

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

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First/Second Semester B.E. Degree Examinations, September/October 2022

ELECTRONICS & COMMUNICATION - FUNDAMENTALS AND APPLICATIONS

(Common to all Branches)

Duration: 3 hrs

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>
MODULE - 1			
1.	a. List and describe the main types of amplifiers.	10	(1 : 1 : 1.3.1)
	b. Explain the operation of PN junction diode under forward and reverse bias conditions with the help of V-I characteristics curve.	10	(2 : 1 : 1.3.1)
(OR)			
2.	a. With neat block diagram explain the working of a DC power supply. Also mention the principal components used in each block.	10	(2 : 1 : 1.3.1)
	b. List the ideal characteristics of Operational amplifier and sketch any two applications of Op-Amp.	10	(1 : 1 : 1.3.1)
MODULE - 2			
3.	a. Draw 3:8 decoder circuit and show its implementation using basic gates with help of logic circuit and truth table.	07	(2 : 2 : 1.4.1)
	b. Compare combinational logic circuit and sequential logic circuit with necessary illustrations and examples.	06	(2 : 2 : 1.3.1)
	c. Explain the operation of SR Flip-Flop with logic diagram and truth table considering for all output states. And also mention how to avoid undetermined state of SR flip flop when S=1 and R=1.	07	(2 : 2 : 1.4.1)
(OR)			
4.	a. Define multiplexer and construct 4:1 multiplexer using basic gates.	08	(2 : 2 : 1.4.1)
	b. Construct the truth table for the logic gate arrangement as shown in fig. Q.4(b), mentioning its logical output expressions at point C, D and final output point Y.	06	(2 : 2 : 1.3.1)

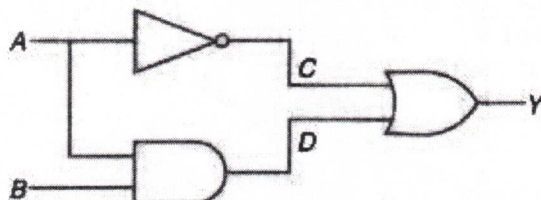


Fig.Q 4(b)

And Justify whether it is an example of combinational or sequential logic circuit?

- c. Write a note on different data types mentioning the bit size and range of values supported. 06 (2 : 2 : 1.3.1)

MODULE-3

5. a. Discuss the following communication interface protocols relevance to automotive applications: i) I²C ii) CAN 10 (1 :3 : 1.3.1)
- b. Bring out the main differences between RISC and CISC, Harvard and Von-Neumann architecture. 10 (2 :3 : 1.3.1)

(OR)

6. a. With neat block diagrams illustrate the working principle of an instrumentation system and a control system. 08 (2 :3 : 1.3.1)
- b. State the differences between microcontroller and microprocessor. 05 (1 :3 : 1.3.1)
- c. Define transducer and tabulate the classification of transducers with examples. 07 (1 :3 : 1.3.1)

MODULE-4

7. a. Explain about sampling, quantization and encoding. 07 (2 :4 : 1.3.1)
- b. Describe the various blocks of the basic communication system with neat diagram. 08 (2 :4 : 1.3.1)
- c. Define antenna and discuss different types of antennas. 05 (1 :4 : 1.3.1)

(OR)

8. a. Explain different types of radio wave propagation with relevant sketches. 07 (2 :4 : 1.3.1)
- b. Write a short note on PAM. 05 (1 :4 : 1.3.1)
- c. Define modulation and explain the following digital modulation schemes with the help of waveforms. 08 (2 :4 : 1.4.1)
- (i) ASK (ii) FSK (iii) PSK

MODULE-5

9. a. With a neat block diagram illustrate the generalized configuration of a fiber optic communication system. 10 (2 :5 : 1.3.1)
- b. Outline the highlights of evolution of mobile wireless technologies start from 1G to 4G. 10 (1 :5 : 1.3.1)

(OR)

10. a. Discuss briefly the role of the following terms with respect to GSM system: mobile station, base station subsystem, and network & switching system. 06 (2 :5 : 1.3.1)
- b. Define the terms cell and cluster in a cellular system and briefly explain the cellular concept in wireless mobile networks. 07 (1 :5 : 1.3.1)
- c. Briefly explain the general satellite communication system with a neat block diagram, highlighting the basic elements of it. 07 (2 :5 : 1.3.1)

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