

8. (a) Discuss the use of triangular plate bending elements. 10
- (b) Explain briefly the various factors to be considered in the development of curved shell elements. 10

24519-1550-(P-4)(Q-8)(16)

(4)

Roll No. ....

**24519**

**B. Tech. 7th Semester (Civil Engg.)  
Examination – December, 2016**

**FINITE ELEMENT METHODS**

**Paper : CE-417-F**

**Time : Three Hours ]**

**[ Maximum Marks : 100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any *five* questions. All questions carry equal marks.

1. (a) Explain the term 'Shape Functions'. Why polynomial terms are preferred for shape functions in finite element method ? 10
- (b) Discuss the advantage and disadvantages of FEM over : 10
- (i) Classical method
  - (ii) Finite difference method

24519-1550-(P-4)(Q-8)(16)

P. T. O.



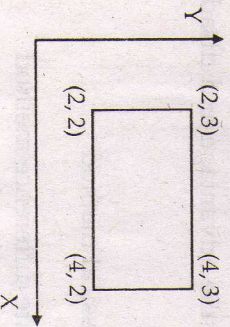
2. Using Lagrange polynomial, find the shape functions for three noded and five noded bar elements. 20

3. Determine using any weighted residual techniques the temperature distribution along a circular fin of length of 6 cm and radius 1 cm. The fin is attached to a boiler whose wall temperature is 140°C and the free end is insulated. Assume convection coefficient  $h = 10 \text{ W/cm}^2 \text{ } ^\circ\text{C}$ . Conduction coefficient  $K = 70 \text{ W/cm}^2 \text{ } ^\circ\text{C}$  and  $T_\infty = 40 \text{ } ^\circ\text{C}$ . The governing equation for the heat transfer through the fin is given by 20

$$-\frac{d}{dx} \left[ KA(x) \frac{dT}{dx} \right] + hp(x)(T - T_\infty) = 0$$

Assume appropriate boundary conditions and calculate the temperature at every 1 cm from left end.

4. A bilateral rectangular element has coordinates as shown in figure and the nodal temperatures are  $T_1 = 100 \text{ } ^\circ\text{C}$ ,  $T_2 = 60 \text{ } ^\circ\text{C}$ ,  $T_3 = 50 \text{ } ^\circ\text{C}$ ,  $T_4 = 90 \text{ } ^\circ\text{C}$ . Compute the temperature at the point whose coordinates are (2.5, 2.5). Also determine the 80 °C isotherm : 20



24519-1550-(P-4)(Q-8)(16)

( 2 )

5. Write short notes on : 20

- (i) Galerkin's method
- (ii) Variation Method
- (iii) Hermite Polynomials

6. (a) Explain the isoparametric concept in finite element analysis. 10

(b) Explain the terms isoparametric, subparametric and superparametric elements. 10

7. A beam of length 10 m, fixed at one end and supported by a roller at the other end carries a 20 kN concentrated load at the centre of the span. By taking the modulus of elasticity of material as 200 GPa and moment of inertia as  $24 \times 10^{-6} \text{ m}^4$ , determine : 20

- (i) Deflection under load
- (ii) Shear force and bending moment at mid span
- (iii) Reaction at supports

24519-1550-(P-4)(Q-8)(16)

( 3 )

P. T. O.



Roll No. ....

**24228**

**B. Tech. 5th Sem. (EE)**

**Examination – December, 2016**

**POWER SYSTEMS-I**

**Paper : EE-315-F**

**Time : Three Hours ]**

**[ Maximum Marks : 100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Question No. 1 is *compulsory* and attempt one from each Section. All questions carry equal marks.

1. (a) Write short note on single phase representation of balance three phase network. 5
- (b) Write short note on comparison of load flow methods. 5
- (c) Write short note on incremental fuel cost for a power plant. 5
- (d) Write short note on ACE(Area Control Error) 5

24228-8850-(P-3)(Q-9)(16)

P. T. O.



## SECTION - A

2. Explain steady state model of Synchronous Generator in detail. 20

3. Write short note on : 20

- (a) Complex power  
(b) Current breaker

## SECTION - B

4. Draw neat & clean Flow Chart of Gauss-Seidel method & explain its algorithm in detail. 20

5. The load flow data for the sample power system are given below. The voltage magnitude at bus 2 is to be maintained at 1.04 p.u. The max & min reactive power limits of the generator at bus 2 are 0.35 & 0.0 p.u. respectively. Determine the set of load flow equation at the end of first iteration by using N-R method : 20

Bus Code	Impedance	Line Charging Admittance
1 - 2	$0.08 + j0.24$	0.0
1 - 3	$0.02 + j0.06$	0.0
2 - 3	$0.06 + j0.18$	0.0

24228-8850-(P-3)(Q-9)(16) (2)

Schedule of generation of loads :

Bus Code	Assumed Vol.	Generation MW	MVAR	Load MW	MVAR
1	$1.06 + j0.0$	0	0	0	0
2	$1.0 + j0.0$	0.2	0.0	0.0	0.0
3	$1.0 + j0.0$	0	0	0.6	0.25

## SECTION - C

6. Write short note on optimal operation of generator on bus bar. 20

7. Explain optimal scheduling of hydrothermal system in detail. 20

## SECTION - D

8. Explain load frequency control of single area in detail. 20

9. Explain Automatic voltage control in detail. 20

24228-8850-(P-3)(Q-9)(16) (3)



Roll No. ....

**24447**

**B. Tech. 7th Semester (ECE)  
Examination – December, 2016**

**WIRELESS SENSOR NETWORK**

Paper : ECE-411-F

Time : Three Hours ] [ Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

**Note :** Question No. 1 is *compulsory*. Attempt one question from each Unit.

- |   |   |
|---|---|
| 1. (a) What is a wireless sensor network ?                          | 4 |
| (b) What are the hardware components of a wireless sensor network ? | 4 |
| (c) What are the requirements of a MAC protocols ?                  | 4 |
| (d) What is wake up radio concept ?                                 | 4 |
| (e) What is clustering ?  | 4 |

24447-1850-(P-3)/(Q-9)/(16)

P. T. O.



### UNIT – I

2. What are the challenges and the required mechanisms of a Wireless Sensor network ? 20
3. What are the various applications of wireless sensor networks and explain any two with an example each. 20

### UNIT – II

4. Explain in detail the hardware components used in WSN architecture. 20
5. Explain in detail about the Gateway concepts. 20

### UNIT – III

6. Explain the design approaches and performance of S-MAC protocol. 20
7. Discuss in detail the Transceiver characteristics and structure. 20

24447-1850-(P-3)(Q-9)(16) (2)

### UNIT – IV

8. Explain in detail about different topology control mechanisms. 20
9. Explain about various clustering mechanisms in WSN. Also explain in detail about the sensor tasking and control. 20

24447-1850-(P-3)(Q-9)(16) (3)



7. Write a detailed note on power substation automation and equipment condition monitoring system. 20

**SECTION - D**

8. Write notes on :
- (a) Substation & feeder level automation. 10
  - (b) Automatic mapping and facility management. 10
9. Write notes on :
- (a) Power system & equipment maintenance. 10
  - (b) Trouble call management. 10

24438-1300-(P-4)(Q-9)(16)

( 4 )

Roll No. ....

**24438**

**B. Tech. 7th Semester (EEE)**  
**Examination – December, 2016**

**PLCS & SCADA**

**Paper : EE-407-F**

Time : Three Hours ] [ Maximum Marks : 100

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory.

1. (a) State and explain advantages and disadvantages of PLC in brief.
- (b) Explain SCADA communication in an electrical power system.
- (c) Write a short note on energy management system.

24438-1300-(P-4)(Q-9)(16)

P. T. O.



- (d) Write a short note on automatic mapping and facility management.  $5 \times 4 = 20$

#### SECTION - A

2. (a) Explain central processing unit in detail along with the three important parts in it. 10
- (b) Write a PLC program to implement the conditional logic statements below : 10
- (i) A PLC output is to switch on if any of three input is switched on.
- (ii) A PLC output is to switch on if any of three input is switched on but not two or more.
- (iii) A PLC output is to switch on if any two output is switched on, but not the third.
3. (a) List various functions of SCADA in electrical operations industry. 10

24438-1300-(P-4)(Q-9)(16) (2)

- (b) Define and explain : HMI, SCADA server, Ladder logic. 10

#### SECTION - B

4. (a) How SCADA system is used in power generating station control room ? Explain with an example. 10
- (b) Discuss the role of SCADA system in a power grid. 10
5. Explain the role of national control centre and regional control centre in a modern power system. Use diagrams to depict the communication between these two. Discuss the use of automatic generation control with a SCADA system in a power system facility. 20

#### SECTION - C

6. (a) Discuss the advantages of inter utility economy energy evaluation. 10
- (b) Write a detailed note on security analysis of power systems. 10

24438-1300-(P-4)(Q-9)(16) (3) P. T. O.



24049

B. Tech. 3rd Semester (ME) F-Scheme  
Examination, December – 2016

MATERIAL SCIENCE

Paper-ME-207-F

Time allowed : 3 hours ] [Maximum marks : 100

**Note :** Attempt any five questions in total, at least one question from each section. **Question no. 1 is compulsory.** Each question carries equal marks. (20 marks)

1. Explain the following –

- (a) Space Lattice
- (b) Induction Hardening
- (c) Objectives of heat treatment processes
- (d) Properties of Martensite
- (e) Strain ageing
- (f) Bauschinger's effect
- (g) Binary phase diagrams
- (h) Types of fracture
- (i) Critical cooling rate
- (j) Tempering.

20

24049-P-3-Q-9-(16)

P.T.O.



( 2 )

24049

**Section-A**

2. (a) Discuss the classification of crystal imperfections in details. 14  
(b) Discuss atomic packing factor and number of atoms per unit cell in detail. 6
3. (a) What different types of structures are found in different materials ? How are these formed ? 10  
(b) What is crystallography ? Explain crystal structure, space lattice and crystal directions. 10
4. (a) Explain the Iron carbon equilibrium diagram in detail. What are its limitations ? 10  
(b) Explain the TTT curve with its applications. 10
5. (a) Explain the difference between annealing and normalizing in detail. 10  
(b) Explain any two surface hardening techniques in detail. 10

**Section-C**

6. (a) What do you understand by plastic deformation ? Explain mechanism of plastic deformation. 10  
(b) Explain the recovery, recrystallisation and grain growth in detail with application. 10

24049

( 3 )

24049

**Section-D**

7. (a) Explain types and mechanism of fractures in detail. 10  
(b) Explain fatigue limit and the factors affecting fatigue. 10
8. (a) Define creep and creep limit. How creep test is carried out and explain creep curve. 10  
(b) Discuss dry and wet corrosion. Explain the methods of corrosion protection. 10
9. (a) Explain various types of polymers and formation of polymers. 10  
(b) What are ceramics, types of ceramics, their properties and formation techniques ? 10

24049



### UNIT - III

6. What do you understand by primary and secondary distribution channels partners ? How are they different from each other ?
7. How has retail culture impacted the distribution strategies of the companies ?

### UNIT - IV

8. What is meant by market logistics and supply chain management ? How is logistics planning linked to the Channel Management ?
9. Write a detailed note on International Sales Management.

56090-700-(P-4)/(Q-9)(16)

(4)

Roll No. ....

56090

**MBA 2 Year 4th Semester (N.S.)  
(Re-appear) Examination -  
December, 2016**

**SALES & DISTRIBUTION MANAGEMENT**

**Paper : MBA-422**

**Time : 3 hours**

**Max. Marks : 80**

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

**Note :** The question paper will have two sections. Section A shall comprise 8 short questions carrying two marks each which are **compulsory**. Answer to each question should not exceed 50 words normally. Section B shall comprise 8 questions (2 questions from each unit). The student will be required to attempt

56090-700-(P-4)/(Q-9)(16)

(1)

[ Turn Over



**four** questions (one question from each unit). All questions will carry equal marks.

### SECTION - A

#### 1. Short answer type questions :

- (a) What do mean by Sales Management ?
- (b) Define Channel Training Programme.
- (c) What are different methods of selecting distribution channels ?
- (d) What is the importance of Sales Contest ?
- (e) What do you mean by channel conflicts and resolutions ?
- (f) What are the roles of channel members in distribution management ?
- (g) Define the purpose of sales territories.
- (h) What are compensation plans ?

56090-700-(P-4)(Q-9)(16)

(2)

### SECTION - B

#### UNIT - I

#### 2. Personal Selling is a two way communication

best suited to the consumer products having low brand loyalty ? Explain.

3. What are the various techniques of compensating and motivating the sales force ? Explain.

#### UNIT - II

4. Suggest the criteria for evaluating the sales persons for consumer product division of a company.

5. "Quotas can act as a motivator as well as demotivator". Comment.

56090-700-(P-4)(Q-9)(16)

(3)

[ Turn Over



9. Explain the following :

20

- (a) Group technology layout
- (b) Planning the introduction of group technology and group technology advantages.

Roll No. ....

**24261**

**B. Tech. 5th Semester (ME)**

**Examination – December, 2016**

**MANUFACTURING TECHNOLOGY - II**

**Paper: ME-309-F**

**Time : Three Hours ]**

**[ Maximum Marks : 100**

*Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any five Questions in total, at least one question from each section. question no. 1 is compulsory. Each question carries equal marks 20 marks.

**1. Explain the following :**

20

- (a) Milling Fixtures
- (b) Principle of Electron beam machining
- (c) Difference between jigs and Fixtures
- (d) CNC Machines

24261-6450-(P-4)(Q-9) (16)

( 4 )

24261-6450-(P-4)(Q-9) (16)

P. T. O.



- (e) Orthogonal cutting
- (f) Milling Tools
- (g) Mechanism of metal cutting
- (h) Clamping devices
- (i) Merchant cutting force circle
- (j) Unconventional machining processes

#### SECTION - A

2. (a) What is the effect of cutting speed, depth of cut and feed rate on the forces on cutting tool ? 10
- (b) Explain the mechanism of chip formation. Also explain the continuous chips with built up edge. 10
3. (a) What is tool life ? Explain the different types of tool wear. 10
- (b) Explain the purpose and types of cutting fluids and effect of cutting fluids on tool life. 10

#### SECTION - B

4. (a) With the help of neat sketch, explain the material removal, surface finish, advantages and application in Electrochemical grinding. 10

24261-6450-(P-4)(Q-9) (16) (2)

- (b) With the help of neat diagram, explain the working of LBM. What are the critical parameters and limitations of LBM ? 10

5. (a) How to determine that the jig and fixtures for a particular application will be economical ? What are the advantages of jigs and fixtures ? 10
- (b) How work pieces are located ? What is meant by 3-2-1 principle of location ? What is the best method to locate a rough surface ? 10

#### SECTION - C

6. (a) Explain the two axes part programming for milling operation with example 10
- (b) Explain the classification on NC system. Also explain the CNC and DNC systems. 10
7. (a) Explain in detail how programming is done for NC machine tool ? 10
- (b) Discuss the advantages of CNC system. 10

#### SECTION - D

8. Explain the following : 20
- (i) Definition, concept and working of group technology.
- (ii) Stages for adopting group technology.

24261-6450-(P-4)(Q-9) (16) (3)

P. T. O.