

AR19

CODE: 19MSE1017

SET-1

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

I M.Tech II Semester Regular Examinations, August-2022

DESIGN OF FORMWORK (Structural Engineering)

Time: 3 Hours

Max Marks: 60

Answer any FIVE questions
All questions carry EQUAL marks

1. Define form work. Write a detail note on the formwork as temporary structures. 12M
2. What are the factors which govern the selection of materials for form work? Discuss any two material types of form work like timber and steel and their importance with economical aspects. 12M
3. Explain in detail about the requirements for design of formwork, loading standards and effect of lateral pressure. 12M
4. Write a short note on the following: (a) forms for small isolated footings (b) forms for large isolated footings (c) forms for column footings (d) forms for foundation walls. No need of sketches. 12M
5. Explain in detail about the traditional slab and beam formwork. 12M
6. Explain the design procedures for form work of special structures like water tanks. 12M
7. Explain the cycle, advantages and limitations of flying formwork and the design issues involved in the flying formwork. 12M
8. Explain in detail the causes of formwork failure and common deficiencies in design leading to formwork failure. 12M

AR19

CODE: 19MSE1027

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I M.Tech II Semester Supplementary Examinations, August, 2022

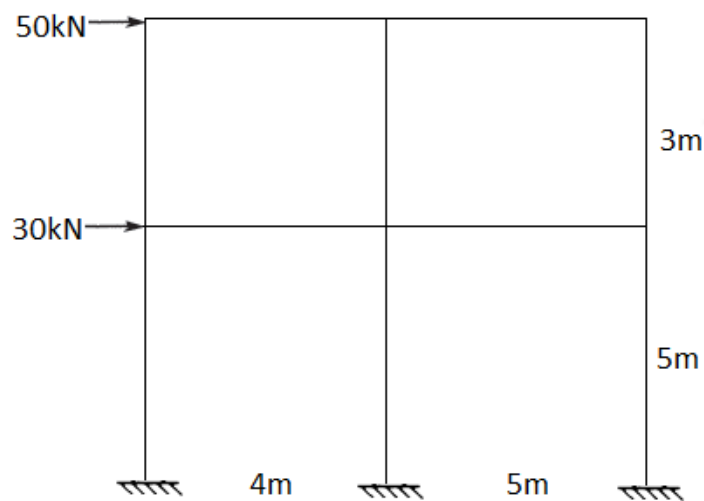
DESIGN OF HIGH RISE STRUCTURES (Structural Engineering)

Time: 3 Hours

Max Marks: 60

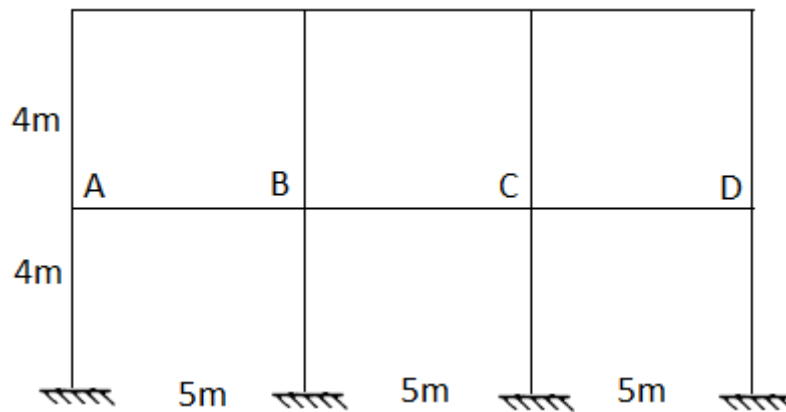
Answer any FIVE questions
All questions carry EQUAL marks

1. An office building is proposed at Vadodara. The size of the building is 50m x 100m and height is 15m. Calculate the design wind force on the building for 50 years design life having wind slope 3° . 12M
2. Analyze the frame shown in figure by portal method 12M



3. Discuss about different types of shear walls, advantages and disadvantages 12M
4. A four storied building frame has four equal bays and height between floors is 3m. The wind loads acting at roof level and various floor levels are, $H_1 = 10\text{kN}$, $H_2 = 10\text{kN}$, $H_3 = 20\text{kN}$ and $H_4 = 20\text{kN}$. The columns have the same cross section. Estimate the moments in the columns and beams using cantilever method. 12M
5. Describe in-detail the design steps for the design of chimney. 12M

6. Design a circular silo of 14m height and 7m internal diameter to store cement of unit weight 15.5kN/m^3 and $\phi = 20^\circ$. 12M
7. Design a circular cylindrical bunker of capacity 400kN to store coal using M30 concrete and Fe:500 Steel, unit weight of coal is 8.0 kN/m^3 , angle of repose of coal is 25° 12M
8. For the frame shown below, dead load from the slab is 2kN/m^2 and Live load is 4kN/m^2 . Analyze the beam BC for positive moment at mid span, negative moment of beam CD at D and Maximum axial force in column at D. 12M



AR19

CODE: 19MVL1011

SET-1

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

I M.Tech II Semester Regular/Supplementary Examinations, August-2022

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 the limitations of low voltage , low power design w.r.t. the following | 6M |
| | | i) Power supply voltage ii) Threshold Voltage | |
| | b) | What are the considerations to be taken care while integrating BiCMOS process? Explain. | 6M |
| 2. | a) | What is the need for Low power circuit design? Explain the issues involved in low power VLSI Design. | 6M |
| | b) | Discuss briefly the n-well CMOS process. | 6M |
| 3. | a) | Explain the different Bi-CMOS isolation Techniques in brief. | 8M |
| | b) | Illustrate a 0.2 μm SOI Bi-CMOS process flow and then explain each step of it. | 4M |
| 4. | a) | Explain the following in brief
i)Wafer bonding ii)Smart cut process. | 6M |
| | b) | What are the key steps involved in Deep submicron processes and explain each step of it. | 6M |
| 5. | a) | Draw the SPICE model for MOSFET and explain the parameters involved. | 6M |
| | b) | Explain the Ebers Moll model in brief. | 6M |
| 6. | a) | Explain analytical characterization of sub-half micron MOS devices | 4M |
| | b) | Discuss about advantages and limitations of SOI technologies. | 8M |
| 7. | a) | Design a conventional CMOS Full adder and discuss its performance | 4M |
| | b) | Explain in detail about EKB model of MOSFET | 8M |
| 8. | a) | Explain evaluation process of latches and flip flops. | 8M |
| | b) | Design and explain the Operation of JK Flipflop using CMOS. | 4M |

AR19

CODE: 19MCS1012

SET-1

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

I M.Tech II Semester Regular & Supplementary Examinations, August-2022

**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) Explain challenges of Sensor Network . | 6M |
| | b) Define the following | |
| | i) Sensor | |
| | ii) Sensor node | |
| | iii) Network topology | 6M |
| | iv) Data centric | |
| | v) State | |
| | vi) Task | |
| 2. | Explain in detail S-MAC protocol of networking sensors. | 12M |
| 3. | a) Describe about Routing on a curve. | 6M |
| | b) Explain Energy-Aware Routing to a Region | 6M |
| 4. | a) Explain about unicast geographic routing. | 6M |
| | b) Discuss about Temporal Data in Sensor Network Database. | 6M |
| 5. | a) Explain In-Network Aggregation in detail. | 6M |
| | b) What is Data centric storage and describe it's significance. | 6M |
| 6. | a) Explain any two IOT conceptual frameworks. | 6M |
| | b) What is Machine to Machine (M2M) communication? What are the differences between IOT and M2M communication? | 6M |
| 7. | a) Describe any two web communication protocols. | 6M |
| | b) Give a short note on Internet connectivity principles. | 6M |
| 8. | a) Describe about IoT security Tomography | 6M |
| | b) Explain in detail Vulnerabilities Security Requirements and Threat Analysis. | 6M |

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****I M.Tech. II Semester Regular/Suppl. Examinations, August,2022****ADVANCED DIGITAL SIGNAL PROCESSING AND APPLICATIONS
(PED)****Time: 3 Hours****Max Marks:60****Answer any FIVE questions****All questions carry EQUAL marks**

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|----|----|--|-----|
| 1. | a) | Determine the eight-point DFT of the signal $x(n) = \{1,1,1,1,1,1,0,0\}$ and sketch its magnitude and phase. | 6M |
| | b) | Obtain the DFT of the following sequence using 8-point FFT algorithm. Give all intermediate results. $X(u) = \{0,1,-1,0,0,-1,1,0\}$ | 6M |
| 2. | | Obtain direct form-I, direct form-II, cascade, parallel form realization of following system: $y(n) = 0.75y(n-1)-0.125y(n-2)+3x(n)+7x(n-1)+x(n-2)$ | 12M |
| 3. | | Explain how analog signal is converted into digital signal with neat sketch | 12M |
| 4. | | Design a High Pass FIR filter whose cut-off frequency is 1.2 radians/sec and $N=9$ Using Hamming Window. | 12M |
| 5. | | With neat sketch explain the Architecture of TMS320LF 2407A. | 12M |
| 6. | | Discuss about the following:
(i) Event manager register address
(ii) General Purpose Timers
(iii) Event Manager Interrupts | 12M |
| 7. | a) | What are the effects of finite word length in digital filters explain? | 6M |
| | b) | Compare FIR and IIR filters. | 6M |
| 8. | a) | Discuss the design steps involved in designing FIR filters using windowing techniques | 6M |
| | b) | Explain how the PWM wave forms are generated with compare units. | 6M |

CODE: 19MTE1009 **SET-2**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech II Semester Regular/Supplementary Examinations, August-2022
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) Illustrate the construction and working of any water tube boiler with a neat sketch. 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 various flow measurement and temperature measurement devices commonly used in power plants. Explain working of any one of the flow measurement device with a 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 functioning of the following in a nuclear power plant 6 M
(i) Moderator (ii) Reflector (iii) Control rods (iv) Biological shield