

Faculty of Engineering & Technology
Fourth Semester B.E. (Electrical Engineering) (C.B.S.)
Examination
DIGITAL AND LINEAR ELECTRONICS CIRCUITS

Time—Three Hours]

[Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Due credit will be given to neatness and adequate dimensions.
- (3) Assume suitable data wherever necessary.
- (4) Illustrate your answers wherever necessary with the help of neat sketches.
- (5) Use of non-programmable calculator is permitted.

1. (a) Define the terms :

- (i) Noise Margin
 - (ii) Figure of Merit
 - (iii) Propagation Delay
- for TTL logic family.

7

(b) Which is the fastest logic family ? Why and explain CMOS NAND gate ?

7

OR

2. (a) Differentiate between Decoders and Demultiplexers. 2
- (b) Design 2 : 1 multiplexer using gates. 6
- (c) Design BCD to Ex-3 code converter. Also draw the gate level circuit. 6
3. (a) What is Master-Slave flip-flop ? Give the logic diagram for Master-Slave J-K flip-flop. Using NAND gate. 7
- (b) Explain Positive Edge triggered S-R flip-flop. 6

OR

4. (a) What is Random Access Memory (RAM) ? Explain different types of RAM. 6
- (b) Convert D-flip flop to T-flip flop. 7
5. ~~(a)~~ Design 3-bit synchronous counter. Use D-flip flop. 7
- (b) Design MOD-5 counter use suitable flip flop. 6

OR

6. ~~(a)~~ Design 1 bit full Adder using two half adders and OR gate. 6
- (b) Explain Arithmetic and logic unit with suitable block diagram. 7
7. (a) Explain Ideal and non Ideal characteristics of OP-Amp. 6

- (b) Explain practical Integrator circuit with suitable circuit diagram. 8

OR

8. (a) Obtain the output equation for instrumentation amplifier. 8

- (b) Obtain the circuit for

$$V_0 = 2 V_1 - 3V_2 + 1.5 V_3. \quad 6$$

9. (a) Explain precision full wave rectifier with waveform. 7

- (b) Explain Sample and Hold circuit using OP-Amp. 6

OR

10. (a) Write a short note on Clipping circuit. Explain with waveforms. 7

- (b) Write a short note on PLL. 6

11. (a) Draw and explain internal block dig. for 555. 6

- (b) Explain bistable multivibrator using 555. 7

OR

12. (a) Draw and explain block diagram at IC 723. 7

- (b) Design 12 V regulator using 7812 IC. 6