AR13

CODE: 13CE4037 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, April-2019

PAVEMENT ANALYSIS AND DESIGN

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define tyre pressure
   b) Write the equation for relative stiffness of slab
   c) List the types of joints in rigid pavement.
   d) List the tests on aggregates
   e) List he types of overlays
   f) List the factors affecting design of pavements
   g) What is meant by warping stress?
   h) Write the equation for CBR method of flexible pavement.
   i) What is meant by soil cement
   j) What are types of failures in rigid pavements?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. What are the various factors to be considered in pavement design? Discuss the significance of each. 12M

(OR)

3. Draw a sketch of flexible pavement cross section and show the component parts. Enumerate the functions and importance of each component of the pavement. 12M

UNIT-II

4. a) Explain how the elastic moduli of subgrade and base course are estimated using plate bearing test. 6M
   b) Calculate the stresses at interior, edge and corner region of a cement concrete pavement using westergaard's stress equations. Use the following data, wheel load 5100kg, modulus of elasticity of cement concrete 3.0×10^5 kg/cm^2 pavement thickness 18 cm, poisson's ratio of concrete 0.15, modulus of subgrade reaction 6.0 kg/cm^3, radius of contact area 15 cm. 6M

(OR)

5. a) Explain Boussinesq theory and Burmister theory for pavement design with neat sketch 12M

UNIT-III

6. Design the size and spacing of dowel bars at the expansion joints of a cement concrete pavement of thickness 25 cm with radius of relative stiffness 80 cm, for a design wheel load of 5000 kg. Assume load capacity of the dowel system as 40% of the design wheel load. Joint width is 2.0 cm, permissible shear and flexural stresses in dowel bar are 1000 and 1400 kg/cm^2 respectively and permissible bearing stress in CC is 100 kg/cm^2 12M

(OR)

7. a) Discuss the advantages and limitation of CBR method of design 6M
   b) Explain how the dimensions and spacing of tie bars are designed. 6M

UNIT-IV

8. a) Briefly explain about water bound macadam (WBM) road construction 6M
   b) What are tests conducted on road aggregate or crushed aggregate. Explain briefly each one 6M

(OR)

9. Explain the requirements of design Mix –marshall's method of bituminous mix design.

UNIT-V

10. Explain the necessity of design approach and method of strengthening of existing pavements for flexible overlay over rigid pavement and rigid overlay over flexible pavement. 12M

(OR)

11. Benkelman beam deflection studies were carried out on 15 selected points on a stretch of flexible pavement during summer season using a dual wheel load of 4085 kg, 5.6 kg/cm2 pressure. The deflection values obtained in mm after making the necessary lag corrections are given below. If the present traffic consists of 750 commercial vehicles per day, determine the thickness of bituminous overlay required, if the pavement temperature during the test was 30^0c and the correction factor for subsequent increase in subgrade moisture content is 1.3. Assume annual rate of growth of traffic as 7.5% adopt IRC guidances. 12M

1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45 mm

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AR13

CODE: 13EE4037 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular & Supplementary Examinations, April-2019
POWER QUALITY MANAGEMENT
(Elective-IV)
(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define distortion factor?
   b) What is voltage swell?
   c) What are called transients?
   d) Define individual harmonics distortion?
   e) Give the causes of transients?
   f) what is the use of oscilloscope?
   g) what is a UPS and give its uses?
   h) What is a harmonic analyser?
   i) Define voltage imbalance?
   j) What is the use of isolation transformer?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain the power quality concerns? **6**
   b) Explain the following terms related with PQ problem. **6**
   i) Sags ii) Swell iii) Waveform distortion

(OR)

3. a) Write about electric power quality standards? **6**
   b) Explain the following terms related with PQ problem. **6**
   i) Harmonics ii) Voltage fluctuation iii) voltage imbalance

UNIT-II

4. a) Explain about static uninterruptible power source system? **6**
   b) Explain about voltage regulators? **6**

(OR)

5. a) Explain about isolation transformer? **6**
   b) Explain about common power frequency disturbances? **6**

AR13

CODE: 13EE4037 **SET-2**

UNIT-III

6.	a)	Discuss in detail about switching transient problems related to loads and load switching?	**6**
	b)	Explain the causes, effects and cures for transient disturbances?	**6**

(OR)

7.	a)	Give any two examples of transient models and their response?	**6**
	b)	Explain the devices for over voltage protection?	**6**

UNIT-IV

8.	a)	Write about individual and total harmonic distortion?	**6**
	b)	How harmonics are produced and what are the harmonic introducing devices	**6**

(OR)

9.	a)	Explain the harmonic current mitigation?	**6**
	b)	Explain IHD, THD, true rms, displacement power factor and distortion power	**6**

UNIT-V

10.	a)	Discuss in detail about disturbances analyser?	**6**
	b)	Explain the harmonic analyser?	**6**

(OR)

11.	a)	Discuss in detail about the power quality measuring instruments?	**6**
	b)	Explain in detail about True RMS meter	**6**

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AR13

CODE: 13ME4040 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, April-2019

UNCONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Enlist any requirement that demand the use of Unconventional machining process
   b) State the main Function of slurry in USM.
   c) State the main Function of concentrator in USM.
   d) Show the effect of standoff distance on material removal rate in AJM with a diagram
   e) State faradays law of electrolysis
   f) State main parameter that influence the performance of chemical milling process.
   g) What is the necessity of creating vacuum around Electron beam machining process.
   h) State the main reason for Material removal in plasma arc machining
   i) Draw the diagram labelling main components in Electro chemical honing.
   j) Define LASER in LBM.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain the important characteristics of any six Unconventional Processes **6M**
   b) Explain the need of using unconventional machining processes. **6M**

(OR)

3. Explain working principle and process of USM method with a neat sketch and state the merits, demerits and applications. **12M**

UNIT-II

4. a) What are the different types of abrasive slurries? Explain their important characteristics. **6M**
   b) Explain the effect of 'grain size' and 'pressure' on the accuracy and rate of metal removal of in abrasive water jet machining. **6M**

(OR)

5. a) What is Abrasive Jet machining and Abrasive Water Jet Machining? Write differences between them. **6M**
   b) List out applications, advantages and disadvantages of water jet machining. **6M**

UNIT-III

6. a) Explain the various process parameters that affect the surface finish of component machined using ECM process. **6M**
   b) What are the different types of electrolytes used in ECM? Explain their characteristics.. **6M**

(OR)

7. a) What is mask in Chemical Machining process? Discuss the different methods of preparing the masks. **6M**
   b) Discuss the advantages and limitations of chemical machining process **6M**

UNIT-IV

8. a) Write any two applications, advantages and disadvantages of EDM process. **6M**
   b) Draw the simple sketch of Electro Discharge Machine and explain the important elements. **6M**

(OR)

9. a) Discuss the various input parameters that affect the quality of the product produced on electric discharge machine. **6M**
   b) Explain the different types of errors occurred while machining the material using EDM? **6M**

UNIT-V

10. a) Explain the principle and process of electron beam machining with a sketch. **6M**
    b) Explain the process of laser beam machining and state any two applications. **6M**

(OR)

11. a) What is transferred mode of plasma arc? Explain the advantages and differences between transferred and non-transferred mode of plasma arc. **6M**
    b) Explain the features of an electron gun used electron beam machining with a sketch.. **6M**

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AR13

CODE: 13EC4044 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular & Supplementary Examinations, April-2019
EMBEDDED & REAL TIME OPERATING SYSTEMS
(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Name few design challenges in embedded system design.
   b) How is a microprocessor different form digital signal processor?
   c) Define a concurrent process.
   d) What is a real time system?
   e) What is meant by the term "standard"?
   f) Write two applications of RS-232.
   g) What is the purpose of task scheduler?
   h) What is the need for a message queue?
   i) What is the role of timers in RTOS?
   j) Name some embedded system operating systems.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Write short notes on processor technology. [6M]

   b) Explain about the design technology of an Embedded system. [6M]

(OR)

3. (a) Explain how a digital signal processor is classified as an ASIP. [6M]
   (b) Explain how to optimize a custom single purpose processor. [6M]

UNIT-II

4. (a) Write short notes on data flow model. [6M]
   (b) Explain about implementing concurrent processes on a processor. [6M]

(OR)

5. a) Explain the concept of finite state machines with data path model (FSMD). [6M]
   b) Describe the Communication among processes of a general purpose processor. [6M]

UNIT-III

6. (a) Write briefly about Ethernet technology used for local area networks. [6M]
   (b) Explain how Bluetooth technology serves as wireless technology standard for exchanging data. [6M]

(OR)

7. a) Write briefly about Telecommunication standards RS422 and RS485. [6M]
   b) Explain the differences between IEEE 1394 and USB standard. [6M]

UNIT-IV

8. (a) What is the purpose of an interrupt handler in a Real Time Operating System? [6M]
   (b) Briefly explain how pipes facilitate synchronisation between tasks in an RTOS. [6M]

(OR)

9. (a) Write short notes on interrupt service routines. [6M]
   (b) With neat sketches explain the kernel architecture of an RTOS. [6M]

UNIT-V

10. (a) Explain briefly about memory management in real time operating systems. [6M]
    (b) What is priority inversion problem? How it can be avoided. Explain [6M]

(OR)

11. (a) Bring out the subtle differences between real time operating systems and typical (non real time) operating system? [6M]
    (b) Discuss about windows CE operating system for embedded systems. [6M]

AR13

CODE: 13CS4043 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, April-2019

MOBILE ADHOC AND SENSOR NETWORKS

(Computer Science and Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Give any two examples of proactive routing protocols.
   b) List the three phases of associativity based routing.
   c) What happens if TCP segments are not having sequence numbers?
   d) What is the minimum size of TCP header?
   e) Define key distribution.
   f) Give any two specifications of mica mote.
   g) What is meant by reactive networks?
   h) Define overhearing in connection to sensor networks.
   i) Give any two applications of wireless mesh networks.
   j) Define data aggregation.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) List and explain the challenges involved in the design of routing protocols. 8M
   b) What are the characteristics of MANETs? 4M

(OR)

3. a) List the applications of MANETs. 6M
   b) Compare topology based and position based approaches of routing protocols. 6M

UNIT-II

4. Classify multicast routing protocols and explain any two. 12M

(OR)

5. a) Draw the TCP header format and explain each field in it. 6M
   b) Briefly describe mobility related solutions for TCP over Ad hoc networks. 6M

UNIT-III

6. a) What are the characteristics that security solutions for Ad hoc networks must have? 6M
   b) Discuss the importance of minimizing the energy consumption in WSNs. 6M

(OR)

7. a) Explain about clustering of sensor. 4M
   b) Explain about cooperation in MANETs 8M

UNIT-IV

8. a) Explain the design issues of MAC protocol for WSNs. 8M
   b) Write short notes on sensor network programming challenges. 4M

(OR)

9. a) Classify the routing protocols for WSNs. 4M
   b) What are the four components of node-level simulator? Explain. 8M

UNIT-V

10. a) What are the security requirements in Wireless Sensor Networks? 6M
    b) List the applications of vehicular ad hoc networks. 6M

(OR)

11. a) Write short notes on 6M
    i) Key management in WSNs. ii) Secure data aggregation in WSNs.
    b) Write short notes on security vulnerabilities in WSNs. 6M

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AR13

CODE: 13CS4038 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular Examinations, April-2019

MACHINE LEARNING

(Information Technology)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) What is machine learning?
   b) Mention the different machine learning applications.
   c) Differentiate Lazy and Eager learning.
   d) What do you mean by Gain?
   e) Define version space.
   f) Explain GIBBS algorithm.
   g) Define optimal mistake bounds.
   h) What is PAC?
   i) Define Rule learning.
   j) What is leaning sets?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Describe the machine learning problems with example. 6M
   b) Explain the need of developing a learning system. 6M

(OR)

3. a) Illustrate concept learning task by means of an example. 6M
   b) Briefly describe the candidate elimination learning algorithm. 6M

UNIT-II

4. a) Explain construction of decision tree with example. 6M
   b) Describe the issues in decision tree learning. 6M

(OR)

5. a) Explain hypothesis space search in decision tree learning 6M
   b) Write short notes on Inductive bias in decision tree learning 6M

UNIT-III

6. a) Describe Bayesian Belief Networks. 6M
   b) Describe Bayes optimal classifier with example. 6M

(OR)

7. a) Explain the process of estimating Hypothesis accuracy. 6M
   b) Describe the Gaussian distribution. 6M

UNIT-IV

8. a) Explain about sample complexity for infinite hypotheses spaces. 6M
   b) Describe Probability learning an approximately correct hypothesis. 6M

(OR)

9. a) Explain about case-based learning with example. 6M
   b) Describe KNN algorithm. 6M

UNIT-V

10. Explain in detail about FOIL. 12M

(OR)

11. Explain the following. 12M
    (i) Sequential covering algorithm ii) Inverse Resolution