

AR13

SET -02

Code No: 13MTE1009

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I M. Tech., I Semester Regular Examinations, January - 2014

NON CONVENTIONAL ENERGY SOURCES

(Thermal Engineering)

Time: 3 hours

Max Marks: 60

**Answer any FIVE questions
All questions carry equal marks**

1. Classify and briefly explain solar radiation measurement methods.
2. Explain the basic difference between an active and passive Solar heating system and with the help of schematic diagram explain solar passive space cooling system through ventilation.
3. a) Define and Classify geothermal sources.
b) What are the advantages and disadvantages of Geothermal Energy Forms?
4. a) Describe the working principle and construction details of basic thermionic generator
b) What is fuel cell? What are the different types of fuel cells?
5. a) What is meant by dry fermentation and wet fermentation?
b) How biogas plants are classified explain briefly?
6. Discuss the advantages and disadvantages of horizontal and vertical axis wind mills. What are the methods used to overcome the fluctuating power generation of wind mill?
7. a) What are the difficulties in tidal power developments?
b) Describe the closed OTEC system, with its advantages over the open cycle system
8. Write short notes on
 - a) Solar water heating
 - b) MHD open cycle system
 - c) Differentiate between nuclear Fission and Fusion.

Code No.13MDE1002**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TAKKALI
(AUTONOMOUS)****I M.Tech. I Semester Regular Examinations, January-2014****ADVANCED DIGITAL SIGNAL PROCESSING****(Digital Electronics and Communication Systems)****Time: 3 hours****Max Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What is FFT and how it reduces number of computations? Derive 8 point DIT FFT algorithm with necessary equations and draw the Butterfly diagram.
2. Design a Butterworth LPF for the following specifications
 - (i) Pass band Gain required = 0.94
 - (ii) Frequency upto which Pass band Gain must remain constant $\omega_1=150$ rad/sec.
 - (iii) Stop band Gain = 0.06
 - (iv) Stop band frequency $\omega_2=300$ rad/sec.
3. Design an FIR linear phase digital filter approximating the ideal frequency response
$$H_d(\omega) = \begin{cases} 1, & \text{for } |\omega| \leq \frac{\pi}{6} \\ 0, & \text{for } \frac{\pi}{6} < |\omega| \leq \pi \end{cases}$$
 - (i) Determine the coefficients of 11 tap filter based on the window method with a Hamming window.
 - (ii) Determine and plot the magnitude and phase response of the filter.
4. Obtain the cascade and parallel structures for the system described by the difference equation $y(n) = \frac{3}{4}y(n-1) - \frac{1}{8}y(n-2) + x(n) + \frac{1}{3}x(n-1)$.
5. Explain the Yule-Walker and Burg Methods for the AR Model Parameters.
6. (a) Explain IEEE 754 standard to represent a binary floating point number.
(b) What is coefficient quantization error and how it is minimized?
7. (a) What are the properties of Modified Periodogram?
(b) Discuss in detail the FIR Wiener filter with neat block diagram.
8. How the problem of frequency warping occurs in Bilinear Transformation method of IIR filter design? How it is compensated? Explain the design steps of Bilinear Transformation method.

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SET-01

CODE : 13MIT1006

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I M.Tech I Semester Regular Examinations, January - 2014

OBJECT ORIENTED SOFTWARE ENGINEERING

(Information Technology)

Time: 3 Hours

Max. Marks: 60

**Answer any Five Questions
All Questions carry equal marks**

1. Compare and contrast Software life cycle Models?
2. What is meant by planning and estimating? Explain about estimation of size and cost of building of software product?
3. Describe Quality Assurance issues .Explain about the execution based testing and non-execution based testing?
4. Explain about Cohesion and Coupling in designing classes?
5. Discuss about generalization, aggregation and association with example?
6. Explain about a).Requirement Elicitation Technique b).Rapid prototyping
7. Explain about Object oriented Design process?
8. Discuss about IIM (Implementation, Integration and maintenance) Phases.

Code: 13MPE1007**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****I M. Tech I Semester Regular Examinations, January-2014****DESIGN AND MONITORING OF MACHINES****(Power Electronics and Electric Drives)****Time: 3 hours****Max. Marks: 60****Answer Any FIVE Questions
All Questions Carry Equal Marks***********

1. a) Explain the concept of condition monitoring and diagnostics engineering management? [6]
b) What is the significance of condition monitoring techniques, explain? [6]
2. a) Derive the output equation of single phase transformer? [6]
b) Calculate the KVA output of a single phase transformer from the following data: The ratio of core height to distance between core centers is 2.8, the ratio of diameter of circumscribing circle to distance between core centers is 0.56, the ratio of net iron area to area of circumscribing circle is 0.7, current density = 2.3 A/mm^2 , window space factor = 0.27, frequency = 50Hz, flux density of core = 1.2 wb/m^2 , distance between core centers = 0.4m. [6]
3. a) Write a short notes on the transformer oil? [6]
b) Explain any two diagnostic tests on the transformer? [6]
4. a) Explain the separation of main dimensions with respect to DC machine? [6]
b) A design is required for a 50 kW, 4 pole and 600 rpm DC shunt generator. The full load terminal voltage is 220V. The maximum gap density is 0.83 wb/m^2 and the ampere conductors per meter is 30,000. Calculate the suitable dimensions of the armature core to give a square pole phase. Assume that full load armature voltage drop is 3% of the rated terminal voltage and the field current is 1% of rated full load current. The ratio of pole arc to pole pitch is 0.67. [6]
5. a) Derive the output equation of three phase induction motor? [6]
b) Determine main dimensions for best power factor of a 100 kW, 3300V, 50Hz, 12 pole star connected slip ring induction motor. Assume $B_{av} = 0.4 \text{ wb/m}^2$, $a_c = 25000 \text{ A/m}$, efficiency = 0.9, power factor = 0.9 and winding factor is 0.96. [6]

6. a) Explain the stator design of three phase induction motor? [6]
- b) A 15 kW, 400V, 3 phase, 50Hz, 6 pole induction motor has a diameter of 0.3 m and the length of core 0.12 m. The number of stator slots is 72 with 20 conductors per slot. The stator is delta connected. Calculate the value of magnetizing current per phase, if the length of air gap is 0.55 m. The gap contraction factor is 1.2. Assume the mmf required for the iron parts to be 35 percent of the air gap mmf. Coil span=11 slots. [6]
7. a) Explain the steps to design the field winding of synchronous machine? [6]
- b) Derive the expression for air gap length of synchronous machine? [6]
8. a) Explain briefly the failure modes of electrical machines? [6]
- b) Explain the following:
i) Temperature monitoring ii) Vibration monitoring [6]

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SET-02

Code No: 13MVL1007

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I M.Tech. I Semester Regular Examinations, January - 2014

ELECTRONIC DESIGN AUTOMATION TOOLS

(VLSI System Design)

Time: 3 hours

Max. Marks: 60

**Answer any FIVE questions
All questions carry equal marks.**

1. (a) Evaluate the various kinds of Net and Register data types.
(b) Analyze the Formal verification and SoC Level verification. [6+6]
2. (a) Define the terms 'simulation' and 'synthesis' relevant to HDL's and explain them with suitable block diagram.
(b) Give the comparison between VHDL and Verilog HDL. [6+6]
3. Name the different CAD tools for simulation, synthesis and explain them in details. [12]
4. (a) Draw the PSPICE model for MOSFET.
(b) Analyze the operation of Leonardo Spectrum. [6+6]
5. (a) Explain the fundamentals of analog and digital simulation.
(b) Write Verilog HDL code for J-K flip-flop using behavioral model. [6+6]
6. Give in detail an overview of high speed PCB design. [12]
7. (a) Explain in detail practical PCB design.
(b) Explain the advantages and Disadvantages of PCB design. [6+6]
8. Write short notes on any TWO:
(a) Cell Models and Delay Models.
(b) Features of Verilog HDL.
(c) Features of Modelsim. [6+6]

Code No: 13MCS1006**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****I M.Tech. I Semester Regular Examinations, January - 2014****Object Oriented Programming
(Computer Science and Engineering)****Time: 3 hours****Max Marks: 60****Answer any FIVE questions
All questions carry equal marks**

1. a) Explain the concepts of Class and Object in detail. 6m
b) Differentiate method overloading and method overriding. 6m
2. a) Explain final class, final method and final variable with an example. 6m
b) Explain the methods of String Buffer class with an example. 6m
3. a) What are the differences between classes and interfaces? Write about Packages in Java. 8m
b) Write a Java Program to demonstrate extending interfaces. 4m
4. a) What is an exception? Explain the keywords used for exception handling with an example. 5m
b) Explain the usage of super keyword with an example. 4m
c) Describe about Daemon threads. 3m
5. a) What is Delegation event model? Write a Java program to handle Mouse events. 6m
b) Explain how text can be displayed using AWT components TextField and TextArea. 6m
6. a) Differentiate applet and application. 6m
b) Write a Java program for passing parameters to applets. 6m
7. a) What are the advantages of swings? Explain Swing components in brief. 6m
b) Write short notes on java.io package and java.lang package. 6m
8. a) Explain the process of creation of Server socket and socket for client with suitable examples. 8m
b) Write short notes on InetAddress class. 4m