

## FACULTY OF ENGINEERING

BE I/IV (ALL BRANCHES) I-YEAR (BACKLOG) EXAMINATION, MAY / JUNE 2018

SUBJECT: ENGLISH

TIME : 3 HOURS

MAX MARKS:75

- Note:** (i) Answer all the questions in Part –A and any five questions from Part – B  
(ii) Answer to the questions of Part – A must be in one place and in the same order as they occur in the Question paper  
(iii)Missing data, if any, may be suitably assumed.

### PART A

**I Fill in the blanks with the appropriate articles.** (1/2x4=2)

1. Seetha has \_\_\_\_\_ unique accent.
2. This fabric looks inferior to \_\_\_\_\_ one I bought in Delhi.
3. I don't like \_\_\_\_\_ dogs, but my brother loves dogs.
4. This is \_\_\_\_\_ ugliest painting Kiran has ever painted.

**II Fill in the blanks with suitable prepositions.** (1/2x4=2)

1. She seems to be interested \_\_\_\_\_ Psychology.
2. He has been waiting for his exam results \_\_\_\_\_ Tuesday.
3. This book is different \_\_\_\_\_ the one that the author wrote last year.
4. You should cross the road only \_\_\_\_\_ Zebra line.

**III Fill in the blanks with the suitable verb forms given below.** (1/2x6=3)

1. In a fit of rage, she ..... up the appointment order yesterday.  
a) tore                      b) teared                      c) has torn                      d) torn
2. We have ..... a convention hall for organizing the party.  
a) chose                      b) chosen                      c) choosed                      d) been choosing
3. The old man was ..... by a mad dog.  
a) bit                      b) bitten                      c) been bitten                      d) being bit
4. A portrait of the founder of the company ..... on the wall.  
a) hung                      b) hanged                      c) was hanged                      d) was hung
5. She ..... down on the sofa for a while.  
a) lay                      b) lies                      c) laid                      d) was lied
6. He \_\_\_\_\_ to his mother every week.  
a) writes                      b) wrote                      c) has written                      d) is writing



**VIII Write a short note on the following:****(2x3=6)**

1. Mention any four barriers to communication.
2. Draw a diagram of the stages in the process of communication.
3. One way versus two-way communication

**PART – B****(10x5=50)**

1. Azim Premji is a modest man despite being a magnanimous business tycoon. Elucidate.
2. You are a manager of BIG C Company. Write a letter to the manager of Samsung Mobiles about the damaged mobile phones received by you. Ask for a replacement of damaged goods.
3. You are the manager of a bank. Your bank wants to start a new branch in Bowenpally, Secundrabad. You have been asked to explore the feasibility and submit a report to the general manager. Draft a formal report.
4. Explain the importance of interpersonal development with reference to Johari Window.
5. Who were the three persons that influenced young Kalam and how did they influence him?
6. Give an account of Satya Nadella's interview by Sudipta Sengupta.
7. Prepare your resume and cover letter addressed to the Recruitment Office, TCS, Gachibowli, Hyderabad for the post of Junior Engineer.

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**FACULTY OF ENGINEERING****B.E. (Civil) III – Semester (CBCS) (Suppl.) Examination, May / June 2018****Subject: Fluid Mechanics – I****Time: 3 Hours****Max.Marks: 70****Note: Answer all questions from Part A & any five questions from Part B.****PART – A (10x2 = 20 Marks)**

- 1 Define viscosity and write Newtons law of viscosity. 2
- 2 Distinguish between rotational flow and irrotational flow. 2
- 3 Define convective acceleration. 2
- 4 Define free vortex motion giving examples. 2
- 5 Write a note on Mach cone and Mach angle. 2
- 6 Determine the capillary rise of water in 2 mm diameter glass tube, if surface tension of water is 0.072 N/m. 2
- 7 Distinguish between laminar flow and turbulent flow. 2
- 8 Define body forces giving examples. 2
- 9 Define momentum equation and how it is useful in fluid mechanics. 2
- 10 Write the continuity equation in differential form for a compressible flow. 2

**PART – B (5x10 = 50 Marks)**

- 11 a) Explain with a neat sketch the working of a Bourden gauge. 5
- b) A fluid of specific gravity 0.8 flows along a surface with a velocity profile given by  $V = 4y - 8y^3$  where  $y$  is in meters measured orthogonal to the surface and  $V$  is the velocity in m/s. What is the velocity gradient at the surface? If the kinematic viscosity of the fluid is 0.36 stokes, what is the shear stress at the surface. 5
- 12 a) Differentiate between:
  - i) Steady flow and unsteady flow
  - ii) Uniform flow and non-uniform flow. 5
- b) If the velocity components at a point in flow field are given by  $u = 2xy$  and  $v = a^2 + x - y^2$ , show that flow is possible and obtain the expression for the stream function. 5
- 13 a) Define Euler's equation of motion along a stream line. 5
- b) An orifice meter with orifice diameter 10 cm is inserted in a pipe of 30 cm diameter conveying 300 lt/s of water has a right angled bend in horizontal plane. Find the force exerted on the bend; if the pressure at inlet and outlet of the bend are  $24.525 \text{ N/cm}^2$  and  $23.544 \text{ N/cm}^2$ . 5

- 14 a) Write a note classification of notches. 5
- b) A 300 mm diameter pipe carries water under a head of 20 m with a velocity of 3.5 m/s. If the axis of pipe turns through  $60^\circ$ , find the magnitude and direction of the resultant force on the bend. 5
- 15 a) Derive an expression for stagnation pressure and density. 5
- b) Find the Mach number when an aeroplane is flying at 1200 km/hour through still air having a pressure of  $8 \text{ N/cm}^2$  and temperature  $-3^\circ\text{C}$ . Wind velocity may be taken as zero. Take  $R = 29.2 \text{ kgm} / \text{kg}^\circ\text{K}$ . Calculate stagnation pressure and temperature on the nose of the plane. Take  $K = 1.4$ .
- 16 a) Show that the streamlines and equipotential lines meet orthogonally. 5
- b) A 300 mm diameter pipe carries water under a head of 20 m with a velocity of 3.5 m/s. If the pipe axis turns through  $45^\circ$ . Find the magnitude and direction of resultant force on the bend. 5
- 17 Write short notes on two of the following: 10
- Micro nanometer
  - Rota meter
  - Significance and use of flow nets.

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## FACULTY OF ENGINEERING

B.E. (EEE/Inst.) III - Semester (Suppl.) Examination, May / June 2018

Subject : Electro Magnetic Fields

Time : 3 Hours

Max. Marks: 70

**Note: Answer all questions from Part-A & any five questions from Part-B.****PART – A (20 Marks)**

- 1 Given point P(-3,4, 8) in Cartesian co-ordinates, Express point P in cylindrical and spherical co-ordinates. (2)
- 2 Give the sketch the |D| against r for a uniformly charged sphere. Justify your answer. Where 'r' is radius of sphere. (2)
- 3 Given an example of an equipotential body. Justify your answer. (2)
- 4 Define the term drift velocity of electrons. (2)
- 5 State and explain Biot savart law. (2)
- 6 A multilayer coil of 2000 turns of fine wire is 20mm long and has a thickness 5mm of winding. If the coil carries a current of 5 mA, find the mmf generated in the coil. (2)
- 7 Derive the formula for energy stored in a magnetic field. (2)
- 8 Why bending of electric flux takes place at the boundary between two dielectric media? (2)
- 9 A uniform plane wave propagating in a medium has  $E = 2e^{-\alpha z} (\sin 10^8 t - \beta z) a_y$  V/m. If the medium is characterized by  $\epsilon_r=1$ ,  $\mu_r=25$  and  $\sigma=4$  s/m, find  $\alpha$  and  $\beta$ . (2)
- 10 In a non magnetic medium  $E = 4 \sin (2\pi \times 10^7 t - 0.8x) a_z$  V/m. Find the time average power carried by the wave. (2)

**PART – B (50 Marks)**

- 11 (a) The finite sheet  $0 \leq x \leq 2$ ,  $0 \leq y \leq 3$  on the  $z = 0$  plane has a charge density  $\rho_s = xy (x^2 + y^2 + 35)^{3/2}$  nc/m. find (i) the total charge on the sheet and (ii) E at (0, 0, 4). (5)
- (b) The point charges -2nc, 5nc and 7nc are located at (0, 0, 0), (0, 0, 1) and (1, 0, 0) respectively. Find the energy in the system. (5)
- 12 (a) Define the following terms: (5)
  - (i) Dielectric constant
  - (ii) electric susceptibility and
  - (iii) relaxation time constant of the material
- (b) Two extensive homogeneous isotropic dielectric meet on plane  $z = 0$ , for  $z > 0$ ,  $\epsilon_{r1}=4$  and for  $z < 0$ ,  $\epsilon_{r2} = 3$ . A uniform electric field  $E_1 = 10a_x - 3 a_y + 4 a_z$  kV/m exists for  $z \geq 0$ . Find the energy densities (in J/m<sup>3</sup>) in both dielectrics. (5)

..2..

- 13 (a) State and explain Ampere's circuit law. (5)  
 (b) A rectangular loop carrying current  $I_2$  is placed parallel to an infinitely long filamentary wire carrying current  $I_1$  as shown in Figure 1. Find the force experienced by the loop. (5)

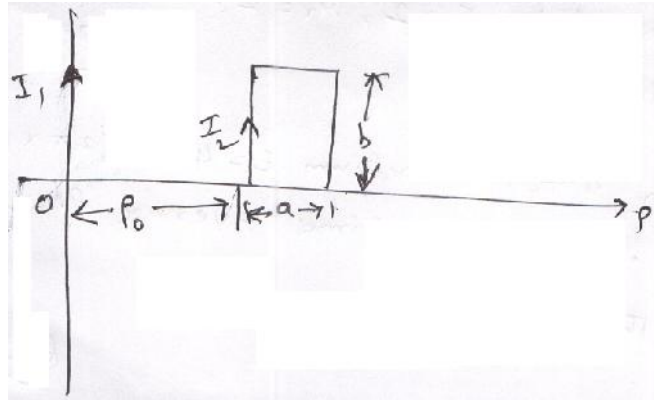


Fig.1

- 14 State and explain four Maxwell's Eq. for time varying fields, in both differential and integral form. (10)
- 15 (a) A lossy dielectric has an intrinsic impedance of  $200 \angle 30^\circ \Omega$  at a particular radian frequency  $\omega$ . If at that frequency, the uniform plane wave propagating through the dielectric has the magnetic field component
- $$H = 10e^{-\alpha x} \cos\left(\omega t - \frac{1}{2}x\right) a_y \text{ A/m. Find } E \text{ and } \alpha. \quad (5)$$
- (b) Derive the uniform plane wave equation. (5)
- 16 (a) State and explain Coulomb's law in vector form for electrostatic fields. (5)  
 (b) A cylindrical capacitor has radii  $a = 2 \text{ cm}$  and  $b = 3.5 \text{ cm}$ . If the space between the plates is filled with an inhomogeneous dielectric with  $\epsilon_r = (10 + \rho)/\rho$ , where  $\rho$  is in cm, find the capacitance per meter of the capacitor. (5)
- 17 Write short notes on the following: (10)  
 (a) Poynting theorem  
 (b) Continuity equation

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## FACULTY OF ENGINEERING

**B.E (ECE) (CBCS) III – Semester (Suppl.) Examination, May / June 2018**

**Subject : Switching Theory & Logic Design**

**Time : 3 Hours**

**Max Marks : 70**

**Note: Answer all questions from Part – A & Any five questions from Part – B.**

### Part – A (20 MARKS)

1. Convert the given hexadecimal number 2AC5.D into its equivalent octal and binary . 2M
2. State and Prove consensus theorem. 2M
3. Realize two input XOR gate with minimum number of NAND gates. 2M
4. Simplify the following Boolean function using k-map 2M  

$$F(A, B, C) = \bar{A}C + \bar{B}C + A\bar{B}\bar{C}$$
5. Draw the logic diagram for 1 bit comparator. 2M
6. Why multiplexer is called as universal element? 2M
7. Define set up and hold time. 2M
8. Write the differences between latch and flip flop. 2M
9. What is meant by lock out problem in the counter ? 2M
10. Draw the state diagram of J K Flip Flop? 2M

### PART – B

11. a) Perform subtraction operation for the following numbers. 5M  
 i)  $(-10)_{10}$  from  $(-15)_{10}$     ii)  $(11010)_2 - (1101)_2$  using 2's complement method.  
 b) Simplify the following expression using Boolean algebra
- $F(w, x, y, z) = xy'z + x'y'z + w'xy + wx'y + wxy$ . And also draw its logic diagram for simplified expression. 5M
12. Minimize the following function using Quine McCluskey method. 10M  
 $F(a,b,c,d,e) = m(0,1,4,5,16,17,21,25,29)$ . And also find prime implicants and essential prime implicants.
13. a) Implement full adder with two 4x1 multiplexers. 5M  
 b) What is meant by hazards in digital circuits? Explain how to design digital circuits without hazards give one example. 5M.
14. a) Explain in detail various techniques to avoid race around condition? 5M  
 b) Convert i) D Flip Flop to J K Flip Flop    ii) T Flip Flop to S R Flip Flop 5M
15. Design a sequential circuit with minimum hardware to produce the output when the input data stream contains 101. 10M
16. a) Convert the following expressions into their respective canonical form 5M  
 i)  $AC + A'BD + ACD'$     ii)  $(A+B+C')(A+D)$   
 b) Identify the prime implicants and essential prime implicants in the following function  $F(w,x,y,z) = m(1,5,6,7,11,12,13,15)$  5M
17. a) Realize full subtractor Difference and Borrow expressions using IC 74138 5M  
 b) Design a mod- 8 asynchronous down counter using J K Flip Flops. 5M

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**FACULTY OF ENGINEERING**  
**B.E. III Semester (M/P) (CBCS) (Supplementary) Examination,**  
**May / June 2018**

**Subject: Fluid Mechanics**

**Time: 3 Hours**

**Max. Marks: 70**

**Note: Answer all questions from Part A and any five questions from Part B.**

**PART – A (10x2=20Marks)**

1. Why Newton's Law of Viscosity is given so much importance?
2. What are the units of viscosity in MKS, CGS and SI units? show the conversion?
3. What do you understand by Ideal plastic fluids explain with the graph?
4. Write down the continuity equation for an incompressible steady flow?
5. Manometers are used for \_\_\_\_\_?
6. Mr. Reynolds is famous for \_\_\_\_\_?
7. Where crested weirs or notch are used?
8. What is the mechanism due to which Float or Notch rotates in a Rotometer.
9. Darcy – Weibatch equation is derived from?
10. What is kinematics of fluid?

**PART – B (5x10=50 Marks)**

11. (a) Find the kinematic viscosity of oil having density  $981 \text{ kg/m}^3$ . The shear stress at a point in oils is  $0.2452 \text{ N/m}^2$  and velocity at that point is 0.2 per second?  
 (b) Why does stream function must satisfy the Laplace equation? Explain with mathematical expression?
12. Explain in detail Euler's equation of Motion?
13. Explain in details the velocity and shear stress distribution for a laminar flow in a circular pipe?
14. Explain with neat sketch Boundary layer along with this plate and its characteristics?
15. Explain with a neat sketch and mathematical expression for drag and lift force acting on a submerged body?
16. (a) Write down the continuity equation for a compressible fluid flow and why is it differing from incompressible one.  
 (b) Explain briefly the velocity of propagation of the elastic or pressure wave in a compressible fluid.
17. Write a short note on
  - a) Piton tube
  - b) Bourdon Tube
  - c) Momentum Equation.

**FACULTY OF ENGINEERING**

**B.E. (AE) III Semester (CBCS) (Suppl.) Examination, May / June 2018**

**Subject: Automotive Engineering Drawing**

**Time: 3 Hours**

**Max. Marks: 70**

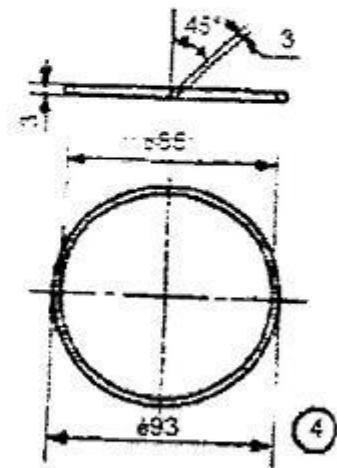
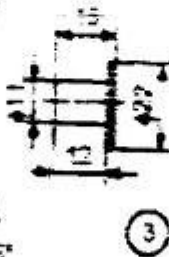
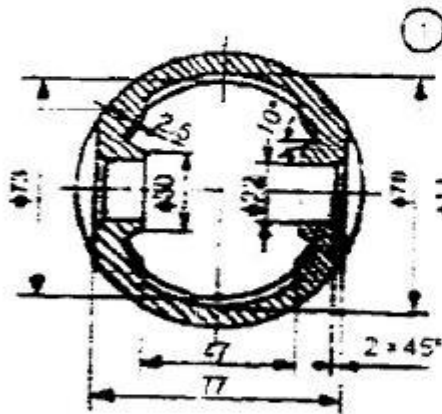
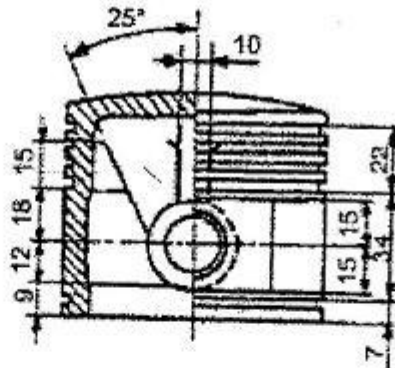
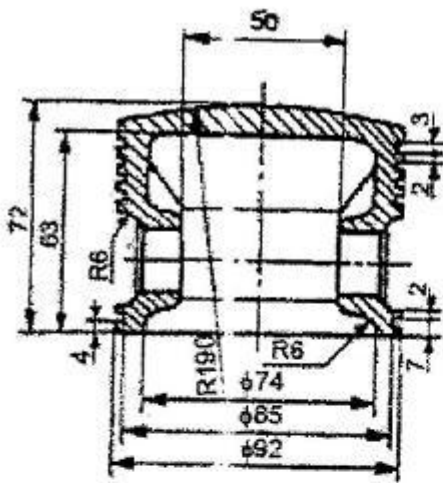
**Note: Answer all questions from Part A & any five questions from Part B.**

**PART – A (5x4=20Marks)**

- 1 Sketch the orthographic projectors (3views) of a Hexagonal Nut of size M20 and mention the proportional dimensions.
- 2 Sketch the Front view and Side view of a cotter joint with sleeve to connect two rods of diameter 30mm and show all the proportional dimensions.
- 3 Sketch Front view and top view of a double riveted zig-zag lap joint to connect two plates of 9mm.thicknes and other proportional dimensions line diameter of rivets, margin, pitch, cross pitch and diagonal pitch.
- 4 Draw conventional representation of the following  
(a)Glass(material) (b) Bearing
- 5 Draw profile of the following threads:  
(a) ACME (b) Whitworth

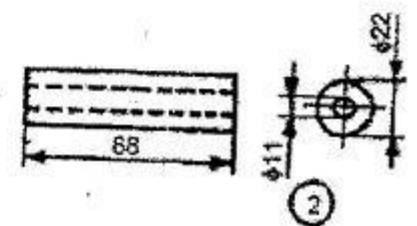
**PART – B (50 Marks)**

- 6 Parts of a Piston assembly are shown in Figure. Assemble all the parts and draw the following views, using first angle projection method.
  - (a) Full sectional front view (20 marks)
  - (b) Top view (20 marks)
  - (c) Side view (10 marks)



Parts list

No.	Name	Mat	Qty
1	Piston	Al-alloy	1
2	Piston pin	HCS	1
3	Piston pin plug	HCS	2
4	Piston ring	CI	5



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**FACULTY OF ENGINEERING & TECHNOLOGY**

**B.E. / B. Tech. (Bridge Course) I - Semester (Backlog) Examination, May / June  
2018**

**Subject : Engineering Physics**

**Time : 3 Hours**

**Max. Marks: 75**

**Note: Answer all questions from Part-A & any five questions from Part-B.**

**PART – A (25 Marks)**

- 1 Distinguish between Fresnel and Fraunhofer diffraction. (3)
- 2 In Fraunhofer diffraction pattern of a double slit, it is found that the fourth secondary maxima is missing. What is the ratio of slit width to the slit separation. (3)
- 3 Explain basic principles of holography. (2)
- 4 What is numerical aperture ? And what is graded index fibre? (2)
- 5 What are the postulates of wave-mechanics? (3)
- 6 Define (i) unit cell (ii) space lattice. (2)
- 7 What is Hall effect? Give expression for Hall coefficient. Explain each term in the expression. (3)
- 8 Explain space-charge polarization. (2)
- 9 Mention general properties of super conductors. (3)
- 10 Explain the significance of surface to volume ratio of nanomaterials. (2)

**PART – B (50 Marks)**

- 11 (a) Explain the construction and working of Nicol prism. (5)  
(b) Explain formation of Newton's rings with the help of a neat diagram and obtain expression for wavelength. (5)
- 12 (a) Describe the fibre drawing process by Double crucible method. (5)  
(b) Derive the schrodinger's time independent wave equation. (5)
- 13 (a) Based on energy band formation explain the classification of solids into conductors, semiconductors and insulators. (5)  
(b) Explain the construction and working of LED. (5)
- 14 (a) Explain the classification of magnetic materials. Give examples for each category. (6)  
(b) What is Meissner effect? Mention few applications of super conductors. (4)
- 15 (a) Distinguish between bulk, thin films and nano materials-based on size and nano scale. (5)  
(b) Explain X-ray fluorescence. (5)
- 16 (a) Explain the construction and working of Laurents half shade polarimeter. (5)  
(b) Explain the construction and working of Helium-Neon laser. (5)
- 17 (a) Explain Weiss theory of ferromagnetism based on molecular field. (6)  
(b) Mention the applications of (i) optical fibre (ii) Nano material (4)

**FACULTY OF INFORMATICS****B.E. (CBCS) (I.T.) III - Semester (Suppl.) Examination, May / June 2018****Subject : Environmental Studies****Time : 3 Hours****Max. Marks: 70****Note: Answer all questions from Part-A & any five questions from Part-B.****PART – A (20 Marks)**

- 1 State the need for public awareness for solving environmental problems.
- 2 Define the term Biomagnification.
- 3 Define decomposes and give their significance.
- 4 Briefly give a short note on food chain and food web.
- 5 Explain threatened and endangered species.
- 6 Why is it necessary to maintain biodiversity?
- 7 Define and give examples for primary and secondary air pollutants.
- 8 State the role of responsibility of an individual in their prevention of pollution.
- 9 Write short notes on disaster management.
- 10 Define water logging. State the reasons and their effects.

**PART – B (50 Marks)**

- 11 (a) What are the major causes of deforestation ? Discuss its consequences? (5)  
(b) Discuss in detailed the factors responsible for land degradation. What are the means to prevent land degradation? (5)
- 12 (a) Define Ecosystem. Explain the structural and functional components of an ecosystem. (5)  
(b) Explain the concept of ecological pyramid. (5)
- 13 (a) Why should we care about wild life? Explain reasons for loss of biodiversity. (5)  
(b) How can an individual conserve different natural resources? (5)
- 14 (a) What is water pollution? Briefly discuss causes, effects and control measures of water pollution. (5)  
(b) Write a brief note on Eutrophication. (5)
- 15 Name and briefly discuss the three functional elements of solid waste management and explain why recycling is an integral part of solid waste management. (10)
- 16 (a) Write short note on Disaster mitigation and management. (5)  
(b) Mention the objectives of Rain water harvesting. (5)
- 17 Write short notes on the following:
  - (a) Salient features of EPA 1986 (5)
  - (b) Merits and demerits of Biomass Energy (5)

## FACULTY OF ENGINEERING

B.E. (CSE) III- Semester (CBCS) (Suppl.) Examination, May / June 2018

Subject : Logic &amp; Switching Theory

Time : 3 Hours

Max. Marks: 70

**Note: Answer all questions from Part-A & any five questions from Part-B.****PART – A (20 Marks)**

1. Simplify the Boolean expression to a minimum number of literals
  - a)  $xy+x^1z+yz$
  - b)  $A^1B(D^1+C^1D)+B(A+A^1CD)$ . (2)
2. Represent the Boolean expression in k-map  $y^1+w^1z^1+xz^1$  (2)
3. Realize XOR using NAND gates. (2)
4. Define prime implicant and essential prime implicant. Give example. (2)
5. Distinguish between combinational circuits and sequential circuits. (2)
6. Explain about SSI circuits. (2)
7. Write characteristic and excitation table of RS and JK flipflop. (2)
8. Explain about PROM. (2)
9. What is state assignment? Give example. (2)
10. Differentiate mealy and moore machine. (2)

**PART-B(50 Marks)**

- 11 a) Write the Huntington postulates and prove them using truth tables. (5)
- b) Express the complement of the function given in sum of minterms and draw the logic diagram  $F(x,y,z)= m(0,2,3,5)$ . (5)
- 12.a) Find the optimal POS expression for  $F(W,X,Y,Z)= m(3,9,11,12,13,14,15)+ d(1,4,6)$  Realize the circuit using NAND gates. (5)
- b) Simplify the function using k-map method and realize using basic gates only  $F(A,B,C,D)= M(3,5,7,8,10,11,12,13)$  (5)
13. By means of QuineMcCluskey method, simplify the Boolean function  $F(a,b,c,d)= m(1,2,3,5,7,9,10,11,13,15)$  (10)
- 14.a) Implement the function  $F(W,X,Y,Z)= m(1,3,4,11,12,13,14,15)$  using 8 to 1 MUX. (5)
- b) Construct a 5 to 32 decoder using four 3 to 8 decoders with enables and a 2 to 4 decoder. (5)
15. Design a full adder circuit using carry look ahead adder and draw the circuit. (10)
16. Tabulate the PAL programming table for BCD to excess-3 code converter and draw the fuse map. (10)
17. Design a mod-12 synchronous counter using JK ff. (10)