Reg. No.												

Question Paper Code	12461

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

Second Semester

Electronics and Communication Engineering

(Common to Electrical and Electronics Engineering and Computer and Communication Engineering)

20BSPH201 - PHYSICS OF ELECTRONIC DEVICES

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is Fermi energy level? Give its significance.	*2,K2,CO1*
2.	Explain the concept of hole.	*2,K2,CO1*
3.	State Curie Weiss law.	*2,K2,CO2*
4.	What is Bohr Magneton?	*2,K1,CO2*
5.	What is meant by dielectric loss?	*2,K2,CO3*
6.	What is meant by diffusion capacitance?	*2,K2,CO4*
7.	What is LDR?	*2,K2,CO4*
8.	What is meant by Base-Width modulation or Early effect?	*2,K2,CO5*
9.	Among CE, CB, CC which one is popular? Why?	*2,K1,CO5*
10.	What is Optocoupler?	*2, K2,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Deduce mathematical expression for electrical conductivity and thermal conductivity of a conducting material and hence obtain Wiedemann-Franz law.	*13,K2, CO1*
		OR	
	b)	(i) Define Fermi distribution function. Discuss the effect of temperature on Fermi Function.	*7,K2,CO1*
		(ii) Explain the classification of conductors, semiconductors and insulators based on the band theory of solids.	*6,K2,CO1*
12.	a)	Discuss the domain theory of ferromagnetism. Also, explain the different types of energy involved in domain growth.	*13,K2,CO2*
		OR	

b) What is Ferrite? Explain the structure, properties and applications of Ferrites. *13,K2,CO2*

13. a) Derive an expression for Internal field and hence deduce Clausius Mosotti relation. *13,K2,CO3*

OR

b) Give a detailed discussion on various types of dielectric breakdown that occur in dielectric material. *13,K2,CO3*

14. a) Derive an expression for the carrier concentration of electrons in an intrinsic semiconductor with neat energy band diagram. *13,K2,CO4*

OR

b) Explain the construction, working and V-I characteristics of a Tunnel diode. Mention the advantages and applications of Tunnel diode. *13,K2,CO4*

15. a) Explain the construction, working of a NPN transistor and also the input and output characteristic of CE configuration. *13,K2,CO5*

OR

b) Explain h parameter of transistor and draw the equivalent circuit of a transistor. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Explain with a neat sketch the construction, working and characteristics of N-channel D-MOSFET. *15,K2,CO6*

OR

b) Explain the construction, working operation and characteristics of SCR with a neat sketch. *15,K2,CO6*