BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.TECH **SEMESTER : I**
BRANCH: EEE **SESSION : MO/18**

SUBJECT: EC549 MODERN INSTRUMENTATIONS THEORY

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Define Intelligent Sensors. Describe the role of on chip signal processing in I.S. [5]
Q.1(b) Design and explain the Silicon Temperature and pressure sensors. [5]

Q.2(a) Design the Von Neumann organization of computer & define its roles in automation system. [5]
Q.2(b) Demonstrate data acquisition system and its uses in Intelligent instrumentation systems. [5]

Q.3(a) Draw and explain the Supervisory Control & Data Acquisition System. [5]
Q.3(b) Design the Direct Digital Control's Structure and explains the utility of Software in DDC. [5]

Q.4(a) (i) Explain the advantages of Programmable Logic Controllers [5]

(i) Y= AB'+A'B+CD+C'D'

(ii) Y=AB'C+A'BC+ABC'

Q.4(b) Define Industrial control application in Cement Industry. Define Artificial Intelligent based system and Artificial neural network and explain its application in any industry. [5]

Q.5(a) Explain the following: (i) Concept of distributed digital control, (ii) Concept of Decentralized computer control. [5]

Q.5(b) Demonstrate the data transmission system and also explain the advantages and disadvantages of digital transmission over analog one. Define the function of modem. [5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BBA **SEMESTER : III**
BRANCH: BBA **SESSION : MO/18**

SUBJECT: BBA3001 RESEARCH METHODOLOGY

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Define Research.	[2]
Q.1(b)	Clearly distinguish between research methods and research methodology.	[4]
Q.1(c)	Explain the importance of research in context of tackling social issues giving suitable examples to support your answer.	[6]
Q.2(a)	What is meant by research process?	[2]
Q.2(b)	List the steps involved in research process.	[4]
Q.2(c)	Discuss the steps you would follow in conducting a research for solving a business problem for a given firm. Give specific examples and make assumptions wherever necessary.	[6]
Q.3(a)	What is a research problem?	[2]
Q.3(b)	Why is it important to clearly define the research problem?	[4]
Q.3(c)	Discuss the steps involved in defining a research problem with the help of suitable examples.	[6]
Q.4(a)	Define Research Design.	[2]
Q.4(b)	Explain the characteristics of a good research design.	[4]
Q.4(c)	Discuss the research design most suitable for conducting a research related to exploring the impact of mobile phones in our day-to-day lives.	[6]
Q.5(a)	Define primary data.	[2]
Q.5(b)	Differentiate between questionnaire & schedule.	[4]
Q.5(c)	Design a questionnaire with at least ten questions (open ended & closed ended) to gather information related to the satisfaction level of students with the quality of education imparted to them in a given institution. Make assumptions wherever necessary.	[6]
Q.6(a)	Define a sample.	[2]
Q.6(b)	Differentiate between probability & non-probability sampling techniques with proper examples.	[4]
Q.6(c)	Discuss giving examples the situations under which judgemental sampling is better than other techniques.	[6]
Q.7(a)	What is coding?	[2]
Q.7(b)	Outline the objectives of tabulation in research.	[4]
Q.7(c)	Explain the different types of research reports.	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.TECH/PRE-PHD **SEMESTER : I/NA**
BRANCH: ESE **SESSION : MO/18**

SUBJECT: CE527 ECOLOGY AND ENVIRONMENT

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Enlist the causes of growing industrial pollution in the developing countries. [5]
Q.1(b) Explain the chronological development of eutrophication in a stagnant waterbody. [5]

Q.2(a) Write the factors necessary to calculate the ecological efficiency of an ecosystem [2]
Q.2(b) Differentiate between the two Energy Flow models [3]
Q.2(c) Calculate the IVI of the following data. Mean Basal cover is $10cm^2$ [5]

Sample	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
A	26	42	18	42	41	33	29	19
B	2	0	5	6	1	1	4	1
C	41	26	30	29	40	22	35	36
D	5	1	5	4	5	1	4	5

Q.3(a) Discuss the values of biodiversity with suitable examples [5]
Q.3(b) Categorize the protected areas network of India and their roles in biodiversity conservation [5]

Q.4(a) Interpret the growth of human population dynamics from J curve to S curve due to carrying capacity [5]
Q.4(b) Construct the hierarchy of Integrated waste management under cleaner production theme [5]

Q.5(a) Evaluate the usefulness of determining biomagnification and translocation of metals in plants for phytoremediation process [5]
Q.5(b) Discuss the importance of bio adsorbents in tackling environmental problems [5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMBA **SEMESTER : ADD**
BRANCH: IMBA **SESSION : MO/18**

SUBJECT: IMA5001 COMMERCIAL LAW

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What constitutes an agreement?	[2]
Q.1(b)	Under what circumstances a contract need not be performed?	[4]
Q.1(c)	What is bailment and what is its main characteristic?	[6]
Q.2(a)	What do you understand by term “delivery”, used in the Sale of Goods Act?	[2]
Q.2(b)	Distinguish between “Condition” and “Warranty”.	[4]
Q.2(c)	What are the various exceptions to the principles of “Caveat Emptor”?	[6]
Q.3(a)	Explain the terms “Partners” and “Firm”.	[2]
Q.3(b)	What are the various rights of the partners of a partnership firm?	[4]
Q.3(c)	What do you mean by the “dissolution of a partnership firm”? Explain	[6]
Q.4(a)	Define “Negotiable Instrument”.	[2]
Q.4(b)	What are the main features of “Negotiable Instruments”?	[4]
Q.4(c)	Under what different circumstances a negotiable instrument may be deemed to have been discharged?	[6]
Q.5(a)	Define a private company.	[2]
Q.5(b)	Distinguish between a private and a public company.	[4]
Q.5(c)	What are the different modes of winding up of a company?	[6]
Q.6(a)	Write a note on consumer.	[2]
Q.6(b)	What do you understand by unfair trade practices?	[4]
Q.6(c)	Explain the nature and scope of the remedies under the Consumer Protection Act.	[6]
Q.7(a)	What is the scope of Information Technology Act, 2000?	[2]
Q.7(b)	What is Cyber law?	[4]
Q.7(c)	What is e-governance? Explain the provisions for e-governance given in the act.	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MCA **SEMESTER : III**
BRANCH: CSE **SESSION : MO/18**

SUBJECT: MCA3001 JAVA PROGRAMMING

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Explain the salient features of java in detail?	[6]
Q.1(b)	Briefly explain general structure of java program?	[6]
Q.2(a)	What is data type? Discuss the different data types available in Java?	[6]
Q.2(b)	What are the limitation of switch () case statement? Write a java program to detect whether the entered number is even or odd. Use nested switch () case statements?	[6]
Q.3(a)	What is the difference between (!0) and (!1). How while loop works with these values? Write a java program to display the numbers in increasing and decreasing order using infinite for loop?	[6]
Q.3(b)	Explain with a proper example how we use break “to exit a loop” and “as a form of goto”?	[6]
Q.4(a)	Compare and contrast overloading and overriding methods?	[6]
Q.4(b)	How to define array in java? Use class and object, write a java program to find the minimum and maximum values in an array?	[6]
Q.5(a)	How does String class differ from the String Buffer class? Write a java program which will read a text and count all occurrences of a particular word?	[6]
Q.5(b)	What is the difference between checked and unchecked exception? Explain with an example how exceptions enable your program to handle errors gracefully?	[6]
Q.6(a)	What is a stream class? How are the stream classes classified?	[6]
Q.6(b)	What is random access file? Explain how it is different from a sequential file?	[6]
Q.7(a)	How do you make a GUI? What are the components of GUI?	[6]
Q.7(b)	What is the Jframe? Explain GUI application in Java?	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.ARCH **SEMESTER : ADD**
BRANCH: ARCHITECTURE **SESSION : MO/18**

SUBJECT: AR1301 PRINCIPLES OF ARCHITECTURE

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Write about the Etymology of Architecture.	[2]
Q.1(b)	What do you understand by "Schematic Design"? Write about its importance.	[4]
Q.1(c)	Carry out a comparison between architectural design in practice and in education.	[6]
Q.2(a)	Write about the space defining elements.	[2]
Q.2(b)	What do you understand by "Geometrical and Non Geometrical surfaces". Give your answer with suitable sketches.	[4]
Q.2(c)	What are the visual and emotional effects of different shapes? How these are incorporated in Visual Art?	[6]
Q.3(a)	What do you understand by Minimum standards of Architectural education?	[2]
Q.3(b)	What is the structure of Architectural Education?	[4]
Q.3(c)	Explain the composition of Art and Technological subjects in Architecture	[6]
Q.4(a)	List various factors which influence the architecture of a particular region.	[2]
Q.4(b)	How North African vernacular houses are influenced by the climate there?	[4]
Q.4(c)	Write short notes on any two i) Standardization ii) Vernacular Architecture iii) Climate and weather	[6]
Q.5(a)	What do you understand by Design Principles?	[2]
Q.5(b)	Write short notes on any two i) Transformation ii) Datum iii) Axis	[4]
Q.5(c)	Graphically explain any one of the following with respect to plan to section, symmetry to balance and hierarchy (i) Villa Savoye by Le Corbusier (ii) Unity temple by F. L. Wright (iii) Eiffel Tower	[6]
Q.6(a)	Discuss about the proportions of Le Modular with suitable sketch	[2]
Q.6(b)	"Biomimicry is an innovation method that seeks sustainable solutions by emulating nature's time-tested patterns and strategies" Explain	[4]
Q.6(c)	What do you know about the industrial revolution in Architecture? Write about its impact on construction industry.	[6]
Q.7(a)	Explain any one concept i) Less is more ii) Building as machine	[2]
Q.7(b)	b) Write short notes on any two i) Architectural Documentation ii) Orthogonal and radial grids iii) Golden Section	[4]
Q.7(c)	Write about the concepts and philosophy of Architect F.L.Wright. Enhance your answer with suitable examples.	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.ARCH **SEMESTER : VII**
BRANCH: ARCHITECTURE **SESSION : MO/18**

SUBJECT: AR7305 (BUILDING SCIENCE-II) ENERGY EFFICIENT BUILDING

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Explain the terms 'Global Warming' and 'Green House Effect'. [6]
Q.1(b) What are the energy needs for a modern multistoried office cum commercial complex? [6]

Q.2(a) Describe the relevance of Energy Audit for an existing Institutional building? [4]
Q.2(b) Describe the performance of building materials and building technologies in energy efficient architecture. [8]

Q.3(a) Define Radiative cooling, Evaporative cooling and Convective cooling. [6]
Q.3(b) Differentiate between Direct and Indirect Passive Solar Gain in buildings. [6]

Q.4 Write short notes on (any three) : [12]
1. Trombe Wall
2. Passive Downdraught cooling
3. Sunspace/solarium
4. Earth air tunnel

Q.5(a) Explain with necessary sketches flat plate collectors. [2]
Q.5(b) Differentiate between Active and Passive Systems in energy savings in building. [4]
Q.5(c) Describe five major components in active solar water heating systems. [6]

Q.6(a) What are the landscaping strategies to be followed in warm humid climate? [6]
Q.6(b) How can a building be shielded from the summer sun and winter cold through landscaping? [6]

Q.7(a) Name four green buildings in India and elaborate green bldg. features of any one in brief. [6]
Q.7(b) Define Green Building concept elaborating GRIHA Rating. [6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BCA **SEMESTER : ADD.**
BRANCH: BCA **SESSION : MO/18**

SUBJECT: BCA2003 DATA STRUCTURE

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Define Data Structure with example.	[2]
Q.1(b)	Why we need to study data structure. Discuss with one suitable example.	[4]
Q.1(c)	Explain the need of dynamic memory allocation with example. Give a comparative account of link-list and array.	[6]
Q.2(a)	Discuss the working of Stack with example and one application.	[2]
Q.2(b)	Write a function to Insert and Delete "N' elements in STACK.	[4]
Q.2(c)	Convert the following in-fix into post-fix using STACK with steps : (A*B)+(C*D)/J*K-(P-Q)/l	[6]
Q.3(a)	Define Recursion with one application to prove its importance in programming.	[2]
Q.3(b)	"To implement recursion one needs to understand base-case". Justify.	[4]
Q.3(c)	Write a recursive function to print your name 'M' times.	[6]
Q.4(a)	Define Queue and Deque with one application of each.	[2]
Q.4(b)	Explain the need of self-referential structure to implement QUEUE using Link-List.	[4]
Q.4(c)	Write a menu driven program to INSERT and DISPLAY 'N' elements in a QUEUE.	[6]
Q.5(a)	Write the data structure to implement Tree with meaningful data members and variables.	[2]
Q.5(b)	Write a program to search an element using Binary Search.	[4]
Q.5(c)	Create the tree from the following data : In-Order : L K A C G E H B F I D Post-Order : L K G H E C I F D B A	[6]
Q.6(a)	Write the Best and Worst Time Complexity of the following i. Selection Sort ii. Binary Search iii. Quick Sort iv. Heap Sort	[2]
Q.6(b)	Give the steps to order the following data using Quick Sort : 10,20,15,5,80,40,70,90,30,50	[4]
Q.6(c)	Write a menu driven program to insert and sort 'N' elements using any sorting technique of your choice, except sequential.	[6]
Q.7(a)	Define Graph with its application.	[2]
Q.7(b)	Give the representation of Directed and Undirected Graph using linked structure.	[4]
Q.7(c)	Draw a Graph and write an algorithm to implement BFS with the result of the BFS of your Graph.	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BCA **SEMESTER : III/ADD**
BRANCH: BCA **SESSION : MO/18**

SUBJECT: BCA3001 DISCRETE MATHEMATICS STRUCTURES

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Define Set and partition of the set. [2]
Q.1(b) If A, B and C are sets, prove that $(A - B) \cup (A - C) = A - (B \cap C)$. [4]
Q.1(c) Find the gcd of 595 and 252 and express it in the form $252x + 595y$. [6]

Q.2(a) Define Converse and inverse of conditional statement. [2]
Q.2(b) Prove that if k^2 is an even integer, then k is an even integer. [4]
Q.2(c) Define contradiction and tautology. Construct the truth table $(p \leftrightarrow q) \vee (\sim q \leftrightarrow r)$. [6]

Q.3(a) Show if 9 books are to be kept in 4 shelves, there must be at least one shelf which contain at least 3 books. [2]
Q.3(b) Out of 5 men and 2 women, a committee of three is to be formed. In how many ways can this be done so as to include (i) exactly one women (ii) at least one women. [4]
Q.3(c) Solve the recurrence relation $a_{r+2} - a_{r+1} - 2a_r = r^2$. [6]

Q.4(a) Define digraph and its path with suitable example. [2]
Q.4(b) If $A = \{1,2,3\}$ and $R = \{(1,2),(2,3),(3,1)\}$, find reflexive, symmetric and transitive closure of R. [4]
Q.4(c) If R and S are equivalence relation on the set A, prove that (i) R^{-1} and (ii) $R \cap S$ is an equivalence relation. [6]

Q.5(a) Find big-Oh of $f(x) = 3x^3 + 2x + 7$ for all real numbers $x > 1$. [2]
Q.5(b) Define (i) one-to-one (ii) Many-one (iii) into (iv) onto function. [4]
Q.5(c) Define permutation function, show that the permutation (i) $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 5 & 6 & 2 & 4 & 1 & 3 \end{pmatrix}$ is odd while the permutation (ii) $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 5 & 6 & 2 & 4 & 1 & 3 \end{pmatrix}$ is even. [6]

Q.6(a) Define lattice with suitable example. [2]
Q.6(b) Define Hasse diagram and hence draw the Hasse diagram of the relation $R = \{(1,1),(2,2),(3,3),(4,4),(1,2),(1,3),(1,4),(2,3),(2,4),(3,4)\}$ on the set $A = \{1,2,3,4\}$ [4]
Q.6(c) Define Partially ordered set. Is set of integers form a poset under divisibility relation, explain? [6]

Q.7(a) The identity element (if it exist) of any algebraic structure is unique. [2]
Q.7(b) Show that the set $G = \{0,1,2,3,4,5,6\}$ is a finite abelian group under addition modulo 6 as composition. [4]
Q.7(c) Show that the set of integers under ordinary addition and multiplication is a commutative ring. [6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: Pre-PhD **SEMESTER : NA**
BRANCH: BIOENGG **SESSION : MO/18**

SUBJECT: DBT1002 TECH. IN MOLECULAR BIOLOGY & GENETIC ENGG

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	List the solutions and steps used for plasmid DNA isolation from *E. coli* cultures using Alkaline Lysis method.	[6]
Q.1(b)	Illustrate the advantages of using silica columns/beads for genomic DNA isolation from plant tissues.	[6]
Q.2(a)	Interpret the reasons for using denaturing agarose gels for RNA electrophoresis.	[6]
Q.2(b)	Compare between Southern and northern blotting techniques.	[6]
Q.3(a)	Define Thermostable DNA polymerases and their fidelity with examples.	[6]
Q.3(b)	Outline the various applications of PCR in medicine.	[6]
Q.4(a)	What criteria are considered to design PCR primers?	[6]
Q.4(b)	How Ti plasmids are prepared for plant transformation?	[6]
Q.5(a)	What basic strategy is followed for RNA-seq experiments?	[6]
Q.5(b)	How next-generation DNA sequences are assembled and annotated?	[6]
Q.6(a)	What are the differences between eukaryotic and prokaryotic expression vectors?	[6]
Q.6(b)	How would you purify a histidine tagged recombinant protein?	[6]
Q.7(a)	Diagrammatically represent the general pathway followed for purification of cellular proteins?	[6]
Q.7(b)	What is the principle of ultra-filtration?	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.TECH **SEMESTER : I**
BRANCH: IS/IT **SESSION : MO/18**

SUBJECT: EC548 INTRODUCTION TO WIRELESS COMMUNICATION

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Give Comparisons between GSM, IS-136 and IS-95.	[5]
Q.1(b)	Describe wireless local loop and RFID system.	[5]
Q.2(a)	Prove that the co-channel reuse ratio is given by $Q=\sqrt{3N}$ where $N= i^2 + ij + j^2$	[5]
Q.2(b)	Briefly describe Hand-off strategies in cellular system.	[5]
Q.3(a)	Explain different types of small-scale fading.	[5]
Q.3(b)	Find median path loss using Okumura's model for d = 50 Km, h_{te}=100 m, h_{re} = 10 m. if EIRP from base station is 1 KW at 900 MHZ, find received power. Take A_{mu} (900 MHz (50 Km)) = 43 dB and G_{AREA} = 9 dB	[5]
Q.4(a)	Explain in detail Wi-Max technology.	[5]
Q.4(b)	Describe about Short-Range Wireless Network Standards	[5]
Q.5(a)	Compare TDMA, FDMA and CDMA techniques.	[5]
Q.5(b)	Explain: I-persistent CSMA, non-persistent CSMA, p-persistent CSMA	[5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: Pre-Ph.D. **SEMESTER : NA**
BRANCH: Pre-Ph.D. **SESSION : MO/18**

SUBJECT: IT516 DATA MINING AND DATA ANALYSIS

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Give two major components of any data warehouse system and discuss them. [5]
Q.1(b) Explain how data mining system can be integrated with database/data warehouse system. [5]

Q.2(a) What is a dataset? Explain the various types of datasets. [5]
Q.2(b) Explain how can you design an expert system. [5]

Q.3(a) Are decision trees easy to interpret? Justify your answer. Given a training set with 5+ and 10- examples. What is the entropy value associated with this dataset? You need not simplify your answer to get a numerical answer. What are the characteristics of rule based classifiers? [5]
Q.3(b) Apply decision tree-based method on the following dataset to generate rules and then check it on any unseen data (to be selected by you). [5]

Temperature	Headache	Cough	Flu-decision
High	Yes	Yes	Yes
Very-High	No	Yes	Yes
High	No	No	No
Very-High	Yes	No	Yes
Normal	Yes	Yes	Yes
Normal	No	Yes	No

Q.4(a) Explain the association rule mining and its importance. Differentiate between feature selection and feature extraction. [5]
Q.4(b) What is hybrid learner? Explain how do you design hybrid learner. [5]

Q.5(a) What is clustering? When should we use it? Discuss briefly any clustering method. Name some *evaluation metrics* appropriate for assessing clustering method. [5]
Q.5(b) Discuss the issues of k-Means method. How can you alleviate the issues? [5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MSc/IMSc **SEMESTER : III/IX**
BRANCH: MGI/PHYSICS **SESSION : MO/18**

SUBJECT: SGI3005 GEOINFORMATICS IN DISASTER MANAGEMENT

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	"Hazard is different from disaster". Justify this statement.	[5]
Q.1(b)	Describe different classes of natural disasters with proper example.	[7]
Q.2(a)	What are the different stages of disaster management? Explain in brief	[6]
Q.2(b)	Name two international agencies involved in disaster management. Describe administrative structure of disaster management in India.	[6]
Q.3(a)	How can Earthquake be understood as a geological hazard? Discuss in light of theory of Plate Tectonics.	[7]
Q.3(b)	Describe various mining hazards which may lead to disasters.	[5]
Q.4(a)	How does river flood take place? Describe various types of this Hydro-meteorological hazard.	[7]
Q.4(b)	What is understood by Cloud Burst? Discuss with examples from India.	[5]
Q.5(a)	What are the causes of Desertification?	[6]
Q.5(b)	Write short note on monitoring Air Pollution using Geoinformatics	[6]
Q.6(a)	What are Forest Fires? How can remote sensing be helpful in its detection?	[6]
Q.6(b)	Explain the role of Geoinformatics in Flood Management.	[6]
Q.7(a)	Write the probable causes of flood in the Indo-Gangetic Plains	[6]
Q.7(b)	Write a note on Landslides in Himalayan region	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.Sc **SEMESTER : I**
BRANCH: PHYSICS **SESSION : MO/18**

SUBJECT: SR505 FLAME PROPAGATION & STABILITY

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) What are the factors that govern the shape and size of a laminar flame? Draw structure of a combustion wave relating the temperature profile and concentration of intermediate products in different zones and explain their nature. [5]

Q.1(b) Integrate various assumptions of Tanford – Pease equation for flame velocity based on diffusion model and present the expression of flame velocity and explain the terms involved. [5]

Q.2(a) Describe a turbulent flame using the concept of turbulent flow. Display the formation of eddies that takes place during turbulent flow and what is their role in a turbulent flame. [5]

Q.2(b) Examine the critical features of Damkohler's theory of wrinkled flame as applied to turbulent flames. What factors effect the turbulent burning velocity? [5]

Q.3(a) What do you understand by 'flame instability'? What is its effect on the combustion process in a rocket [5]

Q.3(b) Write explanatory notes on sensitive flames and singing flames. [5]

Q.4(a) Describe the Kumar and Kuo model for comprehensive flame spreading in a solid propellant crack along with assumptions and conservation equations used. What is the outcome of the model? [5]

Q.4(b) What is ignition transient? What are the series of processes which take place during ignition transient? What are the factors that affect the mechanism of flame spreading? [5]

Q.5(a) Explain the conditions of flash back and blow off using a labelled characteristic flame stability diagram. Also explain conditions for lifted flames in the diagram. [5]

Q.5(b) Calculate the limits of inflammability of a gas mixture containing 40% methane, 20% butane and 40% hydrogen. Limits of inflammability for methane (5.3 and 14), butane (1.9 and 8.5) and hydrogen (4.0 and [5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: Pre-Ph.D. **SEMESTER : NA**
BRANCH: CSE **SESSION : MO/18**

SUBJECT: TIT2013 CLOUD COMPUTING

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Summarize the core features of cloud computing and discuss on its evolution.	[6]
Q.1(b)	With a suitable example explain the process of building a cloud computing environment.	[6]
Q.2(a)	Differentiate between parallel and distributed computing? What are the different programming approaches to achieve parallelism?	[6]
Q.2(b)	What are the different inter process communication models used for distributed systems?	[6]
Q.3(a)	Explain virtualization with respect to cloud computing. Briefly discuss on the characteristics of a virtualized environment.	[6]
Q.3(b)	With a suitable diagram explain the hardware virtualization reference model.	[6]
Q.4(a)	With a neat sketch, explain the fundamental components in the Cloud reference model.	[6]
Q.4(b)	What are the different types of cloud? Discuss with suitable examples the kind of needs addressed by each type of Cloud?	[6]
Q.5(a)	Outline the applications provided by Amazon Web Services (AWS). Explain the features of Amazon EC2.	[6]
Q.5(b)	Describe the platform architecture of Google AppEngine.	[6]
Q.6(a)	Are clouds secured? Give a discussion on the practices followed for securing the cloud.	[6]
Q.6(b)	Discuss the various migration issues of the organization towards clouds.	[6]
Q.7(a)	Explain energy efficient computing and express its role in cloud computing?	[6]
Q.7(b)	Summarize the importance of cloud federation. With a suitable diagram explain the components of a cloud federation reference stack.	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MAD **SEMESTER : III**
BRANCH: A&M **SESSION : MO/18**

SUBJECT: MSH1109-ENTREPRENEURSHIP & SMALL BUSINESS MANAGEMENT

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What is the meaning and importance of entrepreneurship?	[6]
(b)	What is the concept of entrepreneurship?	[6]
Q.2(a)	What is the difference between entrepreneurship and entrepreneur?	[6]
(b)	How many types of entrepreneur in the market? Explain it.	[6]
Q.3(a)	What is the entrepreneurial process in business management?	[6]
(b)	What is the difference between invention and innovation? (with example)	[6]
Q.4(a)	Discuss the behavioral aspects and model of entrepreneur. Explain the product planning and development.	[6]
(b)	Why scanning and screening of new ideas is important support in entrepreneur with an example.	[6]
Q.5(a)	What is the importance of sole proprietorship in entrepreneur?	[6]
(b)	Explain the importance of innovation in intellectual property management.	[6]
Q.6(a)	What is entrepreneurial marketing?	[6]
(b)	Explain the marketing strategy for entrepreneur.	[6]
Q.7(a)	Explain the institutional support of small business in India.	[6]
(b)	What is the importance of finance and marketing in entrepreneurship point of view.	[6]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH **SEMESTER : I**
BRANCH: CSE **SESSION : MO/18**

SUBJECT: IT503-WIRELESS SENSOR NETWORKS

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Give a comparative account of traditional network and wireless sensor network in terms of challenges and constraints of WSN. [5]

(b) Name and evaluate the different performance parameters of single hope and multi-hope communication in WSN. [5]

Q.2(a) Discuss propagation and propagation impairments. How propagation impairments give rise to multipath. [5]

(b) Discuss with example why we need localization in WSN. Compare anchor and ranged-based localization. [5]

Q.3(a) Elaborate the contention-free and contention-based medium access strategies with advantages and disadvantages. Can one would be preferable over other? [5]

(b) Define RTS and CTS with diagram. Assume that the RTS and CTS frames are as long as DATA and ACK frames. Justify the advantages of using CTS/RTS with your decision of applying or not applying of CTS/RTS. [5]

Q.4(a) Name and explain routing challenges and design issues in Wireless Sensor Network. [5]

(b) Is data-centric routing feasible in WSN? Give the objective and basic protocol operation of SPIN. [5]

Q.5(a) What are the challenges of security in WSN? What characteristic of WSN make routing difficult to implement. [5]

(b) "Sensor Networks are vulnerable to a variety of attacks that attempt to compromise the network's operation and data generated by sensor nodes". Justify. [5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH **SEMESTER : I**
BRANCH: CIVIL **SESSION : MO/18**

SUBJECT: CE501-ADVANCED SOILD MECHANICS

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1 Derive the relation between strain component & displacement. [10]

Q.2 Analyse the bending of a beam by uniform load. [10]

Q.3 Analyse stress distribution in a Hollow Cylinder subjected to internal pressure p_i and outer pressure P_o . [10]

Q.4 Analyse the torsion of an elliptical shaft. [10]

Q.5 Explain Tresca[IS] Theory of failure and Van Mises theory of failure. [10]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH **SEMESTER : I**
BRANCH: ECE **SESSION : MO/18**

SUBJECT: EC513-SPREAD SPECTRUM TECHNIQUES AND MULTIPLE ACCESS

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Describe spread spectrum techniques along with its advantages over other conventional system. Discuss working of MSK-DSSS modem with neat diagram. [5]

(b) Discuss difference between DSSS and FHSS. Also explain working of coherent FHSS modem. [5]

Q.2(a) Why a sequence generator is necessary in a spreading system? Discuss the fundamental of sequence generator along with different multiplying and/or dividing circuit of two different sequences. [5]

(b) State and explain maximal length sequence along with their properties. [5]

Q.3(a) Discuss and explain spread spectrum communication system model in jamming environment with respective block diagram. [5]

(b) Describe performance of coherent DS systems in partial band jamming along with all signal processing equations and block diagram. [5]

Q.4(a) Describe CSMA. Derive their throughput equation. [5]

(b) Describe OFDMA and how it differs from SDMA. Give details. [5]

Q.5(a) Write short note on RAKE receiver and MUD. [5]

(b) Describe all the channels associated with CDMA system. [5]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MCA **SEMESTER : I**
BRANCH: MCA **SESSION : MO/18**

SUBJECT: CA403-COMPUTER ORGANIZATION AND ARCHITECTURE

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Simplify the given Boolean expression using Boolean algebra properties- [5]
i) $A \oplus AB' \oplus A'$ ii) V+V'W+V'W'X+V'W'X'Y+V'W'X'Y'Z
and also explain De-Morgan's Theorem.

(b) Realize 16:1 MUX using [5]
i) 8:1 MUX
ii) 4:1 MUX

Q.2(a) Explain the functionality of a computer and difference between Byte addressable and word addressable memory. [5]

(b) Consider a hypothetical processor which uses different operand accessing mode shown in below- [5]

Operand Accessing Mode	**Frequency (%)**
1.Register	30
2.Immediate	20
3.Direct	22
4.Memory Indirect	17
5.Indexed	11

Assume that 2 clock cycles consumed for memory reference, 1 clock cycle consumed for arithmetic computation, and 0 clock cycle consumed when operand is in register or instruction itself. What is the average operand fetch rate of the machine?

Q.3(a) What are the differences between hardwired and micro programmed control units? Also explain RISC processor. [5]

(b) Explain different types of hazards that occur in a pipeline. [5]

Q.4(a) In a 2-level memory organization, Level1 memory is 5 times faster than Level2 memory and its access time is 10ns less than average access time. Let Level1 access time is 20ns. What is the hit ratio? [5]

(b) Explain memory hierarchy design. Also explain Set Associative Mapping technique of cache memory. [5]

Q.5(a) Explain Flynn's Classification. [5]

(b) Write a Micro-Program for Fetch Cycle. Explain Types of interrupts. [5]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH/MUP/SAM/SAP/SAC/PRE-PHD/MSC **SEMESTER : I/NA**
BRANCH: ALL **SESSION : MO/18**

SUBJECT: CE576-ENVIRONMENTAL SCIENCE & MANAGEMENT

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Explain the mechanism of controlling particulate emissions with suitable diagrams.	[5]
(b)	What is the mechanism to treat nitrogen and phosphorous in waste water?	[5]
Q.2(a)	Design a plan for conducting environmental audit at any site.	[5]
(b)	Explain your understanding on the initiatives to achieve sustainable development in India.	[5]
Q.3(a)	Write short notes on structure of ecosystem.	[5]
(b)	Elaborate upon the various functions of forest ecosystems.	[5]
Q.4(a)	Identify the causes of global warming.	[5]
(b)	Explain the mechanism of Elnino formation and its impacts.	[5]
Q.5(a)	Identify the components of acid rain and how does it affect the monuments in India. Write down the reactions for yellowing of TajMahal.	[5]
(b)	Provide evidences of how photochemical smog is and has been affecting the globe.	[5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MSC/IMSC/PRE-PHD **SEMESTER : III/VII/NA**

BRANCH: CHEMISTRY **SESSION : MO/18**

SUBJECT: SAC2007-APPLICATIONS OF SPECTROSCOPY

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) With the help of a neat diagram explain the working of Quadrapole mass analyzer. What are the disadvantages of electron ionization (EI) type molecular ion generator? [6]

(b) Discuss isotope effect with example. Compare and contrast – molecular ion, protonated molecular ion and metastable ion. [6]

Q.2(a) Discuss the mass spectrum of cycloalkanes. Why the molecular ions in case of cycloalkanes are more stable than those in case of alkanes? [6]

(b) Discuss the fragmentation that takes place during the mass spectroscopy of alkyl halides. State Stevenson's rule and explain with an example. [6]

Q.3(a) Predict the epr spectrum of $\cdot CD_3$, $\cdot {}^{13}CD_3$, $\cdot CH_2D$ radicals. [6]

(b) How many esr transitions are expected for Mn^{+2} in weak and strong tetragonal fields? Describe the transitions with diagram. [6]

Q.4(a) How does isotopic substitution affect the vibrational frequency? Discuss with examples. [6]

(b) Discuss the principle of Raman spectroscopy. [6]

Q.5(a) Proof that J=4E for ^1H spin-spin splitting with proper diagram. [6]

(b) What do you mean by first order and second order spectra? Write the principle of NOESY spectroscopy. [6]

Q.6(a) Describe the principle of ^1H NMR spectroscopy and hence compare it with ^{13}C NMR. [6]

(b) Predict the right structure with proper explanations from following data; [6]

Molecular formula: $C_7H_{11}NO$

^1H NMR: 9.5 (s, 1H), 2.5 and 1.9 (2 sets of triplet, 4H), 1.2 (s, 6H).

^{13}C NMR: 205 (d), 120 (s), 45 (s), 32, (t), 21 (q), 12 (t).

Q.7(a) Outline the working principle of an ion trap analyzer. [4]

(b) Write short note on Anharmonic oscillator. [4]

(c) Write short note on broad band decoupling in ^{13}C NMR spectra [4]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BARCH **SEMESTER : IX/ADD**
BRANCH: ARCHITECTURE **SESSION : MO/18**

SUBJECT: AR9103-CONSTRUCTION MANAGEMENT

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Define construction management. [2]
(b) What are the various classifications of project? [4]
(c) Describe in detail 'The Project Life Cycle'. [6]

Q.2(a) What are the short comings of Bar Chart Technique? [2]
(b) Write a short note on following: [4]
(i) Resource Smoothening
(ii) Resource Levelling
(c) Develop the bar chart end estimate the project completion time. Divide the whole project in four equal phases and hence derive the cost histograms [6]

Activity	Duration (Days)	% Age Cost	Inter - Relation
A	7	21	Starting Activity
B	4	16	Start after 3 days of A start
C	11	22	Start with B
D	3	21	Can Start with B & C
E	4	8	Start after C & D
F	2	12	Start after E

Q.3(a) Draw the CPM network for the project with following activities and characteristics given in table 1. [2]

Activity	Immediate Successor	Duration (Days)
A	C,D	6
B	E,G	8
C	E,G	4
D	G	3
E	F	6
F	-	2
G	-	10

Table 1

(b) For the project given in table 1, find the project duration and the critical path. [4]
(c) For the project given in table 1, calculate the floats of each activity. [6]

Q.4(a) 'PERT is best to be adopted in scientific research projects' – justify. [2]
(b) If the critical path of a project is 20 months along with a standard deviation of 4 months, what is the Z factor for the project to be completed within: (a) 20 months (b) 18 months (c) 24 months? [4]
(c) A construction project includes activities as per the table below. The event nodes and three PERT times are listed below. Establish the PERT network and find the Z factor of completion of the project within 30 days. [6]

Activity	Event - Nodes	PERT times (days)	Activity	Event - Nodes	PERT times (days)
A	1-2	2-5-14	G	4-5	1-3-5
B	1-3	3-6-15	H	5-6	2-3-10
C	2-4	DUMMY	I	5-7	2-3-4
D	3-4	1-2-3	J	5-8	4-7-16
E	2-6	7-10-25	K	6-8	4-6-14
F	3-7	4-11-12	L	7-8	4-6-20

PTO

Q.5(a) Differentiate between Discounted and Non-discounted Cash Flow Criteria [2]

(b) Explain briefly about CAT & RAT schedule with suitable graph. [4]

(c) Followings are the two alternative of a certain project. Discuss the feasibility of the alternatives based on PBP and NPV. [6]

Project: I

Initial investment: Rs 25,000

Return for first and second year: Rs 5,000 (each)

Return for third and fourth year: Rs 12,000 (each)

Project: II

Initial investment: Rs 30,000

Return for first to fourth year: Rs 10,000 (each)

(Take the Discount rate as 10% for both the alternative)

Q.6(a) Define Line of balance. [2]

(b) Explain Direct, Indirect and total cost component of Project along with proper graphical representation. [4]

(c) Explain the cost slope and its implication in calculation of optimum cost of the project. [6]

Q.7(a) What are the basic elements of Quality in construction? [2]

(b) What are the reasons for safety management? [4]

(c) Discuss the various types of equipments used for concreting operation. [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: PRE-PHD **SEMESTER : NA**
BRANCH: CIVIL **SESSION : MO/18**

SUBJECT: MCE6003-WATER POWER ENGINEERING

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What are the advantages of hydropower?	[6]
(b)	Classify the hydropower plants on the basis of heads.	[6]
Q.2(a)	What do you mean by non-conventional energy? Describe various types of non-conventional energy resources.	[6]
(b)	What are the environmental impacts of energy use?	[6]
Q.3(a)	Differentiate between base load and peak load plants.	[6]
(b)	Describe briefly the components of a hydropower plant.	[6]
Q.4(a)	Define the following: (i) average load, (ii) peak load, and (iii) load factor	[6]
(b)	What is load duration curve?	[6]
Q.5(a)	Discuss briefly the water hammer theory in case of gradual closure of valve.	[6]
(b)	What are the functions of surge tank?	[6]
Q.6(a)	Differentiate between impulse turbine and reaction turbine.	[6]
(b)	What are characteristic curves? How do we obtain the characteristic curves?	[6]
Q.7(a)	Discuss the role of private sector in hydropower generation.	[6]
(b)	What do you understand by economic diameter of penstock?	[6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: PRE_PHD **SEMESTER : NA**
BRANCH: ECE **SESSION : MO/18**

SUBJECT: MEC2003-DSP ALGORITHMS & ARCHITECTURE

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) A discreet time signal x(n) is interpolated by factor M and its output is y(n). If DTFT of input signal is $X(e^{jw})$ then find DTFT of interpolated signal y(n). Using the result of DTFT of interpolated signal, explain the need of anti-imaging filter. In particular, if x(n)= (1,2,3,4) and value of interpolation factor M is equal to 3 then find output of this interpolator. [6]

(b) Define the differentiation and time shifting properties of Z-transform and find the inverse z-transform of $X(z)=\frac{1}{1-az^{-1}}, |z| \succ a$ using contour integral method. [6]

Q.2(a) What do you mean by finite world length problem in digital filters? What are consequences of finite world length problem? Derive expression of variance of error signal obtained due to quantization of input signal. [6]

(b) Draw direct form and cascade form for FIR filters given by [6]

$$H(z) = \left(1 - \frac{1}{4}z^{-1} + \frac{3}{8}z^{-2}\right)\left(1 - \frac{1}{8}z^{-1} - \frac{1}{2}z^{-2}\right)$$

Q.3(a) Explain Von Neumann Architecture and Harvard Architecture to achieve multiple memory access in digital signal processor. [6]

(b) With the help of block diagram, explain VLIW architecture used for programmable digital signal processor. [6]

Q.4(a) What are major phases of pipelining in C6X family of processors? Explain each phase in detail. [6]

(b) Describe various features of C6X family of processors? Also discuss about register addressing mode, linear addressing mode and circular addressing mode of C6X family of processors. [6]

Q.5(a) Name various ALU unit, multiplier unit and functional unit of C6X processors? Also discuss about various assembly language instructions of any two functional units? [6]

(b) Comment on timers and interrupts of C6X processor. [6]

Q.6(a) Discuss about various programmable on-chip peripherals of C6X processors in detail. [6]

(b) Explain memory constraints and cross path constraints of C6X processors. [6]

Q.7(a) With the help of block diagram, explain all major sections of TMS320C5X. [6]

(b) Discuss about Address Generation Unit (AGU) and Program Control Unit (PCU)for Motorola DSP563XX processor. [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MBA **SEMESTER : I**
BRANCH: MANAGEMENT **SESSION : MO/18**

SUBJECT: MT401-ORGANIZATION AND MANAGEMENT

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Management is art of getting things done through others. Describe. [5]
(b) Management is the process of effective utilization of human and material resources to achieve the enterprise's objective. Explain. [5]

Q.2(a) Why F.W Taylor Known as a Father of scientific Management? Discuss the contribution of F.W Taylor in the field of scientific management. [5]
(b) What do you mean by social responsibilities of business? Enumerate these responsibilities. [5]

Q.3(a) Discuss planning involves a choice between alternative courses of action and also describe the importance and advantages of planning. [5]
(b) What do you mean by Plan? In any organization policies, procedure, budget and rule regulation are important for it. Give suitable example. [5]

Q.4(a) What is meant by recruitment? How does it differ from selection? Compare the merits and demerits of recruitment through promotion and recruitment from outside. [5]
(b) What do you think about the selection? What are the steps involved in the selection procedure? Discuss. [5]

Q.5(a) What do you mean by controlling? Discuss its importance in business organizations. [5]
(b) Explain the steps involve in the process of controlling? [5]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BAM **SEMESTER : III**
BRANCH: ANIMATION & MULTIMEDIA **SESSION : MO/18**

SUBJECT: BAM1301-AUDIO VISUAL TECHNOLOGY

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1	(a)	What are the two main characteristics of sound?	[2]
	(b)	What is the use of Sound Effects?	[4]
	(c)	What is the difference between Digital and Analog Signals?	[6]
Q.2	(a)	What is a microphone?	[2]
	(b)	Describe the basics of audio editing.	[4]
	(c)	Describe the types of microphones based on the pick up patterns.	[6]
Q.3	(a)	What is line of action in a shot?	[2]
	(b)	Briefly describe the 180-degree rule of camera placement system.	[4]
	(c)	Explain Electronic News Gathering and Electronic Field Production?	[6]
Q.4	(a)	What is the use of white balance in the Camera?	[2]
	(b)	What are the options available for white balance in a typical DSLR camera?	[4]
	(c)	Explain the effects on the picture in the outdoor and indoor circumstances without white balance?	[6]
Q.5	(a)	What do you understand by NTSC and PAL?	[2]
	(b)	What are the broadcasting formats being used in World nowadays?	[4]
	(c)	What is the meaning & scope of Multimedia? Give few examples.	[6]
Q.6	(a)	What is Compression? Why is it necessary to compress files?	[2]
	(b)	Name a few techniques used for digital video compression.	[4]
	(c)	What are the advantages of digital media?	[6]
Q.7	(a)	What do you understand by CCD?	[2]
	(b)	Describe the Exposure Triangle.	[4]
	(c)	Explain in your words the use of camera language in animation film making.	[6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BAM **SEMESTER : V**
BRANCH: BAM **SESSION : MO/18**

SUBJECT: BAM1501-DIRECTION FOR ANIMATION & AESTHETICS

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What is Storyboarding?	[2]
(b)	What is the difference between a Script and a Screenplay?	[4]
(c)	What are the main elements which can enhance the quality of the Storyboards?	[6]
Q.2(a)	What do you understand by Q & A patterns?	[2]
(b)	Why it (Q&A) is used in the film making? Explain with an example and drawings.	[4]
(c)	What is the importance of Bar Sheet in Animation Studio? Explain with examples.	[6]
Q.3(a)	What do you understand by Line of Action?	[2]
(b)	How would you establish a New Line of Action with a New Sight Line? Explain with the help of drawings.	[4]
(c)	What is the Role of the Director in the Animation Studio?	[6]
Q.4(a)	What do you understand by A, I and L Patterns?	[2]
(b)	What is the difference between A andL Patterns? Explain with examples and drawings.	[4]
(c)	What are the basic camera angles? Explain with the help of drawing.	[6]
Q.5(a)	What is 3- point perspective?	[2]
(b)	What are the recent trends in Perspective Rendering?	[4]
(c)	Make a building using 3- point perspective using insect's eye view.	[6]
Q.6(a)	What is the Pre-Production Process?	[2]
(b)	Write in detail about all the steps included in Pre-Production Process.	[4]
(c)	Write a short description on Father of Animation- Ram Mohan and their contribution as an animation film maker.	[6]
Q.7(a)	Create a TV Commercial (Duration of 12 To 16 Seconds) of any Chocolate Company keeping in mind the following points:	[2]
(b)	Title/ Punch Line of TV Commercial	[4]
(c)	Script/ Screenplay Thumbnails of Storyboard	[6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC **SEMESTER : VII**
BRANCH: MATHS & COMP. **SESSION : MO/18**

SUBJECT: MSH1105-E-COMMERCE

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Explain the types of e-commerce.	[6]
(b)	Describe the value chain in e-commerce.	[6]
Q.2(a)	Describe the components of EDI.	[6]
(b)	Describe the EDI standard.	[6]
Q.3(a)	Explain firewall as security system.	[6]
(b)	Describe encryption.	[6]
Q.4(a)	Describe electronic fund transfer	[6]
(b)	Explain the different methods of electronic payments.	[6]
Q.5(a)	Explain the emerging trends in e-commerce.	[6]
(b)	Describe the drawbacks in e-commerce	[6]
Q.6(a)	Explain digital commerce.	[6]
(b)	Explain mobile commerce.	[6]
Q.7(a)	Explain supply chain management.	[6]
(b)	Describe on line Mercantile model from customer perspective.	[6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC **SEMESTER : VII**
BRANCH: FT **SESSION : MO/18**

SUBJECT: SAF1001-ADVANCED FOOD MICROBIOLOGY

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Discuss the factors affecting microbial growth in food. [6]
(b) What is Spoilage? Discuss in detail the spoilage of milk and milk products, the factors involved and the remedies. [6]

Q.2(a) What meant by preservation of food? Discuss the physical methods of food preservation. [6]
(b) Briefly describe the role of chemicals in the food preservation. [6]

Q.3(a) What are the chemical changes in food brought about by the microbes? [6]
(b) Discuss the various types of interaction between the microorganisms with examples. [6]

Q.4(a) What do you mean by food poisoning? Discuss the factors involved in food poisoning. [6]
(b) What are microbial toxins and their mode of action? [6]

Q.5(a) What do you mean by food hygiene and sanitation? What are the preventive measures for food contamination. [6]
(b) Discuss any two rapid methods in detection of microorganisms. [6]

Q.6(a) Discuss some of the traditional fermented foods of India. [6]
(b) Give a vivid account of the fermented foods based on milk. [6]

Q.7(a) What do you mean by Bio-burden? Give the advantages of routine bioburden analysis. [6]
(b) Discuss the different methods for storage of microbial cultures. [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MSC **SEMESTER : III**
BRANCH: BT **SESSION : MO/18**

SUBJECT: SBT3019-BIOANALYTICAL TECHNIQUES

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Describe the different types of rotors used in centrifugation with proper figures and mention the applications of each types. [6]

(b) Calculate the RCFmin, RCFav and RCFmax for a centrifuge tube rotating at 40000 rpm and in which the distance between the rotation axis and the meniscus is 16 cm and that between rotation axis and the bottom of the tube is 28 cm. [6]

Q.2(a) Define chromatography. Explain the different types of chromatography based on mechanism of separation. [6]

(b) Explain the principle of ion exchange chromatography. Give examples of cationic and anionic resins used in ion exchange chromatography. [6]

Q.3(a) Why Tswett's experiments is pioneer in the field of chromatography? Support your answer with a schematic of a proper modern chromatographic equipment. [6]

(b) Write in brief about i) Resolution ii) Selectivity [6]

Q.4(a) How you will describe that characteristic (composition, concentration and pH) of buffer affects the electrophoresis process? [6]

(b) Describe the various steps involved in SDS- PAGE starting from sample preparation. [6]

Q.5(a) Derive Beers Lambert law with proper equations and also mention three limitations of this law. [6]

(b) With a schematic diagram briefly describe dual beam UV spectrophotometer also mention the differences and advantages over single beam spectrophotometer. [6]

Q.6(a) Explain the instrumentation and applications of ICP. [6]

(b) What are the different steps in mass spectrometric analysis? Explain your answer with the help of a schematic diagram of a mass spectrometer. [6]

Q.7(a) Describe the instrumentation of TGA. Give any example of thermogravimetric measurement. [6]

(b) What is Curie point? Explain the calibration of TGA instrument using Curie point method. [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: Pre_PhD **SEMESTER : NA**
BRANCH: ECE **SESSION : MO/18**

SUBJECT: MEC1011-PROBABILITY MODELS & STOCHASTIC PROCESS

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) What is random variable? Describe the probability distribution function and probability density function with their properties? [2]

(b) A particular random variable has probability distribution function given by $F_X(x) = \begin{cases} 0, -\infty < x < 0 \\ 1 - e^{-2x}\ 0 \le x \le \infty \end{cases}$ [4]
Find i) the probability that X>0.5 ii) the probability that 0.3<X≤0.7

(c) In an experiment, if a random variable X has element X={1,2,3,4,5,6} with probabilities $P_X(x) = [\frac{2}{36}, \frac{8}{36}, \frac{12}{36}, \frac{7}{36}, \frac{5}{36}, \frac{2}{36}]$, sketch the distribution function of X. [6]

Q.2(a) Explain the central limit theorem with suitable example. [2]

(b) A random variable X has the probability given as: P(X=0) =P(X=2)=P and P(X=1)=1-P and 0≤P≤1/2. For what value of P, variance of X is maximum? [4]

(c) The pdf of a random variable X is given as $f_X(x) = \frac{x}{20}, 2 \le x \le 5$, find the pdf of Y=3X-5. [6]

Q.3(a) Define conditional probability and conditional expectation. [2]

(b) Consider two random variables, X= cos θ, Y=sinθ, where θ is uniformly distributed in the range (0,2π). Show that the random variables X and y are uncorrelated. [4]

(c) The joint pdf of a bivariate random variable (X,Y) is given as $f_{X,Y}(x,y) = \begin{cases} ke^{-(ax-by)}, x > 0, y > 0 \\ 0, \quad otherwise \end{cases}$ where a,b and k are constants. Find the value of k and discuss whether X and Y are independent. [6]

Q.4(a) Describe the strict sense stationary and weak sense stationary process. [2]

(b) Describe about sampling theory. Define the sample mean and sample variance. [4]

(c) A random process is defined as $X(t) = A\cos(w_c t + \theta)$ where θ is a uniform random variable over (0,2π). Verify whether the process is ergodic in the mean sense and autocorrelation sense [6]

Q.5(a) Discuss Markov process with example. [2]

(b) Discuss the thermal noise and shot noise. [4]

(c) A stationary random process has a autocorrelation function given as $R(\tau) = \frac{25\tau^2+36}{6.25\tau^2+4}$ [6]
Find the mean, mean square value and variance of the process.

Q.6(a) Discuss what happen to PSD of a random signal if we pass it through a linear system. [2]

(b) Derive an expression for power spectral density. Describe the white noise [4]

(c) Describe Auto regressive process and find the relationship between autocorrelation sequence with model parameters. [6]

Q.7(a) Describe the Poisson process. [2]

(b) Explain Kalman filter with suitable example. [4]

(c) What is an optimum filter? Derive the expression for a Wiener filter [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMCA **SEMESTER : ADD.**
BRANCH: IMCA **SESSION : MO/18**

SUBJECT: IMCA1001 MATHEMATICS - I

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) State the Leibnitz Theorem for nth derivative of product of two functions. [2]

(b) Find nth derivative of the function $x^n e^x$ [4]

(c) If $u = \tan^{-1} x$, then prove that $(1-x^2)u'' - 2xu' = 0$ [6]

Q.2(a) Write the expansion of a function of one variable in Taylor's infinite series. [2]

(b) Write the Maclaurin's series to expand $\sin x$ as a power series. [4]

(c) Show that $x^5 - 5x^4 + 5x^2 - 1$ has a maximum value at $x = 1$. [6]

Q.3(a) Find a first order partial differentiation of $\tan^{-1}(x+y)$ [2]

(b) If $u = \tan^{-1}\left(\frac{x^3+y^3}{x-y}\right), x \neq y$, show that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \sin 2u$ [4]

(c) Expand function $f(x,y) = x^2 + xy - y^2$ by Taylor's theorem in $(x-1)$ and $(y+2)$ [6]

Q.4(a) Evaluate $\int_0^1 (e^x + x^2)dx$ [2]

(b) Find the area bounded by the circle $x^2 + y^2 = 1$, line $x = y$ and line $y = 0$ [4]

(c) Find the area enclosed by the Lemniscate $r^2 = a^2 \cos 2\theta$ [6]

Q.5(a) Change the order of integration $\int_0^1 \int_x^{2-x} f(x,y)dxdy$ [2]

(b) Transform the integral $\int_0^1 \int_0^x f(x,y)dxdy$ to the integral into polar form [4]

(c) Evaluate $\iiint (x^2 + y^2 + z^2)dxdydz$ over the volume enclosed by the unit sphere. [6]

Q.6(a) Define Exact differential equation in first order and first degree with condition. [2]

(b) Solve: $(x+2y)(dx-dy) = dx + dy$ [4]

(c) Solve the equation $xy' + y\log y = xye^x$ [6]

Q.7(a) Solve: $(D^2 + a^2)y = 0$ [2]

(b) Solve the PDE: $p\tan x + q\tan y = \tan z$ [4]

(c) Solve the PDE: $(D^2 + DD' - 6D'^2)z = \cos(2x+y)$ [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER : ADD.**
BRANCH: EEE **SESSION : MO/18**

SUBJECT: EE2201-PRINCIPLES OF ELECTRICAL ENGINEERING.

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) What is the principle of duality? [2]
(b) Determine the current delivered by the source in the network of fig. 1(b)? [4]
(c) Using Delta-Star transformation, find an equivalent resistance between A & B in the network of fig. 1(c). [6]

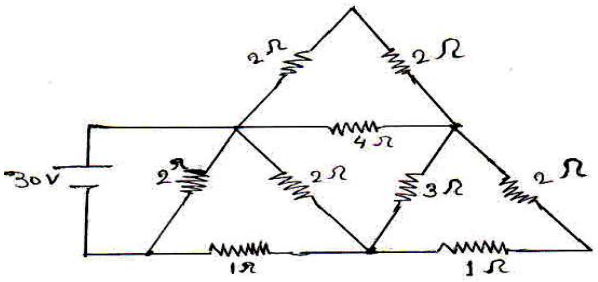

Fig.1(b)

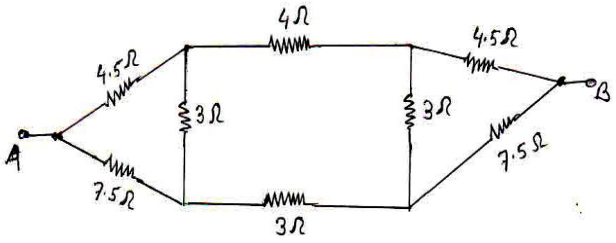

Fig.1(c)

Q.2(a) Distinguish between Bilateral and Unilateral elements with examples? [2]
(b) What is the utility of superposition theorem? [4]
(c) Find the current through the $10\,\Omega$ resistor for the network shown in fig. 2 (c). [6]

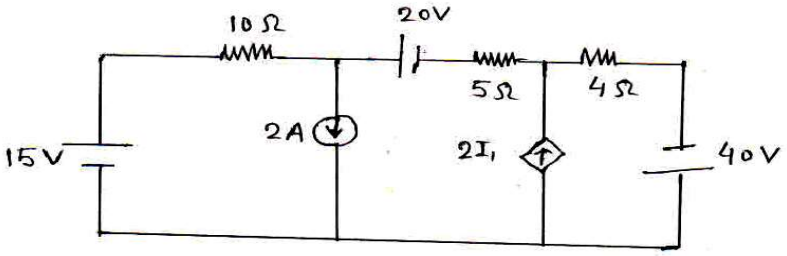

Fig. 2(c)

Q.3(a) Define RMS value and phase difference in alternating quantities? [2]
(b) Find the Form factor of the Wave form in fig. 3(b). [4]

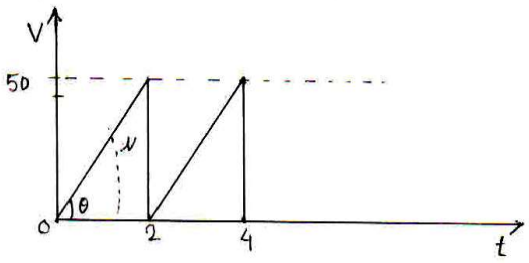

Fig. 3(c)

(c) A voltage $V(t) = 100\sin 314t$ is applied to a series circuit consisting of 10Ω resistance, 0.0318H inductance and a capacitor of 63.6μF. find i) Expression for i(t). ii) Phase angle between voltage & current. iii) p.f iv) Active power consumed. v) Peak value of pulsating power. [6]

PTO

Q.4(a) What do you mean by band width of a series resonant circuit? [2]

(b) A parallel circuit consists of a 2.5μF capacitor and a coil whose resistance and inductance are 15Ω and 260mH respectively. Determine i) the resonant frequency ii) Q-factor of the circuit at resonance. iii) Dynamic impedance of the circuit. [4]

(c) In a series-parallel circuit, the parallel branches A & B are in series with branch C. the impedance are $Z_A=(4+j3)\Omega$, $Z_B=(10-j7)\Omega$ & $Z_C=(6+j5)\Omega$ respectively. If the voltage applied across the circuit is 200V at 59Hz, calculate i) currents flowing in Z_A , Z_B , & Z_C. and ii) total P.F of the circuit. [6]

Q.5(a) What are the advantages of a 3-Φ system? [2]

(b) A symmetrical three phase 400V system supplies a basic load of 0.8 lagging P.F and is connected in star. If the line current is 34.64A. Find the i) Impedance ii) Resistance and Reactance per phase. iii) Total power. [4]

(c) Two watt-meters connected to measure three phase power for star connected load reads 3KW & 1KW. The line current is 10A. Calculate i) line and phase voltage. ii) Resistance and reactance per phase. [6]

Q.6(a) Define Reluctance and Permeance? [2]

(b) An air-cored solenoid has length of 15cm and inside diameter of 1.5cm. if the coil has 900turns, determine the total flux within the solenoid when the coil current is 100mA. [4]

(c) The magnetic circuit shown in fig. 6(c) is build up of iron of square cross-section 3cm side, each air gap is 2mm wide. Each coil is wound with 1000 turns and exciting current is 1A. The relative permeability of part A & part B may be taken as 1000 & 1200 respectively. Find i) Reluctance of part A ii) Reluctance of part B iii) Reluctance of two air gaps iv) total reluctance v) total m.m.f. [6]

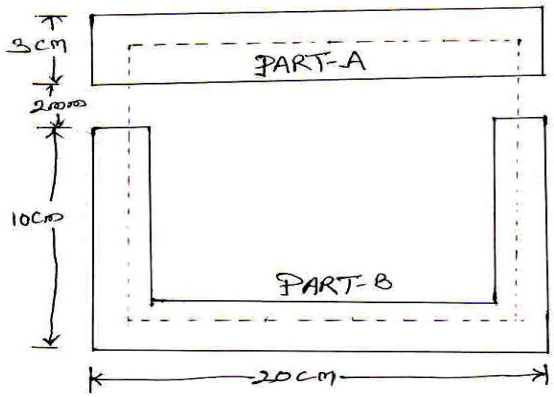

Fig. 6(c)

Q.7(a) Define self and mutual inductance? [2]

(b) Explain PMMC and Eddy current loss? [4]

(c) In the network shown in fig. 7(c), find the voltages V_1& V_2. [6]

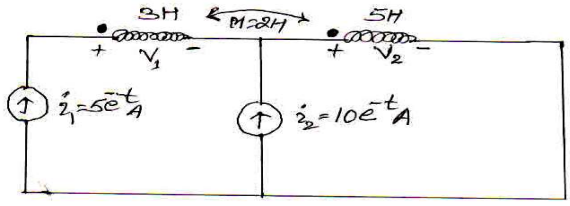

Fig. 7(c)

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MUP **SEMESTER : III**
BRANCH: ARCHITECTURE **SESSION : MO/18**

SUBJECT: MUP3101-PLANNING LEGISLATION & PROFESSIONAL PRACTICE

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Explain in brief the relevance of the subject "Planning Legislation and Professional Practice" in the field of Urban Planning [2]

(b) Evolution of settlement planning in Ancient India was based on four basic aspects, provide a brief on those with a few formations of settlement of that period. [4]

(c) Urban Planning in India during late 19^{th} and early 20^{th} century under British period took a positive direction, enumerate. [6]

Q.2(a) Explain in Brief "Constitution of India". [2]

(b) Explain the relevance of "5year plan" in the field of Urban Planning [4]

(c) 74^{th} amendment of the Constitution of India in 1992, played a significant role in urban development, explain with relevant articles of the amendment. [6]

Q.3(a) Enumerate the term "Land acquisition". [2]

(b) Justify the relevance of "TP Scheme" in order to facilitate urban planning activities [4]

(c) Write short notes on <u>any two</u> of the following: [6]
a) National Environment Policy b) Ordinance c) Zoning Regulation

Q.4(a) Define "Master Plan" in the context of urban development [2]

(b) Explain the necessity of a Master Plan and list out the contents of a complete Master Plan. [4]

(c) Explain the sequential activities, thus required for preparation of "Master Plan" for any urban area. [6]

Q.5(a) Briefly explain the significance of "Scope" in consultancy service [2]

(b) List out the possible merits and demerits of working as an Urban Planner in Private sector, Public sector and Govt. departments in India. [4]

(c) "Urban Planning" is accepted to be a multidisciplinary activity and thus experts from different fields play vital roles. Explain the roles of those experts in a tabular form. [6]

Q.6(a) Define "Slum" in Indian context. [2]

(b) Briefly explain various types of slums and relevant of Slum improvement acts in India. [4]

(c) Write short notes on <u>any two</u> of the following: [6]
a) Joint Venture b) Development Authority c) The Forest Conservation Act, 1980

Q.7(a) What do you understand by the term "Professional Body" in a general context? [2]

(b) Discuss the role and significance of "Professional Body" in the field of Urban Planning [4]

(c) Discuss the category of members for "Institute of Town Planners, India" and the selection procedure. Also explain the role of Chapters and Centers of ITPI [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC **SEMESTER : VII**
BRANCH: PHYSICS **SESSION : MO/18**

SUBJECT: SAP1001-MATHEMATICAL METHODS IN PHYSICS

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Find the eigen values and eigen vectors of the following matrix: [6]

$$A = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$$

(b) Decompose the following matrix into L and U matrices: [6]

$$A = \begin{bmatrix} 25 & 5 & 1 \\ 64 & 8 & 1 \\ 144 & 12 & 1 \end{bmatrix}$$

Q.2(a) Prove that the function $u(x, y) = x^3 - 3xy^2 + y$ is harmonic. Find its conjugate function v (x, y) such that $f(z) = u + iv$ is analytic. [6]

(b) Expand $f(z) = \frac{1}{(z-2)(z-3)}$ in a Laurent series about z_o = 1, valid in the following regions: $1 < |z-1| < 2$ and $|z-1| > 2$. [6]

Q.3(a) What are regular and irregular singular points? Find the singular points of the following differential equation: [6]

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

(b) Find the series solution about x=0 of the differential equation: [6]

$$3x\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = 0$$

Q.4(a) What are gamma functions? State and prove the reflection formula. [6]
(b) Define Beta function. Write beta function in terms of gamma functions and prove it. [8]

Q.5(a) What are Legendre polynomials? Express $f(x) = x^3 + 1$ in terms of Legendre Polynomials. [6]
(b) Define Bessel's equation and solve it using Frobenius method. [6]

Q.6(a) Find the Fourier series of the function [6]

$$f(x) = x - x^2 \text{ for the range } -\pi < x < \pi.$$

(b) Derive a series for $\pi^2/12$. [6]

Q.7(a) Find the Fourier sine and cosine transforms of [6]

$$f(x) = \exp(-kx), \text{ where k is a constant.}$$

(b) Using Laplace theorem, find the current i(t) in an LR circuit given as [6]

$$L\frac{di}{dt} + Ri = V(t)$$

where the applied voltage varies as follows:

$$V(t) = V_o, \quad for\ (0 < t < a) sec.$$
$$= 0, t > a\ sec.$$

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH/MSC/PRE-PHD **SEMESTER : I/NA**
BRANCH: SER/PHYSICS **SESSION : MO/18**

SUBJECT: MA523 COMPUTATIONAL MATHEMATICS

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Applying Monge's method, solve the following partial differential equation: [5]

$$(e^x - 1)(qr - ps) = pqe^x$$

where the notations *p, q, r, s, t,* used have their usual meanings.

Q.1(b) Execute the potential distribution function $u(x, y, z)$ satisfying the Laplace equation $\nabla^2 u = 0$ in a rectangular box defined by $0 \le x \le a,\ 0 \le y \le b,\ 0 \le z \le c$, if the potential is zero on all the sides and on the bottom, while $u = f(x, y)$ on the top of the box. [5]

Q.2(a) Evaluate the largest (numerically) Eigen value and the corresponding Eigen vector of the given matrix correct up to 2 decimal places using Power method: [5]

$$\begin{bmatrix} 1 & 3 & -1 \\ 3 & 2 & 4 \\ -1 & 4 & 10 \end{bmatrix}$$

Q.2(b) Represent the following matrix to tri-diagonal matrix by House-Holder method: [5]

$$\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$$

Q.3(a) Generate the finite difference analogue corresponding to the following boundary Value problem and hence solve using Gauss Seidal iteraive scheme: [5]

$$(u_{xx} + u_{yy}) = 0, \quad 0 \le x \le 4,\ 0 \le y \le 4$$

for the square grid with boundary values given by :

$$u(0, y) = 0,\ u(4, y) = 8 + 2y, \quad u(x,0) = \frac{x^2}{2} \text{ and } u(x,4) = x^2$$ taking h = k = 1.

Q.3(b) Generate the finite difference analogue corresponding to the following boundary Value problem and hence solve with *h* = 0.2 and *k* = 0.1 upto 3 time- steps: [5]

$$u_{tt} = u_{xx}, \qquad \forall \quad 0 < x < 1, \quad t > 0,$$
$$u(0,t) = u(1,t) = 0 \qquad \forall \quad t \ge 0,$$
$$u(x,0) = \frac{x}{2}(1 - x) \qquad \forall \quad 0 < x < 1,$$
$$u_t(x,0) = 0 \qquad \forall \quad 0 \le x \le 1$$

Q.4(a) Execute that the sphere is the solid figure of revolution which for a given surfaces area has maximum volume. [5]

Q.4(b) Consider the following problem: [5]

$$u'' - u = 1, \qquad \forall\ 0 < x < 1, \text{ with } \quad u(0) = 0 \quad u(1) = e - 1$$

Evaluate the coefficient of the approximate solution function $\bar{u} = (e-1)x + x(1-x)(c_1 + c_2 x)$ using Rayleigh- Ritz's approximation method.

PTO

Q.5 Generate the Finite element equations for three element of equal lengths by Finite element method with linear shape functions and hence solve the following BVP: [10]

$u'' + 2xu = x, \quad \forall \ 0 < x < 1, \ \text{with} \quad u(0) = 0, \quad u(1) = 1.$

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH **SEMESTER : I**
BRANCH: AMS **SESSION : MO/18**

SUBJECT: PE501 MANUFACTURING AUTOMATION

TIME: 3.00 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Define 'Automation'. Discuss the significance of automation in Industry with suitable applications. [5]
Q.1(b) Discuss the classification of Automated Manufacturing System's with typical features. [5]

Q.2(a) What are manufacturing Operations? Discuss the major categories of manufacturing costs? [5]
Q.2(b) A company requires 16000 units of raw material costing Rs. 2 per unit. The cost of placing an order is Rs.45 and the carrying costs are 10% per year per unit of the average inventory. Determine: (i) the economic order quantity (ii) No. of orders/ year (iii) cycle time and (iv) total inventory cost [5]

Q.3(a) What are the Automation Principles and Strategies? [5]
Q.3(b) A stepping motor has 200 step angles. Its output shaft is directly coupled to lead screw with pitch = 0.250 in. A worktable is driven by the lead screw. The table must move a distance of 5.00 in from its present position at a travel speed of 20.0 in/min. Determine (a) the number of pulses required to move the table the specified distance and (b) the required motor speed and pulse rate to achieve the specified table speed. [5]

Q.4(a) What is an Industrial Control System? Explain briefly the types of ICS with examples. [5]
Q.4(b) What are the various types of Industrial Control? Discuss the functions of Adaptive Control? [5]

Q.5(a) What are the functions of Programmable Logic Controller's (PLCs)? Discuss the components of PLC with examples [5]
Q.5(b) Write a PLC programme giving a suitable example with procedure and ladder circuit diagram. [5]

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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.SC **SEMESTER : III**
BRANCH: MATHS **SESSION : MO/18**

SUBJECT: SAM3101-OPERATIONS REASEARCH

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1 Use revised simplex method to solve the L.P.P. [12]

$$\text{Maximize } Z = 6x_1 - 2x_2 + 3x_3 \text{ subject to the constraints:}$$
$$2x_1 - x_2 + 2x_3 \le 2, \quad x_1 + 4x_3 \le 4 \text{ and } x_1 \ge 0,\ x_2 \ge 0, x_3 \ge 0.$$

Q.2 Use Dual simplex method to solve the L.P.P. [12]

$$\text{Maximize } Z = -2x_1 - 2x_2 - 4x_3 \text{ subject to the constraints:}$$
$$2x_1 + 3x_2 + 5x_3 \le 2, \quad 3x_1 + x_2 + 7x_3 \le 3, \ x_1 + 4x_2 + 6x_3 \le 5,$$
$$\text{and } x_1 \ge 0,\ x_2 \ge 0, x_3 \ge 0.$$

Q.3 A 4-ton vessel is loaded with one or more of three items. The following table gives the unit weight, w_i, in tons and the unit revenue in thousands of Rupees r_i, for item i. How should the vessel be loaded to maximize the total return? [12]

Item i	w_i	r_i
1	2	65
2	3	80
3	1	30

Q.4 Derive the optimal solution from the Kuhn-Tucker conditions, for the problem: [12]

$$\text{Minimize } Z = -x_1^2 - 2x_2^2 + 2x_1 + 3x_2 \text{ subject to the constraints:}$$
$$x_1 + 3x_2 \le 6, \quad 5x_1 + 2x_2 \le 10 \text{ and } x_1 \ge 0,\ x_2 \ge 0.$$

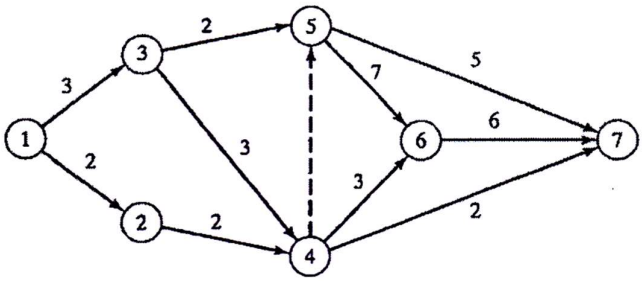
Q.5 Vehicles arrive at a central warehouse at the rate of 18/hour and the arrival rate follows Poisson distribution. The unloading time of the vehicles follows exponential distribution and the unloading rate is 6 vehicles/hour. There are four unloading machine. Find the followings: (a) Probability of zero customer and 3 customers in the system, (b) Expected number of vehicles in the queue and in the system, (c) Expected waiting time for a vehicle in the system and in the queue. (d) Expected percentage of idle time for each machine. [12]

Q.6 Determine the optimal sequence of jobs that minimize the total elapsed time based on the following information processing time on machines is given in hours and passing is not allowed: [6]

	A	B	C	D	E	F	G
Machine M1	3	8	7	4	9	8	7
Machine M2	4	3	2	5	1	4	3
Machine M3	6	7	5	11	5	6	12

PTO

Q.7 Determine the critical path for the project shown below: [12]



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BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.SC. **SEMESTER : I**
BRANCH: MGI **SESSION : MO/18**

SUBJECT: GI501 PRINCIPLES OF REMOTE SENSING

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Explain the significance of Atmospheric Windows. [4]
Q.1(b) It is required to determine the chlorophyll type and content of vegetation present in an urban area every month. Evaluate the roles of different types of resolutions in performing this task. [6]

Q.2(a) Describe the difference between the geo-synchronous and sun-synchronous satellites. [5]
Q.2(b) Compare between opto-mechanical and pushbroom sensors. [5]

Q.3(a) Illustrate two applications of BSQ data format. [4]
Q.3(b) Describe the different types of open data sources. [6]

Q.4(a) Explain the thermal response pattern of the following landuse types in a sunny and clear day: dry agricultural land, irrigated agricultural land, and agricultural land with standing healthy and green crop. [6]
Q.4(b) Explain the effect of surface roughness on the radar backscatter. [4]

Q.5(a) Explain the significance of ground truth radiometry in the analysis and interpretation of remote sensing images. [5]
Q.5(b) Explain three applications each of optical and thermal remote sensing in the field of agriculture. [5]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC **SEMESTER : VII**
BRANCH: CHEMISTRY **SESSION : MO/18**

SUBJECT: TPT1021 PRINCIPLES OF POLYMER TECHNOLOGY

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Define Polymer and write detailed notes on history of development of polymers. [6]
Q.1(b) Classify polymers based on different parameters and draw overall chart for polymer classification. [6]

Q.2(a) Describe theory of addition and condensation polymerization with examples. Also indicate which type of mechanism is conventionally assigned to each type of polymerization. [6]
Q.2(b) Describe the concepts of copolymerization and radiation polymerization with examples. [6]

Q.3(a) Write detailed notes on block and graft copolymerization with examples. [6]
Q.3(b) Describe molecular ratio and reactivity and explain techniques used to quantify them. [6]

Q.4(a) Enlist various types of viscosity associated with polymer solutions and define any two in detail. Also describe the procedure for estimation of polymer molecular weight using Ubbleholde viscometer. [6]
Q.4(b) List the techniques that can be used for polymer molecular wt. estimation, if (i) polymer is soluble in solvent (ii) polymer is insoluble in solvent. Explain any one method corresponding to each in detail. [6]

Q.5(a) Define T_g and T_b and show how T_g is extracted from a typical DSC plot with exo-up and endo-up. Also list the factors affecting T_g and write the various properties obtained from a DSC curve. [6]
Q.5(b) Describe in detail the two configuration modes of conventional DSC. Explain how modulated DSC is different from conventional DSC and enlist names of various clamp geometries available in DMA. [6]

Q.6(a) Differentiate LDPE and LLDPE. Explain one production method for each in detail with figures. [6]
Q.6(b) Describe all the methods used for polystyrene production with figures where applicable. [6]

Q.7(a) List the conditions for a polymer to be conductive. Write the structures of six common conductive polymers and explain the synthesis methods of any two polymer in detail. [6]
Q.7(b) Write short notes on (i) photoresponsive polymers (ii) optical properties of polymers (iii) Magnetic polymers. [6]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI

(END-SEMESTER EXAMINATION)

CLASS: M. PHARM. **SEMESTER: I**
BRANCH: ALL **SESSION: MO/18**

SUBJECT: MPH101T / MPC101T/ MPL101T/ MQA101T/ MPG 101T
MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

TIME: 3.00 Hour **FULL MARK: 75**

INSTRUCTIONS:

1. **The missing data, if any, may be assumed suitably.**
2. **Before attempting the question paper, be sure that you have got the correct question paper.**
3. **Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.**
4. **This question paper consists of (03) three parts. Read the part wise instruction before attempting the questions.**

PART-I
(Instruction: Answer All)

Q1. (10 x 2 = 20 marks)

a. Name the bending vibrations in IR spectroscopy.

b. Which technique is used to detect the hydrogen bonding in compound?

c. Magic angle NMR is carried out at which angle?

d. The number of peaks shown by diethyl ether in an NMR spectrum are is _____

e. In mass spectrum M-18 peak indicates loss of _____

f. The most commonly used detector in liquid chromatography is _____

g. Derivatisation techniques in HPLC are intended to enhance _____

h. The number of theoretical plates depends on what?

i. Increase in conjugation causes _____ shift.

j. Absolute configuration of a compound is determined by which technique?

PART-II
Short Answers
(Instruction: *Answer seven out of nine question*)

(07 x 05 = 35 marks)

Q2. Define and derive Lambert-Beer's Law.
Q3. Describe the different modes of molecular vibrations in IR.
Q4 Discuss the application of Ion exchange chromatography.
Q5. Discuss the working of Gel electrophoresis.
Q6. Summarize the information obtained from a DSC thermogram?
Q7. Discuss the mass spectra pattern & interpretation in –
(i) Saturated Hydrocarbon (ii) Alcohols
Q8. Discuss the 1H NMR spectra data & characterizations of –
(i) Benzoic acid (ii) Aniline (iii) Ethyl benzene
Q9. Describe 5 rules of Fragmentation in mass spectra data.
Q10. Discuss the signal pattern and chemical shift for –
(i) Acetylenic protons (ii) Aryl protons in benzene

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PART-III
Long Answers
(Instruction: *Answer two out of three questions*)

(02 x 10 = 20 marks)

Q11. How would you design an experiment to determine the absorptivity of a newly synthesised drug?

Q12. (a) Define & explain the term NMR. Describe the principle involved in generation of ^{1}H NMR spectra data.

(b) Draw a neat labeled diagram of a ^{1}H NMR spectrometer. Describe the functioning of –
(i) R.f. transmitter (ii) Magnet (iii) Integrator

Q13. Describe & draw neat labeled diagram for functioning of –
(a) Mass spectrometer.
(b) What is the importance of mass spectra data for interpretation & characterization of compounds?

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MAD **SEMESTER : I**
BRANCH: ANIMATION & MULTIMEDIA **SESSION : MO/18**

SUBJECT: AM401 TRADITIONAL ANIMATION

TIME: 03:00 **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	What is the significance of Basic Shapes in creating character (animal or human) for animation, explain it through 3 examples?	[5]
Q.1(b)	What do you understand by Overlapping Action? Explain with examples and the help of drawings.	[5]
Q.2(a)	Differentiate between Straight Ahead Animation and Pose to Pose Animation. Explain with examples.	[5]
Q.2(b)	What is the flow chart of 2D Animation Production Process?	[5]
Q.3(a)	Illustrate the following camera angles for animation in your style- 1) Long Shot of a Railway Station 2) Interior Shot of train- people traveling	[5]
Q.3(b)	Create thumbnails of four-legged Walk Cycle by marking its contact position, down position, pass position and up position.	[5]
Q.4(a)	Design a character of a Criminal. Write out a brief biography of your designed character.	[5]
Q.4(b)	What do you understand by attitude based walk cycle? Create any two.	[5]
Q.5(a)	Create lip-sync and action of the given dialogue using your designed character- *"**Wow, it's a wonderful place**"*	[5]
Q.5(b)	Create lip-sync and action of the given dialogue using your designed character- *"**Hello! How are you?**"*	[5]

********26.11.18******M**

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC **SEMESTER : IX**
BRANCH: MATHS & COMP. **SESSION : MO/18**

SUBJECT: MSH1109 ENTREPRENEURSHIP & SMALL BUSINESS MANAGEMENT

TIME: 03:00 **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Define entrepreneur? Explain the characteristics required to be an entrepreneur.	[6]
Q.1(b)	Explain Product life cycle? What are the strategies adopted in growth phase.	[6]
Q.2(a)	"Entrepreneurs are innovators" Explain.	[6]
Q.2(b)	"Entrepreneurs help in economic development of a nation" Explain.	[6]
Q.3(a)	Explain the entrepreneurial environment of an enterprise.	[6]
Q.3(b)	Explain the different types of entrepreneurs? With Examples.	[6]
Q.4(a)	Explain the elements of a business plan.	[6]
Q.4(b)	Write a business plan for an IT startup?	[6]
Q.5(a)	What are the patentability rights in India?	[6]
Q.5(b)	Explain the Schumpeter's theory of Innovation.	[6]
Q.6(a)	Explain the sole proprietorship ownership in India.	[6]
Q.6(b)	What is the difference between Partnership and a Joint Stock Company?	[6]
Q.7(a)	Explain the debt sources of finance for a startup.	[6]
Q.7(b)	Explain the government schemes to promote entrepreneurship in India.	[6]

********26.11.18******M**