Enrollment No.: _____

NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Engineering and Technology
Program: B. Tech. Civil/Mech/EEE engineering
Year: 1st **Semester:** 2nd
Examination: End Semester Examination
Examination year: May - 2023

Course Code: EE 118 **Course Name:** **Basics of Electrical and Electronics Engineering**
Date: 17/05/2023 **Total Marks:** 40
Time: 2:00 PM TO 4:00 PM **Total Pages:** 01

Instructions:

- *Write each answer on a new page.*
- *Use of a calculator is permitted.*
- *Assume the data wherever necessary by giving proper justification.*
- ** COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping*

	Attempt any FIVE.			
Q. 1	Give the brief detail of DC machine construction with all required diagrams of its internal parts.	**[08]**	**CO3**	**BTL 3, 4**
Q. 2	Derive the emf equation of the 1-phase transformer. Also, explain about transformation ratio. Give a comparison between core-type and shell-type transformers.	**[08]**	**CO3**	**BTL 3, 6**
Q. 3	What is intrinsic & extrinsic semiconductors? Explain the basic function of P-N junction diode with its forward & reverse bias characteristics.	**[08]**	**CO3**	**BTL 1, 2**
Q. 4	a) Reduce the following Boolean expression using Boolean laws F(W, X, Y)= (WX+WY') (X+W)+WX(X'+Y') b) Convert the following function into standard SOP form, reduce it using K-map and draw logic diagram for the reduced Boolean function. F(A, B, C)= A+B'C'	**[08]**	**CO4**	**BTL 3, 4**
Q. 5	Perform the following (i) $(1762.46)_8$ = (_____) 16 (ii) $(886.23)_{10}$= (_____)2 (iii) $(1101111000.110000)_2$ = (_____)8 (iv) 110011010 +11010 = (_____)2	**[08]**	**CO4**	**BTL 3, 4**
Q. 6	Two circuits, the impedance of which are given by Z1 = 10 + j 15 and Z2 = 6-j8 ohm are connected in parallel. If the total current supplied is 15 A, what is the current taken by each branch? Also, find the P.F. of the individual branch.	**[08]**	**CO2**	**BTL 1, 2**
Q.7	For the circuit having pure resistance and choke coil connected in series across AC supply voltage, find the power factor of the coil and the power factor of the total circuit. Also, draw the required vector diagram.	**[08]**	**CO1**	**BTL 4, 6**