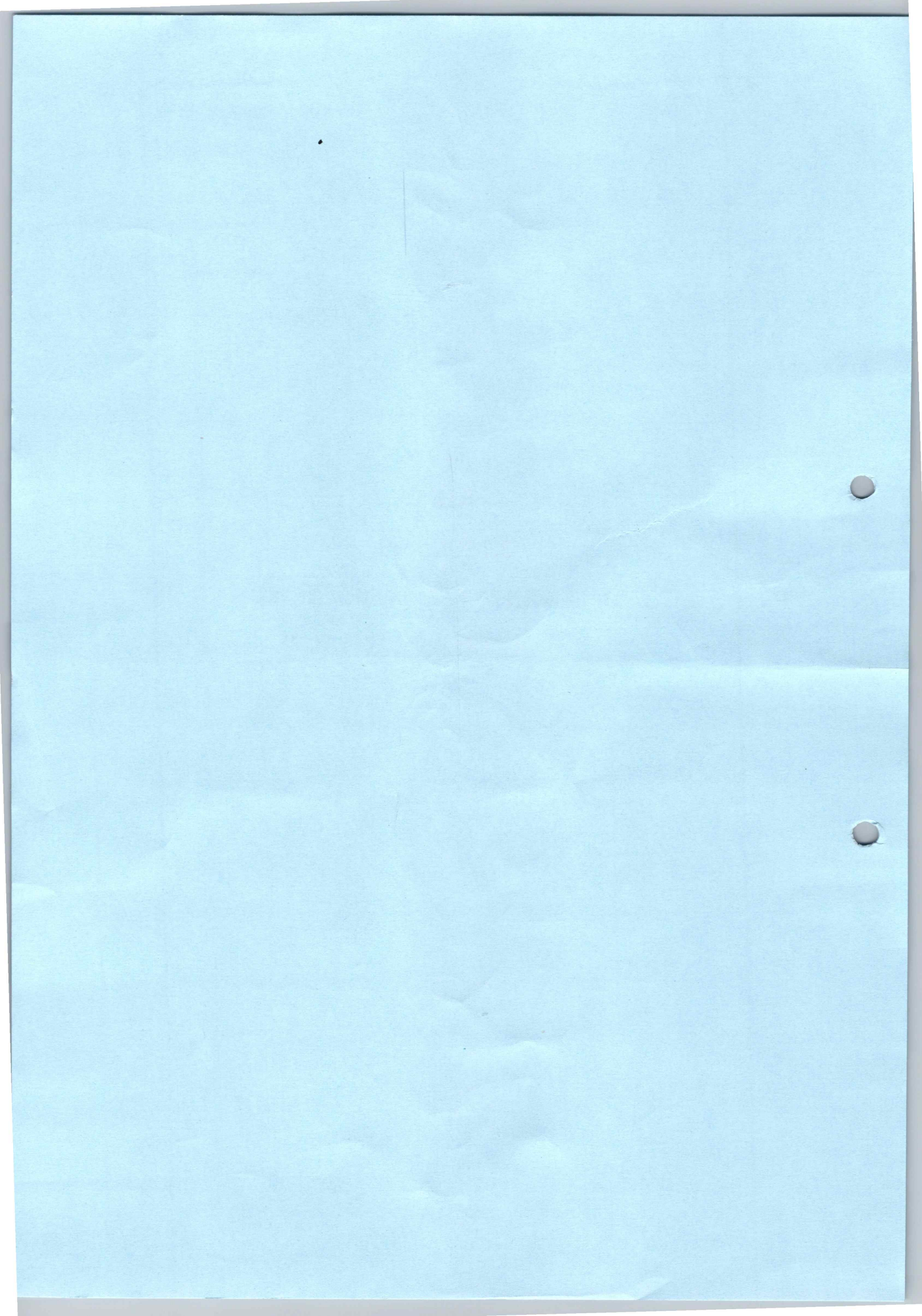


R16

IV B.TECH I SEM

SUPPLEMENTARY EXAMINATIONS

OCTOBER 2023



(R16) IV B.TECH I SEM SUPPLEMENTARY EXAMINATIONS OCT - 2023

TIME TABLE

TIMINGS : 2.00 PM TO 5.00 PM

BRANCH	03.10.2023	05.10.2023	07.10.2023	10.10.2023	12.10.2023	14.10.2023
CIVIL ENGINEERING (01- CE)	ESTIMATION COSTING AND VALUATION (R16CE4101)	ENVIRONMENTAL ENGINEERING-II (R16CE4102)	CONSTRUCTION TECHNOLOGY AND MANAGEMENT (R16CE4103)	OPEN CHANNEL HYDRAULICS (R16CE4108)	PHOTOGRAMMETRY AND REMOTE SENSING (R16CE4114) / BRIDGE ENGINEERING (R16CE4116)	WATER SHED MANAGEMENT (R16CC410E22)
ELECTRICAL AND ELECTRONICS ENGINEERING (02 - EEE)	POWER SYSTEM OPERATION AND CONTROL (R16EEE4101)	SWITCHGEAR AND PROTECTION (R16EEE4102)	UTILIZATION OF ELECTRICAL ENERGY (R16EEE4103)	POWER QUALITY (R16EE4107)	PLC AND AUTOMATION (R16EEE4109)	INTERNET OF THINGS (R16CC410E7) / WEB TECHNOLOGIES (R16CC410E8)
MECHANICAL ENGINEERING (03 - ME)	FINITE ELEMENT METHODS (R16ME4101)	CAD/CAM (R16ME4102)	ADVANCED MANUFACTURING PROCESSES (R16ME4103)	POWER PLANT ENGINEERING (R16ME4104)	PRODUCTION PLANNING AND CONTROL (R16ME4111)	ROBOTICS (R16CC410E14)
ELECTRONICS AND COMMUNICATION ENGINEERING (04 - ECE)	OBJECT ORIENTED PROGRAMMING THROUGH JAVA (R16EC4101)	MICROCONTROLLERS AND EMBEDDED SYSTEMS (R16EC4102)	COMPUTER NETWORKS (R16EC4103)	BIO MEDICAL INSTRUMENTATION (R16EC4107)	RADAR SYSTEMS (R16EC4110)	GLOBAL POSITIONING SYSTEM (R16CC410E18)
COMPUTER SCIENCE AND ENGINEERING (05 - CSE)	INTERNET OF THINGS (R16CS4101)	BIG DATA ANALYTICS (R16CS4102)	SOFTWARE TESTING METHODOLOGY (R16CS4105)	MOBILE AD-HOC AND SENSOR NETWORKS (R16CS4110)	CLOUD COMPUTING (R16CC410E9)	-----

NOTE:

- i. ANY OMISSION OR CLASHES IN THIS TIME TABLE MAY PLEASE BE INFORMED TO THE CONTROLLER OF EXAMINATIONS, IMMEDIATELY.
- ii. EVEN IF GOVERNMENT DECLARES HOLIDAY ON ANY OF THE ABOVE DATES, THE EXAMINATIONS SHALL BE CONDUCTED AS USUAL.
- iii. THE HODs ARE REQUESTED TO INFORM THE EXAMINATION SECTION (AUTONOMOUS) ANY OTHER SUBSTITUTE SUBJECTS THAT ARE NOT INCLUDED IN THE ABOVE LIST IMMEDIATELY.

M. S. R.

CHIEF CONTROLLER OF EXAMINATIONS



Subject Code: R16CC41OE9

IV B.Tech I Semester Supple Examinations, October-2023

CLOUD COMPUTING (OPEN ELECTIVE-II)

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is Hypervisor?
- (b) Write any two key properties of Cloud Computing.
- (c) Write any two examples of open source software where licensed offered these software's tends to be cloud friendly.
- (d) What is Host Security?
- (e) What are the features of Platform-as-a-Service?
- (f) What do you mean by Disasters in the Cloud?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain about "Server Virtualization" with related advantages and limitations.
- (b) Explain "On-Demand Computing" with a suitable example.
3. (a) "The network is the computer"- Justify this statement with respect to Cloud.
- (b) What is capacity planning and why it is necessary? Explain.
4. (a) Explain Service Level Agreement (SLA) for any Cloud application.
- (b) What is the best way to compare cost in the cloud to the other models in general? Explain it with a suitable example.
5. (a) Explain any three issues arises in Standard and Regulations of Cloud Security.
- (b) Explain why data security is important in Cloud Computing?
6. (a) What are the benefits of "Database-as-a-Service" in Cloud Computing?
- (b) Explain "Process-as-a-Service" in Cloud Computing.
7. (a) Explain about "two key Metrics " involves in Disaster Recovery Plan.
- (b) "Monitoring" is one of the key component of Disaster Management. Explain with a suitable example.



Subject Code: R16ME4101

IV B.Tech I Semester Supple Examinations, October-2023

FINITE ELEMENT METHODS

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define the words Stress and Strain
- (b) Define the term shape function
- (c) Define the term beam element
- (d) What is an isoperimetric element
- (e) Define Steady State Heat Transfer
- (f) Discuss Mesh generation

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

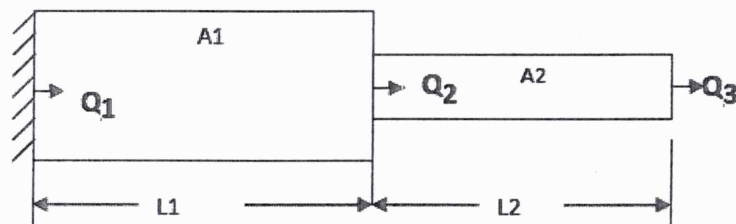
2. (a) Explain the potential energy formulation for obtaining element equations in Finite element methods **[6M]**
- (b) The following stresses are developed in a thin plate under a plane stress $\sigma_{xx} = 120$ Mpa $\sigma_{yy} = 14$ Mpa and $\sigma_{xy} = 5$ Mpa. Determine the strain induced in the plate, assuming that $E = 209$ Gpa and $\nu = 0.3$ **[6M]**
3. (a) What are the shape functions for the 1-D axial bar element with quadratic interpolation function. **[6M]**
- (b) A bar element is subjected a body force of 40 kN/m^3 throughout the length of 200 mm with a diameter of 20 mm. A traction force of 500 kN/m is also acting along the length. Calculate the load vector for the bar element for the above loads. **[6M]**
4. (a) Derive the stiffness matrix for plane truss element. **[6M]**
- (b) For the simply supported beam of span 2 m is subjected a 20 kN/m of UDL in the first half of the beam and 10 kN/m in the second half of the beam. Estimate the deflections and slopes at the centre and at the ends of the beam. Take $I = 5 \times 10^{-6} \text{ m}^4$ and $E = 200 \text{ GPa}$ **[6M]**
5. (a) Calculate the strain displacement matrix for the element with the coordinates 1(40,50), 2(90,20) and 3(60,80) mm. And also calculate the strains the triangle whose nodal displacement values are $u_1=0.3 \text{ mm}$, $v_1=0.3 \text{ mm}$, $u_2 = 0.2 \text{ mm}$, $v_2 = -0.4 \text{ mm}$, $u_3 = 0.3 \text{ mm}$, $v_3 = 0.5 \text{ mm}$ **[6M]**
- (b) Derive the Jacobian matrix for a 2-D triangular element in terms of the nodal coordinates **[6M]**

6. (a) What are different thermal applications of finite element analysis? Compare the structural analysis with thermal analysis. **[6M]**

(b) Calculate the temperature distribution induced in the fin of 8 mm diameter, which is exposed to the convective heat transfer coefficient of $52 \text{ W/m}^2 \text{ K}$ with 30° C ambient temperature. The base of the fin is exposed to a heat flux of 5000 kW/m^3 and the thermal conductivity of fin material as 30 W/m K . **[6M]**

7. (a) Explain how to solve the equilibrium equation by considering the dynamic behavior? **[6M]**

(b) Determine natural frequencies and corresponding mode shapes for the shown in figure 7(b) below. Take $L_1 = 1 \text{ m}$, $L_2 = 2 \text{ m}$, $A_1 = 2 \text{ m}^2$, $A_2 = 1 \text{ m}^2$, $\rho = 7850 \text{ kg/m}^3$, $E = 200 \text{ GPa}$.





Subject Code: R16ME4102

IV B.Tech I Semester Supple Examinations, October-2023

CAD/CAM

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) List the types of output devices used in conjunction with computer Aided design system.
- (b) Distinguish between Bezier curves and Cubic Spline curve
- (c) Describe the significance of layers?
- (d) What are the advantages of CNC machines?
- (e) Define part family and machine cell
- (f) What are the applications of FMS?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- 2 (a) Explain the conventional process of the product cycle in the conventional manufacturing environment [6]
- (b) The vertices of a triangle are situated at points A (15, 30), B (25, 35) and C(5, 45). Find the coordinates of the vertices if the triangle is first rotated 10° counter clockwise direction about the origin and then scaled to twice its size. [6]
- 3 (a) Explain the Constructive Solid Geometry (CSG) method to create models with suitable example [6]
- (b) Explain the following modeling techniques: [6]
 - i) Wire-Frame Modeling
 - ii) Surface Modeling
- 4 Explain various Geometric and Editing commands in drafting and modeling systems. [12]
- 5 (a) Explain the working of NC machine tool with the help of the diagram. [6]
- (b) Briefly explain the Canned cycle in manual part programming. [6]
- 6 (a) Discuss with examples the following: [6]
 - (i) Monocode
 - (ii) Polycode
- (b) Explain in details about the features of Flexible Manufacturing System (FMS). [6]
- 7 (a) Explain the Generative CAPP type system with neat sketch. [6]
- (b) Explain in briefly the integration of CAQC with CAD/CAM. [6]



Subject Code: R16ME4103

IV B.Tech I Semester Supple Examinations, October-2023

ADVANCED MANUFACTURING PROCESSES

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Explain stir casting Process.
- (b) What are the Advantages and applications of LBW?
- (c) What are Advantages and limitations of Magnetic Forming Process?
- (d) Explain the economic considerations of Abrasive Machining.
- (e) Explain the basic principles of Material removal in Electro-Spark process.
- (f) What are the Advantages and applications of Plasma Machining?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain Squeeze casting process with a neat sketch. [6M]
- (b) What is ceramic shell casting? Compare Sand Casting and Ceramic Shell Casting. [6M]
3. (a) Explain the Working Principle of Electron Beam Welding. [6M]
- (b) What is Hybrid Welding Process? Explain any one giving its advantages. [6M]
4. Explain the principle of explosive forming. Compare confined system and nonconfined system of explosive forming. [12M]
5. (a) Explain the Water Jet Machining Process with a schematic diagram. [5M]
- (b) Discuss the major process variables that affect the MRR in Abrasive Jet Machining. [7M]
6. Electrochemical machining is performed to remove material from an surface of 20mm*20mm Under the following conditions. inter electrode gap, $l=0.2\text{mm}$, supply voltage, $V=12\text{volt}$, specific resistance of electrolyte, $\rho_s=2\Omega\text{ cm}$, Atomic weight of Iron, $A=55.85$, Valency of Iron, $Z=2$, Faraday's constant, $F=96540\text{ coulombs}$. Find MRR. [12M]
7. (a) State and explain about the parameters that influence Plasma Machining Process. [6M]
- (b) State the mechanism of metal removal, merits and demerits of laser beam Machining process. [6M]



Subject Code: R16ME4104

IV B.Tech I Semester Supple Examinations, October-2023

POWER PLANT ENGINEERING

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Enumerate sources of energy.
- (b) Enlist the desired characteristics of a good steam boiler
- (c) Differentiate natural draught and induced draught
- (d) What are the challenges in installing a nuclear power plant
- (e) State the applications of diesel power plant.
- (f) How is the total annual cost of electricity is calculated

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. In a Rankine cycle, the steam at inlet to turbine is saturated at a pressure of 30 bar and the exhaust pressure is 0.25 bar. Determine: (i) The pump work (ii) Turbine work (iii) Rankine efficiency (iv) Condenser heat flow (v) Dryness at the end of expansion. Assume flow rate of 10 kg/s 12M
3. (a) With the help of a neat sketch describe the working of Babcock & Wilcox boiler 8M
(b) Explain the function of a superheater and give its classification 4M
4. (a) Write a short note on pulverized fuel firing 6M
(b) Enlist advantages and disadvantages of electrostatic precipitator 6M
5. In an air standard gas turbine engine, air at a temperature of 15°C and a pressure of 1.01 bar enters the compressor, where it is compressed through a pressure ratio of 5. Air enters the turbine at a temperature of 815°C and expands to original pressure of 1.01 bar. Determine the ratio of turbine work to compressor work and the thermal efficiency when the engine operates on ideal Brayton cycle. Take : $\gamma = 1.4$, $C_p = 1.005$ kJ/kg K. 12M
6. (a) Give the layout of a diesel engine power plant 6M
(b) Describe briefly the methods of governing an impulse turbine? 6M
7. (a) Name important gaseous pollutants discharged by thermal power plants. 4M
(b) The peak load on a power plant is 60MW. The loads having maximum demands of 30 MW, 20 MW, 10 MW and 14 MW are connected to the power plant. The capacity of the plant is 80 MW and the annual load factor is 0.5. Estimate i) average load on the power plant ii) the energy supplied per year iii) the demand factor iv) the diversity factor. 8M



Subject Code: R16ME4111

IV B.Tech I Semester Supple Examinations, October-2023

PRODUCTION PLANNING AND CONTROL

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is job order production?
- (b) State the objectives of short term forecasting
- (c) Give a short note of ABC analysis
- (d) Define routing. List out limitations of routing
- (e) What is scheduling? What are its objectives?
- (f) Discuss any four applications of computer in PPC

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Describe the functions of Production planning and control? [6M]
- (b) State the purpose of a manufacturing organization in an industry. Give a typical organization structure of a manufacturing organization. [6M]
3. (a) Name and describe the various factors affecting sales forecasting. [6M]
- (b) State the advantages and limitations of sales forecasting. [6M]
4. (a) Explain the significance of EOQ formula. What are its Limitations? [6M]
- (b) How can load reports be used to develop material requirement plans? [6M]
5. (a) What do you meant by bill of material? Explain in detail.[6M]
- (b) Discuss different routing procedure. .[6M]
6. For the following data, find the schedule that minimizes the mean flow time, if the number of parallel machines is 2. [12M]

Job	1	2	3	4	5	6	7	8
Processing Time (hr)	5	7	4	8	3	2	6	10

7. (a) List out and briefly explain the activities of dispatcher. . [6M]
- (b) Explain the applications of computer in production planning and control . . .[6M]



Subject Code: R16EC4101

IV B.Tech I Semester Supple Examinations, October-2023
OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) List the principles of Object Oriented Programming with a brief usage of each.
- (b) Define class and object.
- (c) Define Object class and String Class.
- (d) List the methods used in Suspending and Resuming the Threads.
- (e) Define Adapter Class and specify its usage.
- (f) Define TextField and TextArea.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What are the drawbacks of procedural languages? Explain the need of object oriented programming with suitable program. [6M+6M]
- (b) Define constructor? What is its requirement in programming? Explain with program.
3. (a) Explain various access specifiers supported by Java with an example
- (b) Explain clearly about how Java handles cleaning up of unused objects. [6M+6M]
4. (a) With suitable code segments illustrate various uses of 'final' keyword.
- (b) Define exception? How are exceptions handled in Java programming? Explain. [6M+6M]
5. (a) Explain thread life cycle and thread creation in Java with an example program.
- (b) Explain how to achieve thread synchronization. [6M+6M]
6. (a) Write an applet to display the mouse cursor position in that applet window.
- (b) What is the role of event listeners in event handling? List the Java event listeners [6M+6M]
7. (a) Discuss various AWT containers with examples.
- (b) Explain the creation and manipulation of menus. [6M+6M]



Subject Code: R16EC4102

IV B.Tech I Semester Supple Examinations, October-2023

MICRO CONTROLLERS AND EMBEDDED SYSTEMS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

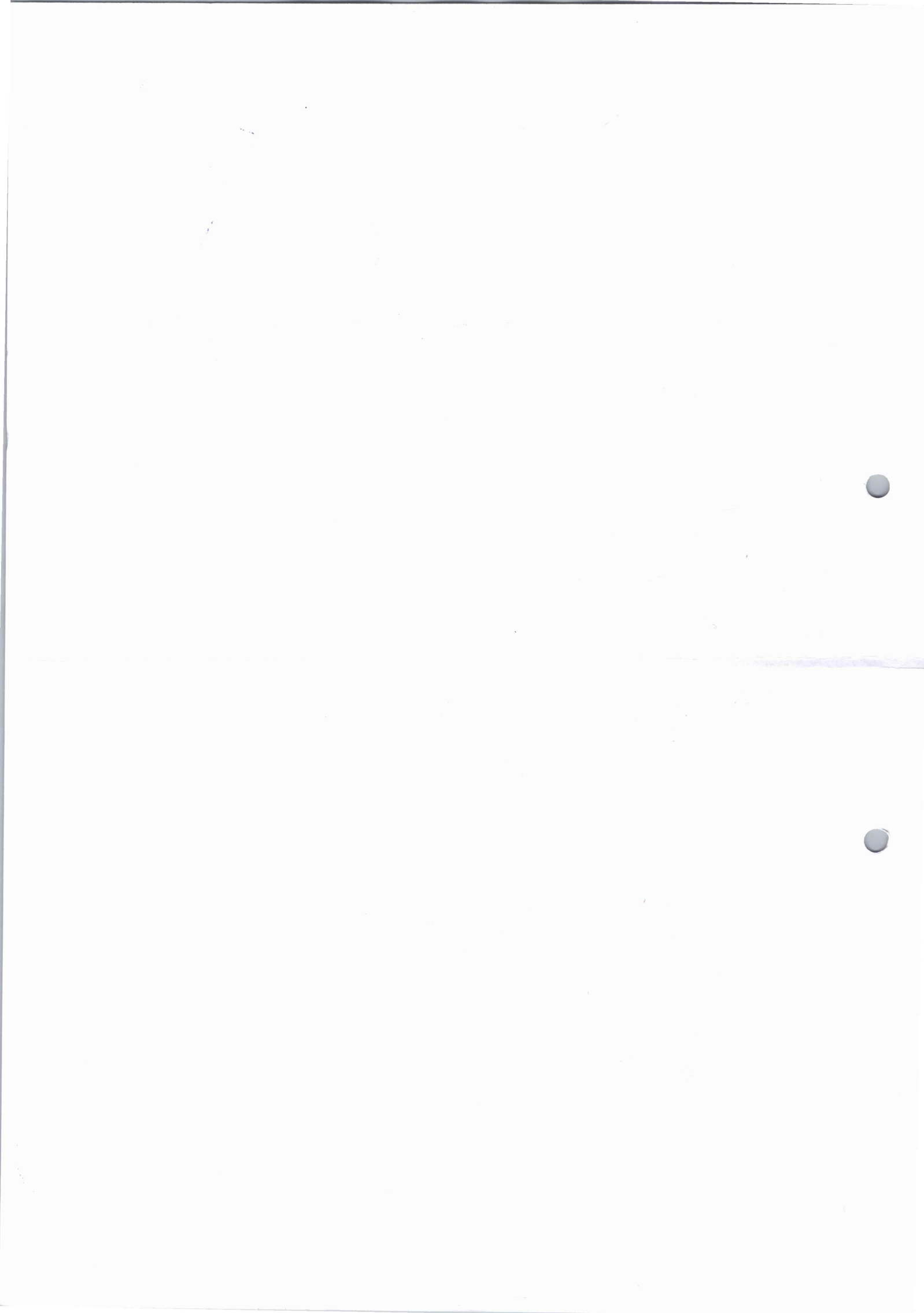
1. (a) Distinguish between direct and indirect addressing modes
- (b) Briefly explain the procedure of interfacing humidity sensor to 8051.
- (c) What are the differences between general purpose computing and embedded systems?
- (d) What is interrupt latency and how can we reduce it?
- (e) Discuss the importance of Embedded Systems in auto mobile industry applications
- (f) Explain the purpose of device drivers in operating systems

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss briefly about the interrupt structure of 8051 Microcontroller [6]
- (b) Write a look-up table program to determine the square root of a number [6]
3. (a) Describe how an LCD can be interfaced with 8051 and also write a program to send 'I', 'N', 'D', 'I', 'A' to LCD continuously [6]
- (b) Explain and draw a typical stepper motor interfacing with 8051 microcontroller [6]
4. (a) Draw the architecture of ARM controller and explain the operation of each block in it [6]
- (b) Discuss the various characteristics and quality attributes of Embedded systems [6]
5. (a) Discuss the organization structure of ARM processor [4]
- (b) Explain the design flow of automatic chocolate vending machine as an embedded system [8]
6. (a) Describe the role of Watchdog timer in embedded systems [4]
- (b) Justify the need for brown-out detection circuit in real time embedded applications and explain the mechanism for implementing the same. [8]
7. (a) Discuss the various types of semaphores in vxworks RTOS? [5]
- (b) Explain the different task communication synchronization issues encountered in interprocess communication [7]





Subject Code: R16EC4103

IV B.Tech I Semester Supple Examinations, October-2023

COMPUTER NETWORKS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from **Part-B**

All questions carry equal marks of 12.

PART-A

1. (a) Write the differences between broadcasting and point-to-point transmission.
- (b) Illustrate the differences between guided and un-guided transmission media.
- (c) Illustrate the concept of error detection with simple example.
- (d) What is meant by optimality principle? Explain.
- (e) List different types of transport service primitives.
- (f) Write the difference between computer security and network security.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Compare OSI reference model with Internet protocol suite. Write your observations.
 - (b) Define topology and write about different types of topologies.
3. Write the uses of switching in networks. Illustrate different switching techniques in networks and also compare them.
4. (a) Illustrate framing concepts in DLL with simple examples.
 - (b) Write the uses of ALOHA. And explain the concepts of pure ALOHA and slotted ALOHA with neat diagrams.
5. (a) Explain in brief Distance vector Routing algorithm.
- (b) Explain the following congestion control algorithms:
- i. leaky bucket algorithm
 - ii token bucket algorithm.
6. (a) List different types of services provided by the transport layer. Explain briefly.
- (b) Draw the structure of TCP header format and explain briefly.
7. (a) Illustrate DES with neat diagram.
- (b) Write about DNS in brief.

Subject Code: R16EC4110

IV B.Tech I Semester Supple Examinations, October-2023

RADAR SYSTEMS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) List ant two radar applications.
- (b) Calculate the Doppler frequency of an aircraft moving with a speed of 550 Knots and when the CW radar is working with $\lambda=8\text{cms}$.
- (c) Write about MTI radar parameters.
- (d) What are the types of tracking radar.
- (e) Define aperture efficiency.
- (f) List advantages of phased array antennas.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss in brief the radar range equation and modified radar range equation.
- (b) List and explain about the Radar Frequencies and Applications.
3. (a) Draw a block diagram of the FMCW radar and explain its operation.
- (b) Discuss about the Isolation between the transmitter and receiver.
4. (a) Describe the MTI radar performance with a neat block diagram.
- (b) Explain the comparison performance among MTI versus Pulse Doppler radar.
5. (a) Explain about the importance of parameter Frequency agility and glint reduction.
- (b) Define tracking in range and explain the split gate tracker method.
6. (a) What is meant by correlation? Explain cross correlation with the help of neat block diagram.
- (b) Explain the derivation of Matched Filter Receiver with necessary expressions.
7. (a) Write about radiation pattern of phased array antennas with suitable equations.
- (b) A radar receiver is connected to a 30 ohm resistance antenna that has an equivalent noise resistance of 25 ohm. Calculate the noise figure of the receiver and the equivalent noise temperature of the receiver.



Subject Code: R16CS4102

IV B.Tech I Semester Supple Examinations, October-2023

BIG DATA ANALYTICS

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

- (a) List out the Web-based tools for monitoring your Hadoop setup.
- (b) Can the Mapper produce a key/value pair from a single input? How can we solve this issue?
- (c) Compare: Apache Spark RDD vs DataFrame vs DataSet
- (d) Give the statements for how to join the two pair RDDs based on their key?
- (e) List out the Pig Latin Operators along with their purposes for Data Access and Transformations.
- (f) Write a shell command in Hive to list all the files in the current directory.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) Illustrate the numerous architectural components of Hadoop. [6+6]
(b) Compare the three operating modes of Hadoop and its Setups.
- (a) How can we pass a different seed to initialize random numbers to each Map task, in order to make sure that no two Map tasks will work on the same values? What other parameter will we have to pass to each Map task? What will be the type of the keys and values of the input of Map tasks? What will they represent? [6+6]
(b) The Reduce task sums the results. What will the types of the keys and the values of the Reduce task be? What will they represent?
- (a) Spark performs in-memory computation and manipulation thanks to RDD. But when the problem requires to access computation again and again between different jobs, RDD get recomputed each time. How can this problem be avoided? [6+6]
(b) Suppose we have distributed data across multiple nodes and each file contains historical information about monthly salaries paid by an employer. Your task is to find the total sum of salaries paid by the employer in the record.

Here is the code snippet, explain why it will work or not work. Present your solution to remedy (if any) problem in the given code. (Scala code)

```
var counter = 0
var rdd = sc.textFile("data.txt")
rdd.foreach(x => counter += x)
println("Counter value: " + counter)
```

- (a) Spark has Resilient Distributed Datasets (RDD) which works on lazy transformation mechanism. Explain what this lazy transformation is and what its benefits are. [6+6]
(b) Explain with example how to reduce the number of partitions of a RDD and get the result in a new RDD?

6. (a) Illustrate Admiring the Pig Architecture. **[6+6]**
(b) Explain evaluating with the local and distributed modes of running Pig scripts.
7. (a) How many types of joins are there in Pig Latin? Explain with an example. **[6+6]**
(b) List the collection types provided by Hive for the purpose a start-up company want to use Hive for storing its data. Describe your answer.



Subject Code: R16CS4105

IV B.Tech I Semester Supple Examinations, October-2023
SOFTWARE TESTING METHODOLOGY
(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from **Part-B**
All questions carry equal marks of 12.

PART-A

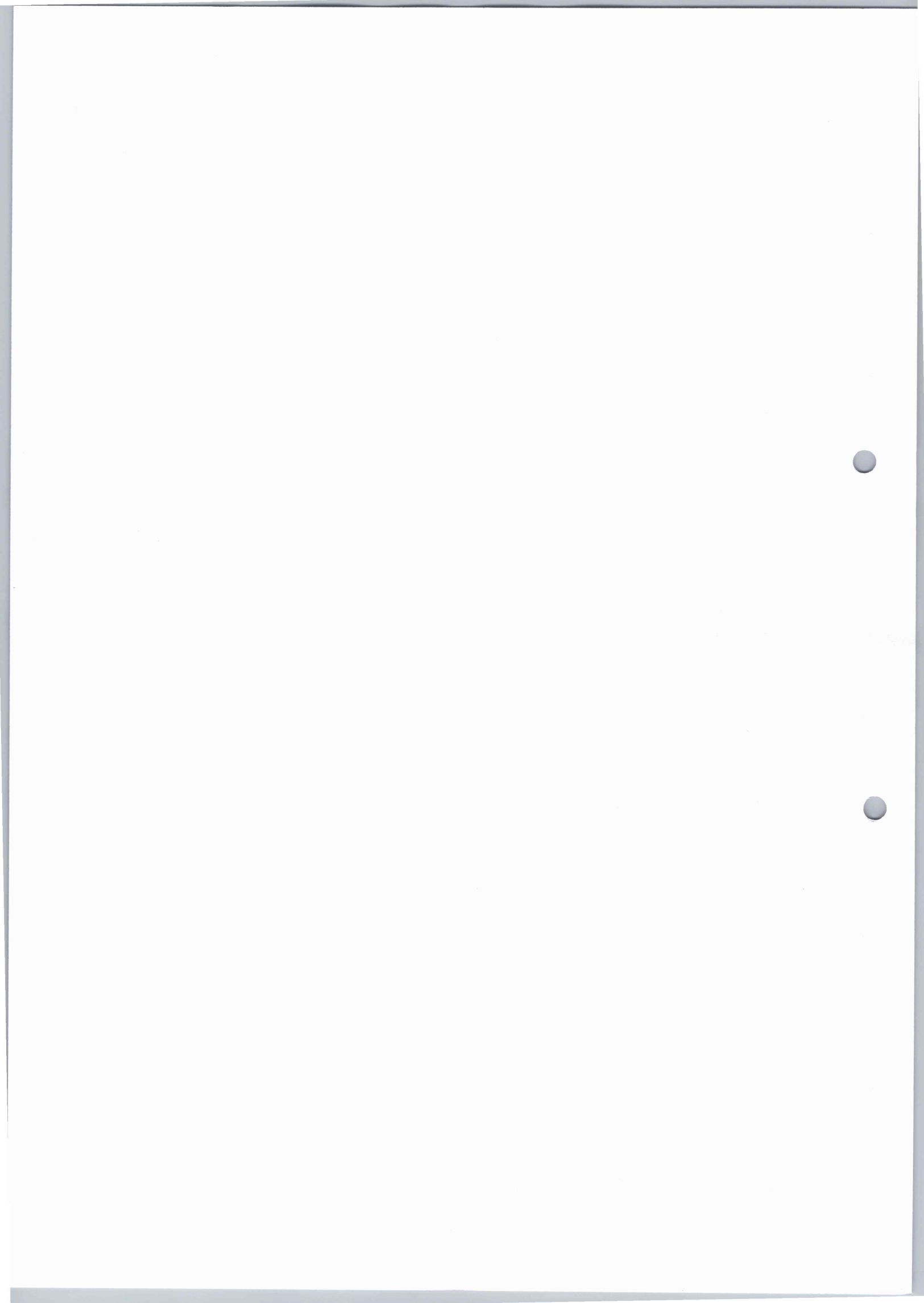
1. (a) Write the benefits of automated testing.
- (b) What is the focus of acceptance testing?
- (c) Define syntax-based testing.
- (d) Differentiate Beta testing from Alpha testing.
- (e) Compare open and closed domains.
- (f) What is logic based testing?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss about Myths related software testing and its facts.
 - (b) Explain software testing life cycle with proper diagram.
3. (a) Illustrate high level and low level designs.
 - (b) How to perform syntax testing using the black-box method? Explain.
4. (a) What is the need of white box testing and explain loop testing with example.
 - (b) Explain structured walkthroughs with example.
5. (a) Explain how the function testing is different from integration testing.
 - (b) How the system testing is performed? Explain.
6. (a) How the effectiveness of a prioritized test suite is measured? Explain.
 - (b) Discuss the process to create the software quality metrics.
7. (a) Define Bug. Discuss the consequences of bugs.
 - (b) Explain the features of test automation. Give its merits and demerits over manual testing.





Subject Code: R16CS4110

IV B.Tech I Semester Supple Examinations, October-2023

MOBILE AD-HOC AND SENSOR NETWORKS

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

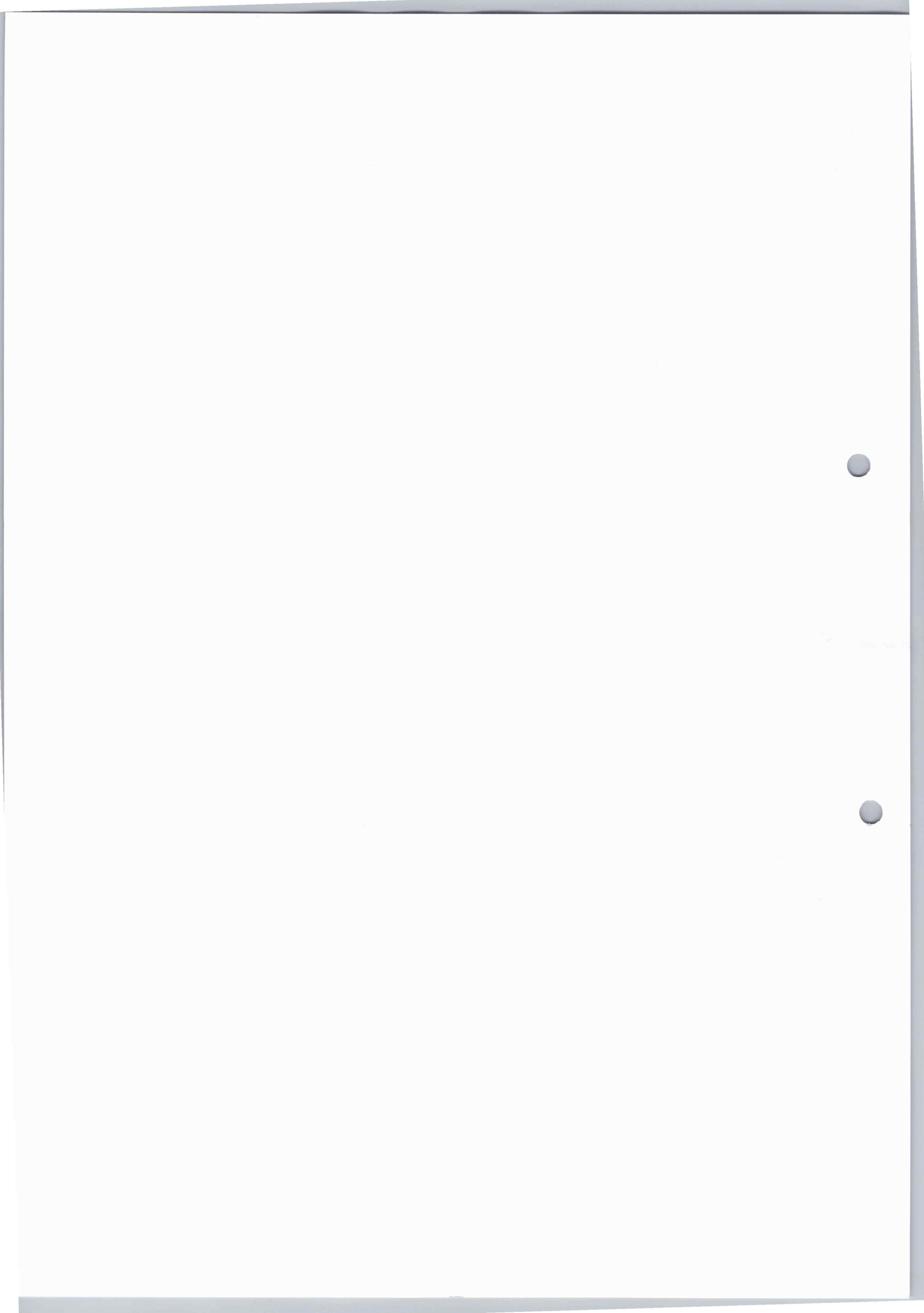
1. (a) Write the limitations of reactive routing protocol
- (b) Define geo-casting
- (c) Write the impact of partition in TCP
- (d) List the applications of WSN
- (e) What is the disadvantage of static channel allocation?
- (f) What are the operating systems used in WSN

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the characteristics and limitations of MANET
- (b) Explain the DSR protocol with neat sketch
3. (a) Explain the broadcasting storm problem with example
- (b) Compare and contrast broadcasting and multicasting
4. Explain the mobility related solutions for TCP over ad hoc
5. (a) Explain the design issues of WSN
6. (a) Explain the SMAC with neat diagram
- (b) Explain the directed diffusion in detail
7. Illustrate the Sensor Network Hardware





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Subject Code: R16CC410E14

IV B.Tech I Semester Supple Examinations, October-2023

ROBOTICS (OPEN ELECTIVE-III)

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

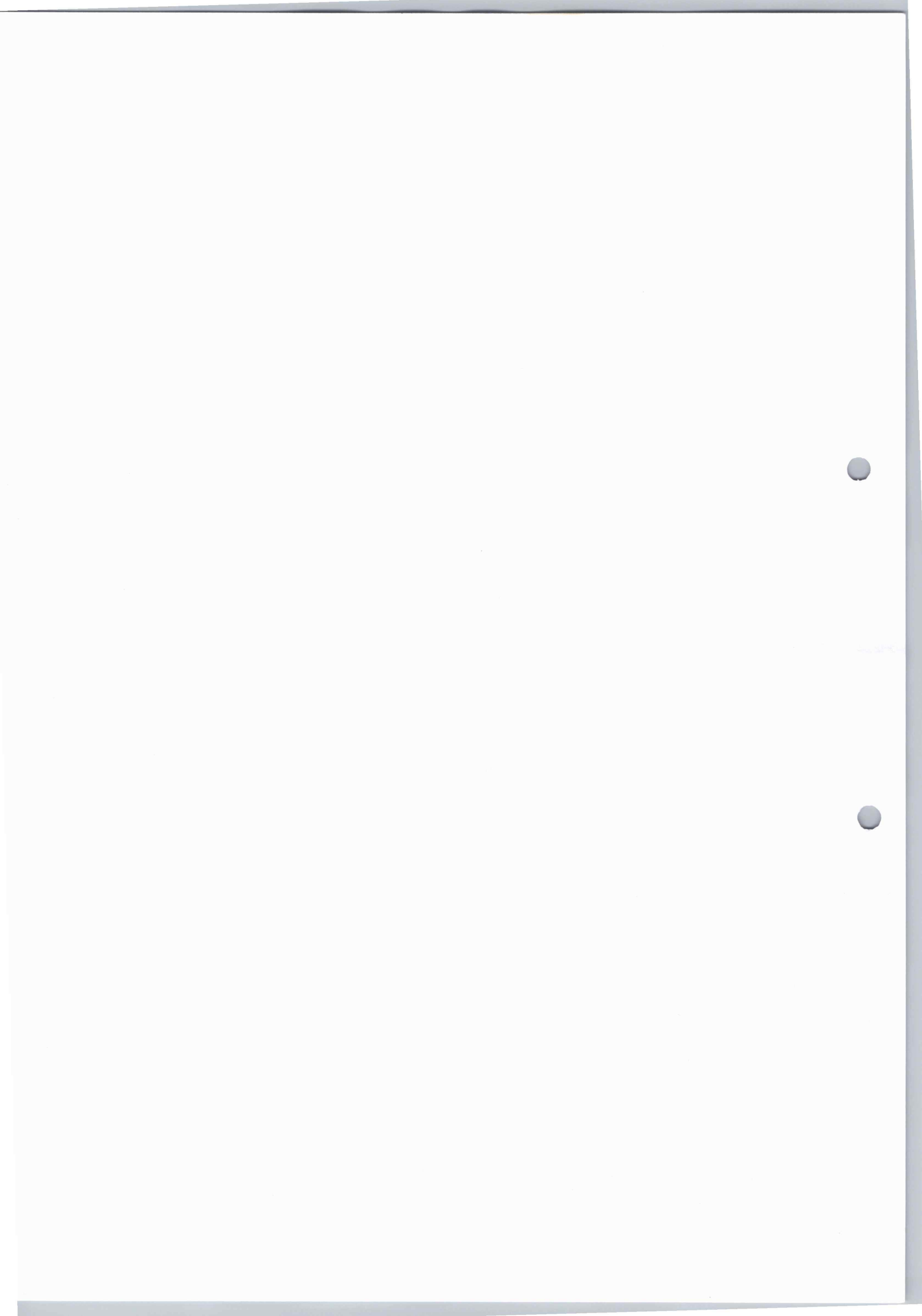
1. (a) Give the classification of robot by control system.
- (b) List the advantages and disadvantages of pneumatic actuator.
- (c) What are the future applications of Robot?
- (d) Differentiate joint coordinates and world coordinates.
- (e) What do you mean by manipulator jacobian?
- (f) List out different robot programming languages.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Sketch and explain the four basic robot configurations classified according to the coordinate system.
3. (a) Briefly explain the working principle of any two types of position sensors with neat sketch.
- (b) Explain the construction and working of stepper motor. Draw the sketch and slate advantages and disadvantages over other electric motors.
4. (a) Explain application of robot in robot continuous arc welding.
- (b) Describe the Spray coating operation with robot system.
5. (a) What is the role of D-H notation? Explain their importance in solving Forward Kinematics.
- (b) Write homogeneous transformation matrices for rotation in 3D.
6. Make a comparison of Newton-Euler and Lagrange-Euler formulations and state the situation when you will prefer Newton-Euler and when you will prefer Lagrange-Euler formulation.
7. A single cubic trajectory given by $q(t) = 30 + t^2 - 6t^3$ is used for a period of 3 seconds. Determine starting and final position, velocity and acceleration of end effector.





Subject Code: R16CC41OE18

IV B.Tech I Semester Supple Examinations, October-2023
GLOBAL POSITIONING SYSTEM (OPEN ELECTIVE-III)
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Why do we need control segment in GPS?
- (b) How ionospheric refraction, topsoheric refraction are differ each other?
- (c) Does antenna height and data processing are related, show that relation?
- (d) What is the purpose of a kalman filtering?
- (e) List the factors which effects the speed and reliability in air borne GPS.
- (f) What is Loran-C under GNSS? How it is useful in GPS?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the basic principle and operation of the GPS system. [6 M]
- (b) Write details of user segment receivers. [6 M]
3. (a) What is data combination and show how linear combinations are developed for dual frequency data with integer and real numbers. [8 M]
- (b) Compare these two effects: special relativity, general relativity [4 M]
4. (a) Discuss the various aspects of conducting a GPS survey and provide details to make the effort more productive in real time. [6 M]
- (b) Explain how effectively the datum transformation can be done with its two its specified models. [6 M]
5. (a) With suitable notations: show resolving ambiguities with dual frequency phase data. [6 M]
- (b) What is cycle slip detection and repair, show the mathematical model of its carrier phase and ranges. [6 M]
6. (a) List and explain several uses of GPS. [4 M]
- (b) Compare GPS with GLONASS. [4 M]
- (c) Write the application of Air borne GPS for photo control. [4 M]
7. (a) How the GPS modernization can be done? And explain detailed key features of GPS. [6 M]
- (b) Differentiate ground based and satellite based augmentation [6 M]
