17/8/05

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Ph. D. ENTRANCE EXAMINATION, NOVEMBER – 2005

Time: 140 minutes **Maximum: 160 marks**

Section – B & C

Note: -

*(1) Answer any **twelve** questions from Section B and **one** question from Section C in the subject concerned.*

(2) In Section B each question carries 10 marks. Section C carries 40 marks.

(3) In Section B an answer should not exceed 100 words. In Section C an answer should not exceed 500 words.

(4) The candidates are permitted to answer questions only from the subject for which he / she has been registered for the examination.

(5) The candidates should clearly indicate the section and question paper number in the answer paper.

(6) Page No. 1 to 56 Question Booklet and use Page No. 57 to 88 for Answering Questions.

(7) No page should be detached from this Booklet.

(8) *No additional sheet shall be supplied.*

Reg.No.						

Ph. D. ENTRANCE EXAMINATION, NOVEMBER – 2005

Time: 140 minutes **Maximum: 160 marks**

Section – B & C

(This is to test the candidate's capability of defining concepts through short answers.)

Note: -

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(5) The candidates should clearly indicate the section and question paper number in the answer paper.

FACULTY OF ARTS

1. English

Section-B

1. Chaucer's *The Canterbury Tales*.
2. The picaresque element in Tom Jones
3. Metaphysical school of poetry
4. Precursors of the Romantic movement
5. Regionalism in Victorian Novels
6. Matthew Arnold as a Victorian poet
7. Dramatic monologues and soliloquies

8. The mature comedies of Shakespeare
9. The Movement poets
10. Main Concepts of Romantic poetry
11. Modernism and its exponents
12. Main concepts of Transformational generative grammar
13. Post colonial Theory
14. Absurd Theatre
15. Virginia Woolf and Feminism
16. New literatures in English

Section - C

1. "Postmodernism is at the same time a continuation and a break away from the concepts of Modernism." Evaluate this statement in the context of contemporary writing
2. Discuss the problems faced by Malayalis in learning English and offer suggestions for overcoming these.
3. What are the strategies used by women writers to (re)write themselves into existence. Discuss with reference to any three writers you are familiar with.

2. German

Section B

Explain briefly any twelve of the following terms !

1. Alliteration
2. Troubadourpoesie
3. Rokoko
4. Dadaismus
5. Paarreim
6. Trümmerliteratur
7. Barock
8. Gruppe 47
9. Satire
10. Entiwicklungsroman
11. Semiotik
12. Etymologie
13. Philolog
14. Linguistik
15. Konkrete Poesie
16. Symbolismus
17. Trivialliteratur

Section C

Analysieren Sie eins der folgenden mit Hilfe einer passenden literarischen Perspektive !

(a) Die Lösung

Nach dem Aufstand des 17. Juni
Ließ der Sekretär des Schriftstellerverbands
In der Stalinallee Flugblätter verteilen
Auf denen zu lesen war, daß das Volk
Das Vertrauen der regierung verscherzt habe
Und es nur durch verdoppelte Arbeit
Zurückerobern könne. Wäre es da
Nicht doch einfacher, die Regierung
Löste das Volk auf und
Wählte ein anderes ?

(b) Der Steinfischer

Der große Fischer ist wieder erschienen. Er sitzi in seinem morschen Boot and fischt, wenn früh die erste Lampe aufflammt und wenn die letzie am Abend gelöscht wind. Die Dorfbewohner sitzen auf dem Kies der Böschung und sehen ihm grinsend zu. Er fischt nach Heringen, aber er zieht nur Steine hoch.

Alles lacht. Die Männer schlagen sich auf die Schenkel, die Weiber halten sich die Bäuche, die Kinder sp;ringen hoch in die Luft vor Lachen.

Wemm der große Fischer sein brüchiges Netz hochzieht und die Steine drin findet, verbirgt er sie nicht, sondern langt weit aus mit dem braunen starken Arm, greift den Stein, hält ihn hoch und zeigt ihn den Unglücklichen.

(c) Der Arzt Hunain und der Kalif

Der Arzt Hunain wurde zum Kalifen gerufen. Der Kalif wünschte Gift für seine Feinde. Er bot dem Arzt Reichtümer an, wenn er gehorchte, Gefängnis, wenn er Schwierigkeiten machite. Nach einem Jahr im Gefängnis wurde Hunain aufs neue an den Fuß des Thrones geschleppt. Auf der einen Seite waren Kleinodien aufgehäuft, auf der anderen lagen Folterwerkzeuge. Der Kalif deutete mit dem Finger zuerst auf den einen Hausfen, dann auf den anderen. "Was soll es sein ? fragte er. Hunain antwortete ihm: " Ich habe nur die Kunst des Heilens studiert, keine andere. "Der Kalif winkte dem Henker und Hunain, fühlend, daß sein letztes Stündlein gekommen war, sagte : "Am Tag des Gerichts wird Gott es mir vergelten. Wernn der Kalif sich versündigen will, so ist es seine Sache. "Des Kalifen Lächeln brach die Spannung. Er hatte niemals beabsichtigt, den Arzt zu verletzen, und prüfte nur seine Ehrenhaftigkeit.

3. Journalism & Communication

Section – B

1. Interval data
2. Semantic Differential Technique
3. Style Book
4. Special effects
5. Interactive media
6. Story Board
7. Media Convergence
8. Press Bearing Authority
9. Flesch Formula
10. NAMEDIA
11. Tombstoning
12. Lobby Correspondent
13. Modular make-up
14. Fair comment
15. Cultivation Hypothesis
16. Maslow's Hierarchy of needs

Section – C

1. What do you understand by scaling technique? What are the essential aspects o scaling?
2. Discuss the different types of observation method and bring out the merits an demerits of each.
3. What is a Research design? What are the requirements of a good Researc design?

4. Philosophy

Section - B

1. Truth and Validity
2. Epistemology
3. Laws of thought
4. Naturalistic fallacy
5. Kinds of syllogism
6. Rules of inference

7. Sruti prasthana
8. 'Himalayas of the soul'
9. Anasakti yoga
10. Tripitakas
11. Khyativada
12. Philosopher king
13. Monadology
14. Interactionism
15. Critique of Pure Reason
16. Logical positivism

Section – C

1. Role of reason in Greek philosophy
2. Sabda pramana in Indian Philosophy
3. Use theory of meaning

5. Library and Information Science

Section - B

1. Literature Review
2. UGC – Infonet services
3. Webometrics
4. Historical research methodology
5. Bibliographic coupling
6. Knowledge management
7. Boolean logic in on-line search
8. Variables
9. E-Publishing
10. Remainder books
11. Digital divide
12. Subject Gateways
13. Copy cataloguing
14. Grey Literature
15. Style manuals
16. Knowledge society

Section - C

1. Prepare a research design at the Ph.D level on a research topic "Information technology applications in participatory planning in Kerala".
2. Discuss the significance of user studies as a method of research in the field of Library and Information science.
3. Discuss the scope of experimental research methodology in library and Information field.

FACULTY OF COMMERCE

6. Commerce

Section - B

Write short notes on the following

1. Portfolio Management
2. Automatic Vending
3. Brand insistence
4. Community Shopping Centres
5. Economic and Technological Environment
6. Return on Investment
7. Social Needs
8. Strategic Business Units
9. Wholly Owned Subsidary
10. Venture Capital Funds
11. Credit Rating Agencies
12. SEBI
13. Entrepreneurship Development
14. CVP Analysis
15. Financial Leverage
16. EVA Analysis

Section – C

Write an Essay on any one of the following.

1. Explain a few characteristic features of agricultural products.
2. Describe the impact of privatization on the Indian Economy.
3. Outline the research proposal for a marketing research.

FACULTY OF EDUCATION

7.Education

Section – B

1. State the different stages of cognitive development according to Piaget? State any three class-room implications of the theory of Piaget.
2. What is defense mechanism? Citing one such mechanism, explain how it is manifested through behaviour.
3. Distinguish between a Test and an Inventory.
4. Define personality. What are the characterisitics of a good personality?
5. What are the instructional and nurturant effects of 'Concept attainment model"?
6. Explain what is meant by competency based curriculum?
7. How does maturation influence learning?
8. Offer some practical suggestions for raising the status of the teaching profession.
9. With suitable examples distinguish between an 'Objective test' and an 'Objective-based test'.
10. "Information without formation will end in deformation". Briefly explain this statement.
11. Explain Thorndike "Law of Effect" with specific illustrations.
12. Describe the advantage of Computer Assited Teaching (CAT).
13. What do you understand by test reliability? What are the different method of measuring reliability.
14. Distinguish between formative evaluation and summative evaluation.
15. What is the significance of micro-teaching in teacher-training?
16. Explain briefly the role of career masters.

Section – C

1. Draw up a research proposal for studying the effect of Team Teaching on academic performance of the students at higher secondary level.
2. a) What is the difference between a study and a research project?

   b) In a classroom experiment, why is it more difficult to control extraneous variables than it would be in a science laboratory.

   c) Why is randomization the best method for dealing with extraneous variables?
3. a) Enumerate the characteristics of Action-Research and Fundamental Research.

   b) Selecting a suitable topic explain the steps in Action Research.

FACULTY OF ENGINEERING & TECHNOLOGY
M.Sc. (ENGINEERING) BY RESEARCH

8. Civil
Section – B

1. What is high performance concrete? Explain briefly.
2. Find suitable pitch for single lap joint for plates 10 mm thick if allowable tensil stress = 150N/mm^2, allowable shear stress of fastener = 100 N/mm^2, allowabl bearing stress of fastener = 300 N/mm^2
3. A uniform load of 2 kN/m, 5 m long, crosses a girder of 20 m span from left t right. Calculate the maximum bending moment and shear force at a section 8m from left hand support.
4. Explain the different limit states in limit state method of reinforced concret design.
5. Briefly explain the problem of boundary layer separation, clearly mentioning th conditions for its occurrence. Also give any three remedial measure to overcom the phenomenon.
6. a) Give the basic prepositions of unit hydrograph theory.
   b) The duty at the head of a distributary and that at the head of a water-course i canal irrigation are estimated. Which one is greater? Justify the answer.
7. Explain briefly the various stages of work in a new highway project.
8. What are the different methods of road construction? Describe their merits an demerits.
9. Explain the factors affecting self-purification of polluted streams. What is mea by de-oxygenation curve and re-oxygenation curve?
10. Write short notes on:
    a) Breakpoint method of chlorination
    b) Fluoridation
    c) Clarriflocculator
11. What are the different field compaction methods?
12. Comment on the SPT test used to measure the resistance of soil to penetration.

Section – C

1. The water in a perennial river flowing through an arid region has to be diverte to the use of an irrigation district, by canal irrigation. A diversion headwork h to be planned for it. Briefly explain the studies, design aspects, data requiremen and procedures to be followed in the fulfillment of the project.

2. A rural road is to be constructed on a marshy area for light traffic flow. Explain in detail the steps required for the construction of the same beginning from the acquisition of land.

9. Architecture

1. List out the various cost effective techniques adopted for construction.
2. Which are the various agencies involved in the propagation of cost effective technology?
3. Explain pre-cast construction and its advantages and disadvantages over the conventional construction.
4. In avenue planning certain landscape values of trees have to be taken into consideration. Explain these values and also the qualities for trees in avenue planning.
5. What are the various aspects to be considered in planning a pedestrian system?
6. What is meant by Modular coordination and what are its advantages? Explain with sketches how modular co-ordination can be built into various building components into its function, planning and construction.
7. As per the Architects Act 1972, what are the powers and functions of the Council of Architecture?
8. Describe the town planning principles of Indus Valley.
9. Critically examine the planning of Chandigarh.
10. Name the different types of sound absorbing materials. Explain how they absorb sound. How does the absorption vary with frequency?
11. What are the aspects to be considered in the planning of a Five Star Hotel?
12. Explain briefly the detrimental effects of traffic on the environment.

Section – C

Critically examine the salient features of the National Housing Policy of India.

10. Chemical Engineering

Section – B

1. Determine the force between two molecules as a function of distance, as given by the Lemnard Jones potential.

2. The velocity profile through a circular pipe of radius R is given by

$$V = \frac{(P_O - P_L)R^2}{4\mu L}\left[1 - \left(\frac{r}{R}\right)^2\right]$$

Where, $(P_O - P_L)$ = Pressure difference

μ = Viscosity of liquid

L = Length of pipe

r = radial distance from centre

Derive the volumetric flow rate

3. How does the viscosity of gases and liquids vary with pressure and temperature?
4. A furnace wall consists of three layers; first, a layer of heat resistant refractory brick of 5 cm thickness; Second, a layer of insulating brick of thickness 6 cm and finally a steel plate of thickness 0.6 cm. The inside temperature of the furnace is 1400^0C and outside temperature of the furnace wall is 60^0C.? The thermal conductivities of refactory brick, insulating brick and steel are 125, 75 and 1250 J hr^{-1} cm^{-1} $^0c^{-1}$. Calculate the heat loss from the furnace.
5. Explain Fich's law of diffusion.
6. 2 kg of nitrogen at 100 kPa and 25^0C is compressed in a reversible, isothermal non-flow process to a pressure of 200 kPa. Determine (a) the final temperature (b) the work transfer (c) the heat transfer (d) the change in internal energy.
7. A heat reservoir at 538^0C is brought into thermal communication a heat reservoir at 260^0C. 250 kJ of heat is transferred from the high temperature reservoir to the low temperature reservoir. Calculate the change in entropy of the universe resulting from the heat exchange process.
8. Derive the Maxwell relation $\left(\frac{\partial P}{\partial T}\right)_V = \left(\frac{\partial S}{\partial V}\right)_T$
9. The equilibrium absorption of acetone vapour on an activated carbon at 30^0C is given by the following data:

G absorbed/carbon	0	0.1	0.2	0.3	0.35
Partial pressure acetone, mm Hg	0	2	12	42	92

The vapour pressure of acetone at 30^0C is 283 mm Hg. A liter flask contains air and acetone vapour at 1atm and 30^0C with a relative saturation of the vapour of 35%. Two grams of fresh activated carbon is introduced into the flask, and the flask is sealed. Compute the final vapour concentration at 30^0C and the final pressure. Neglect the absorption of air.

10. What are the properties of a solvent used in liquid extraction. Explain what is selectivity.
11. A stream of aqueous monomer A (1 mol/liter, 4 liter/min) enters a 2 liter mixed flow reaction, is radiates therein and polymerizes as follows.

$$A \xrightarrow{+A} R \xrightarrow{+A} S \xrightarrow{+A} T \ .....$$

In the exit stream $C_A = 0.01$ mol/liter, and for a particular reaction product W, $C_W = 0.0002$ mol/lit. Find the rate of reaction of A and the rate of formation of W.

12. Explain the differences between bubbling fluidized bed, turbulent fluidized bed and fast fluidized bed.
13. A synthesis gas analyzing 6.4% CO_2, 0.2% O_2, 40.0% CO and 50.8% H_2 (the balance is N_2) is burned with 40% dry excess air. What is the composition of the flux gas?
14. A tank containing 100kg of a 60% brime (60% salt) is filled with a 10%. Salt solution at the rate of 10kg/min. Solution is removed from the tank at the rate of 15kg/min. Assuming complete mixing, find the kilogram of salt in the tank after 10 minutes.
15. Give the flow sheet for an activated sludge process for treatment of effluent.
16. Explain refining of vegetable oils.

Section - C

1. Name and briefly explain the unit processes that take place in a petroleum refinery.
2. Given the feed composition, product specification and production rate, explain how the process design of a tower type distillation column can be done using Mc Cabe and Thiele method.
3. Describe the different instruments for measurement of temperature clearly mentioning their range of operation.

11. Electronics & Communication

Section - B

1. CMOS logic gates – advantages.
2. Feedback amplifier – advantages
3. FIR digital filter – advantages and disadvantages

4. Stub matching
5. V.S.W.R. measurement
6. Class C power amplifiers
7. OP-amp Schmitt trigger
8. Foldback protection in power supplies
9. Applications of PLL
10. Comparison of AM and FM
11. Micro controllers Comparison with Microprocessors.
12. Yaji uda antenna
13. Principles of Optical Communications
14. Channel Capacity theorems and its implications
15. Wide band amplifier
16. Impact of VLSI

Section – C

1. Recent advances in Mobile Communication or Digital Communication.
2. Recent advances in digital system designs or Computer aided circuit analysis.
3. Recent advances in Digital Signal Processing or Digital Image Processing.

12. Electrical and Electronics

Section – B

1. Show that in a balanced star-connected system, the current in neutral is zero.
2. What is the relevance of all day efficiency in distribution transformers?
3. What is (a) skin effect; and (b) proximity effect?
4. How does corona occur in power transmission systems?
5. Draw the forward and reverse characteristics of a diode and mark various regions.
6. Explain the operation of a pumped-hydro storage scheme.
7. Draw the circuit of a dc series voltage regulator using a power transistor and briefly describe its functioning.
8. How does GTO vary from ordinary thyristors?
9. How do you compare FM radio broadcasting to AM?
10. Describe gray code and binary code.

11. Draw the circuit of a modulo-9 counter using D flip-flops.
12. What is meant by slow rate of a linear IC?
13. With an example, show how a decimal number can be converted into a hexadecimal number.
14. Explain how differential amplifiers are capable of reducing noise.
15. What are on-load tap changers (OLTC)? Where do you find its application?
16. Explain how power-angle curve is useful in stability studies.

Section - C

1. Insulation coordination in power systems.
2. Modern trends in power genertion from renewable sources of energy.
3. Latest trends in electric drives and its efficient operation.

13. Computer Science

Section – B

1. Explain TCP/IP network model. Distinguish it from the ISO-OSI model.
2. What are sliding window protocols? Describe its implementation details.
3. Explain operator precedence grammar.
4. Write notes on
   (a) DFA
   (b) Parse Tree
   (c) LEX
5. Explain the following file organizations.
   a) B+tree files
   b) Hashed files
   c) Inverted files
6. Compare BCNF and 3NF.
7. Write an 8085 assembly language program to convert a given decimal number to binary.
8. Describe Semaphores
9. Discuss the different levels of testing a software product usually undergoes.
10. Write notes on CASE tools.
11. Write C routines to traverse a binary tree in preorder and in postorder.
12. What are the salient features of RISC architecture?

13. What are microprograms? Describe the organization of a microprogrammed control unit.
14. Compare the different process scheduling algorithms.
15. Differentiate between a process and a thread.
16. Discuss the main features of object oriented programming.

Section – C

1. Describe the features of a Real time OS. Discuss the research issues in improving the performance of Real Time OSs.
2. What is meant by Data Mining? Discuss the current techniques used and potential research issues in Data Mining.
3. Discuss the data compression techniques and standards adopted in digital data transmission. Outline potential research issues in this field.

14. Mechanical

Section – B

1. Differentiate between manufacturing and service operations.
2. Explain how just in time (JIT) can reduce work in process inventory and increase return on investment.
3. What type of layout you would suggest for mass customized manufacturing?
4. What is Break even point? Where and when it is used?
5. How can the OC curve be used to ensure quality control?
6. State the zeroth law of thermodynamics. How is mercury in a thermometer able to find the temperature of a body using this law?
7. Define heat engine, refrigerator and heat pump.
8. Explain the difference between internal energy and enthalpy of wet steam and dry steam.
9. How are the exchangers classified?
10. Explain the working of a single stage reciprocating air compressor.
11. Compare the Otto and Disel cycles for same compressions ratio and heat inputs.
12. Discuss the defects in a lattice structure of crystalline material.
13. What are the functions of a riser in castings?
14. How do thermoplastics differ from thermosetting plastics?

15. Distinguish between direct stress and bending stress.
16. Discuss the property of fatigue failure.

Section – C

1. Resources are limited. So is the case with Petroleum. Under such a condition analyze the potential for conservation of energy, alternate uses and optimal uses.
2. With increasing standards of life, automobile has assumed the status of a necessity rather than a luxury. Analyze the problems and prospects paused by the increasing use of automobiles and associated increasing production of automobiles.
3. In the context of Kerala's unique flora and fauna, demography, intellectual and educational background what type of industries and business services are best fits. Explore the potentials and analyze the impacts of your findings.

Ph.D. ENGINEERING

15. CIVIL

Section - B

1. Define bulking of sand and discuss its effects on the properties of concrete. Briefly explain how its value is determined.
2. Design the central section of a welded plate girder of effective span 30m subjected to a superimposed load of 80kN/m over the full length of the beam. The design stresses may be assumed suitably.
3. Determine the maximum bending moment which can occur when a train of loads 4kN, 8kN, 12 kN and 7 kN separated by distances 2m, 3m and 2m respectively, crosses a span of 40m.
4. Explain the principles of different methods of reinforced concrete design.
5. Briefly explain how you can derive a 2 hours unit hydrograph if a 3 hours unit hydrograph is known, for a catchment.
6. A tank completely full of water is 6m square at the top, 3m square at the bottom and 3m in deep. The four sides are planes, each having the same trapezoidal shape. Find the magnitude of the resultant force on each side of the tank and the location of the above pressure force.
7. Explain in brief the various tests carried out on bitumen.
8. Explain the various types of failures and their causes, in the case of flexible pavements.

9. Draw the flow diagram of Activated sludge process and describe the working of a activated sludge plant.
10. What is meant by permanent hardness of water? Explain Zeolite process to remove permanent hardness.
11. What are the different bearing capacity failures?
12. What do you mean by a floating foundations?

Section – C

1. A town has to be provided with a water supply system. A river flowing by the side of the town can be used as the source for it. Briefly explain the details regarding the investigations, data requirement, design aspects, and procedures necessary for the implementation of the project.
2. Describe elaborately the steps to be taken for the construction of a multi-storeyed building starting from the site investigation stage.

VI Architecture & Planning

Section A

1. Describe the role of co-operatives in the housing sector.
2. Discuss the role of housing standards in Master Plan Preparation.
3. Non-Governmental Organizations have a major role in housing the lower income groups. Explain.
4. Give a brief account of the urban and rural housing problems of India.
5. What do you understand by slum clearance and slum improvement? Differentiate between the two.
6. The problem created by the fast growth of vehicle population has a direct impact on the environment in which we live. Briefly explain the above statement.
7. What is O.D. Survey? Briefly explain the need for the O.D. Survey and the specific uses to which the survey data is used.
8. Explain how you as an individual and your local community are dependent upon transportation.
9. What are the issues involved in the landscape planning of urban roads.
10. Write a short note on 'Techniques of Sampling'.
11. What is meant by incremental housing?
12. What are the various data required for the population projection of a country?

Section - C

Explain the role of planning regulations and controls in the preparation of the Development Plan of a town.

17. Computer Science

Section B

1. Discuss the transport layer design issues in ISO-OSI model.
2. Describe IEEE 802.5 LAN standard.
3. Compare the different process scheduling algorithms.
4. Write an algorithm to convert NFA to DFA. Show an example.
5. Describe LL(1) grammar.
6. Translate the expression x*(y-z)*p/q – m into
   a) Syntax tree
   b) Postfix notation
   c) Three address code
7. Explain the following instructions in Intel 8085.
   a) DAA
   b) DADH
   c) XCHG
   d) RAL
8. What are software interrupts? Explain those available in 8085.
9. Explain the sequence of operations when a processor is interrupted.
10. Write regular expression for variable names in C Language and convert the regular expression to context free grammar.
11. What are the features of a good software design?
12. Discuss two methods for creating and running a thread in JAVA.
13. Write short notes on
    a) Embedded SQL
    b) Virtual records
    c) Client Server data bases
14. Explain a Perceptron classifier in artificial neural networks. What are its limitations?
15. Compare and contrast Crisp and Fuzzy sets.
16. Explain Black Board Architecture in Artificial Intelligence.

Section C

1. Discuss the challenges in developing embedded system software. Identify potential research issues in this field.
2. Discuss the issues in implementing distributed databases. How are they handled in the World Wide Web?
3. Discuss the data compression techniques and standards adopted in digital data transmission. Outline potential research issues in this field.

18. Electrical and Electronics

Section B

1. Why fault studies in power systems are required?
2. Why transient stability limit is lower than steady state stability limit?
3. Explain the importance of load curve in power system operation?
4. What is meant by Ferranti effect in power transmission lines?
5. What is the effect of excitation of synchronous motor on its armature current?
6. What is meant by energy-efficient motors? How does it differ from ordinary motors?
7. What is soft-starters for electric motors?
8. What is the condition for maximum efficiency of dc generators?
9. Draw a typical transistor amplifier in common emitter configuration. Explain the advantages of using this configuration.
10. Explain how differential amplifiers are capable of reducing noise. What is meant by common-mode rejection ratio (CMRR)?
11. What is a combinational logic circuit? What are its important features?
12. As referred to an SCR, explain
    i) latching current
    ii) holding current
    iii) turn-off time
    iv) repetitive peak forward voltage
13. Briefly explain the principle of circulating current differential protection applied to power transformers.
14. What are harmful effects of voltage surges? What is the difference between a surge and an impulse?
15. What are the difference between fuel cells and storage batteries?
16. What is self-tuning type of adaptive control? What are its merits?

Section – C

1. Evaluate the role of Internet in information dissemination.
2. Modern trends in power generation from renewable sources of energy.
3. Recent advances in the control of re-usable launch vehicles.

19. Electronic Communication

Section B

1. Coding and its need
2. LOS propagation characteristics
3. Applications of PLL
4. Modes of propagations in rectangular waveguides
5. FPGA
6. FFT and spectral analysis
7. Impact of microelectronics
8. Pentium processor
9. Directional antenna
10. Gussen effect and its applications
11. Data acquisition
12. Shift register applications
13. Semiconductor memories
14. Active filters
15. Micro controller applications
16. ISDN

Section C

1. Give an account of data compression techniques.
2. Discuss applications of Neural networks or Fuzzy Systems.
3. Discuss recent trends in Mobile Communication System or Speech Synthesis.

20. Mechanical Engineering

Section B

1. Differentiate between the impacts of make to stock and make to order strategies in manufacturing.
2. What do you understand by mass customization?

3. Describe the role of batch size in inventory build up and suggest how can you reduce the work in process inventory while ensuring prompt delivery.
4. Briefly explain the role of Pareto analysis in conjunction with Ishikawa fishbone diagram to improve quality.
5. Why only in constant pressure non flow process, the enthalpy change is equal to heat transfer.
6. Establish that the efficiency of a reversible engine depend on temperature of source and sink and is independent of working substances.
7. Why it is necessary to pressurize the cabin in the case of air refrigeration system?
8. What are the factors causing diesel knock and how it affects performance.
9. Distinguish between white and nodular cast iron.
10. What is the objective of tempering plain high carbon steel?
11. In castings, how padding helps in directional solidification?
12. How does grain size in a polycogstalline solid affects the strength of the solid?
13. Describe the Indian standard septem of Limits and fits.
14. What do you understand by stress concentration? Explain.
15. Explain how factor of safety is determined under steady and varying loads.
16. What type of rolling contact bearing will be suggested under
    (i) Light radial load with high rotational speed and
    (ii) Heavy axial load with shock? Give reasons?

Section C

1. An appropriate blend of agricultural production and industrial production highlighted economic stability. With increasing role of growth in service sector, the economic dimensions are changing. Analyze.
2. Application of Internet has redrawn the boundaries of manufacturing capabilities. Discuss the ways in which India can establish manufacturing excellence, maintaining quality and market acceptability using Internet and IT.
3. Kerala has intellectuals, talents and potential for building up industrial infrastructure. Yet promoters hesitate to start business in the state. How can we build a healthy environment for promoters to establish business units in Kerala.

FACULTY OF FINE ARTS

21. Music

Section - B

1. Daru
2. Complementary interval
3. Nāmavāli
4. Laws of Vibration
5. Rain producing ragas
6. Graha bhedam
7. Radha mangala bhasha
8. Thevaram
9. Darsana Ashtapadi
10. Ragamalika
11. Navasandhi rituali
12. Ganastambhas
13. Thribzinna
14. Ragas used in Kathakali music. Write lakshanan for two raga.
15. Morning ragas. Write lakshanan for two ragas.
16. Divya prabandham

Section C

1. Write the evolution of he instrument veena through ages.
2. Write a note on the Raga and emotion with appropriate examples.
3. Explain the music of the ancient Tamils.

FACULTY OF LAW

22. Law

Section B

1. Vicarious liability
2. Deterrent theory of punishment
3. The doctrine of pari delicto
4. Intellectual Property Rights
5. Ratio decidendi
6. Law as social engineering
7. Ombudsman

8. Right to education
9. Doctrine of pleasure
10. Failure of Constitutional machinery in the state
11. Right to counsel
12. Doctrine of proportionality
13. Procedural ultra vires
14. Constitutive theory of recognition
15. Pactum sunt servanda
16. Convention on Biological Diversity

Section C

1. Right to Development and the New International Economic Order.
2. Judicial Review and the Ninth Schedule of the Constitution.
3. Transparency in Governance vis-à-vis Public Interest Immunity.

FACULTY OF MEDICINE

23. Basic Medical Sciences

Section - B

a) Anatomy

1. Describe the attachment of thenar muscles and it innervations. What is the peculiarity of movements of thumb.
2. Describe the extrahepatic biliary apparatus.
3. Discuss the functional areas and blood supply of superolateral surface of human brain.
4. Compare and contrast the fissures and medial surface of Right and Lung.
5. Add notes on a) Sternum b)Styloid process of temporal bone.
6. Describe briefly a) Tympanic membrane b) Sterno mastoid muscle.

b) Physiology:

1. Explain the ionic basis of resting membrane and action potentials in skeletal muscle.
2. Explain the mechanisms of blood pressure regulation in our body.
3. How is respiration chemically regulated.

4. Explain the functions of bite.
5. Name hormones of adrenal cortex and give the functions of growth hormone.
6. Explain the changes in the ovary during the different phases of menstruation.

c) Pharmacology:

1. Antiepileptic drugs
2. Drugs used in bronchial asthma
3. Oral contraceptive
4. Adverse effects and uses of Glucocorticoids
5. Local Anaesthetics
6. Broad spectrum antibiotics

d) Biomedical Sciences:

1. Structure and function of immunoglobulins
2. Detoxification
3. Role of Vit 'D' in calcium metabolism
4. Discuss about RNA polymerases
5. Protein biosynthesis in eukaryotes.
6. Briefly explain how will you determine the molecular weight of a substance

e) Pathology Questions :

1. What is the definition of a granuloma? How are giant cells formed in granulomas? What are other cells in a granuloma? Describe the microscopic appearance of tuberculous granuloma.
2. Distinguish between inflammatory and noninflamatory edema; define exudate vs transduate.
3. Describe morpholic features of thrombi.
4. Define 'pneumonia". Distinguish between bronchopneumonia and lobar pneumonia. List common etiologic agents for each type of pneumonia.
5. Define Leukemias classify acute leukemias. Lit two cyto-chemical stains used in the diagnosis of leukemia. How will differentiate Leukemia and Leukemoid reaction.
6. Compare and contrast benign and malignant tumors.

Section - C

1. What is ethics in research and discuss about ethics and research in humans?
2. Describe the recombinant DNA technology. What are the important applications of this technique.
3. Discuss in detail the types of Research Design.

24. Medicine & Allied Specialities

Section – B

1. Erythema multiforme
2. Antimicrobial resistance
3. Paracetamol poisoning
4. Respiratory failure
5. Systemic inflammatory response syndrome
6. Superior vena caval obstruction
7. Biological changes with ageing
8. Obsessive compulsive disorder
9. Conversion disorder
10. Hyperkalemia
11. Pellegra
12. Klinefelters syndrome
13. Mutation
14. Infective endocarditis
15. Management of Acute Severe Asthma
16. Head injury
17. Lung Transplantation
18. Pathobiology of ageing
19. Drug abuse & Dependence
20. Cyclooxygenase pathway
21. Low Molecular weight heparins
22. Gene Therapy
23. HLA polymorphism
24. Long QT syndrome
25. Amiodarane

26. Status Asthamaticis
27. Multiple Organ dysfunction syndrome
28. Analgenic nephropathy
29. Zollinger – Ellison syndrome
30. Autoimmune Hepatitis

Section – C

1. Discuss etiology, clinical features, pathogenesis, investigations and management of stroke in young patients.
2. Discuss etiology, clinical features, pathogenesis, investigations and management of Hepatitis B.
3. Discuss etiology, clinical features, pathogenesis, investigations and management of Hyper Osmolar non ketotic Coma.

25. Pharmaceutical Sciences

Section – B

1. Explain the principle of mass spectrometry.
2. Give the principle of enzyme immunoassay and its applications.
3. What is biological half-life? How is elimination rate constant determined from it?
4. What is pharmaceutical incompatibility? Give examples.
5. Explain the methods used to monitor adverse drug interactions.
6. Give a brief note on biogenetic pathway in medicinal plants.
7. Give a short account of Good Laboratory Practices.
8. Explain recombinant DNA technique.
9. Explain nutrigenomics with examples.
10. Give a short account of tests used to evaluate tablets.
11. What is twin cross over test? Give examples.
12. What is the principle of HPTLC? Give its applications in Pharmacy.
13. How does pharmacogenomics help in individualizing drug therapy?
14. Give a brief note on accelerated stability studies.
15. Write a short note on the neurotransmitters in the CNS.
16. Give a short account of antisense drugs.

Section C

1. Discuss cGMP and its salient features.
2. Discuss the various phases of clinical trial of a drug.
3. Elaborate the various stages involved in the development of a new drug molecule from a lead molecule. What is high throughput screening?

26. Nursing

Section B

1. Issues and problems of present system of evaluation in nursing education.
2. Disaster Management.
3. Nursing care of patients with head injury.
4. Progressive patient care.
5. Directly observed therapy short term.
6. Teenage care
7. Quality assurance mechanisms in nursing practice.
8. Ethical issues in nursing.
9. Self care deficit theory.
10. Methods of disposal of solid wastes.
11. Rehabilitation of patient with COPD.
12. Characteristics of an evaluation tool.
13. Computer applications in nursing.
14. Observation as a method of data collection.
15. Longitudinal research designs.
16. Future challenges in nursing practice.

Section C

1. Discuss the different types of sampling and explain the factors to be considered for determining adequacy of sample size.
2. Describe in detail how to critique a research report.
3. "The rate of caesarian deliveries are found to be significantly high in a maternity hospital". As a nurse researcher, explain how a scientific investigation could be conducted to explore the factors in association with the above situation. Formulate a detailed research proposal.

FACULTY OF DENTISTRY

27. Dentistry

Section B

1. Anti fungal drugs
2. Composition of Saliva
3. Describe maxillary air sinus
4. Destraction Osteogenesis
5. Differential diagnosis of trismus
6. Myofunctional Appliances
7. Epidemiological triad
8. Water born diseases
9. Objectives of Epidemiology
10. Non-elastic impression materials
11. Management of Le-Forte II fracturo
12. Carpel Index
13. Viral visions of Oral Cavity
14. Course of distribution of Facial artery
15. Suturing materials
16. Pre-adjusted edgewise appliance
17. Rampant caries
18. Ludwigs Angina
19. Parent Counselling & Child Psychology
20. Antimicrobials in periodontal therapy
21. Consumer protection act
22. Fluorosis index
23. Recent advances in Orthodontic bonding system
24. Discuss glass-ionomer cement
25. Face-bon transfer
26. Chemical control of respiration
27. Poly acid modified composite
28. Western-Blot test
29. Supportive periodental therapy.
30. Immunoglobulins

Section C

1. Research Methodology & Scientific writing
2. Infection Control
3. Oral Health is an integral part of Systemic Health

FACULTY OF MANAGEMENT

28. Management

Section - B

Define/Explain the following:

1. Scientific Management
2. Decentralisation
3. Active listening
4. Perceptual block
5. Johari Window
6. Research abstract
7. Co-branding
8. Production modification
9. Multivariate analysis
10. Plant layout
11. ANOVA
12. Structured interview
13. 360 degree appraisal
14. Hot Stove Rule
15. Paretos rule
16. Demarketing

Section C

1. What is the need for research in Management studies? Do you think that new avenues will be generated through the research in Management studies? Justify your answer.

2. Describe the difference between Training and Development. Bring out the scope for improvement in skills, knowledge and attitude for Foreman in a large Manufacturing organisation through training.
3. You are asked to do a study for a leading Consumer Durables dealer in Trivandrum who are marketing the ONIDA brand. Develop a questionnaire for analysing the purchase behaviour of Trivandrum city residents.

29. Tourism

Section B

1. Green Tourism
2. Eco-tourism
3. Beach tourism
4. Ethnic tourism
5. Multiplier effect in Tourism
6. Heritage tourism
7. Carrying capacity of Tourism
8. Advantages of Travel packaged tourism
9. Characteristics of Seven Star Hotels
10. Destination Tourism
11. Star Alliance in Air travel
12. Duty Free Shopping
13. Dubai Festival and Tourism
14. Tourist guides
15. Backwater cruises
16. Economics of Scale in Tourism

Section C

1. What is a research process? Enumerate the characteristics of a good researcher.
2. Differentiate between primary and secondary data.
3. Evaluate the role of advertising in Tourism.

FACULTY OF ORIENTAL STUDIES

30. Arabic

Section B

(١) المعلقات السبع
(٢) مميزات النشرالجاهلى
(٣) جمع القرآن و تدوينه
(٤) الصحاح الستة
(٥) الشعراء المحضومون
(٦) عبدالله ابن المقفع
(٧) الف ليلة وليلة
(٨) المتنبشى
(٩) الخليل بن أحمد
(١٠) ابو حنيفه النعمان
(١١) الغزالى
(١٢) الجامعة الازهر
(١٣) مصطفى لطفى المنفلوطى
(١٣) الامام محمد عبده
(١٥) احمد شوقى
(١٦) 'فى الادب الجاهلى' لطه حسين

Seciton C

(١) نجيب محفوظ حياته و آثاره
(٢) توفيق الحكيم حياته و آثاره
(٣) شاه ولى الله الدهلوى

31. Linguistics

Section B

1. What are the design features of human language?
2. Why do we say language is symbolic?
3. Differentiate morph, morpheme and allomorph.
4. What is internal reconstruction?
5. What is a phrase structure rule? Distinguish it from a transformational rule.
6. Distinguish between phoneme and morphophoneme.
7. How does language make infinite use of finite number of rules?
8. What are vowels and consonants.
9. 'Language is the mirror of human mind'. Discuss.
10. What is text and textuality?
11. Discuss the notion 'translation equivatenee'.

12. Distinguish between continuous and discontinuous ICs.
13. What are linguistic universals?
14. Is Transformational grammer 'structural' or 'post structural'.
15. 'A language is realized in its dialects?' Do you agree? Explain.
16. What is computational linguistics.

Section – C

1. Discuss the methodology of morphenic analysis. What are the notations, tools and rules for the morphonic analysis of a language.
2. How do you propose to do field work in linguistics? Elucidate the different techniques suggested by linguists of different theoretical orientations.
3. What are sentences? How do you classify the sentences in your language as a prerequisite to a comprehensive syntactic analysis of the same.

32. Hindi

Section B

१. अमीर खुसरो।
२. संत काव्य की विशेषताएँ।
३. हिन्दी के प्रमुख कृष्ण भक्त कवि।
४. रीतिमुक्त कविता।
५. आचार्य महावीर प्रसाद द्विवेदी।
६. साकेत की मौलिक उद्भावनाएँ।
७. महादेवी वर्मा की कविता।
८. मुक्तिबोध कविता।
९. बाणभट्ट की आत्मकथा का रचना विधान।
१०. जयशंकर प्रसाद के नाटकों में ऐतिहासिकता।
११. गोदान में चरित्र-चित्रण।
१२. साठोत्तरी हिन्दी आलोचना।
१३. नयी कहानी
१४. शेखर : एक जीवनी।
१५. विद्यानिवास मिश्र के निबन्ध।
१६. केरल की हिन्दी पत्रिकाएँ।

Section C

१. आधुनिक हिन्दी कविता के क्षेत्र में संवेदना और शिल्प की दृष्टि से निरंतर परिवर्तन होता आया है - इस कथन की समीक्षा कीजिए।
२. स्वातंत्र्योत्तर हिन्दी उपन्यासों में अभिव्यक्त सामाजिक चेतना व मूल्यांकन कीजिए।
३. स्वातंत्र्योत्तर हिन्दी नाटक साहित्य की मुख्य प्रवृत्तियों को रेखांकित कीजिए।

33. Malayalam

SECTION B

1. കണ്ണശ്ശകവികളും പാട്ടുപ്രസ്ഥാനവും
2. ഭാഷാമിശ്രവും മണിപ്രവാളവും
3. മുണ്ടശ്ശേരിയും രൂപഭദ്രതാവാദവും
4. അലങ്കാരവും ഇമേജറിയും
5. സൈനേസ്തേസിസ്
6. മലയാണ്മയുടെ വ്യാകരണം
7. രീതിരാത്മകകാവ്യസ്യ
8. പാരിസ്ഥിതികവിമർശനം
9. ഘടനാവാദം
10. സി.വി.കുഞ്ഞുരാമനും മലയാളഗദ്യവും
11. ഭാഷാസംക്രമണവാദം
12. സി.എസ് നായരും മലയാളവിമർശനവും
13. മാറ്റാത്തിയും ഫെമിനിസ്റ്റ് സമീപനവും
14. മരുമക്കത്തായം കേരളത്തിൽ
15. ദ്രാവിഡഭാഷാഗോത്രത്തിന്റെ വ്യതിരിക്തഭാവങ്ങൾ
16. മലയാളപത്രപ്രവർത്തനത്തിനു ക്രൈസ്തവമിഷണറിമാർ നൽകിയ സംഭാവന

SECTION C

1. ചെറുശ്ശേരിയുടെ കൃഷ്ണഗാഥയിലെത്തുമ്പോൾ തന്നെ മലയാളകാവ്യഭാഷ അതിന്റെ തനിമ സാക്ഷാത്കരിക്കുന്നു. എന്നിട്ടും എഴുത്തച്ഛനെ മലയാളഭാഷയുടെ പിതാവായി വാഴിക്കുന്നത് യുക്തിസഹമാണോ? വിമർശനാത്മകമായി പരിശോധിക്കുക.

2. ഭാഷാഗദ്യത്തിന്റെ വികാസപരിണാമങ്ങൾ പഠിക്കാൻ പ്രയോജനപ്പെടുന്ന ഉപാദാനങ്ങൾ വിവരിച്ച് അവയുടെ സാദ്ധ്യതകളും പരിമിതികളും ചർച്ച ചെയ്യുക.

3. "മലയാളത്തിലെ നവോദ്ധാന നോവൽ സാഹിത്യത്തെ നിർണ്ണയിച്ച സാമൂഹിക രാഷ്ട്രീയ സാംസ്കാരിക പ്രേരണകൾ" ഗവേഷണാത്മകമായി സമീപിക്കുക.

34. Sanskrit

Section B

1.	Aśvaghosa	2.	Nārāyaṇiya
3.	Ānandavardhana	4.	Amarakaśataka
5.	Śūdraka	6.	Karṇabhāra
7.	Bāṇabhaṭṭa	8.	Naḷacampū
9.	Svāti Tirunāl	10.	Amarakośa
11.	Kedārabhaṭṭa	12.	Kalpsūtras
13.	Yāska	14.	Arthaśāstra
15.	Bādarāyaṇa	16.	Meghasandeśa

Section C

1. Prasthānatraya and its influence on Indian philosophy.
2. Sanskrit education and values of life.
3. Critical appreciation of Abijñānaśākuntala.

35. Tamil

Section B

1.	தமிழ-கிரந்தம்	2.	தொகா நிலைத் தொடர்
3.	செவியறிவுறூஉ	4.	ஔவையார்
5.	அறநெறிச்சாரம்	6.	வேற்றுமையணி
7.	கலம்பகம்	8.	கதைப்பாடல்கள்
9.	முப்பத்திரண்டு உத்திகள்	10.	சுதேச மித்திரன்
11.	க. நா.சுப்பிரமணியன்	12.	குணங்குடி மஸ்தான்
13.	அடியும் தொடையும்	14.	தலித்தியம்
15.	கலைச் சொல்லாக்கம்	16.	வானம்பாடி இயக்கம்

Section C

1. சங்க இலக்கியத்தின் செவ்வியல் தன்மைகளை விளக்க நீவிர் ஆய்வு மேற்கொண்டால் அதை எங்ஙனம் செய்வீர்கள் என்பதை ஒரு ஆய்வுத் திட்டமாகத் தயாரிக்கவும்.
2. ஆராய்சிசி என்பதன் வரைவிலக்கணத்தைக் கூறி அதன் படிநிலைகளையும் முறைகளையும் எடுத்துக்காட்டுகளுடன் விளக்குக.
3. வரலாற்று முறைத் திறனாய்வில் (Historical Research) பயன்படும் ஆய்வுச் சான்றுகளை வகைப்படுத்தி விளக்குக.

FACULTY OF FUTURE STUDIES

36. Technology Management

Section B

1. Give a brief account of methods of technology forecasting.
2. Make a comparison of Gompertz and Pearl curves.
3. Give the advantages and disadvantages of Morphological analysis as a technology forecasting method.
4. Give a brief account of measuring chaos.
5. Give an account of bio informatics.
6. Develop a note on value chain analysis.
7. Conceptualise and highlight the importance of developing early warning systems.
8. Make an assessment of developing optical fiber technology in India.
9. Give an account of prospects of nano technology in the context of India.
10. Critically evaluate the ongoing space research in India.
11. Elucidate with a case study – the relevance tree as a method of technology forecasting.
12. Distinguish process and product life cycles in terms of the lags.
13. Explain the dimensions of Technology Information Systems.
14. Develop a note on technology assessment.
15. Explain what do you mean by Adaptive Estimation Procedure (AEP).
16. Conceptualise Genetic Algorithm.

Section C

1. Discuss the importance of fuzzy logic in technology development.
2. Give an account of knowledge engineering.
3. Develop a note on technological implications of globalization in the context of India.

FACULTY OF PHYSICAL EDUCATION

37. Physical Education

Section B

1. Explain the significance of Management in Physical Education and Sports.
2. Naturalism in Physical Education.
3. Consolation Knock out tournaments.
4. Types of muscle contraction.
5. SAF Games.
6. Biomechanical Analysis of Triple Jump.
7. Sign and Symptoms of overload training.
8. Contemporary Physical Education.

9. Qualities and Qualifications of a coach.
10. Components of health related physical fitness.
11. History of Volleyball Federation of India.
12. Doping in Sports.
13. Sports Authority of India.
14. Sports Nutrition.
15. Mental Imagery
16. Laws of Learning

Section C

1. Types of Research in Physical Education and Sports.
2. Theories of Management.
3. Research in Sports Sciences.

FACULTY OF APPLIED SCIENCE

38. Biotechnology

Section B

1. What is the mechanism by which *Klebsiella* sp. become antibiotic resistant.
2. Name and describe the organism that is the leading cause of bacterial meningitis in adults.
3. What is acellular vaccine?
4. Describe what happens at each steps in gram stain.
5. Can a dog infected with rabies virus transmit the disease while appearing well? Explain.
6. Explain the techniques by which DNA uptake of a plant cell is achieved.
7. What are anchorage dependent and anchorage independent cell cultures?
8. What are mycorrhizae.
9. What are *nod* genes? Explain its role in symbiotic nitrogen fixation.
10. How will you distinguish a Prokaryotic cell from a Eukaryotic cell.
11. What is cDNA? How is it used for cloning Eukaryotic genes.
12. What is the difference between a yeast, a mold and a mushroom.
13. Describe the various kinds of granulocytes and their function.
14. What are endotoxins? How do they differ from exotoxins.
15. Describe the method for determining the minimum inhibitory concentration (MIC) of an antimicrobial drug.
16. Describe the process by which diphtheria toxin enters host cell and kills them.
17. What is hemolytic uremic syndrome? Name an organism that can cause it.
18. Describe the process of Bioremediation.
19. How does canning differ from pasteurization.
20. What is gene silencing.

21. What are monoclonal antibodies.
22. What is RFLP? How is it used for gene mapping.
23. Define the terms:
    a) Hypersensitive response
    b) Systemic acquired resistance
    c) Induced systemic response
24. What are defensins and Elicitors? What is its importance in disease resistance?

Section C

1. What are antibiotics? What are the methods adopted for screening antibiotic producing organisms. Explain the mechanism of action of an antibiotic.
2. What are *nif* genes? Give an account of the nitrogenase enzyme and the mechanism of symbiotic nitrogen fixation.
3. Give an account of the application of biotechnology in Agriculture.

39. Computer Science

Section - B

1. The logical address space in a computer system consists of 128 segments of capacity 32 pages of 4K words. The physical memory consists of 4k page frames, each of 4k word capacity. Formulate the logical and physical address format. Note the binary number of the logical address for segment 35 and word number 1999 on page 16.
2. Obtain the 4-bit two's complement representation of the number -7_{10}.
3. Describe the movements of packets on a bus network and describe the movement of messages on a ring network.
4. Write an algorithm to find the shortest path between each pair of nodes of a given graph G. Suppose you want to trace the shortest path, in addition to finding out the length, explain how best you can do this.
5. Write a recursive algorithm to calculate the binomial coefficient $\binom{n}{k}$. Find the total number of recursive calls needed for the computation of $\binom{n}{k}$.
6. Give the technical difference between a Java applet and a Java application.
7. Explain the two methods for creating threads in Java.
8. What is a semaphore? Explain the three operations that process can perform on a semaphore.
9. Describe the client-server, three-layer architecture. What are the three different types of procedure calls used in client-server scenarios? Describe them briefly.
10. Define the transitive closure of a binary relation. Describe Warshall's algorithm to compute the transitive closure of a given relation.

11. What is commonsense knowledge? How can you represent such commonsense knowledge?
12. Design a tree traversal algorithm which does not require the use of a stack or a thread.
13. Describe the process involved in merge sort used in merging two sorted arrays. Write a pseudo code for merge-sort. Obtain the time complexity of your algorithm.
14. Describe the RSA Encryption Algorithm and explain how that is used in designing digital signatures.
15. Define the concept of hashing. Design a hashing method using objects and classes.
16. Explain the difference between entropy coding and direct coding of a sequence of symbols of length m.

Section C

1. What are RPCs (Remote Procedure Calls)? Explain briefly the fundamental concepts and issues to RPCs. Describe the various steps that normally take place in RPC (use a diagram if required).
2. Discuss the problem of database mining. Make a review of some popular algorithms in database mining, their merits and demerits. Explain the new trends in the technology.
3. Describe the important components and their functions of a Search Engine. What are the drawbacks of a traditional search technique? Give a critical overview (including its features) of "Google".

40. Environmental Science

Section-B

1. El Nino.
2. Wind roses.
3. Water pollution-Causes and effects.
4. Vermicomposting.
5. Polluter pays principle.
6. Fresh water ecosystems.
7. Desertification.
8. Rainwater harvesting.
9. Fly ash and its utilization.
10. Inversions.
11. Ecolabelling.

12. Hydrosere.
13. Ramsar convention and classification of Wetlands.
14. Keystone species and endemic species.
15. Ozone Depletion.
16. EPA 1986.

Section-C

1. CRZ and coastal zone management
2. Soil Erosion, causes and soil Conservation.
3. Instruments used for Water Quality Analysis.

41. Optoelectronics

Section-B

1. Briefly explain the concept of coherence.
2. Explain the Fourier transform property of a lens.
3. What is second harmonic generation?
4. Name a few cases in which polarization plays a role in light matter interaction.
5. Give notes on photonic materials.
6. Explain the blue colour of ocean?
7. What is WDM? What are its advantages?
8. Give notes on different types of signal attenuation mechanisms in an optical fiber.
9. Write the electromagnetic spectrum in the ascending order of frequency.
10. Explain the three transmission windows in a silica fiber in optical communication.
11. Give notes on photominescence.
12. Distinguish between indirect and direct band gap materials.
13. Write down Maxell's equation for an isotropic medium.
14. Write down the different optical modulation techniques.
15. Give notes on laser speckle patterns.
16. What do you mean by spatial filtering?

Section-C

1. Describe different types of optical fibers. Explain how light is propogated through a fiber. Briefly explain the different signal dispersion mechanisms in a fiber. Also explain the modes in a fiber.

2. Write down the principle of a laser. Distinguish between stimulated emission and spontaneous emission. Briefly explain the working of a He-Ne laser.
3. a). What is the principle of holography? Mention its advantages over conventional photography.
   b). Explain how holograms are recorded and images are reconstructed.

FACULTY OF SCIENCE

42. Aquatic Bio & Fisheries

Section-B

1. What is the present trend in water quality management of culture ponds?
2. How C:N ratio enhance the productivity in fish ponds?
3. What are the molecular tools for the assessing genetic diversity?
4. Describe the methodology for the biodiversity of fisheries.
5. Comment on biodegradation of phenol in retting grounds.
6. Trawling ban enhances the fishery resources during rainy season-comment on.
7. Give a note on live stock assessment of ornamental fish in Lakshedweep.
8. Explain the biological balances in the aquarium.
9. Protein marker is the key to the identification of toxicity-Explain.
10. Host-Parasite specificity is a metabolite exchange-Discuss.
11. In which way mangrove vegetation serves for fish and prawn as spawning habitat?
12. Specify population dynamics, community structure and species diversity of fish in a tropical estuary.
13. Explain the immunostimstimulants of plant origin for fish health management.
14. Balancing microbial diversity enhances the health management of prawn culture system-Discuss.
15. What is the present status of Epizootic Ulcerative syndrome in fishes of the tropical countries?
16. Whether pigment sources change the colour and growth of juvenile fish. If so, what are the pigments?

Section-C

1. How does the present coastal aquaculture industry influences the socio-economic status of fishing community?
2. Molecular techniques and classical biological taxanomy are interdependent-Explain with suitable examples.
3. Remote sensing technology on fishery resources of Oceans-Discuss.

43. Biochemistry
Section-B

1. Write down the pathway for the formation of Glucose from Alanine indicating the enzymes catalyzing each reaction.
2. Explain the importance of covalent modifications of enzymes in vivo with suitable examples.
3. How does C4 pathway differ from C3 pathway of carbon fixation.
4. Describe the flow of electrons in the mitochondrial electron transport chain.
5. What are the key functional differences between F1 AT Pase and Na^+-K^+ AT Pase.
6. How did Meselon-Stahl experiment confirm that DNA replication is semiconservative.
7. Explain the role of G protein in the intracellular generation of second messenger in response to adrenalin.
8. Explain the role of nucleoside diphosphate sugars in carbohydrate interconvension.
9. How is nitric oxide formed in the cell? Explain its second messenger function.
10. Explain the action of pyridoxal phosphate as a coenzyme.
11. Explain the mechanism of check point arrest in cell cycle progresson in G2 phase.
12. 'Pyruvate stands at the juction of multiple pathways'. Substantiate the statement.
13. Explain the molecular mechanism of ADH action in the control of water balance.
14. Differentiate between muscarinic and nicotinic receptors.
15. Describe the pathways for activation of caspases in a poptotic process.
16. Explain the use of SiRNA technology in the study of gene expression.

Section – C

1. An experiment was done to determine the effect of a component Z on the biochemical reaction A + B → C catalysed by the enzyme E. It was found that in the presence of Z very little of the product C was formed, but if the concentration of A and B was greatly increased, then the product C formed at an almost normal rate. Explain how Z is acting on this reaction, with suitable Kinetic analysis.
2. A new protein has been identified and antibodies have been produced. Explain how the antibodies can be employed to study.
    (a) Changes in the level of this protein in plasma.
    (b) Localisation of the protein in the ER, in hepatocyte.
    (c) Effect of a drug on the synthesis of the protein.

3. A herbal formulation has been claimed to have significant hepatoprotective effect. Design an experiment using a suitable animal model to evaluate its hepatoprotective effect.

44. Botany

Section - B

1. What are enzymes? How do they differ from inorganic catalysts and coenzymes? Give mechanism of enzyme action.
2. Briefly outline the protoplast fusion technique and its application in the in plant improvement.
3. What is oxidative phosphorylation? Give mechanism of phosphorylation in the light of recent researches.
4. Define genetic code. Give a brief account on the properties of genetic code.
5. Describe in brief the mechanism of protein synthesis in prokaryotes. How does it differ from enkaryotes.
6. What are CAM plants? How do they differ from C_4 plants. Give mechanism of carbon fixation in CAM plants.
7. Define quarantine. Briefly describe the process of quarantine during plant introduction, giving suitable examples.
8. What is emasculation? Explain different methods of emasculation practiced in crop improvement programme.
9. Explain the development of one- gene-one-enzyme hypothesis and discuss its significance.
10. DNA replication is semiconservative. Discuss the experimental evidence of this statement.
11. Briefly describe the northern and western blotting techniques and discuss their application.
12. Briefly describe the various mechanisms for the fixation of mutant alleles in populations with special reference to selectionist and concepts
13. Discuss the role of controlling elements in gene regulation in enkaryotes.
14. Describe the structure and function of ribosomes.
15. Explain the primary, secondary and textary structure of protein.
16. Define gene interaction. With suitable example explain complementary gene interaction and their phenotypic variation.

Section-C

1. Briefly explain an appropriate breeding technique for the production of disease resistant and high yieldind cotton.

2. Discuss in detail a how bio-systemic study helps to understand the interrelationship of plant population. Cite examples.
3. Define genetic transformation with suitable example. Explain how the technique is applicable to produce genetically modified plants.

45. Chemistry

Section-B

1. What is *trans* effect in metal complexes? Discuss its application in synthesis inorganic chemistry.
2. Explain the reasons for the colours and variable valances of transition metals.
3. Write briefly on charge transfer spectra with suitable examples.
4. State and explain the selection rules pertaining to electronic spectroscopy.
5. Write a note on various nuclear reactions with examples.
6. Write shortly on interhalogen compounds with examples
7. Explain the terms: diaptropic, homoaromatic, mesionic and heteroaromatioc with suitable examples.
8. What is optical isomerism? Discuss the optical isomerism of biphenyls.
9. Give a brief account of Diels-Alder reaction.
10. Discuss that factors that influence the structure and stability of carbon radicals.
11. What is benzoin condensation? Discuss its mechanism.
12. Discuss photoelectric effect and Compton effect.
13. State Carnot theorem. Derive the expression for the efficiency in a reversible cyclic process.
14. Derive Maxwell relations.
15. Describe a method for the determination of viscosity of gases.
16. What is corrosion? Briefly discuss the theories of corrosion.

Section-C

1. Discuss the various instrumental techniques used for the structural studies of metal complexes.
2. Discuss the principle and application of IR spectroscopy for the characterization of organic compounds.
3. Write a critical account of reaction kinetics bringing out various mechanisms in reactions in solution with suitable examples.

46. Demography

Section-B

1. Do you think that the declining sex ratio among 0-6 populations in kerala is due to sex selection abortion?

2. What do you mean by sustainable development?
3. How can utilize experiences of kerala in the formulative of a national population policy?
4. Describe the salient features of Indian census.
5. Describe the factors to be considered in fraiming a questionnaire.
6. Discuss the stable population theory as developed by Alfred Lotka.
7. Explain the impact of population growth on natural resources.
8. Describe Brass method of estimating completeness of death registration.
9. Status of women is determined by women empowerment and women antonomy, Discuss.
10. Explain the critical minimum effort thesis of Lebenstein.
11. Development is the best contraceptive. Comment.
12. Explain the demographic transition theory.
13. In kerala, mortality is low, but morbidity is high. Comment.
14. How can you construct an Abridged life table?
15. Explain the effect of population growth on economic development.
16. Explain the usefulness of path analysis in social science research.

Section-C

1. How do you find out the demographic and socio-economic profile of a ward? Prepare a questionnaire and give the methodology to analyse the data.
2. What are the stages involved in social science research?
3. How can you demographically evaluate the family welfare programmes in India?

47. Geology

Section-B

1. Explain the magnetic reversal in deep-sea sediments.
2. With suitable examples elucidate the application of Rubey's equation and stokes' Law.
3. Comment on the Lead and Zinc deposits of India.
4. Illustrate the use of microfossils in oil exploration.
5. Discuss the process in paired metamorphic belts.
6. Give an account of the clay deposits of kerala.
7. What are strategic minerals?
8. With suitable examples discuss the formation of oil traps.
9. Discuss the use of Bouger anomaly maps in the exploration for mineral resources.

10. Write explanatory notes on microhardness test.
11. Explain how axial plane foliation can be used in deducing polyphase deformation.
12. Give an account of Goldschmidt's geochemical classification.
13. Discuss the constraints in the determination of age of the Vindhyans.
14. Distinguish symmetrical plane and symmetrical space lattices.
15. Give a brief account of the precambrain rocks of kerala.
16. Critically examine the classical views on the origin of geosynclinal basins.

Section-C

1. What are shear indicators and shear sense indicators? Discuss the effect of reactivated shearing on shear sense indicators.
2. Give an account of the coal deposits of India with special reference to the Quaternary deposits.
3. What is pumping test? Explain in detail the Theis equation.

47A.Geography
Section-B

1. Explain the behaviour of a system.
2. Discuss the usefulness of terrain classification in resourced analysis.
3. Evaluate the pediplain concept.
4. Describe the possible causes of climatic change.
5. Write a note on Tropical climates.
6. Critically analyse the role of German geographers in the development of geography.
7. Outline briefly the watershed development programme.
8. Explain the basic concepts of regional planning.
9. Give an account of the minimum deviation method of crop combination analysis.
10. Analyse the causes for the deterioration of urban environment.
11. Explain Rank-Size rule.
12. What are the different types of samples and describe the sampling methods in geographical research.
13. Explain the concept of crustal displacement of Wegener with evidences.
14. "Natural Vegetation is a true reflection of climate and physiography"-Elucidate with reference to India.
15. Briefly outline the important components of map design.
16. Account for the various methods of image processing.

Section-C

1. Write a detailed account on the cartographic appreciation of toposheets published by survey of India in different periods.
2. Critically evaluate the pattern of regional development in India.
3. Provide a descriptive account on the suitability and relevance of GIS as a technique in geography to find solutions for various earth related problems.

48. Home science

Section-B

1. Discuss the principles and process of organizing in management.
2. Explain the role of change agent in rural development.
3. Bring out the role of food groups in planning diets to obtain a balanced diet for an adult woman.
4. Discuss the measures for energy conservation in home lighting.
5. Communication of methods makes learning effective. Justify the statement.
6. Give a detailed account of the mechanism of respiration.
7. Effective human relationship is an aid for effective management. Explain.
8. Write a note on family life and responsible parenthood.
9. Explain the roles and responsibilities of a dietetian.
10. Draw and explain the plan of ornamental garden.
11. Explain the causes for low productivity in agriculture.
12. Write on the structure and function of hemoglobin.
13. Do you think that home science education as made you measureful for the family and society? Substantiate your answer.
14. Elucidate the different methods of bringing about co ordination in extension work.
15. What is Basal Metabolism? Enumerate the factors which influence basal metabolism.
16. Bring out the place of housing in integrated development.
17. Bring out the role of universities in the eradication of illiteracy.
18. State the characteristics of modern storage structures.
19. Examine the methods available to assess the food and nutritional problems of the community.
20. Describe the various tools for evaluation.
21. Explain the scope of Home science.
22. Explain the role of women in agriculture.
23. 'Home science serves the nation'- Discuss.

24. Explain the role of audio-visual aids in Home science communication.

Section-C

1. Choose any one of the areas listed below:
   a. Evaluation of an adult education programme in rural area.
   b. Assessment of nutritional status of a community.
   c. Fuel energy conservation at house hold level and prepare a proposal stating clearly.
      1. The need and significance of the stud.
      2. The objectives of the study.
      3. Methodology and
      4. The analysis that would be adopted.

49. Mathematics

Section-B

1. Find all automorphisms of the group Z_{12}.
2. Find all automorphisms of the field $(\sqrt{2}, \sqrt{3})$.
3. Factorize $x^3 + x + 1$ into irreducible in $Z_3[x]$.
4. Let W_1, W_2, W_3, be subspaces of a vector space V such that $W_1 \oplus W_2 = W_1 \oplus W_3 = V$. Is it necessary that $W_2 = W_3$. Justify your answer.
5. Find the eigen values and one eigen vector corresponding to each eigen value for the matrix $A = \begin{bmatrix} 2 & 3 & 0 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix}$
6. Let Y be a topological space such that for every topological space X, every mapping from X to Y is continuous. Verify whether Y is necessarily an indiscrete space.
7. Let X be an uncountable set with co countable topology. Verify whether X is separable.
8. Describe a triangulation of the Mobius strip. List all 2-simplexes in it.
9. Find all points $x \in \left[0, \pi/2\right]$ such that $\sin x + \cos x = 1$.
10. Let $f = R^2 \to R$ be defined by $f(x,y) = \begin{cases} xy^2/(x^2+y^4) : x \neq 0 \\ 0 \qquad\qquad\quad : x = 0 \end{cases}$

    Find the directional derivative $f^1(0, u)$ where $u = (1, 2)$.

11. Let $u(x, y) = x^2 + y$. Can u be the real part of an analytic function. Justity your answer.
12. Describe the nature of the singularity of $z \sin(Y_z)$ at $z = 0$.
13. Let A and B be subspaces of an inner product space X such that $A^{\perp} = B^{\perp}$. Is it necessary that A = B. Justify your answer.
14. Let X be an inner product space and a functional f on X be defined by $f(x)=<x,a>$ for a fixed $a \in X$. verify whether $\|f\| = \| a \|$.
15. Let E be an ortho-normal set in a Hilbert space H and $P:H \to H$ be defined by $P(x) = \sum_{u \in E} < x, u > u;$ *for all* $x \in H$.

    Verify that P is an orthogonal projection and find range of P.
16. Is the sequence space l^1 reflexive? Justify your answer.

Section – C

1. Develop the theory of Euclidean domains giving examples and showing various properties.
2. Describe various compactifications of topological spaces giving examples and bringing out their major properties.
3. Describe orthonormal basis and bring out their role in Hilbert space theory.

50. Physics

Section-B

1. We know that nuclei are not made of protons and electrons, rather than protons and neutrons. Explain why.
2. How do you classify nuclear reactions as exoergic and endoergic? Give one example for each type.
3. The spectral lines of various elements are detected from a galaxy in the constellation Ursa Major. An ultraviolet line from singly ionized calcium of wavelength 393 nm is observed at 414 nm. At what speed is this galaxy receding from the earth?
4. Cosmological principle requires that H_0 must have the same value every where in space, but does not require that it be a constant in time. Explain why.
5. Use band model to explain how it is possible for some materials to undergo a semiconductor-to-metal transition as the pressure or temperature varies.
6. Pure sodium (Na) is a good conductor of electricity, but sodium chloride (NaCl) crystal is an insulator. Explain why.
7. What are the most significant similarities between the Bohr model of the hydrogen atom and the Schrodinger analysis? What are the differences?

8. A particle in a box is in the ground level. What is the probability of finding the particle in the right half of the box? Is the answer the same if the particle is in an excited level? Explain.
9. How would you expect the probability for a particle to tunnel through a potential barrier to depend on the height of the barrier? Explain.
10. Phosphors coated inside a fluorescent lamp convert ultraviolet radiation into visible light. Can we make use a phosphor to convert visible light into ultraviolet? Explain.
11. What is the speed of a particle whose kinetic energy is equal to its rest energy?
12. A commonly used lens coating material is MgF_2 with $n = 1.38$. What thickness should a nonreflective coating have for 550-nm light if it is applied to glass with $n = 1.52$?
13. Why is a diffraction grating better than a two-slit setup for measuring wavelengths of light?
14. State and explain maximum power transfer theorem.
15. What is an operational amplifier?
16. What are the advantages of digital communication over analogue communication?

Section – C

1. You have to study the variation of the ionospheric structure. Describe the research methodology you adopt from an earth station.
   What additional information you can obtain, if we do this experiment from a satellite above the ionosphere?
2. What is nanomaterial? How do you prepare such materials and study their properties?
3. You have been asked to verify the structure of a given molecule by spectroscopic methods. How do you plan your studies?

51. Statistics

Section-B

1. Define probability space. Give an example of it.
2. Given $p(A) = 0.5$, $p(A \cup B) = 0.7$ find $p(B)$ when (i) A, B are independent, (ii) A, B are mutually exclusive, (iii) $p(A \mid B) = 0.5$.
3. Evaluate $E \mid x-1 \mid$ if x is distributed in Poisson with mean = 1.
4. Define distribution function F of a random variable X . Show that the set of its discontinuity points is at most countable.

3. Let $X_1, \ldots\ldots, X_n$ be a random sample of size $n(>1)$ from a population with density $f(x) = \theta^x (1-\theta)^{1-x}$, for $x = 0, 1$ where $0 < \theta < 1$. Let $\mu = \min(X_1, \ldots\ldots, X_n)$ and $V = \max(X_1, \ldots\ldots, X_n)$. Derive the joint density of (μ, v).

52. Zoology
Section-B

1. What is a contig, an RFLP, a VNTR, an STS and an EST? How are each of these used in the construction of chromosome maps?
2. What is antisense RNA? State its uses in genetic research and in agriculture.
3. Briefly describe the various DNA repair mechanisms.
4. Differentiate between generalized and specialized transduction.
5. Explain the hormonal integration in calcium homeostasis and the associated defects.
6. Write briefly on the methods of dispersion.
7. Briefly describe the principle and application of photometry in biology.
8. Comments on ELISA and RIA.
9. Briefly describe the classification and distribution of immunoglobulins.
10. Differentiate between EEG and ECG
11. Explain the path of electron transfer during photosynthetic process.
12. Discuss the various endocrine techniques for recognition of endocrine disorders.
13. Comment on mitochondrial shuttles operating across the mitochondrial membrane.
14. Briefly describe the techniques for elucidating the conformation of proteins.
15. Explain Bohr effect and the integration of respiratory control.
16. Comment on the lymphatic system.

Section-C

1. Discuss and differentiate the working of SEM and TEM and outline the tissue preparation steps and additional techniques used in electron microscopy.
2. Explain the role of metabolic mill in release of energy and elucidate the anapleurotic reaction associated with it.
3. Define the concept of sustainable development and discuss the present scenario on agri-ecosystem management in India.

FACULTY OF SOCIAL SCIENCES

53. Archaeology

Section-B

1. Discuss the growth of Archaeology into an independent discipline
2. Discuss the relative methods of dating in archaeology.
3. Write an essay on the prehistoric art of Europe.
4. Give an account of the South African prehistory.
5. Bring out the salient features of Indian Mesolithic culture.
6. Elucidate the characteristic features of South Indian Neolithic culture.
7. Write a note on copper hoards
8. Bring out the salient features of Harappan town planning.
9. Discuss the second urbanization process in north India.
10. Write a note on Ajanta paintings.
11. Discuss the contribution of Chalukyas to temple architecture.
12. Write a note on the coins of Kumaragupta.
13. Bring out the salient features of kushan coins
14. Discuss the origin of Brahmi script.
15. Write a note on antiquity of writing in India
16. Give an account of megalithic monuments with special reference to Kerala.

Section-C

1. Explain the term 'primary sources' and 'secondary sources' and their relevance for archaeological research.
2. Prepare a proposal on the Megaliths of Kerala emphasising the methods you would adopt for data collection and research.
3. Discuss the general formatting adopted in a research thesis.

54. Economics

Section-B

1. Revealed preference hypothesis
2. The slutsky theorem
3. Price leadership
4. Real balance effect
5. Phillips curve
6. Crowding out effect
7. Critical minimum effort thesis
8. Lewis model with 'unlimited supply of labour
9. Disguised unemployment
10. Arrow's impossibility theorem
11. Free rider problem
12. Ability to pay principle of taxation
13. Stopler – Samuelson theorem
14. Optimum tariff
15. Effect of technical progress on international trade
16. Euro-Dollar markets

Section-C

1. Critically examine the common minimum programme (CMP) of the limited progressive. Alliance government in the center.
2. Examine the factors contributed for achieving a better quality of life in Kerala compared to poor states in India.
3. Examine the causes of shift in cropping pattern in Kerala.

55. History

Section-B

1. R.B. Foote
2. Tamil Brahmi
3. Minovans
4. Malik Kafur
5. Marco Polo
6. Addled parliament
7. Dollar Diplomacy
8. Fidel Castro
9. Hortus Malabariens
10. Satyasodhak samaj
11. Sayyid Ahmad Khan
12. Royal Asiatic society
13. Madras Native Association
14. Empiricism
15. Hermeneuticism
16. Hypothesis

Section-C

1. "History is the unfolding story of human freedom". Explain
2. What is a hypothesis? What would be your proposed hypothesis of research?
3. What are the different types of documentation? Explain the significance of archival documents.

56. Islamic history

Section-B

1. Describe the prime religious duties of a Muslim.
2. Sketch the role of Abu-Bakr in expanding the Islamic state.
3. Write a note on Kharijites.

4. Explain the consequences of the tragedy of Karbala.
5. Discuss the revivalist movements in Islam by Ibn – Taymiyah.
6. Explain the rise of Khomeni in Iran.
7. Mention the importance of the treaty of serves .
8. What is the Islamic concept of owneship of wealth.
9. Write a note on the evolution of Zionist movement and its impact.
10. Write a note on Arab League
11. Give an account of the contribution of Muslim Spain in transmitting Arab learning to Europe.
12. Discuss the development of Fiqh under the Abbasids.
13. Write a note on the religious policy of Aurangzeb.
14. What is the significance of Ijma in religious matters.
15. Examine the revolt of 1921 and its impact in Kerala
16. Trace the beginnings of Muslim League in Kerala

Section –C

1. What are the contributions of Arab Historiography to modern Historiography.
2. Discuss the statement "History is philosophy" teaching by examples.
3. Prepare a synopsis on "the emergence of Muslim community in post – independent Kerala.

57. Political Science
(Including Public Administration)
Section-B

1. Max Weker's analysis on Bureaucracy
2. Development Administration.
3. Polyarchy and Pluralism.
4. Factors contributing morale in public services
5. Distinguish between devolution and decentralisation.
6. Lenin's theory on Imperialism
7. Gandhiji on State
8. Sarvodaya Movement
9. Internet Revolution and its impact in political science.
10. G4 and the issue of reforming U.N. Security Council.
11. Nuclear energy co-operation between India and United States.
12. Inter state river water disputes in India.
13. Features of National Employment Guarantee Act.
14. Media Democracy in the era of Globalization

15. Finance Ministry and Budgeting process
16. Major functions of Union Public Service Commission.

Section-C

1. Define synopsis. Identify and examine the scope of the major elements to be considered while preparing a synopsis.
2. Bring out the significance of survey research in social science research methodology.
3. Prepare a research design on "Women Employment through Decentralisation process: A case study of Kerala".

58. Psychology

Section-B

1. Depressive neurosis
2. Cognitive behaviour therapy
3. Advance organizer
4. Pseudo experimental design
5. Psychosexual development
6. Divergent thinking
7. Type A personality
8. Rorschach test
9. Self fulfilling prophecy
10. Engineering psychology
11. Test manual
12. Sensitivity training
13. Learned help lessness
14. Maslow's hierarchy of needs
15. Coping behaviour
16. Defense mechanism

Section-C

1. Formulate a research design to show the effectiveness of intervention strategies in reducing alcoholism.
2. Bring out the importance of analysis of variance in psychological investigations
3. Describe the procedure for hypothesis testing. Illustrate your answer with suitable examples.

59. Sociology

Section-B

1. Class consciousness
2. Phenomenology
3. Hypothesis
4. Versthen
5. Pretest
6. Agil

7. Deconstruction
8. Genealogy of power
9. Organic analogy
10. Scientific method
11. Functional paradigm
12. Dramaturgical perspective
13. Religion of Humanity
14. Theory of communicative action
15. Duality of structure
16. Experimental design

Section-C

1. Explain how social research can help policy making and planning, with suitable examples.
2. Prepare a research proposal on any topic of your interest, for a funding agency.
3. Bring out the use of sampling in social research. Examine the important methods of sampling.

60. Social Work

Section-B

1. Describe the psychoanalytic approach in social care work.
2. Define counselling and list out the major techniques used in counselling
3. Discuss the relevance of Self-Help groups in contemporary society.
4. Discuss the scope of qualitative research in social work.
5. Briefly describe the directive principle enshrined in Indian constitution.
6. Describe the legislative measures to combat atrocities against scheduled caste scheduled tribe.
7. Discuss the reasons for increasing rote of suicides in kerala.
8. 'Social Work Education is lagging behind times" comment.
9. Briefly describe the various tools used for data collection in social work research.
10. Define social work and discuss its major functions.
11. Define administration. What are the functions of administration?
12. Differentiate between reliability and validity.
13. Write a brief note on psychosomatic disorders.
14. Explain the important steps in organizing a successful training programme.
15. Write a brief note on the rights of the child.
16. Discuss the scope of social work in industries.

Section-C

1. Briefly describe the various steps in social work research.
2. Prepare a research proposal for conducting a KAP study on AIDS among commercial sex workers.
3. What is a hypothesis? Point out the characteristics of a good hypothesis. List out the different type of hypotheses.