C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 52408A

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

Second Semester

Electronics and Communication Engineering

15UEC208 - ELECTRONIC DEVICES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The forbidden energy gap for germanium is CO1- R

   (a) 0.12 eV (b) 0.32 eV (c) 0.72 eV (d) 0.92 eV

2. The diode is a CO2- R

   (a) is the simplest of semiconductor devices

   (b) has characteristics that closely match those of a simple switch

   (c) is a two-terminal device

   (d) All of the above

3. Most of the electrons in the base of an NPN transistor flow: CO3- R

   (a) into the collector (b) into the emitter

   (c) in to the base supply (d) out of base lead

4. For a JFET, the value of VDS at which ID becomes essentially constant is the CO4- R

   (a) pinch-off voltage (b) cutoff voltage (c) breakdown voltage (d) ohmic voltage

5. A Diac is switch CO5- R

   (a) An A.C (b) D.C (c) Either of the above (d) None of the above

PART – B (5 x 3= 15 Marks)

6	State Mass Action Law.	CO1- R	
7.	Define peak inverse voltage in a PN junction diode	CO2- R	
8.	Define Regulator.	CO3- R	
9.	Define Trans-conductance	CO4- R	
10.	What is SCR? Mention its Applications.	CO5- R	

PART – C (5 x 16= 80Marks)

11.	(a)	Explain the Classifications of semiconductors and derive the expression for carrier concentration in intrinsic semiconductor.	CO1- U	(16)
		Or		
	(b)	Explain about drift and diffusion currents and obtain its expression.	CO1- U	(16)
12.	(a)	(i) Give diode current equation	CO2- U	(8)
		(ii) Explain how a barrier potential is developed at the PN Junction.	CO2- U	(8)
		Or		
	(b)	Explain the construction and working of full-wave rectifiers and its parameter	CO2- U	(16)
13.	(a)	Explain CE Transistor configuration and draw a circuits for determining input and output characteristics.	CO3- U	(16)
		Or		
	(b)	A transistor with IB=100μA and IC=2mA Find (i) B of the transistor (ii) α of the transistor (iii) emitter current I_E	CO3- U	(16)
14.	(a)	Explain the construction and operation of N Channel JFET.	CO4- U	(16)
		Or		
	(b)	Explain the principle of operation of enhancement N-channel MOSFET and draw its drain characteristics.	CO4- U	(16)

15. (a) Explain the principle behind the tunnel diode and varactor diode CO5- U (16)

Or

(b) Draw the characteristics of UJT and explain its working principle.. CO5- U (16)