Enrollment No. _____

NAVRACHANA UNIVERSITY
a UGC recognized University

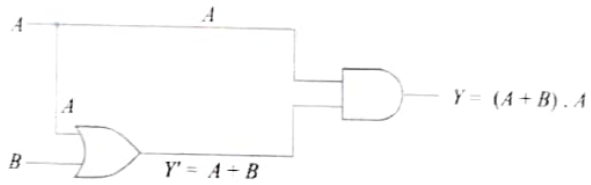
School: School of Science
Program: B.Sc.
Year: 2nd **Semester:** 3rd
Examination: End Semester Examination
Examination year: December - 2022

Course Code: PH205 **Course Name:** Analog and Digital Electronics
Date: 14/12/2021 **Total Marks:** 40
Time: 11:30 am to 13:30 pm **Total Pages:** 2

Instructions:

- *Write each answer on a new page.*
- *Use of a calculator is permitted.*
- ** COs=Course Outcome mapping. # BTL=Bloom'sTaxonomy Level mapping*

Q. No.	Details	Marks	COs*	BTL#
Q.1	**Choose a correct alternative**	**5**		
	1. A pn junction acts as a ……. a) controlled switch b) bidirectional switch c) unidirectional switch d) none of the above		CO1 CO2 CO3	BT1, BT2
	2.The ratio of change in collector current to the base current is a) β b) α c) μ d) none		CO1 CO2 CO3	BT1, BT2
	3. The ripple factor of Full wave rectifier is a) 1.21 b) 0.48 c) 0.75 d) 0.21		CO1 CO2 CO3	BT1, BT2
	4. The ……filters can be designed to provide required gain. a) active filters b)choke input filter c) pi filters d) high pass filters		CO1 CO2 CO3	BT1, BT2
	5. The decimal number 266 is equivalent to octal number a) 135 b) 412 c) 431 d) 136		CO4 CO5	BT1, BT2, BT3
Q.2	**Answer the following:**	**5**		
	1. In a transistor, I_c=100 & I_E=110mA Find value of β.		CO1 CO2 CO3	BT1, BT2, BT3

	2. Draw AND gate using universal NAND gate.		CO4 CO5	BT1, BT2, BT3
	3. What is meant by Tunneling in Tunnel diode?		CO1 CO2 CO3	BT1, BT2
	4. What is peak inverse voltage?		CO1 CO2 CO3	BT1, BT2
	5. Draw the circuit diagram and frequency response plot for Low pass filter.		CO1 CO2 CO3	BT1, BT2, BT3
Q.3	**Answer in detail**	15		
	1. State De Morgan's Theorem and obtain the truth table for the following digital circuit: 		CO4 CO5	BT1, BT2, BT3, BT4
	2. Write a short note on LED		CO1 CO2 CO3	BT1, BT2
	3. Explain the input and output characteristics of common emitter npn transistor.		CO1 CO2 CO3	BT1, BT2
	4. A full-wave rectifier uses two diodes, the internal resistance (r_f) of each diode may be assumed constant at 20Ω. The transformer r.m.s. secondary voltage fro centre tap to each end of secondary is 50V and load resistance (R_L) is 980Ω. Find i) the mean load current ii) the r.m.s. value of load current.		CO1 CO2 CO3	BT1, BT2, BT3, BT4
	5. For a certain transistor, I_B = 20μA; I_C = 2mA and β= 80. Calculate I_{CBO}.		CO1 CO2 CO3	BT1, BT2, BT3, BT4
Q.4	**Answer in detail. (Any3)**	15		
	1. What is Ripple factor? Explain the working operation of a full wave rectifier		CO1 CO2 CO3	BT1, BT2
	2. Convert : a) $(110011)_2$ to decimal number b) $(356)_{10}$ to hexadecimal c) simplify the expression		CO4 CO5	BT1, BT2,

	$Y = (A + B + C).(A + B)$			BT3, BT4
	3. Explain in detail: a) Choke input filter b) Pi filter		CO1 CO2 CO3	BT1, BT2
	4. Discuss the behavior of pn junction under forward and reverse biasing. Draw and explain the V-I characteristics of pn junction in detail.		CO1 CO2 CO3	BT1, BT2

**********End of Question Paper**********