Q. Code: 714973

Reg. No. | | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2023

Fourth Semester

EC18451 - MARINE ELECTRONICS

(Marine Engineering)

(Regulation 2018)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	To understand the basics of Electronics Circuits.	**2**
CO 2	To learn the concepts of Combinational and Sequential Circuits in Digital Electronics.	**3**
CO 3	To study about the working of controllers and measuring instruments.	**2**
CO 4	To understand the working principle of power electronic devices and Satellite Communication.	**2**
CO 5	To study the architecture and assembly language programming of 8051 microcontroller.	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Define current gain in CE configuration.	**1**	**2**
2.	In a bipolar transistor which region is wider and which region is thinner? Why?	**1**	**3**
3.	Design the logic circuit of Half adder using a truth table.	**2**	**3**
4.	Show how to connect NAND gates to get an AND gate and OR gate?	**2**	**2**
5.	Examine the advantages of PLC over relay logic.	**3**	**3**
6.	Identify the transducer used for measuring vibration.	**3**	**3**
7.	Explain the forward characteristics of SCR.	**4**	**2**
8.	Differentiate between LED and LCD.	**4**	**2**
9.	Classify the different types of addressing modes used in 8051.	**5**	**3**
10.	Write about memory organization of 8051 microcontroller.	**5**	**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Draw the circuit diagram of an NPN transistor in CE configuration and explain input and output characteristics. Also give the comparison of CE, CB, CC configuration.	**(14)**	**1**	**2**

(OR)

(b)	Construct the working of 555 timers as Astable Multivibrator and derive anexpression for the frequency of oscillation.	**(14)**	**2**	**2**
12. (a)	Label the Boolean function using K-map and draw the logic diagram of a decade counter.	**(14)**	**2**	**3**
	(OR)			
(b)	**(i)** Find 1's and 2's Complement of 8-digit binary numbers 100101010.	**(4)**	**2**	**3**
	(ii) Realize the function F(w, x, y, z)= Σ (1,4,6,7,8,9,10,11,15) using 8 to 1Multiplexer.	**(10)**		
13. (a)	Construct with a neat sketch the Integrated Automation Control and Monitoring System (IACMS).	**(14)**	**3**	**2**
	(OR)			
(b)	**(i)** Explain the acceleration measurement transducer with the necessary diagram. **(8)**	**(7)**	**3**	**2**
	(ii) Write short notes on Q meter.	**(7)**		
14. (a)	**(i)** Explain in detail about International Maritime Satellite (INMARSAT). **(10)**	**(7)**	**4**	**2**
	(ii) Explain the operating principle of LED with its V-I characteristics.	**(7)**		
	(OR)			
(b)	What is a Fibre optic gyroscope (fog)? Explain its operating principle. What arethe major applications of fog?	**(14)**	**4**	**2**
15. (a)	Explain in detail the architecture of the 8051 Microcontroller.	**(14)**	**5**	**2**
	(OR)			
(b)	An array of 20 numbers is stored in the internal data RAM starting from thelocation 40H. Write a 8051 ALP program to (a) Sort the array in ascending order. (b) Modify the above program for sorting in descending order.	**(14)**	**5**	**2**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Elaborate on Search and Rescue operations using GMDSS.	**(10)**	**4**	**3**

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