Reg. No.												

Question Paper Code	12465

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Second Semester

Computer Science and Business Systems

20BSPH205 - PRINCIPLES OF ELECTRONICS

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is doping and dopant? Give examples.	*2,K1,CO1*
2.	Why silicon semiconductor preferred than all other semiconductors?	*2,K1,CO1*
3.	Define clippers.	*2,K1,CO2*
4.	Sketch full wave bridge rectifier circuit.	*2,K2,CO2*
5.	Distinguish between PNP and NPN transistors.	*2,K2,CO3*
6.	Define stability factor.	*2,K1,CO3*
7.	What are the two advantages of negative feedback?	*2,K2,CO4*
8.	List out the Barkhausen criteria for oscillations.	*2,K1,CO4*
9.	What are the conditions for ideal operational amplifier?	*2,K1,CO5*
10.	What is flip flop?	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	(i) Explain Energy band in solid.	*8,K2,CO1*
		(ii) Classify material on the basic forbidden energy gap.	*5,K2,CO1*
		OR	
	b)	Explain Energy band diagram for P type and N type semiconductors.	*13,K2,CO1*
12.	a)	What is PN junction diode? How PN junction are formed. Explain.	*13,K2,CO2*
		OR	
	b)	What is Half wave rectifier? Explain the working of half wave rectifier circuit diagram and its parameters.	*13,K2,CO2*
13.	a)	Explain an experiment to determine the characteristics of a transistor in CE configuration. Explain how transistor parameters can be evaluated.	*13,K3,CO3*

OR

b) What is MOSFET? Explain construction and working of EMOSFET. *13,K2,CO3*

14. a) Derive an expression for voltage gain of an amplifier with negative feedback and positive feedback. *13,K2,CO4*

OR

b) Write down the various characteristics of topology. *13,K2,CO4*

15. a) Describe an operational amplifier. Explain its action as (i) Inverting amplifier (ii) Non inverting amplifier. *13,K2,CO5*

OR

b) What is Counter? Explain Asynchronous counter with its neat diagram. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) (i) Explain half adder and Full adder circuit using IC 7400 series. *10,K2,CO6*

(ii) Explain the working function AND gate using discrete components. *5,K2,CO6*

OR

b) (i) With a neat sketch, explain the Half subtraction and Full subtraction. *10,K2,CO6*

(ii) Construct a logic circuit using NAND gates only for $Y = \overline{A} + \overline{BC}$. *5,K2,CO6*