Q. P. Code: 26350

(3 Hours) **[Total Marks: 80]**

N.B.: (1) Question No. **1** is **compulsory.**
(2) Solve any **three** questions out of remaining **five.**
(3) Figures to **right** indicate **full** marks.
(4) Assume suitable **data** where **necessary.**

Q1. Solve any four 20
a) Explain block diagram of op-amp.
b) Explain working of Integrator with circuit diagram.
c) Convert following binary number to decimal ,Octal, Hexadecimal
$(11010.11)_2$
d) Covert S-R flip flop to D flip flop.
e) State De Morgan's theorem & implement OR gate using NAND gate only.

Q2. a) Draw the truth table of full adder and realized using 3:8 decoder. 10

b) Explain Voltage Divider biasing Circuit with its stability factor. 10

Q3. a) Implement following using only one 8:1 Multiplexer and few gates.

$F(A,B,C,D)= \sum m(0,1,3,4,5,8,9,10,12,15)$ 10

b) Draw circuit diagram and explain the operation of Astable Multivibrator using IC555. 10

Q4. a) Reduce the expression $f(A,B,C,D) = \sum m(1,5,6,12,13,14) + d(2,4)$ using K map method. Implement the reduced expression using logic gates. 10

b) Explain in brief Bidirectional Shift Registers. 10

Q5. a) Write VHDL program for full subtractor. 10
b) Design MOD- 11 ripple counter using suitable J-K flip-flop. 10

Q6 Write short notes on any four 20
a) Explain important features of differential amplifier.
b) Write comparison between FET and BJT.
c) Explain essential features of VHDL.
d) Draw diagram of a master slave JK flip-flop.
e) Explain working of LCD.

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