ii) Determine the population principal components Y_1, Y_2 for the covariance matrix Σ $= \begin{pmatrix} 5 & 2 \\ 2 & 2 \end{pmatrix}$. Also calculate the total population variance explained by the 1st principal component.

19. Explain the terms (i) Sufficient estimator ; (ii) Efficient estimator ; (iii) Cramer-Rao lower bound to the variance of an estimator ; and (iv) Maximum likelihood estimator. Describe the relationships among these four concepts.

20. Describe Likelihood ratio test for testing a hypothesis simple or composite against a simple or composite alternative hypothesis. Mention two of its important properties.

$(2 \times 10 = 20 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN HOME SCIENCE
AUGUST 2021

COURSE II—ADVANCES IN HOME SCIENCE

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Discuss the factors to be considered in planning diet for elderly people.

2. What is the role of a dietitian in a hospital ?

3. Explain geotextiles and techno textiles.

4. Discuss the qualities of a good leader.

5. Enumerate the objectives off ECCE centres.

6. What are the common adulterants in foods and its detection ?

7. Discuss the cause symptoms and dietary management for ulcer.

8. Explain the Postnatal care of infants.

9. Discuss the nutritional classification food proteins.

10. Explain eco-friendly textiles.

11. Discuss about the selection of ideal flooring and floor coverings in different rooms in the house.

12. What is the role of information technology in communication ?

13. Discuss the role of vitamin D in calcium absorption in the body.

14. Discuss the factors to be considered in preparing audio visual aids for communication.

15. Discuss dietary management in Obesity.

16. Explain Food Guide pyramid.

$(12 \times 5 = 60 \text{ marks})$

Part B

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

17. What are the essential non nutrients in food ? Explain the role of non-nutrition in promotion of health status.

18. Explain the values of play for the overall development for young children.

19. Discuss the principles of art and design for interior designing and interior space planning with special interference to selection and arrangement of furniture's and furnishings.

20. Discuss the role of extension agencies for planning and implementing community programs.

$(2 \times 10 = 20 \text{ marks})$

G 5907

Ph.D. COURSE WORK EXAMINATION IN SOCIAL WORK, AUGUST 2021

COURSE II—ADVANCED SOCIAL WORK EDUCATION AND PRACTICE

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Elaborate on Task Centered Model of Social work practice.

2. Explain the Phases of Strength Based Approach.

3. What is IASSW ? Explain its major purposes.

4. Highlight the importance of indigenization of Social Work.

5. Explain Social Group Work.

6. Explain the role of case manager and different models in case management.

7. Discuss briefly strategies of bottom up approach in Social Work.

8. What are the general characteristics of ecological perspective in Social Work ?

9. What is multiculturalism ?

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

11. Explain Millennium Development Goals and targets.

12. Explain the goals of international social work education.

13. Explain Social development perspective in Social Work.

14. Briefly explain the strategies for International Social Work.

15. Briefly explain global standards regarding the school's core purpose or mission statement in social work education.

16. Explain human rights perspective in Social Work.

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *of the following.*
Each question carries 10 marks.

17. What are the challenges of field work in International Social Work.

18. Elaborate on regulatory bodies in International Social Work.

19. Discuss on local and global issues of Global Warming and climate change.

20. Briefly explain global standards for Social Work education and training.

$(2 \times 10 = 20 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN SOCIOLOGY
AUGUST 2021

COURSE II—CURRENT PERSPECTIVES IN SOCIOLOGY

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Factors associated with Area of Origin-Area of Destination-Intervening Obstacles-Personal factors-Characteristics of migrants-Volume of migration-Streams and Counter-streams of migration.

2. Women oppressed through capitalist system-gendered division of labor-productive and reproductive labor- women's labor less valuable-oppressed- radical reconstruction of capitalist economy-criticisms

3. Reality created through interactions - rationalisation- language - three stages Externalization-Objectivation- Internalization

4. Human resource-Education an indicator of human development- Better Human capital Gainful employment- Leads to economic development.

5. Accounting-the commonsense world-indexicality and reflexivity-breaching experiments conversation analysis.

6. Studies society scientifically - explains social behaviour-studies social institutions-Helps solving social problems-enables better planning-promotes welfare of citizens especially the marginalised.

7. Challenges modernity's view – rejects objective reality - truths are subjective - Truth is relative - Reality is human construct - Meaning is provisional - declines influence of religions

8. Meaning - gender roles- targets children- agents of gender socialization-parents, peers, schools, media etc.

9. Rationalism-empiricism-science of social control-observation-objectivity.

10. Agrarian- Illiteracy- tradition bound - low education- lack of technology-digital divide.

11. Economic-social-cultural-technological-higher standard of living.

12. New turn to postmodernism- post structuralism-theory of Deconstruction.

13. Poverty-lack of infrastructure-irresponsible functionaries-low morale-language problem.

14. Internal and international-rural-urban-seasonal-voluntary and forced-long term and short term-return migration.

15. Media help MNCs spread new culture- globalisation of western values -damages other cultures -results in cultural homogenisation-mediated globalisation.

16. Sociology and economics- anthropology- political science-demography.

(12 × 5 = 60 marks)

Part B

Answer any **two** *questions of the following.*
Each question carries 10 marks.

17. Causes-push and pull factors-consequences-Social-economic-cultural-demographic.

18. Awareness-socio-cultural change-modernise-westernise-liberalise values-globalise.

19. Phenomenology of the social world - stock of knowledge - common sense.

20. Epics, myths, smritis etc.- illiteracy and low education- women carry the tradition - reform/ feminist movements.

(2 × 10 = 20 marks)

G 5909

Ph.D. COURSE WORK EXAMINATION IN PSYCHOLOGY, AUGUST 2021

COURSE II—RECENT ADVANCES IN PSYCHOLOGY

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Discuss Eysenck's concept of traits.

2. Depth Psychology.

3. Resilience.

4. Temperament.

5. Psycho neuroimmunology.

6. Stage approach to health behaviours.

7. Marginalized societies.

8. Aggression and violence.

9. Community psychology.

10. Limbic system.

11. Brain stem.

12. Common cerebral disorders.

13. Types of memory.

14. Projective tests.

15. Tests for special population.

16. Reliability.

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *of the following.*
Each question carries 10 marks.

17. Define Personality. Discuss the biological basis of Personality.

18. Briefly explain neuropsychological testing.

19. What are the stages of test construction ?

20. Define Health Behaviours. What are the Health compromising Behaviours ?

$(2 \times 10 = 20 \text{ marks})$

(Pages : 2)

Ph.D. COURSE WORK EXAMINATION IN ARABIC, AUGUST 2021

Course II—BROAD AREA IN ARABIC

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any twelve *of the following questions.*
Each question carries 5 marks.

١ - الفرق بين الغزل البدوى و الغزل الحضري في العصر الأموي .

٢ . علم الكلام والفلسفة الإسلامية .

٣ - دور الأسواق في ازدهار الشعر العربي في العصر الجاهلي .

٤ - مدح النبى في الشعر العربي

٥ - وصف الأطلال في الشعر الجاهلي

٦ - أسباب النهضة الثقافية الحديثة في بلاد العرب .

٧ - إعجاز القرآن

٨ - مساهمة الاستشراق في إحياء التراث العربي القديم

٩ - مصادر الشعر الجاهلي .

Turn over

10ـ الشعر العربي الكلاسيكي في العصر الحديث

11ـ خصائص الشعر الجاهلي

12ـ حركة الديوان و دعواتها

13ـ موقف الإسلام من الأدب

14ـ الواقعية الاشتراكية في الأدب العربي

15ـ الملامح الفنية للنقائض

16ـ الرمزية عند أدونيس ـ

(12 × 5 = 60 marks)

Part B

Answer any two questions from the following in Arabic or English.
Each question carries 10 marks.

1ـ تطور النقد الأدبي العربي عبر العصور

2ـ الأدب العربي في المهجر

3ـ القصة القصيرة و تطورها في العالم العربي

4ـ الرواية العربية عند نجيب محفوظ ـ

(2 × 10 = 20 marks)

Ph.D. COURSE WORK EXAMINATION IN MANAGEMENT STUDIES AUGUST 2021

COURSE II—MODERN TRENDS IN MANAGEMENT STUDIES

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Compare the tasks, priorities, and responsibilities of first-line, middle, and top managers.

2. Discuss the work of Henri Fayol and Max Weber as it relates to the general administrative approach to management.

3. Describe the coordination and collaboration that is necessary for successful value chain management.

4. Describe the three forms of market efficiency.

5. Compare and contrast a sticky dividend policy with a residual dividend policy. Which policy is more widely used by large corporations ? What advantages does that policy have over the other ?

6. Describe the Static Theory of Capital Structure.

7. Does heredity determine a person's personality ? Explain.

8. How must roles be allocated to ensure effective team performance ?

9. Explain the job characteristics theory. How does it tie in with intrinsic compensation ?

10. The length of a fashion cycle is often hard for industry analysts to predict. Explain why this is true.

11. List the four advantages of conducting marketing research online.

12. Frederick Herzberg developed a two-factor theory that distinguishes dissatisfiers and satisfiers. How does Herzberg's theory affect sellers marketing strategy ?

13. Which forecasting technique would you consider for technological forecasts ?

14. What are the differences and similarities among material requirements planning, manufacturing resource planning, and enterprise resource planning systems ?

15. What is anticipation inventory and what are the benefits and drawbacks of having it ?

16. What are the trade-offs among on-site expansion, new location, and relocation ?

$(12 \times 5 = 60 \text{ marks})$

Turn over

Part B

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

17. What are some of the issues that need to be addressed when setting up for global e-commerce ?

18. Give an example of a risk-free investment and explain why you claim it has no risk. Give an example of a risky investment and explain why you claim the investment to be risky.

19. A company of 15 employees has recently decided to overhaul its performance appraisal system. Which plan would be most appropriate for the company to a adopt ? Why ?

20. (A) What are the four steps involved in making capacity decisions ?

    (B) What factors should be considered when selecting the appropriate capacity cushion ? How does the choice of capacity cushion relate to other decisions in operations management ? To other functional areas ?

$(2 \times 10 = 20$ marks$)$

G 5912

Ph.D. COURSE WORK EXAMINATION IN PHILOSOPHY
AUGUST 2021

COURSE II—MAJOR THEMES AND CONCEPTS OF PHILOSOPHY

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. What is Philosophy ? Explain.

2. Discuss the problems of induction.

3. Bring out the distinction between ethics and meta ethics.

4. Elucidate the notion of space and time.

5. Discuss the rules of replacement.

6. Explicate the ethical issues involved in abortion.

7. Write a note on categorical imperative.

8. Discuss Nyaya-Vaisesika Pluralism.

9. Elucidate the Buddhist doctrine of Sunyavada.

10. Distinguish between Phenomena and Noumena.

11. Write a note on communicative reason.

12. Explain logical positivism.

13. Examine Austin's speech act theory.

14. Elucidate Frege's account of sense and reference.

15. Discuss the problem of meaning following Donald Davidson.

16. Write a note on Brahman Atman identity.

$(12 \times 5 = 60 \text{ marks})$

Part B

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

17. State and explain Mill's experimental method.

18. Evaluate the ethical theory of utilitarianism.

19. Give an exposition of Aristotle's views on form and matter.

20. Elucidate Heidegger's account of 'the question of being'.

$(2 \times 10 = 20 \text{ marks})$

G 5913   (Pages : 2)   Reg. No............................

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

Ph.D. COURSE WORK EXAMINATION IN ISLAMIC HISTORY
AUGUST 2021

COURSE II—RECENT TRENDS IN ISLAMIC HISTORY

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Explicate the significance of diplomatic history and international relations in a historical study.

2. Elaborate the intellectual, cultural and religious dimensions of Islamic History.

3. Illuminate the recent perspectives of writing women's history.

4. Evaluate Islamic Modernism as a response to western modernization.

5. Point out the basic affirmations of Positivism.

6. Assess the influence of Romantic relativism in the culture and development of a society.

7. Elaborate Al Ghazali's thought on ethics of living in a society.

8. Elucidate the contribution of Ibn Rushd in Islamic Scholasticism.

9. Interpret the political ideology of Ibn Taymiyyah with special reference to his concept of governance.

10. Write a note on 'Asabiyyah'.

11. Describe the relevance of the concept of "Annihilation of caste".

12. Expound the spiritual process of the growth and decline of civilizations as enunciated by Toynbee.

13. Assess Mappila literature as a paradigm for countercultures.

14. Illuminate the relevance of Malabar Rebellion as an integrated nationalist movement.

15. Evaluate the prominence of 'Tahfatul Mujahideen' in the history of Kerala Historiography.

16. Explicate the application of Marxist dialectic in historical materialism.

$(12 \times 5 = 60$ marks)

Part B

Answer any **two** *questions of the following.*
Each question carries 10 marks.

17. Elucidate the different branches in historical methodology with special emphasis on its peculiar features.

18. Differentiate the religio-political concepts of Al Farabi and Al Mawardi on leadership in Islam.

19. Analyze the historiography of peasant movements in colonial India as enunciated in "the prose of counter-insurgency" by Ranajit Guha.

20. Elaborate the syncretistic tendencies emerged in the medieval architecture and assess its distinctive features.

$(2 \times 10 = 20$ marks)

G 5914

Ph.D. COURSE WORK EXAMINATION, AUGUST 2021

COURSE I—RESEARCH METHODOLOGY

(I – Common to the Stream : Science, Applied Science and Engineering)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. What are the sources of literature review ?

2. What are the different methods of data collection?

3. Define citation index.

4. Explain the different graphical representations of data.

5. Write a detailed note on CPCSEA.

6. What is the significance of impact factor of a journal ?

7. Write a short note on intellectual property rights and patent law.

8. Differentiate between scientific and arbitrary methods in research.

9. Write a note on INFLIBNET.

10. Discuss the methodology of writing a research paper.

11. What are the importance of internet in data collection?

12. What are the major concerns associated with biological sample collection?

13. Write a note on types of data.

14. Give the importance of visual aids in the presentation of a research work.

15. Evaluate the importance of hypothesis in research.

16. Describe the role of IAEC in the field of biological research.

$(12 \times 5 = 60$ marks)

Part B

Answer any **two** *questions from the following.*
Each question carries 10 marks.

17. Write a detailed note on the steps involved in the preparation of project proposal.

18. Explain the application of internet in the field of research.

19. Write a note on ethical principles and good laboratory practices.

20. Describe the major tools involved in data interpretation and analysis.

$(2 \times 10 = 20$ marks)

G 5915

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

Name...

Ph.D. COURSE WORK EXAMINATION, AUGUST 2021

COURSE I—RESEARCH METHODOLOGY

(II – Common to the Stream : Social Sciences, Management, Commerce, Law and Behavioural Sciences)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. What is transformative paradigm ?

2. What are the sources of research problem ?

3. What is a hypothesis ? What are the sources of hypothesis ?

4. Explain research designs.

5. Distinguish between Historical and Exploratory research.

6. Elaborate attitude scales as methods of data collection.

7. What are the different types of variables.

8. Differentiate between qualitative and quantitative research.

9. Explain the importance of statistics in Social Research.

10. Give a brief note on methods of analysis.

11. Explain the importance of statistics in Social Research.

12. Explain the features of a good report.

13. Explain MLA style.

14. Explain IPR.

15. Explain Type I and Type II errors.

16. Marks of students in a class are given below. Calculate mode.

Marks	0–10	10–20	20–30	30–40	40–50	50–60	60–70	70–80
No. of students	10	14	16	14	11	13	17	13

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *questions from the following.*
Each question carries 10 marks.

17. Elaborate on experimental Research Method.

18. What are the features of a good research proposal ? Prepare a research proposal in your area of specialization.

19. Differentiate between probability and non-probability sampling.

20. Calculate Karl Pearson's co-efficient of correlation from the following :

X	11	12	13	14	15	16	17	18	19	20
Y	30	29	29	25	24	24	24	21	18	15

$(2 \times 10 = 20$ marks$)$

G 5916

Ph.D. COURSE WORK EXAMINATION, AUGUST 2021

COURSE I—RESEARCH METHODOLOGY

(III Common to the Stream : Languages)

Time : Three Hours
Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Textual criticism in research.

2. Define and describe the transformative paradigm in research.

3. Considerations in selecting a topic for research.

4. Tools of research.

5. Primary sources of research.

6. Government publications as material for research.

7. Comparative method in research.

8. Analysis and interpretation of data.

9. Introduction of a thesis.

10. Giving footnotes, endnotes and references.

11. Essential elements in a bibliographical entry.

12. Importance of appendices for a thesis.

13. Appropriate language for the thesis.

14. Difference between literary criticism and literary research.

15. INFLIBNET.

16. Advantages of using computers in research.

$(12 \times 5 = 60$ marks$)$

Part B

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

17. Give briefly the outlines of a research proposal.

18. Critically evaluate the different methods of research.

19. Discuss briefly the processes that lead to the beginning of research.

20. Give a brief description of the use of ICT in research.

$(2 \times 10 = 20$ marks$)$

Ph.D. COURSE WORK EXAMINATION, AUGUST 2021

COURSE IV—RESEARCH AND PUBLICATION ETHICS

(2019 Admissions only)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Bring out the need for maintaining ethical practices in research.

2. What are duplicate and overlapping publications ?

3. Describe the rules of citing electronic sources in the APA style.

4. Define 'Plagiarism' and bring out its different types.

5. Is plagiarism a crime ? Explain plagiarism in legal context ?

6. Explain salami slicing ?

7. Differentiate fabrication and falsification.

8. What are the Problems Encountered by Researchers in India ?

9. Which are the fundamental ethical principles of research ?

10. How will you handle conflicts of interests in research ?

11. Explain issues relating to authorship such as guest authorship, gift authorship and ghost authorship ?

12. Explain impact factor ?

13. What are the branches of philosophy ?

14. What are the causes of scientific misconduct ?

15. What are Predatory publishers ?

16. Write a short note on open access publications ?

$(12 \times 5 = 60 \text{ marks})$

Part B

Answer any **two** *questions from the following.*
Each question carries 10 marks.

17. Which are the recognised norms of research ethics to the research community, institutions and individuals?

18. Explain research integrity ? How will you follow research integrity ?

19. What are the reasons that lead to unethical behaviour in research ?

20. Explain publication ethics ? What are the Principles of Transparency and Best Practice in Scholarly Publishing ?

$(2 \times 10 = 20 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN SANSKRIT, AUGUST 2021

Course II—BROAD AREA IN SANSKRIT

Time : Three Hours   Maximum : 80 Marks

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

Part A

*Answer any **twelve** of the following questions.*
Each question carries 5 marks.

1. अधो निर्दिष्टेषु **द्वादश**प्रश्नानां उतराणि खण्टिकारूपेण लिखत :

   1   वेदांगानि कानि ?

   2   प्रश्नोपनिषद् प्रश्नानि कानि ?

   3   महाकाव्यलक्षणं किम् ?

   4   नास्तिकदर्शनानि के ?

   5   पुराणानि कति ? कानि च तानि ?

   6   कुलशेखरस्य नाटकद्वयमधिकृत्य लिखत ।

   7   योगदर्शनस्य महत्वं किम् ?

   8   संस्कृतसाहित्ये केरलवरम वलिय कोयितम्पुरान् महोदयस्य योगदानं किं ?

   9   कालिदासस्य नाटकानि

  10   नाच्युरल लाइग्वेज् प्रोसर्सिंग् (NLP)

  11   ग्रन्थसंरक्षणम्

  12   हस्तलिखित ग्रन्थे पाठविमर्शम्

  13   पञ्चतन्त्रम्

14 सौन्दर्यलहरी

15 आयुर्वेदस्य बृहज्जयी इति प्रसिद्धानि ग्रन्थानि कानि

16 अर्थशास्त्रम्

<div align="right">(12 × 5 = 60 marks)</div>

Part B

II. प्रश्नद्वयं व्याख्यात :

17 दशरूपकाणि कानि विवृणुत

18 आस्तिकदर्शनानि कानि विवृणुत

19 दशोपनिषदः कानि विवृणुत

20 केरलीय संस्कृतनाटकानधिकृत्य लिखत

<div align="right">(2 × 10 = 20 marks)</div>

Ph.D. COURSE WORK EXAMINATION IN MALAYALAM, AUGUST 2021

Course II—ഭാഷാ സാഹിത്യ പഠനസിദ്ധാന്തം

Time : Three Hours Maximum : 80 Marks

Part A

പന്ത്രണ്ടു ചോദ്യത്തിന് രണ്ടു പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക.

ഓരോ ചോദ്യത്തിനും 5 മാർക്കു വീതം.

1. മലയാള ഭാഷയുടെ ഉത്ഭവ ചർച്ചയിൽ തമിഴ് ജന്യവാദങ്ങൾക്കുള്ള പ്രസക്തിയെന്ത് ?

2. പാട്ടിന്റെയും മണിപ്രവാളത്തിന്റെയും സംയോജനമാണ് എഴുത്തച്ഛൻ തന്റെ കൃതികളിൽ നിർവഹിച്ചത് —വിശദീകരിക്കുക.

3. സാമൂഹിക ഭാഷാവിജ്ഞാന(Socio linguistics)ത്തിന്റെ അന്വേഷണ മേഖലകൾ പരിചയപ്പെടുത്തുക.

4. ഭരണഭാഷ മാതൃഭാഷയാക്കേണ്ടത് ജനാധിപത്യത്തിൽ എത്രത്തോളം പ്രധാനമാണ് ?

5. കേരളീയ ഭക്തിപ്രസ്ഥാനത്തിൽ എഴുത്തച്ഛൻ കൃതികൾക്കുള്ള സ്ഥാനം വിമർശനാത്മകമായി വിലയിരുത്തുക.

6. "വ്യവസ്ഥയെല്ലാം ശിഥിലം

   പ്രധാനം ഗാനരീതി താൻ"

   —ഇത് ദ്രാവിഡ വൃത്തങ്ങളുടെ മൗലികതയായി കണക്കാക്കാമോ ? പരിശോധിക്കുക.

7. തനത് നാടക സങ്കല്പം എന്തെന്നു വിവരിക്കുക.

8. സാഹിത്യാപഗ്രഥന പദ്ധതി എന്ന നിലയിൽ തിണ സങ്കല്പത്തെ പരിചയപ്പെടുത്തുക.

9. കഥ, നോവൽ പഠനത്തിൽ ആഖ്യാനശാസ്ത്ര(Narratology)ത്തിനുള്ള സ്ഥാനം നിർണ്ണയിക്കുക.

10. ചങ്ങമ്പുഴക്കവിതയുടെ ജനപ്രിയതയ്ക്ക് അടിസ്ഥാനമായ ഘടകങ്ങൾ എന്തെല്ലാം ? സോദാഹരണം ചർച്ച ചെയ്യുക.

11. സാഹിത്യ സാംസ്കാരിക വിമർശകൻ എന്ന നിലയിൽ എം.എൻ.വിജയനെ പരിചയപ്പെടുത്തുക.

12. കേരളീയ ദൃശ്യ കലകളെക്കുറിച്ചുള്ള പഠനത്തിൽ അന്തർവിജ്ഞാനീയ സമീപനത്തിനുള്ള സാധ്യതകൾ എത്ര മാത്രം ? വിവരിക്കുക.

13. ഘടനാവാദാനന്തര സാഹിത്യ സിദ്ധാന്തങ്ങൾക്ക് ഭാഷാ സാഹിത്യ പഠനത്തിലുള്ള സ്ഥാനം പരിശോധിക്കുക.

14. ബ്ലോഗ്, ഫെയ്സ്ബുക്ക് തുടങ്ങിയ നവസാങ്കേതിക മാധ്യമങ്ങൾ കവിതയെ വളർത്തുകയാണോ തളർത്തുക യാണോ ? സ്വമതം സ്ഥാപിക്കുക.

15. സ്ത്രീവാദ സാംസ്കാരിക വിമർശനത്തിന്റെ അടിസ്ഥാന സങ്കല്പങ്ങൾ എന്തെല്ലാം ?

16. നവമാധ്യമങ്ങളിൽ മലയാള ഭാഷയ്ക്കു വരുന്ന പരിണാമം വിമർശിച്ചു വിലയിരുത്തുക.

$(12 \times 5 = 60 \text{ marks})$

Turn over

Part B

രണ്ടു ചോദ്യത്തിന് നാലു പുറത്തിൽ കവിയാതെ ഉത്തരമെഴുതുക.

ഓരോ ചോദ്യത്തിനും 10 മാർക്ക് വീതം.

17. മലയാളത്തിലെ ആദ്യത്തെ വ്യാകരണ, ഭാഷാശാസ്ത്ര, സൗന്ദര്യശാസ്ത്ര രചന എന്ന നിലയിൽ ലീലാതിലകത്തെ വിലയിരുത്തുക.

18. കേരളത്തിന്റെ അധുനികീകരണത്തിൽ അച്ചടിയും പത്രപ്രവർത്തനവും വഹിച്ച പങ്കെന്ത് ? വിവരിക്കുക.

19. തകഴി, ബഷീർ, ഉറൂബ് എന്നിവരുടെ നോവലുകളിൽ നവോത്ഥാന മൂല്യങ്ങളും ആശയങ്ങളും എപ്രകാരം ആവിഷ്കരിക്കപ്പെട്ടിരിക്കുന്നു എന്നു പരിശോധിക്കുക.

20. പാശ്ചാത്യ സാഹിത്യസിദ്ധാന്തങ്ങളുടെ പ്രയോഗം സാഹിത്യ ഗവേഷണത്തിന് നേട്ടമോ കോട്ടമോ എന്നു വിലയിരുത്തുക.

$(2 \times 10 = 20 \text{ marks})$

Ph.D. COURSE WORK EXAMINATION IN PHYSICS
AUGUST 2021

COURSE II—RECENT DEVELOPMENTS IN PHYSICS

Time : Three Hours   Maximum : 80 Marks

Part A

Answer any **twelve** *of the following questions.*
Each question carries 5 marks.

1. Explain Kronig-Penny model with suitable diagrams.

2. Discuss coherent anti-Stokes Raman scattering.

3. Why do we think that the expansion of universe is accelerating ?

4. Discuss the effective mass of electron's and holes. Explain why effective mass of hole is greater than electrons ?

5. The charm quark is assigned a charm quantum number $C = 1$. How does the Gelmann Nishijima formula for electric charge be modified for four flavors of quarks ?

6. What are Friedmann equations ? Discuss briefly the Friedmann model of Universe.

7. Derive Curie-Weiss equation.

8. Explain Stock shift in semiconductor.

9. What is Hysteresis loop and explain how this loop modification can affect magnetism of materials.

10. Discuss Frenkel and Mott-Wannier excitons.

11. What is the significance of quarks in hadrons?

12. Discuss Klein-Gordon equation.

13. What are second order and third order non-linear phenomena ?

14. Briefly explain free electron theory of metals.

15. Explain Curie point and exchange integral.

16. By assuming the electromagnetic field tensor and its dual form, obtain the covariant form of the Maxwell's equations.

$(12 \times 5 = 60 \text{ marks})$

Turn over

Part B

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

17. Write down the electromagnetic field tensor $F^{\mu\nu}$ in matrix form. Hence discuss the general covariant form of Maxwell's equations. Compute $F^{\mu\nu}F_{\mu\nu}$ in terms of E and B.

18. Illustrate with diagrams octet and decuplet of baryons. Discuss the experimental evidence for the quark model.

19. Discuss the propagation of electromagnetic wave through non-linear media.

20. Explain relativistic field theories with suitable examples.

$(2 \times 10 = 20 \text{ marks})$