CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

First/Second Semester B.E. Degree Examination, June/July 2023
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. With neat block diagram, explain the working of a DC power supply. Also mention the principal components used in each block. **(08 Marks)**
   b. Mention advantages of negative feedback in amplifiers circuits. With relevant equations and diagram, explain the concept of negative feedback. **(06 Marks)**
   c. With circuit diagram and waveform show how operational amplifier work as inverting amplifier. **(06 Marks)**

OR

2 a. Explain the working of Bi-phase Full wave rectifier circuit with neat diagram. **(08 Marks)**
   b. Explain the operation of a simple Zener voltage regulator. **(06 Marks)**
   c. With the circuit diagram, explain the voltage doubler. **(06 Marks)**

Module-2

3 a. With the help of truth table, explain full adder using logic gates. **(08 Marks)**
   b. Design a 3 to 8 Decoder and show its implementation using basic gates. **(06 Marks)**
   c. Write a note on different data types mentioning the bit size and range of values supported. **(06 Marks)**

OR

4 a. Design a 4 × 1 multiplexer using basic gates. **(08 Marks)**
   b. Discuss the design of a 3-bit asynchronous up-counter. **(06 Marks)**
   c. Design a 4-stage shift register using J-K bistables. **(06 Marks)**

Module-3

5 a. Compare Embedded systems and general computing systems. Also provide major application areas of Embedded systems. **(08 Marks)**
   b. Define sensors and give its classification with examples. **(06 Marks)**
   c. Explain the following external communication interfaces : USB, Wi-Fi **(06 Marks)**

OR

6 a. Explain the working principle of operation and applications of stepper motor. **(08 Marks)**
   b. Bringout the differences between RISC and CISC, Harvard and Neumann. **(06 Marks)**
   c. Write a note on classification of embedded systems. **(06 Marks)**

Module-4

7 a. Describe the blocks of the basic communication systems. **(08 Marks)**
   b. Describe the classification of RF (Radio Frequency) spectrum with applications in communication systems. **(06 Marks)**
   c. Discus the various Multiple Access Techniques used in cellular network. **(06 Marks)**

OR

8 a. Define and explain SNR, Noise Figure channel types, amplitude modulation. (08 Marks)
   b. Explain different types of radio wave propagation with a neat diagram. (06 Marks)
   c. Present the architecture of a wireless communication transmitter and its modulation scheme QPSK with waveforms. (06 Marks)

Module-5

9 a. Bring out the features of FM transmitter FM receiver and repeaters in microwave communication. (08 Marks)
   b. Draw the schematic diagram of a cellular telephone system and define its basic components. (06 Marks)
   c. List the requirement identified for the 4G technology. (06 Marks)

OR

10 a. With the help of diagram, discuss the following types of network topologies. Ad – Hoc network Topology, Infrastructure Network Topology. (08 Marks)
   b. Draw the block diagram, showing the basic elements of a satellite communication system and briefly explain them. (06 Marks)
   c. Explain the optical fiber communication system with a block diagram. (06 Marks)

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