

Roll No. ....

Total No. of Questions : 09]

**Paper ID [EC204]**

[Total No. of Pages : 02

(Please fill this Paper ID in OMR Sheet)

**B.Tech. (Semester - 4<sup>th</sup>)**

**DIGITAL ELECTRONICS (EC - 204)**

**Time : 03 Hours**

**Maximum Marks : 60**

**Instruction to candidates :**

- 1) Section - A is **compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

**Section - A**

**(10 × 2 = 20)**

**Q1)**

- a) The need to study octal & hexadecimal system, when the Digital machine understands only binary code.
- b) Where do we use ASCII, Excess-3 & Grey codes?
- c) How many select lines are there for a 30 to 1 MUX?
- d) Difference between combinational & sequential circuits.
- e) Features of content addressable memories.
- f) What is the Mod of 6 bit Ring Counter?
- g) List the various type of A/D converters.
- h) Where do we use PLA's?
- i) What are the various type of parity checkers and where do we use them?
- j) Convert decimal 27.125 to octal.

**Section - B**

**(4 × 5 = 20)**

**Q2)** If A = 1101 and B = 101 find

- |             |                             |
|-------------|-----------------------------|
| (i) A + B   | } by 2'S complement method. |
| (ii) A - B  |                             |
| (iii) B - A |                             |
| (iv) A × B  |                             |

- Q3)** Discuss the comparison of the important features of various IC logic families.
- Q4)** Draw the circuit of an S-R flipflop using NAND gates. Modify it to include clock. Derive J-K circuit from S-R flipflop circuit & explain its truth table.
- Q5)** (i) Make a K-map for the function :
- $$f = AB + A\bar{C} + C + AD + A\bar{B}C + ABC$$
- (ii) Express f in standard SOP form.
- (iii) Minimize it and realize the minimized expression using NAND gates only.
- Q6)** Draw the circuit of a counter type A/D converter and explain its operation.

### Section - C

(2 × 10 = 20)

- Q7)** Draw the circuit of Totem pole NAND gate and explain its operation. Explain why these cannot be wire ANDed?
- Q8)** (a) What are the various type of ROM's? Discuss their relative advantages and disadvantages.
- (b) Draw the circuit of a static MOS RAM cell and explain its operation of Read and Write.
- Q9)** Write notes on any two of the followings :-
- (a) binary ladder D/A converter.
- (b) 4 bit binary shift register.
- (c) 3 bit binary magnitude comparator.