

# CBCS SCHEME

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21ELN14/24

## First/Second Semester B.E. Degree Examination, Dec.2023/Jan.2024 Basic Electronics and Communication Engineering

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Explain AC to DC power supply with the neat block diagram. (10 Marks)
- b. Write a note on different types of amplifiers. Also define the voltage gain and current gain. (10 Marks)

OR

- 2 a. Mention the different characteristics of an operational amplifier. (07 Marks)
- b. Explain wein bridge oscillator. (07 Marks)
- c. Explain operational amplifier configurations. (06 Marks)

### Module-2

- 3 a. Explain the different basic logic gates. (06 Marks)
- b. With the help of timing diagram, explain how RS bistable element works. (07 Marks)
- c. Design full adder circuit using basic gates. (07 Marks)

OR

- 4 a. With a neat block diagram, explain the working of 4-bit binary counter. (10 Marks)
- b. Define multiplexer and explain 4:1 multiplexer with circuit diagram. (10 Marks)

### Module-3

- 5 a. Bring out the classification in Embedded Systems  
i) Based on generations  
ii) Based on complexity and performance requirements. (10 Marks)
- b. Bring out the differences between Harvard and Von-Neumann architecture. (05 Marks)
- c. Explain WiFi communication interface. (05 Marks)

OR

- 6 a. With the help of neat block diagram, explain an instrumentation system. (07 Marks)
- b. What are sensors? Write a note on the following sensors (i) Temperature sensor  
(ii) Sand sensor. (06 Marks)
- c. Explain 7-segment LED display with common anode configuration. (07 Marks)

### Module-4

- 7 a. Define sampling theorem and explain when aliasing takes place and how can it be avoided. (07 Marks)
- b. Define an antenna and discuss different types of an antenna. (07 Marks)
- c. Define and explain SNR, Noise figure, channel types and amplitude modulation. (06 Marks)

OR

- 8 a. Discuss the various multiple access techniques used in a cellular network. (10 Marks)
- b. Explain Forward Error Correction and Automatic Repeat Request. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-5**

- 9 a. Bring out the features of FM transmitter and FM receiver and repeaters in microwave communication. (10 Marks)
- b. With the help of a block diagram, explain the generalized configuration of a fiber-optic communication system. (10 Marks)

OR

- 10 a. Define the following terms in GSM system :  
i) Base Station Subsystem (BSS)  
ii) Mobile Station (MS)  
iii) Network Switching System (NSS) (06 Marks)
- b. Based on orbits, discuss the different types of satellites. (07 Marks)
- c. Write a note on LTE-A system architecture (07 Marks)

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