

AR19

CODE: 19MTE1009 **SET-2**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech II Semester Regular Examinations, December-2020

THERMAL AND NUCLEAR POWER PLANTS
THERMAL ENGINEERING

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions
All questions carry EQUAL marks

1. a) What are the basic resources in India for power generation? List out their capacities in different regions. 6 M
b) What do you understand by proximate and ultimate analysis of coal? Explain. 6 M
2. a) Explain the general layout of a steam power plant with a neat diagram. 6 M
b) What are the differences between fire tube boilers and water tube boilers? 6 M
3. a) Describe the working of any one type of direct contact condenser with a neat sketch. 6 M
b) Draw a simple lay out showing combined Brayton and Rankine cycle power plant and explain its operation with the help of T-S diagram. 6 M
4. a) Distinguish between open cycle and closed cycle gas turbine power plants. 6 M
b) Illustrate method of regeneration to improve overall efficiency of a gas turbine power plant. Represent the same on a T-s and h-s diagrams. 6 M
5. a) Explain the working of PWR with a neat sketch 6 M
b) Describe various methods of nuclear waste disposal with sketches. 6 M

6. a) Explain the following 6 M
(i) Load factor
(ii) Plant capacity factor
(iii) Load curve
(iv) Load duration curve
b) The following loads are connected to a power plant: 6 M

| Type of Load | Max. demand (MW) | Diversity factor | Demand factor |
|--------------|------------------|------------------|---------------|
| Domestic | 16 | 1.2 | 0.72 |
| Commercial | 20 | 1.4 | 0.85 |
| Industrial | 40 | 1.4 | 0.95 |

If the overall diversity factor is 1.45, determine

- (i) The maximum load, and
(ii) The connected load of each type.
7. a) List out the pressure measurement instrument used in power plant and discuss the working of electromagnetic transducer with a simple sketch. 6 M
b) What is thermal pollution and explain its bad effects on environment. 6 M
8. a) How dust collection systems differs from ash collection? Why it is more serious in case of pulverized coal fired boilers? 6 M
b) Explain working of optical pyrometer used for high temperature measurement. 6 M



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CODE: 19MPE1013

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I M.Tech. II Semester Regular Examinations, December, 2020

ADVANCED DIGITAL SIGNAL PROCESSING AND ITS APPLICATIONS
(PED)

Time: 3 Hours

Max Marks:60

Answer any FIVE questions
All questions carry EQUAL marks

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|----|----|----------------------------------------------------------------------------------------------------------------|-----|
| 1. | a) | Explain how an analog signal is converted into digital signal with neat diagram. | 6M |
| | b) | List the advantages and disadvantages of digital signal processing. | 6M |
| 2. | a) | Differentiate the different structures for IIR systems | 6M |
| | b) | Realize following system with difference equation in cascade form $y(n) = y(n-1) + 2y(n-2) + x(n) - x(n-1)$ | 6M |
| 3. | | Compare IIR and FIR digital filters. | 12M |
| 4. | | Design FIR filter using Hamming window technique. | 12M |
| 5. | | Discuss about groups of addressing modes and Assembly language Instructions. | 12M |
| 6. | a) | Explain how the PWM waveforms are generated with compare units. | 6M |
| | b) | Explain about Event Manager Interrupts and Event Manager register address. | 6M |
| 7. | a) | Explain the effects of Quantisation in Analog-to-Digital conversion of signals? | 6M |
| | b) | Compare DIT and DIF FFT algorithms and FFT and DFT algorithms. | 6M |
| 8. | | Explain the functional block diagram of the TMS320LF2407A DSP controller with neat diagram. | 12M |

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CODE: 19MVL1011 **SET-2**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech II Semester Regular Examinations, December-2020

LOW POWER VLSI DESIGN **(VLSI System Design)**

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions
All questions carry EQUAL marks

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|----|----|----------------------------------------------------------------------------------------------------------|----|
| 1. | a) | Explain about sources of power dissipation in digital integrated circuits? | 6M |
| | b) | Explain High-performance, high cost digital Bi-CMOS device using P-well CMOS process with neat sketches? | 6M |
| 2. | a) | Write in detail about LOCOS technology of isolation? | 6M |
| | b) | Write the key process steps in deep sub micron process. | 6M |
| 3. | a) | Explain how the body-effect coefficient influence the MOSFET current? | 6M |
| | b) | Describe the concept of Low-voltage/Low-power lateral BJT on SOI? | 6M |
| 4. | a) | Explain Ebers Moll model. | 6M |
| | b) | Explain about Gummel poon Bipolar model detail? | 6M |
| 5. | a) | Explain Analytical characterization of sub-half micron MOS devices? | 6M |
| | b) | Discuss in detail about P-channel sub-micron devices with neat sketches? | 6M |
| 6. | a) | Draw the schematic and layout diagram for 4 input AND gate using CMOS logic? | 6M |
| | b) | Explain some conventional CMOS and BiCMOS logic gates. | 6M |
| 7. | a) | With neat diagram explain the operation of Bi CMOS NOR gate? | 6M |
| | b) | Explain the working of Conventional multi drain complementary BiCMOS buffers? | 6M |
| 8. | a) | Explain about the Performance Theme for Flip Flops? | 6M |
| | b) | Draw and explain the hybrid mode PMOS device. | 6M |

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CODE: 19MCS1012

SET-2

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

I M.Tech II Semester Regular Examinations, December-2020

**SENSOR NETWORKS AND INTERNET OF THINGS
Computer Science and Engineering**

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions
All questions carry EQUAL marks

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|----|----|------------------------------------------------------------------------------------------------|-----|
| 1. | a) | What are the advantages of Sensor Networks and explain? | 6M |
| | b) | Explain about collaborative Processing in Sensor Networks. | 6M |
| 2. | a) | Briefly explain S-MAC protocol and IEEE802.15.4 protocol&Zigbee. | 6M |
| | b) | What are the key assumption in Networking sensors. | 6M |
| 3. | | Explain Geographic Energy-Aware Routing in detail. | 12M |
| 4. | a) | What is the vision of IoT? How does the vision reflect in use of IoT in smart street lighting? | 6M |
| | b) | Explain about Distributed Hierarchical Aggregation. | 6M |
| 5. | a) | What is Energy minimization Broadcast and explain. | 6M |
| | b) | Describe about sensor data base challenges. | 6M |
| 6. | a) | Describe access-authorization methods. | 6M |
| | b) | Explain M2M service layer standardization. | 6M |
| 7. | a) | How do IoT devices communicate? Explain with suitable diagrams. | 6M |
| | b) | Explain in detail the advantages and disadvantages of IoT. | 6M |
| 8. | a) | What are the server-end functions IoT for business processes? | 6M |
| | b) | Explain about Access control and Secure message communication | 6M |

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CODE: 19MSE1017

SET-2

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

I M.Tech II Semester Regular Examinations, December-2020

DESIGN OF FORMWORKS Structural Engineering

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions
All questions carry EQUAL marks

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|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1. | Define form work. Write the requirements of for formwork. | 12M |
| 2. | What are the characteristics of good quality timber formwork? Write a short note on the commonly used timber sections for formwork and their properties. | 12M |
| 3. | Write a note on assumptions made for design of formwork and a detail note on estimating permissible stresses. | 12M |
| 4. | Explain in detail about the conventional wall formwork and proprietary wall formwork system. | 12M |
| 5. | Discuss about the case studies in formwork failure. | 12M |
| 6. | Explain the design procedures and requirements of formwork involved in rounded water tanks and bridges. | 12M |
| 7. | Define slipform. Discuss the following: (a) vertical slipform (b) horizontal slipform (c) functions of various slipforms. | 12M |
| 8. | Explain the techniques of formwork involved in the construction of multi-storied buildings. | 12M |