CBCS SCHEME

First/Second Semester B.E. Degree Examination, June/July 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. Describe various electronic units of a d.c. power supply with a neat block diagram. **(07 Marks)**
   b. Derive an expression for overall gain of an amplifier with negative feedback. **(07 Marks)**
   c. Illustrate single-stage astable multivibrator using operational amplifier and explain the threshold voltages. **(06 Marks)**

OR

2 a. With neat block diagram and waveforms, explain the working of bridge rectifier. **(08 Marks)**
   b. Explain the working of op-amp comparators and summing amplifiers with input and output waveforms. **(08 Marks)**
   c. A 5 V zener diode has a maximum rated power dissipation of 500 mW. If the diode is to be used in a simple regulator circuit to supply a regulated 5 V to a load having resistance of 400 Ω; determine a suitable value of series resistor for operation in conjunction with a supply of 9 V. **(04 Marks)**

Module-2

3 a. With the help of truth table and logic expressions, explain full adder using basic gates. **(08 Marks)**
   b. Discuss the design of a 3-bit asynchronous up-counter. **(07 Marks)**
   c. Write a note on different data types mentioning the bit size and range of values supported. **(05 Marks)**

OR

4 a. Design a 3-to-8 Decoder and show its implementation using basic gates. **(07 Marks)**
   b. With the help of timing diagram, explain how D-type bistable circuit works. **(06 Marks)**
   c. With a neat block diagram, show how typical input and output blocks are connected to a microcontroller unit. **(07 Marks)**

Module-3

5 a. Differentiate : Embedded systems versus General computing systems. Also provide major application areas of Embedded Systems. **(08 Marks)**
   b. Discuss arrangement of an instrumentation system and a control system. **(06 Marks)**
   c. Illustrate topology for USB device connection. Also, classify four different data transfers supported by USB. **(06 Marks)**

OR

6 a. Explain the principle of operation, working and applications of stepper motor. **(08 Marks)**
   b. With relevant diagrams, explain the operation of Relay. **(06 Marks)**
   c. Write a note on classification of Embedded systems. **(06 Marks)**

Module-4

7 a. Draw a block schematic diagram of the most general form of basic communication system and explain. **(08 Marks)**

b. Explain different types of radio wave propagation with a neat diagram. **(06 Marks)**

c. Differentiate : (i) Amplitude modulation versus Frequency modulation.
(ii) Analog modulation versus Digital modulation. **(06 Marks)**

OR

8 a. Explain PAM, PWM, PPM and PCM with the help of waveforms. **(08 Marks)**

b. Discuss Forward Error Correction (FEC) technique. With neat diagram and example. **(07 Marks)**

c. Define an antenna and discuss various types of antennas. **(05 Marks)**

Module-5

9 a. Draw the schematic diagram of cellular telephone system and define its basic components. **(06 Marks)**

b. Draw the block diagram, showing the basic elements of a satellite communication system and briefly explain. **(08 Marks)**

c. With the help of block diagram, explain generalized configuration of a fiber-optic communication system. **(06 Marks)**

OR

10 a. With a neat block diagram, explain GSM system architecture. **(08 Marks)**

b. With the help of architecture figure, explain the evolution from GSM to LTE. **(08 Marks)**

c. What is Bluetooth? Explain Bluetooth architecture. **(04 Marks)**

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