

Digital & Linear Electronics Circuits Paper- III

P. Pages : 2

Time : Three Hours



TKN/KS/16/7368

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.
 11. Use of non programmable calculator is permitted.

1. a) Reduce the following function using k-map technique and realize using NAND gates only. **7**
 $f(A,B,C,D)=\Sigma m(0, 2, 4, 6, 8, 10)+D(1, 5, 11, 15)$.

b) Implement the following function using 8:1 mux. **7**
 $F = \Sigma m(0, 1, 2, 3, 11, 12, 14, 15)$.

OR

2. a) Design a BCD to seven segment decoder for common cathod configuration. **7**

b) Compare the different logic families ? **7**

3. a) Draw logic diagram of JK flip-flop using NAND gate and Explain its working ? **6**

b) Explain the classification of memories according to their physical characteristics. **7**

OR

4. a) Convert **7**

i) D Type flip-flop to J-k flip-flop

ii) J-k flip-flop to T flip-flop

b) Explain how a latch can be used as one bit memory cell. Differentiate between latch and flip-flop. **6**

5. a) Explain the difference between combinational logic circuit and sequential logic circuit with suitable example. **6**

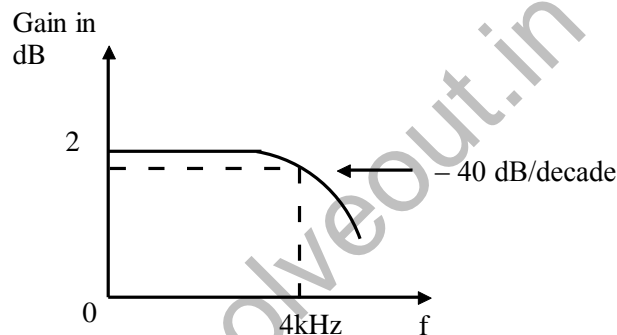
b) Explain the working of 4 bit up-down counter. **7**

OR

6. a) Design a full subtractor circuit and implement using NAND gate. 7
- b) Explain the working of ring counter with a neat diagram and waveform. 6
7. a) Define following terms. 8
- i) Input offset voltage
 - ii) Slew rate
 - iii) CMRR.
 - iv) Input bias current
- b) Derive the equation for voltage gain A_F in non inverting amplifier. 6

OR

8. a) Draw and explain voltage follower. 6
- b) What is a differentiator ? What are its limitations ? How they are overcome in practical differentiator ? 7
9. a) Design the circuit for the following filter response. 6



- b) Explain the significance of precision rectifier and also explain precision half wave rectifiers. 7
- OR**
10. a) Explain the working of successive approximation analog to digital converter. 8
- b) Explain phase locked loop circuit. 5
11. a) Design a 555 astable multi-vibrator using IC555 having output frequency 10KHz and duty cycle 25%. 7
- b) Write short note on IC 78XX and 79XX. 6

OR

12. a) Explain briefly working of IC 555. Give functions of various pins. 7
- b) Write short note on IC741. 6
