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21ELN14

**First Semester B.E./B.Tech. Degree Examination, Feb./Mar. 2022**  
**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 a neat circuit diagram and waveforms, explain the working of Bridge rectifier without filter. (08 Marks)
- b. A 6V 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 6V to a load of 500Ω. Determine a suitable value of series resistor for a supply of 12V. (06 Marks)
- c. With a neat block diagram, derive the expression for overall gain of a negative feedback amplifier. (06 Marks)

**OR**

- 2 a. Define the following with respect to Operational Amplifiers and write their typical values :  
i) Open loop voltage gain    ii) Input offset voltage    iii) Full power bandwidth and  
iv) Slew rate. (08 Marks)
- b. With a neat circuit diagram, explain the working of Integrator using Op-Amp. (06 Marks)
- c. With a neat circuit diagram, explain the working of Wein bridge Oscillator using Op-Amp. (06 Marks)

**Module-2**

- 3 a. With the help of truth table, explain full adder using logic gates. (08 Marks)
- b. Realize 8 - to - 1 multiplexer using basic gates. (06 Marks)
- c. With the help of logic diagram, explain the working of R - S bistable circuit. (06 Marks)

**OR**

- 4 a. With the help of neat block diagram, explain the working of Microcontroller System. (08 Marks)
- b. With a neat block diagram, explain the 4 - bit shift register using JK Flip - flop. (06 Marks)
- c. With a neat block diagram, waveforms and truth table, explain 3 - bit Asynchronous counter using JK Flip - flop. (06 Marks)

**Module-3**

- 5 a. What is an Embedded System? List any 7 comparison between Embedded system and General purpose computing system. (08 Marks)
- b. Explain the classification of Embedded system, based on Generation. (06 Marks)
- c. List the comparison between Microprocessor and Microcontroller. (06 Marks)

**OR**

- 6 a. With a neat block diagram, explain an Instrumentation System. (08 Marks)
- b. With a neat circuit diagram, explain Common Cathode and Common Anode 7 Segment LED display. (06 Marks)
- c. Write short notes on : i) I 2 C Bus and ii) S P I Bus. (06 Marks)

**Module-4**

- 7 a. Describe the blocks of the Basic Communication System. (08 Marks)  
b. Explain the types of Communication System. (06 Marks)  
c. Define Amplitude Modulation. With the help of waveforms, explain Amplitude Modulation. (06 Marks)

**OR**

- 8 a. Explain three different modes of propagation of Electromagnetic waves, with a neat diagram. (08 Marks)  
b. With a neat block diagram, explain Transmitter and Receiver using Automatic Repeat Request. (06 Marks)  
c. Define an Antenna. Explain Yagi Antenna model with 3D Radiation pattern. (06 Marks)

**Module-5**

- 9 a. With a neat block diagram, explain Cellular Telephone System. (08 Marks)  
b. With a neat block diagram, explain GSM System Architecture. (06 Marks)  
c. Write a short note on WLAN. (06 Marks)

**OR**

- 10 a. With a neat block diagram, explain Satellite Communication. (08 Marks)  
b. With a neat block diagram, explain Analog link of an Optical Fiber Communication System. (06 Marks)  
c. Write a short note on Frequency Bands of Microwave Communication. (06 Marks)

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