B.E. (Electrical Engineering (Electronics & Power)) Fourth Semester (C.B.S.)

Digital & Linear Electronics Circuits

P. Pages : 2 **NRT/KS/19/3365**

Time : Three Hours *0773* 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. Assume suitable data whenever necessary.

1. a) Explain in detail the working of a two i/p TTL NAND gate with totem pole output. **6**

b) Implement the following function using 4:1 MUX. F = m (0, 1, 2, 3, 11, 14, 15). **7**

OR

2. a) Simplify the following logic function and realize using minimum number of NAND gates. **6**
F (A, B, C, D) = M (1, 2, 3, 8, 10, 11, 14) + d (7, 15).

b) Design a BCD to seven segment decoder from common cathode configuration. **7**

3. a) Explain the working of master-slave JK Flip-Flop and explain how race around condition can be eliminated. **7**

b) Convert : **7**
1) D type Flip-Flop to JK Flip-Flop.
2) SR Flip-Flop of JK Flip-Flop.

OR

4. a) Explain working of positive level triggered S.R. Flip-Flop using NAND gate. **7**

b) Write short note on ROM, EPROM, EEPROM. **7**

5. a) Design full adder using two half adders. **7**

b) Explain the difference bet^{n} combinational logic circuit and sequential logic circuit with suitable examples. **6**

OR

6. a) Explain the working of ring counter with neat diagram and waveform. **7**

b) Explain the working of 3 bit up-down counter. **6**

7. a) Derive the equation for voltage gain Af in Non-inverting amplifier. **7**

b) Realize the ckt using OP-Amp for the equation $V_O=3V_1 – 2V_2+V_3 – 2V_4$. **7**

OR

8. a) What is differentiator. What are its limitation. How they are overcome in practical differentiator. **7**

b) Define following terms. **7**

a) Input offset voltage. b) Slew rate.
c) CMRR. d) Input bias current.

9. a) With neat diagram explain precision full wave rectifier. **7**

b) Design a second order active Butterworth low pass filter having cut off frequency of 2KHz. **6**

OR

10. a) Explain positive and negative clipper using OP-amp. **7**

b) Explain Schmitt trigger using OP-Amp. **6**

11. a) Design a 555 astable multivibrator using IC 555 having output frequency 10KHz & duty cycle 25%. **7**

b) Write short notes on IC 723 voltage regular. **6**

OR

12. a) Draw & explain internal block diagram of IC 555 and explain its working. **7**

b) Write short note on IC 741. **6**

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