C

Reg. No. :

Question Paper Code: R2425

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Second Semester

Computer Science and Business Systems

R21UEC225- PRINCIPLES OF ELECTRONICS ENGINEERING

(Regulations R2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. Ripple factor of half wave rectifier is _____ CO1-U

   a) 1.414 b) 1.21 c) 1.3 d) 0.48

2. The base of transistor is CO1-U

   a) heavily doped b) moderately doped c)lightly doped d) none

3. For a FET when will maximum current flows? CO1- U

   (a) $V_{gs} = 0V$ (b)$V_{gs} = 0v$ and $V_{ds} >= |V_p$ (c) $V_{DS} >= |V_p|$ (d) $V_p = 0$

4. What is the gray code for the binary number: 1011100010? CO2-U

   (a) (0110010011) (b) (00110010011) (c) (1110010011) (d) (0010010011)

5. Which of these flip – flops cannot be used to construct a serial shift register? CO2 -U

   (a) D – flip flop (b) SR flip – flop (c) T flip – flop (d) JK flip – flop

PART – B (5 x 3= 15 Marks)

6. List the applications of Zener diode. CO1-U
7. Give the relation between α and β. CO1- U
8. Define amplification factor in JFET. CO1 -U
9. Draw the logical symbol and truth table of 2-input Ex-NOR Gate. CO2-U
10. List the types of Shift registers. CO2- U

PART – C (5 x 16= 80 Marks)

11.	(a)	Draw and explain the energy band diagram for the following (i) conductors (ii) Insulators (iii) semiconductors	CO1-U	(16)
		Or		
	(b)	Explain the working principle of half wave rectifier with neat sketch. Also, derive the various parameters associated with it.	CO1-U	(16)
12.	(a)	Distinguish between the different types of transistor configurations with necessary circuit diagrams. Also, obtain the relation between the current amplification factors α ,β and γ of a transistor.	CO1- U	(16)
		Or		
	(b)	Construct a circuit which is used for amplifier application. Also, draw input and output characteristics for the circuit. Obtain the relation between the current amplification factor of α ,β and γ of a transistor	CO1- U	(16)
13.	(a)	"Field Effect Transistor is a voltage controlled current device".- Justify the statement by describing the characteristics of the device involving the impact of various parameters such as pinch-off voltage, source drain voltage and gate source voltage.	CO1- U	(16)
		Or		
	(b)	Discuss your understanding on MOSFET detailing the types, construction and characteristics.	CO1 -U	(16)
14.	(a)	Minimize the given Boolean function using K-map and implement the minimized function using appropriate logic gates. $F(A,B,C,D)= \Sigma m(3,4,5,7,9,13,14,15)$	CO4 -App	(16)
		Or		
	(b)	Implement 8 to 1 Multiplexer with appropriate truth table and logic diagram.	CO4- App	(16)
15.	(a)	Make use of clocked S-R flip-flop to formulate the excitation table of J-K flip-flop and characteristic equation from its characteristic table.	CO4 -App	(16)
		Or		
	(b)	Explain Parallel –in-parallel-out (PIPO) shift register with necessary waveforms.	CO4 -App	(16)