U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2024 Semester End Main Examinations

Programme: B.E **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 21EC1ESBEC / 21EC2ESBEC **Max Marks: 100**
Course: Basic Electronics and Communication Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) What is Regulated power supply? Explain with block diagram. **06**

b) An amplifier has a power gain of 13.79dB and identical input and output resistances of 600 Ω. Determine the input voltage required to produce an output of 10 V. **04**

c) Define the following with respect to Op-Amp **06**
I. Input offset voltage
II. Full Power Bandwidth
III. Slew Rate

d) An inverting operational amplifier is to operate according to the following specification: **04**
Voltage gain = 100
Input resistance (at mid-band) = 10 kΩ
Lower cut-off frequency = 250 Hz
Upper cut-off frequency = 15 kHz
Devise a circuit to satisfy the above specification using an operational amplifier.

OR

2 a) List the advantages and disadvantages of half-wave and Bridge rectifier **06**

b) Determine the frequency of oscillation of a three-stage ladder network oscillator in which C = 10 nF and R = 10 kΩ. Design the circuit for a frequency of 5kHz **04**

c) The following data were obtained during a load test carried out on a d.c. power supply: **06**
Output voltage (no-load) = 8.5 V
Output voltage (800 mA load) = 8.1 V
Determine the output resistance of the power supply and estimate the output voltage at a load current of 400 mA.
Output voltage (a.c. input: 230 V) = 15 V
Output voltage (a.c. input: 190 V) = 14.6 V
Determine the regulation of the power supply and estimate the output voltage when the input voltage is 245 V.

d) Explain the two basic configurations of operational voltage amplifiers. **04**

UNIT - II

3 a) Discuss the clocked operation of D-type bistable with the state table and necessary timing diagram. **06**

b) Implement Full adder using Half adder **04**

c) Analyze the output of different modes of operation of a 4-bit shift-register if the serial input is "1011" with the rightmost bit (LSB) fed first serially. **10**

UNIT - III

4 a) Compare and comment on Von Neumann versus Harvard Architectures with relevant figures. **06**

b) Briefly describe the following actuators – LED and Piezo-buzzer. **04**

c) What letters related to hexadecimal representation can be display on a 7-segment LED display? Explain the same using a common Anode configuration. **06**

d) Differentiate between the two types of communication interfaces with examples. **04**

OR

5 a) Describe the differences between RISC & CISC architecture. **06**

b) Broadly classify transducers with examples. **04**

c) Explain the interfacing of matrix keypad to 8051 microcontroller **06**

d) Explain USB concept with a neat diagram. **04**

UNIT - IV

6 a) Explain GSM System Architecture with neat diagram? **10**

b) Assume a Scenario where an Airtel Subscirber 'A' makes a Call to an another Airtel Subscriber 'B'. List the steps performed by the mobile transmitter 'A' and mobile receiver 'B' **06**

c) The noise factor of a radio receiver is 15:1, calculate its noise figure. Determine the output S/N ratio when the input S/N ratio to the receiver is 35dB. **04**

UNIT - V

7 a) How WSN are classified? Explain each with an example. **10**

b) Explain closed loop control of a personal lighting system. **06**

c) Explain the role of WSN in Health care. Mention few applications. **04**

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