

**FACULTY OF ENGINEERING****B.E. 4/4 (Civil) I-Semester (Supplementary) Examination, May / June 2019****Subject : Concrete Technology****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

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|----|--|---|
| 1  | Mention Bogue's compounds and their functions.                   | 3 |
| 2  | What are the factors influencing the workability of concrete?    | 3 |
| 3  | Differentiate between tangent modulus and secant modulus.        | 2 |
| 4  | Explain Revibration.   | 2 |
| 5  | What are the basic considerations in the design of concrete mix? | 3 |
| 6  | What are the causes of lack of durability?                       | 3 |
| 7  | What are the functions of admixtures?                            | 2 |
| 8  | Enlist the advantages of light weight concrete.                  | 2 |
| 9  | What are the applications of Ferro cement?                       | 3 |
| 10 | What are the characteristics of fresh self compacting concrete?  | 2 |

**PART – B (50 Marks)**

- |       |  |    |
|-------|--|----|
| 11 a) | Explain maturity concept of concrete.  | 5  |
| b)    | Calculate the maturity of concrete for 7 days when cured at an average temperature during day time is 25°C and night time is 15°C. | 5  |
| 12    | Compare the IS code of the mix design with British method and ACI method.  | 10 |
| 13 a) | What are Pozzolonas and explain Pozzalonic action in concrete mix with advantages.   | 5  |
| b)    | Explain applications and advantages of plasticizers and super plasticizers.  | 5  |
| 14 a) | Discuss the properties and applications of recycled aggregate concrete.  | 5  |
| b)    | Discuss in detail high density concrete with its applications.   | 5  |
| 15 a) | Explain advantages and disadvantages of self compacting concrete.  | 5  |
| b)    | Explain need for fibre reinforced concrete and its applications.   | 5  |
| 16 a) | What are the aspects considered in quality control of concrete?  | 5  |
| b)    | Explain any two tests on workability of concrete.  | 5  |
| 17    | Write short notes on following :   |    |
| a)    | Ready mix concrete   | 3  |
| b)    | Alkali aggregate reaction  | 4  |
| c)    | Stress strain curve for concrete   | 3  |

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**FACULTY OF ENGINEERING**  
**B.E. 4/4 (EEE) I - Semester (Suppl.) Examination, May / June 2019**

**Subject : Electrical Machine Design**

**Time : 3 Hours**

**Max. Marks: 75**

**Note: Answer all questions from Part-A & any five questions from Part-B.**

**PART – A (25 Marks)**

- 1 Name the magnetic materials used for Yoke, Transformer Stampings and permanent magnet. [3]
- 2 What is magnetization curve? [2]
- 3 List the methods used for determining the motor rating for variable load drives. [3]
- 4 What are the problems that arise during the calculation of m.m.f. for air gap? [3]
- 5 What are the factors to be considered for the selection of number of poles in dc machine? [3]
- 6 Explain how depth of armature core for a D.C. machine is determined. [3]
- 7 Name the factors to be considered to choose the type of winding for a core type transformer. [3]
- 8 List the advantages and disadvantages of using closed type of rotor slot in squirrel cage induction motor. [3]
- 9 What are the advantages of digital computer? [2]

**PART- B (50 Marks)**

- 10 Explain the different types of magnetic materials and their properties in detail. [10]
- 11 Derive an expression for the thermal resistivity of winding and prove that the square of the length of the copper per metre of winding thickness is equal to space factor. [10]
- 12 Determine the diameter and length of armature core for a 55 KW, 110 V, 1000 rpm, 4-pole shunt generator, assuming specific electric and magnetic loadings of 26000 amp. cond./m and  $0.5 \text{ Wb/m}^2$  respectively. The pole arc should be about 70% of pole pitch and the length of core about 1.1 times the pole arc. Allow 10 ampere for the field current and assume a voltage drop of 4 Volts for the armature circuit. Specify the windings used and also determine suitable values for the number of armature conductors and number of slots. [10]
- 13 A 5 HP, 440 volt, 3 phase, 4 pole cage motor with 375 turns/phase in the stator has the following design data for its rotor. Slots = 30, rotor bar size = 8.5 mm X 6 mm; length of the bar = 12.5 cm; end ring size = 10 mm X 15 mm; inner diameter of the end ring = 11.5 cm. Calculate the rotor resistance when referred to the stator winding. Assume specific resistance as  $2 \times 10^{-6} \text{ cm}$ . [10]
- 14 Explain different approach methods of computer aided design. [10]
- 15 What are the various types of synchronous machines based on rotor construction? Bring out the constructional differences between them. [10]
- 16 (a) Derive the output equation of three phase transformer. [5]  
 (b) What are the different conductor materials used in the construction of transformers and DC and AC machines? Point out salient properties of these materials. [5]

**FACULTY OF ENGINEERING**  
**B.E. 4/4 (ECE) I-Semester (Old) Examination, May / June 2019**  
**Subject: Mobile Cellular Communications**

Time: 3 Hours

Max. Marks: 75

**Note:** Answer All Questions From Part-A & Answer Any five Questions From Part-B.

**Part – A (25 Marks)**

1. Give the relationship between cluster size and co-channel re-use ratio 2
2. If 25 MHz of total spectrum is allocated for a duplex wireless cellular system and each simplex system has 25 KHz RF bandwidth, find the number of channels per cell site when a frequency reuse of 4 is used 3
3. Calculate the far – field distance for an antenna with maximum dimension of 1 meter and operating frequency of 910 MHz 3
4. Define rms delay spread and coherence bandwidth 2
5. A cellular operator is allocated a total spectrum of 25 MHz and guard band 12.5 KHz. If the channel bandwidth is 25 KHz, find the number of channels available in FDMA system. 3
6. If the normal GSM time slot consists of six trailing bits, 10 guard bits, 15 training bits and three traffic bursts of 36 bits of data. Find frame efficiency 3
7. Mention GSM services 2
8. Give the frequency specifications of IS-95 CDMA digital cellular systems 3
9. Compare 2.5 G and 3 G cellular networks 2
10. Write short notes on 3G- W- CDMA (UMTS). 2

**Part – B (50 Marks)**

11. a) Explain various handoff mechanisms in different generations 5  
 b) If signal – to interference ratio of 18 dB requires for satisfactory performance of a cellular system, What is the frequency re-use factor that should be used for maximum capacity if path loss exponent is (i) 3 and (ii) 4? 5
12. Explain the three basic propagation mechanisms for mobile radio. 10
13. a) Explain partition losses (same floor) and partition losses between floors 5  
 b) Explain different types of small – scale fading 5
14. a) Explain TDMA SYSTEMS 5  
 b) Explain different CSMA protocols 5
15. Draw the GSM system architecture and explain its channel types 10
- 16 a) Explain Durkin's model 5  
 b) What are advantages of CDMA over FDMA and TDMA? 5
17. Write short notes on (i) WLAN (ii) PANs 10

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**FACULTY OF ENGINEERING****BE 4/4(M/P/AE) I-Semester (Suppl.) Examination, May / June 2019****Subject: Operation Research****Time: 3 Hours****Max. Marks: 75****Note:** Answer all questions from Part-A, & Any five question from Part-B**Part - A (2.5 x 10 = 25 Marks)**

1. Briefly describe the scope of operations research
2. State the applications of LPP to industry
3. What is test for optimality in simplex method.
4. What is the condition of simplex to be solved by dual simplex method.
5. What is unbalanced assignment problem.
6. Define queue discipline.
7. What are the applications of game theory.
8. Classify replacement problems.
9. What are the assumptions of common queuing models.
10. Define sequencing and sequencing order.

**Part- B (50 Marks)**

11. Use Big-M method to solve following LPP 10

Minimize  $Z = 5x_1 + 3x_2$ 

Subjected to constraints

$2x_1 + 4x_2 = 12$

$2x_1 + 2x_2 = 10$

$5x_1 + 2x_2 = 10, \quad x_1, x_2 \geq 0$

12. Use dual simplex method to solve the following LPP 10

Maximize  $Z = -3x_1 - x_2$ 

Subjected to constraints

$-x_1 - x_2 = -1$

$-2x_1 - 3x_2 = -2$

$x_1, x_2 \geq 0$

13. a) How to solve an assignment problem if objective function is to be maximized. 3

- b) Consider the following unbalanced transportation problem and find the optimal solution. 7

Stores

		Stores			
		A	B	C	Supply
To	W	4	8	8	76
	X	16	24	16	82
	Y	8	16	24	77
	Demand	72	102	41	

- 14 a) Explain Two-person zero-sum game. 3

- b) Solve the Travelling sales men problem given in following table. 7

-2-  
To

From

	1	2	3	4	5
1	-	6	12	6	4
2	6	-	10	5	4
3	8	7	-	11	3
4	5	4	11	-	5
5	5	2	7	8	-

15. The data collected in running a machine, the cost of which is Rs 60,000 are given below. Determine optimum period for replacement of the machine.

10

Years	1	2	3	4	5
Resalevalue Rs.	42000	30000	20400	14400	9650
Running Cost, Rs.	18000	20270	22880	26700	31800

16. Determine total elapsed time for the following production problem.

10

Job	A	B	C	D	E	F
M/C 1	6	16	8	12	16	12
M/C 2	12	14	10	14	14	14
M/C 3	8	10	12	10	10	16

17. Write short notes on  
a) Genetic algorithm  
b) Sensitivity analysis

5  
5

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**FACULTY OF ENGINEERING****B.E. 4/4(CSE) I – Semester (Supplementary) Examination, May/June 2019****Subject: Principles and Applications of Embedded Systems****Time: 3 Hours****Max. Marks: 75****Note: Answer all questions from Part A and any five questions from Part B****PART – A (25Marks)**

1. What is the purpose and format of CPSR in ARM processor? 2M
2. Define supervisor mode and exceptions in embedded system? 2M
3. Write the stages in ARM7 pipeline? 2M
4. Contrast the differences between CISC and RISC Architectures? 3M
5. Explain why memory management is not used in embedded systems? 2M
6. What is Re-entrant function? What is the role of Re-entrant function? 3M
7. Give short notes on Distributed Embedded systems? 2M
8. Explain the use of data structures queue in embedded systems? 3M
9. Distinguish b/w RMS and EDF 3M
10. Illustrate the steps of loading S/W into target system in embedded system? 3M

**PART – B (50 Marks)**

11. a) Describe the design challenges of Embedded systems? 6M
- b) Explain in detail the sample requirements for model train control system. 4M
12. a) Illustrate DMA controller with diagram and explain briefly 6M
- b) Describe about the hardware architecture at a generic consumer device? 4M
13. What is semaphore? What are the problems which arise due to shared data and here the Semaphore can be used to solve this problem? Explain with example. 10M
14. Explain following scheduling algorithms with examples:
  - a) priority based scheduling 4M
  - b) Rate Monotonic scheduling 3M
  - c) Earliest deadline first scheduling 3M
15. a) Explain the methods followed for testing embedded software on host machine? 6M
- b) Discuss rule to be followed by the Interrupt in RTOS environment with example? 4M
16. a) Explain in detail about the various categories of Multiprocessors? 6M
- b) Explain the architecture of shared memory multiprocessor with example? 4M
17. Write short note on: 10M
  - a) Multiple interrupts
  - b) Set associative cache
  - c) Linker/Locator for Embedded software

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**FACULTY OF ENGINEERING****BE 4/4 (ECE) I - Semester (Supplementary) Examination, May /June 2019****Subject: Embedded Systems (Elective-II)****Time: 3 Hours****Max Marks: 75****Note:** Answer all questions from Part-A & Any five questions From Part-B.**Part – A (25 Marks)**

1. Why do we use a loader in a computer system and a locator in an Embedded System? (3)
2. What is the role of RAM in an Embedded System? (2)
3. Write any 4 features of CISC and RISC Architectures (3)
4. Differentiate ARM mode and Thumb mode. (2)
5. What do you mean by plug and play devices? What are bus protocols of buses UART, RS232C, USB, CAN, Bluetooth and PCI that support plug and play devices. (3)
6. What is FireWire? What is the main purpose of FireWire? (3)
7. What are the functions of device programmer? (2)
8. Why do we use host system for most of the embedded system development? What are the software tools needed at the host? (3)
9. What is Cross-compiler? (2)
10. What is the use of target emulator and ICE.? (2)

**PART – B (50 Marks)**

11. (a) Define Embedded System. What are the classifications of Embedded Systems? (6)  
(b) Explain about Embedded System – On-Chip. (4)
12. Explain about ARM core with the help a neat diagram and also explain about ARM Extension i.e., Coprocessor (10)
13. Explain any two of the following protocols (10)  
i) I2C      ii) CAN      iii) USB
14. Explain about Embedded System design and Co-design issues in System Development Process. (10)
15. (a) Explain about the design process in embedded system. (4)  
(b) An automatic Chocolate Vending Machine is to be designed in a project. What will be skills needed in terms of hardware and software engineers. (6)
16. (a) Explain about Embedded Software Development Tools. (6)  
(b) Explain about logic Analyzer (4)
17. Answer any two (10)  
i) PCI, PCI-X      ii) ARM CPSR register      iii) RTOS Characteristics

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**FACULTY OF ENGINEERING****B.E.4/4 (ECE) I-Semester (Suppl.) Examination, May / June 2019****Subject : Entrepreneurship (Elective-II)****Time: 3 Hours****Max. Marks: 75**

Note: Answer all questions from part-A. Answer any FIVE questions from Part-B.

**Part –A (25 Marks).**

1. Define entrepreneurship. What are qualities of Successful Entrepreneur? 3
2. Explain briefly about partnership enterprise 3
3. Explain the role of Technology in Entrepreneurship 2
4. Describe briefly about the environmental influence 2
5. What are the different sources of finance? 3
6. Discuss about significant features of marketing analysis? 3
7. List the stages in Project Formulation 2
8. Define a project and mention different parameters to be considered in project formulation? 2
9. State the features of PERT network management? 2
10. What are the attributes of entrepreneur? Explain the role of time in entrepreneurial activities? 3

**Part –B (50 Marks)**

- 11 a) What are the opportunities and challenges for entrepreneurial growth in India? Explain 5
  - b) Explain in detail role of entrepreneurs in improving economic status of a country 5
  - 12 a) Explain about first generation entrepreneur. 5
  - b) Explain in detail about opportunities and challenges of women entrepreneurs in India context. 5
  - 13 Define Project and prepare a detailed project report of a project technology based opportunities for housing. 10
  - 14 The maintenance of a machine consists of ten jobs. The precedence relationship of these jobs has been listed with the help of their node numbers. 10
- | Job             | 1-2 | 2-3 | 2-4 | 3-5 | 3-6 | 4-6 | 4-7 | 5-8 | 6-8 | 7-8 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Duration (Days) | 2   | 3   | 5   | 4   | 1   | 6   | 2   | 8   | 7   | 4   |
- Draw the project network diagram and calculate ES, EF, LS, LF TS and FS. 10
  - 15 a) How is a Project formulated? Give an overview? 5
  - b) What do you understand by project appraisal? How it is done? 5
  - 16 What is urgency addiction? Is it good for an entrepreneur? How it influences the market? 10
  17. Write short notes on any three of the following
    - a) Types of enterprises
    - b) Critical path and non critical path
    - c) Assessment of tax
    - d) Time Management Matrix.
    - e) Collaborative interaction for technology development.

## FACULTY OF ENGINEERING

**BE 4/4 (ECE) I – Semester (Supplementary) Examination, May/June 2019**

**Subject: Optimization Techniques (Elective-II)**

**Time: 3hrs**

**Max. Marks: 75**

**Note: Answer all questions from Part-A, & any five questions from Part-B**

### PART – A (25 Marks)

1. What is Optimization? Give engineering application of optimization.
2. What is sensitivity analysis?
3. Explain Gradient of a function?
4. What is the motivation for simplex method?
5. Is there a difference between local minimum and global minimum? Explain
6. What are the limitations of gradient search method?
7. Write the algorithm of simulated annealing.
8. What is the physical basis of SA?
9. What are the basic operations used in Genetic algorithms?
10. State the significance of cross over.

### PART – B (50 Marks)

- 11.a) State and explain the standard form of Linear programming Problem. 2M
- b) Maximize  $F = x_1 + 3x_2$  subject to 8M  
 $-4x_1 + 3x_2 \leq 12$   
 $x_1 + x_2 \leq 7$   
 $x_1 - 4x_2 \leq 2$   
 $x_i \geq 0, i=1,2$
- 12.a) Explain with an example Simplex method. 5M
- b) Discuss in brief exhaustive search and Dichotomous search method. 5M
- 13.a) Why is a conjugate directions method preferred in solving a general nonlinear problem? 5M
- b) Minimize  $f(x_1, x_2) = x_1^2 - 2x_1 - 4x_2 + 5 + x_2^2$  starting from the point  $X_1 = \begin{pmatrix} 9 \\ 0 \end{pmatrix}$  using Steepest Descent method. 5M
- 14.a) With the help of an example, explain the cutting plane method. 5M
- b) Compare Simulated annealing and Genetic algorithms. 5M
- 15.a) What is the purpose of cross over and mutation? How are they implemented in GAs? 5M
- b) Consider the problem, Maximize  $F = x_1 + x_2^2, 0 \leq x_1, x_2 \leq 4$  how many bits are required to decode the variables to an accuracy of 3 decimal places using GA. 5M
- 16.a) Write the steps for minimization of objective function in univariate method. 4M
- b) Find the minimum of  $f = x(x-1.5)$  in the interval (0.0, 1.00) to within 10% of the exact value using exhaustive search method. 6M
17. Write short notes on any two of the following
  - a) Random search methods
  - b) Conjugate gradient method
  - c) Monte Carlo algorithm

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**FACULTY OF ENGINEERING****B.E. 4/4 (ECE) I-Semester (Supplementary) Examination, May/June 2019****Subject: System Automation and Control (Elective-III)****Time:3 Hours****Max. Marks:75****Note: Answer all questions from Part-A and answer any FIVE questions from Part-B.****PART –A (25 Marks)**

- |   |   |
|---|---|
| 1. What is Automation testing and when is Automation testing useful?        | 2 |
| 2. Define sensor. List the various characteristics of a sensor.             | 2 |
| 3. List the various criteria to choose suitable data acquisition equipment. | 3 |
| 4. List various types of temperature measurement sensors.                   | 3 |
| 5. Define pneumatic resistance , capacitance and inheritance.               | 3 |
| 6. Why we need mathematical model?  | 2 |
| 7. What are closed loop controllers?  | 3 |
| 8. Draw the ladder diagram of NOR and NAND gate.                            | 2 |
| 9. List few components of a motion control system.                          | 2 |
| 10. Define end effectors.   | 3 |

**PART –B (5 x 10 = 50 Marks)**

- |  |    |
|--|----|
| 11. a) Draw process pyramid and describe in detail.                      | 5  |
| b) Explain anyone ADC architecture in detail.                            | 5  |
| 12. a) Describe various types of high pressure measurement techniques.   | 5  |
| b) Explain level of industrial automation system.                        | 5  |
| 13. Describe building blocks for fluid system. In details                | 10 |
| 14. With the help of block diagram describe basic structure of PLC.      | 10 |
| 15. Describe in details components of a motion control system.           | 10 |
| 16. (a) Explain in detail the operation of the domestic Washing machine. | 7  |
| (b) Explain how torque is measured.                                      | 3  |
| 17. Write short notes on   |    |
| a. Role of automation in industries.                                     | 5  |
| b. Microcontroller.  | 5  |

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**FACULTY OF ENGINEERING****B.E. 4/4 (ECE) I-Semester (Suppl.) Examination, May / June 2019****Subject : Internet of Things (Elective-II)****Time : 3 Hours****Max. Marks: 75****Note:** Answer all questions from Part-A and any five questions from Part-B.**Part-A (25 Marks)**

1. What is Publish-Subscribe model? 2
2. Mention Characteristics of Big Data 3
3. What is dynamic IP address assignment 3
4. Differentiate between open source and closed source 2
5. What is an API? How is different for human and IoT Devices 3
6. Briefly describe the purpose of LWIP library. 2
7. What is SPI? Mention that five pins in Raspberry Pi for SPI interface. 3
8. Write a python program for blinking an LED on Pin no 20 of Raspberry pi 2
9. Explain the Model-Template-View framework in DJANGO architecture 2
10. Who are Venture Capitalists and what support do they extend to IoT Start-up's 3

**PART- B (50 Marks)**

11. a) What are the cloud computing services offered to the users in different forms? 5  
b) Give details of application layer protocols used in IoT. 5
12. a) Draw the IPv4 header frame format & explain each field in it. 5  
b) What software are used in CNC milling. Explain briefly. 5
13. a) Illustrate STACK memory allocation with a psuedocode and appropriate figures. 5  
b) Enlist three coding techniques for improvement in performance of IoT Devices. 5
14. a) What are the advantages of Python over other languages. 5  
b) Write a python program for sending an email on switch press. 5
15. a) What is WAMP. Give Key features of WAMP and describe a peer to peer WAMP protocol 5  
b) Draw the business model Canvas and mention the nine elements of the canvas. 5
16. a) How is RAM allocation done in IoT devices 5  
b) Elaborate how decoding is done IoT devices using hardware emulators, JTAG and Hyperterminal 5
17. Write short notes on :  
a) XMPP Vs COAP 3  
b) Advantages and disadvantages of Polling 3  
c) Single Parsing 4

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**FACULTY OF ENGINEERING**  
**B.E. 4/4 I Semester (Supplementary) Examination, May/June 2019**

**Subject: Wireless and Mobile Communications (Elective – II)**

**Time: 3 Hours**

**Max. Marks: 75**

**Note: Answer all questions from Part – A & any five questions from Part – B.**

**Part – A(25 Marks)**

- |   |   |
|---|---|
| 1. Write three features of 3G wireless networks.                                | 2 |
| 2. What is frequency reuse? Why it is important.                                | 2 |
| 3. Explain about TDD.   | 3 |
| 4. What is meant by pseudo-Noise (PN) sequence                                  | 3 |
| 5. Write the advantages of CDMA Technology.                                     | 2 |
| 6. List the advantages offered by digital modulation.                           | 2 |
| 7. Differentiate between wireless and fixed Telephone networks.                 | 3 |
| 8. Draw the Frame structure of GSM.   | 3 |
| 9. Write the need for Mobile IP.  | 2 |
| 10. Define Home Agent, Foreign and mobile node with respect to mobile networks. | 3 |

**Part – B (50 Marks)**

- |   |    |
|---|----|
| 11. Draw the block diagram of cellular system and explain how a call is made between landline and mobile user. Draw the timing diagram. | 10 |
| 12. Explain in detail about various Handoff strategies.   | 10 |
| 13. a) Explain Knife-edge diffraction model.  | 6  |
| b) Explain the effects of radio wave reflection from a dielectric.  | 4  |
| 14. Write a detail note on CDMA digital cellular standard.  | 10 |
| 15. a) Write briefly about QPSK.  | 5  |
| b) Explain about space division multiple access.  | 5  |
| 16. a) Differentiate between the characteristics of wireless and fixed telephone networks.  | 6  |
| b) Explain about DHCP.  | 4  |
| 17. Write short notes on the following.   |    |
| a) Outdoor propagation models.  | 4  |
| b) Digital modulation   | 3  |
| c) Agent Advertisement and discovery  | 3  |

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**FACULTY OF ENGINEERING****B.E. 4/4 (I.T.) I – Semester (Supple.) Examination, May/June 2019****Subject : Ad-hoc and Sensor Networks (Elective – II)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions from Part-A & any five questions from Part-B.****PART – A (25 Marks)**

- |  |   |
|--|---|
| 1. Define wireless-sensor Networks   | 3 |
| 2. What are the applications of Hotspot technology?                        | 3 |
| 3. Write about Geo casting.  | 2 |
| 4. How DSR works in MANETs?  | 3 |
| 5. What are the drawbacks of multicast tree structures?                    | 2 |
| 6. Mention advantages of using probe packets for detecting of a new paths. | 2 |
| 7. What are QOS parameters in Ad hoc networks?                             | 3 |
| 8. What is Byzantine attack?   | 3 |
| 9. Write about MACA.   | 2 |
| 10. What is idle listening in WSN?   | 2 |

**PART – A (50 Marks)**

- |   |    |
|---|----|
| 11. a) Briefly discuss the applications of MANET.                               | 5  |
| b) Discuss various spectrum allocation methods.                                 | 5  |
| 12. a) Explain process of route establishment and route maintenance in AODV.    | 5  |
| b) Explain the working of DSDV protocol.  | 5  |
| 13. a) Discuss about the TCP-aware cross layered solution.                      | 5  |
| b) Explain the classification of multicast protocols for Ad hoc networks.       | 5  |
| 14. a) Give the classification of security attacks in Ad hoc wireless networks. | 5  |
| b) Explain various QoS related issues in Ad hoc networks.                       | 5  |
| 15. a) Give any two applications of wireless sensor networks.                   | 5  |
| b) Compare demand based and contention based MAC protocols for sensor networks  | 5  |
| 16. Discuss proactive and reactive routing protocols for Ad hoc networks        | 10 |
| 17 Write briefly about  |    |
| a) Vulnerabilities of MANET   | 5  |
| b) Flooding   | 5  |

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**FACULTY OF ENGINEERING****B.E. VI – Semester (CBCS) (Main) Examination, May/June 2019****Subject: Operating Systems (Elective – I)****Time: 3 hours****Max. Marks:70****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****Part – A (2 x 10 = 20 Marks)**

- 1) List the various OS components?
- 2) Distinguish between semaphore and monitors?
- 3) Distinguish between logical address and physical address?
- 4) List and define non-contiguous memory allocation schemes?
- 5) Describe the conditions under which a deadlock situation may arise?
- 6) List the implementation techniques of access matrix?
- 7) Discuss the advantages of contiguous memory allocation of disk space?
- 8) List any four secondary storage memory devices?
- 9) Write about Windows NT?
- 10) Explain Process Management in Linux?

**PART – B (5 x 10 = 50 Marks)**

- 11) a) List out the various process states and briefly explain the same with a state diagram? (05)  
 b) Describe the typical elements of process control block? (05)
- 12) Consider the following set of processes with the length of the CPU burst time given in milliseconds

Process	BurstTime
P1	10
P2	1
P3	2
P4	1
P5	5

The processes are assumed to have arrived in the order p1, p2, p3, p4, p5 all at time 0. Draw Gantt charts illustrating the execution of these processes using FCFS, SJF and calculate TAT. (10)

- 13) a) Define page fault? When does a page fault occur? Describe the action taken by OS when page fault occurs? (5)  
 b) Explain the following file concepts: (5)
  - i) File attributes
  - ii) File operations.
- 14) a) State and explain the methods involved in recovery from deadlocks? (05)  
 b) Explain how resource graph can be used for detecting deadlocks? (05)

- 15) a) Explain how disk caching can improve disk performance? (05)  
b) Discuss in detail the performance issues of secondary storage management? (05)
- 16) a) Explain Inter Process Communication in Windows NT (05)  
b) Explain Kernel Modules? (05)
- 17) Write short notes on of the following: (10)  
a) Thrashing  
b) File System Mounting

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**FACULTY OF ENGINEERING**  
**BE IV – Semester (CBCS) (Main) Examination, May/June 2019**

**Subject: OOP USING JAVA [Elective-I]**

**Time : 3 Hours**

**Max. Marks: 70**

**Note : Answer All Questions from Part-A , & Any five Questions From Part –B**

**Part – A (20Marks)**

1. Why is java architectural neutral? [2M]
2. What are the different ways of defining constants in java? [2M]
3. Define object in java. [2M]
4. Define Package. [2M]
5. Differentiate abstract class and Interface. [2M]
6. What is the use of 'super' keyword? [2M]
7. What are the different ways to create a thread? [2M]
8. List the different collection classes and interfaces. [2M]
9. List the different AWT controls. [2M]
10. Define Serialization. [2M]

**Part – B (50Marks)**

11. a) Explain the basic concepts of object oriented programming. [5M]  
 b) What is an array? How arrays are declared and initialized? Explain with example? [5M]
12. a) Briefly discuss about the concept of multiple catch statements [5M]  
 b) Briefly discuss about the control statements used in java. [5M]
13. a) Differentiate method overloading and method overriding with suitable examples. [5M]  
 b) Explain the concept of User-Defined Exception with a suitable example. [5M]
14. a) Explain Print Writer class with an example. [5M]  
 b) Explain comparator interface with an example. [5M]
15. a) List out and explain different types of event listeners supported by java [5M]  
 b) What are the different types of Layout Managers and write a program to illustrate the use of Flow Layout Manager. [5M]
16. a) What is a File? What are the different types of File Constructors. Explain File creation with an example. [6M]  
 b) Write a program to copy one file content in to another file. [4M]
17. Write short notes on the following.
  - a) String Tokenizer [4M]
  - b) Final keyword [3M]
  - c) Frame [3M]

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**FACULTY OF ENGINEERING**

B.E VI – Semester (CBCS)(I.T.) Examination, May/June 2019

Subject: Data Base Systems (Elective – I)

TIME: 3 Hours

Max. Marks: 70

**Note: Answer all questions from Part-A & Any Five Questions from Part-B****PART – A (20 Marks)**

1. Explain advantages of DBMS over file system.
2. Draw the E-R diagram for the following example: Student entity has attributes such as {Stu\_Id, Stu\_Name & Stu\_Addr} and College entity has attributes such as {Col\_ID & Col\_Name}.
3. How candidate key is different from super key?
4. Define Aggregate function.
5. Define DBMS Interface
6. Specify ACID properties
7. Define Distributed Database.
8. Define system privileges in database
9. Define Serial Schedule
10. Define Transaction Log backup

**PART – B (5 x 10 = 50 Marks)**

11. a) Differentiate strong entity and weak entity? (5M)  
b) Discuss types of attributes in the entity relationship model? (5M)
- 12) Explain relational algebra and its operations. (10M)
- 13) a) Explain database Application paradigms. (5M)  
b) How query are written in SQL? Explain with suitable examples. (5M)
- 14) Briefly explain distributed database Architecture. (10M)
- 15) a) Explain main control measures which are used to provide security of data in Databases. (5M)  
b) Describe threats in Database (5M)
- 16) a) Explain Normalization in Databases. (5M)  
b) What is aggregation in Databases. (5M)
- 17) Write short notes on:
  - a) Columnar database (5M)
  - b) NoSQL (5M)

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**FACULTY OF ENGINEERING****B.E. VI – Semester (CBCS) Main Examination, May / June 2019****Subject: Principles of Embedded Systems (Elective – I)****Time: 3 Hours****Max. Marks: 70****Note: Answer All Questions From Part – A. & any Five Questions From Part-B.****PART – A (20 Marks)**

1. Draw a neat diagram of the hardware of Embedded System. [2]
2. Differentiate between Open collector outputs and Tri-stating outputs. [2]
3. What is the need for DMA? [2]
4. What is the purpose of using a WAIT input signal in a Bus cycle? [2]
5. Define worst case interrupt latency. [2]
6. What are the various criteria for selecting software architecture? [2]
7. Compare and contrast round-robin and round-robin with interrupts. [2]
8. What is the function of Cross-Compiler and Cross-Assembler? [2]
9. Describe the goals of a typical testing process on the host machine. [2]
10. Give two advantages of Instruction set simulators. [2]

**PART – B (50 Marks)**

11. a) Describe the various issues and problems to be looked into when writing software for an embedded system. [5]  
b) Draw the timing diagram for a static RAM and explain. [5]
12. a) Design a microprocessor system having 64KB memory addressing capability and connected to a ROM and a RAM each of 32KB capacity. The ROM address space begins from 0x0000 and RAM address space begins from 0x8000. Show the complete schematic of the system. [6]  
b) Describe the working of a UART using a neat block diagram. [4]
13. a) What is shared data problem and what measures are taken to overcome this Problem in an embedded system design? [5]  
b) Describe the working of a Watchdog timer with a neat block diagram. [5]
14. a) Compare the various software architectures with respect to priorities, worst response time for task code, stability of response and simplicity. [5]  
b) Explain the Function-Queue-Scheduling architecture with an example. [5]
15. a) Explain the techniques of getting embedded software into the target system. [5]  
b) Describe the role of linker/locator in the embedded software development. [5]
16. a) What are the objections, limitations and shortcomings of testing embedded system code on the host system? [5]  
b) What is an in-circuit emulator? Describe its operation with a diagram. [5]
17. Write short note on any two of the following: [10]
  - a) Built-Ins on the Microprocessor.
  - b) Real Time Operating System Architecture.
  - c) Logic Analyzer modes of operation.

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**FACULTY OF ENGINEERING****B.E VI Semester (CBCS)(EEE) (Main) Examination, May / June -2019****Subject: Basics of Power Electronics (Elective –I)****Time: 3 hours****Max. Marks: 70****Note: Answer all questions from Part – A, & answer any five questions from Part – B****PART – A (20 Marks)**

- |    |   |   |
|----|---|---|
| 1  | List the advantages of power electronic converters.   | 2 |
| 2  | What is meant by commutation? List the methods for commutating SCR.   | 2 |
| 3  | Explain how a freewheeling diode improves power factor in a system.   | 2 |
| 4  | What is a dual converter? List the advantages of a dual converter.  | 2 |
| 5  | Enumerate the applications of D.C choppers.   | 2 |
| 6  | A step up chopper has output voltage of two to four times the input voltage. For a chopping frequency of 2000Hz, determine the range of off periods for the gate signal.                | 2 |
| 7  | What is an inverter? List few industrial applications of inverter.  | 2 |
| 8  | List the pulse width modulation techniques used for inverter control.   | 2 |
| 9  | A single phase full wave ac voltage controller feeds a load of $R=20\ \Omega$ with an input voltage of 230V, 50Hz. Find the rms value of output voltage if firing angle is $45^\circ$ . | 2 |
| 10 | List the advantages of circulating mode of operation in cycloconverter.   | 2 |

**PART – B (50 Marks)**

- |    |  |     |
|----|--|-----|
| 11 | a) Explain the switching performance of BJT with relevant waveforms. Indicate clearly turn-on and turn-off times and their components.   |     |
|    | b) Draw and explain the switching characteristics of a thyristor.  | 5+5 |
| 12 | Describe the operation of a single phase two-pulse converter with relevant voltage and current waveforms and obtain an expression for the output voltage.  | 10  |
| 13 | Describe the working of buck-boost converter with neat wave forms. Derive the expression for output voltage.   | 10  |
| 14 | Discuss the working principle of a three phase inverter with neat waveforms for a star connected resistive load, when each thyristor operates for $180^\circ$ mode.  | 10  |
| 15 | Discuss the principle of phase control in single phase ac voltage controller. Derive expression for the rms value of its output voltage.   | 10  |
| 16 | a) Explain with relevant circuit diagram and waveforms how complementary impulse commutation is achieved?  |     |
|    | b) A 3- full converter charges a battery from a three phase supply of 230V, 50Hz. The battery emf is 200V and its internal resistance is $0.5\ \Omega$ . On account of inductance connected in series with the battery, charging current is constant at 20A. Compute the firing delay and the supply power factor. | 5+5 |
| 17 | Explain any two from the following   |     |
|    | a) Thyristor Protection  |     |
|    | b) Sinusoidal pulse width modulation   |     |
|    | c) Step up cyclo converter   | 5+5 |

**FACULTY OF ENGINEERING****BE VI – Semester (CBCS) (Main) Examination, May/June 2019****Subject: Industrial Robotics (Elective-I)(Except M/P/A.E)****Time: 3 Hrs****Max Marks: 70****Note: Answer all questions from Part – A & answer any five questions from Part- B****PART – A (10 x 2 = 20 Marks)**

1. Define the following words 2
  - a) Degrees of freedom of a robot
  - b) Work space of a robot
2. Differentiate between Accuracy and Repeatability of a robot. 2
3. List four desirable features of a sensor. 2
4. Explain the working principle of an Hall effect sensor. 2
5. Write the rotation matrix for the rotation  $R(z, -45^\circ)$  2
6. Differentiate between Direct and Inverse Kinematics. 2
7. Define Robot Vision. Write the purpose of Image processing stage. 2
8. What is quantization error? How is it corrected? 2
9. List different types of motion commands. 2
10. Explain various lightening techniques used in machine vision. 2

**PART – B (50 Marks)**

11. Explain the applications of robots in the fields of 10
  - a) Welding and b) Assembly
12. a) Explain the use of sensors in robots. 3
  - b) Explain different types of position and Range sensors used in robots. 7
13. a) Explain the use of DH parameters in kinematics of robots. 5
  - b) Explain Euler and RPY angles method for specifying orientation of a body. 5
14. a) Explain various Lightening techniques used in Machine vision. 5
  - b) Explain Features Extraction and object Recognition stages of Machine vision. 5
15. a) Explain Lead through methods of Robot Prog-remaining. 4
  - b) Briefly explain VAL programming of Robots. 6
16. Describe briefly energy management strategies? 10
17. Write short notes on: 10
  - a) Task level languages.
  - b) Image data reduction.
  - c) Force and Torque sensors.

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**FACULTY OF ENGINEERING**

**BE VI – Semester (CBCS) (Main) Examination, May/June 2019**

**Subject: Material Handling [Elective-I](Except M/P/A.E)**

**Time : 3 Hours**

**Max. Marks: 70**

**Note : Answer All Questions from Part-A , & Any five Questions From Part –B**

**Part – A (20Marks)**

1. State the working of a screw feeder with neat sketch.
2. Identify the difficulties in Manual handling.
3. What are the factors influencing selection of equipment in material handling?
4. Draw the schematic sketch of a wall mounted jib crane and show the motions.
5. Brief Note on the working of Stacker-cum-Reclaimer in Cement Plant & Coal based Thermal Power Plant.
6. Enumerate the principle components of a belt conveyor.
7. State the importance of Ergonomic Principle in design of Material Handling Systems.
8. How do AGV detects obstacles and stop?
9. What are the advantages and disadvantages of Magnetic Tape Guiding for AGV?
10. What is ASRS and state the merits of ASRS?

**Part – B (50Marks)**

11. Discuss the factors relating to the feasibility study on a proposed fork lift truck for material handling.
12. Draw Pneumatic Conveying Cycle and explain various components and equipments.
13. When a large number of AGVs are in operation in a Warehouse, how Traffic Control and Zone Control is carried out. Write a note on avoidance of Collusions.
14. Differentiate and Compare Pneumatic Conveyors Vs Mechanical Conveyors.
15. Explain the terms that are used to distinguish pallets used for specific purposes.
16. Compare the advantages and disadvantages of Bar Code System Vs RFID System.
17. Classify different types of Material Handling equipment and explain each of these with neat sketches.

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**FACULTY OF ENGINEERING**

**B.E VI – Semester (CBCS)(Main) Examination, May/June 2019**

**Subject: Automotive Safety & Ergonomics (Elective – I)(Except M/P/A.E)**

**Time: 3 Hours**

**Max. Marks: 70**

**Note: Answer all questions from Part-A & Any Five Questions from Part-B**

**PART – A (10 x 2 = 20 Marks)**

1. What is safety sandwich construction?
2. State the energy equation for a body during collision?
3. What are the speed characteristics of passenger compartment during impact?
4. What do you mean by interior safety system?
5. Give the merits and demerits of tiltable steering wheel.
6. List the safety equipments used in vehicle?
7. What do you mean by man-machine system?
8. How to reduce the vibrations in vehicle?
9. Draw schematic diagram of a typical test plant.
10. What are the advantages of tyre pressure control system?

**PART – B (5 x 10 = 50 Marks)**

11. a) Explain the influence of engine location on safety, with a neat sketch.  
b) Briefly explain the design of body for safety.
12. Briefly Classify active safety and passive safety of a vehicle and explain each one of them.
13. Explain the construction and working of automatic seat belt tightened system with neat sketch.
14. Explain the importance of Ergonomics in Automobile safety.
15. Describe the features of central locking, rain sensor system with a neat sketch.
16. (a) Explain recent trends in Automobile lighting.  
b) Explain different types of Automobile lamps.
17. Write short notes on
  - a) Requirement of crash testing
  - b) ABS (Anti-lock braking system)
  - c) Ingress and egress.

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**FACULTY OF ENGINEERING****B.E. VI – Semester (CBCS) (Main) Examination, May / June 2019****Subject: Disaster Management (Elective – I)****Time: 3 Hours****Max.Marks: 70****Note: Answer all questions from Part-A and any five questions from Part-B****PART – A (10x2 = 20 Marks)**

1. Define the components that constitute vulnerability
2. Define the various kinds of droughts
3. Define heat waves and cold waves
4. What is meant by the term 'differential impacts'
5. Sketch the disaster cycle
6. List the responsibilities of urban local bodies (ULBs) in disaster risk reduction
7. List the various factors affecting vulnerability of communities
8. List few appropriate technologies used in disaster management
9. Write a few lines about 'OM act'
10. Write a few lines about 'waste management' as a component of disaster relief

**PART – B (5x10 = 50 Marks)**

- |  |   |
|--|---|
| 11 a) Write about the classification and causes of drought.                              | 5 |
| b) Give the definitions of disaster, resilience, hazard and risk.                        | 5 |
| 12 a) Write about the global trends in disasters.  | 5 |
| b) Classify disasters with suitable examples.  | 5 |
| 13 a) Explain the various phases of disaster cycle and analyse it.                       | 5 |
| b) What is DRR and explain its role in preparedness of a community.                      | 5 |
| 14 a) Discuss the impact of development project such as dams.                            | 5 |
| b) Discuss the relevance of indigenous knowledge with respect to disaster management.    | 5 |
| 15 a) Discuss the hazard and vulnerability profile of India.                             | 5 |
| b) Discuss sanitation as a component of disaster management.                             | 5 |
| 16 a) List the economic and environmental impacts of droughts.                           | 5 |
| b) Discuss road hazards in India.  | 5 |
| 17 a) Discuss the use and relevance of appropriate technologies for disaster management. | 5 |
| b) Discuss OM act  | 5 |

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