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

Autonomous Institute Affiliated to VTU

December 2023 Supplementary 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 suitably assumed.

UNIT - I

1	a)	With a neat circuit diagram and wave forms, explain Bi-Phase rectifier circuit.	**08**
	b)	Determine i) equivalent output resistance and ii) regulation of the power supply for the following data (a) Load test output voltage (no load) = 12V output voltage (2A load current) = 11.5V (b) Regulation test output voltage (mains input, 220V) = 12V output voltage (mains input, 200V) = 11.9V	**06**
	c)	With a neat block diagram, derive the expression for overall gain of a negative feedback amplifier.	**06**

OR

2	a)	Define the following terms w.r.t operational amplifier and also write their typical values i) Open loop voltage gain. ii) Input offset voltage iii) Full power bandwidth & iv) Slew rate.	**08**
	b)	Describe different types of amplifiers.	**06**
	c)	With a neat circuit diagram, explain Wein bridge oscillator using op-amp.	**06**

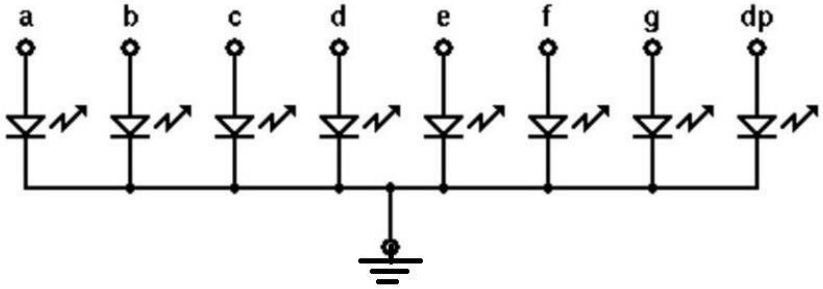
UNIT - II

3	a)	With the help of truth table, explain full adder circuit using basic gates.	**08**
	b)	Realize 8-to-1 multiplexer using basic gates.	**06**
	c)	With a neat block diagram, waveforms and truth table, explain 3-bit Asynchronous counter using JK flip flop.	**06**

UNIT - III

4 a) Explain the classification of embedded system based on generation. **06**

b) Consider a 7-segment display unit as shown in the figure below. How many such display units are required to display "HELLO"? Construct the corresponding decoding table with the binary and hexadecimal codes. **08**



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

OR

5 a) Describe how matrix keyboard could be interfaced with 8051 microcontroller and explain its operation. **06**

b) Explain the different modes of operations of stepper motor with table indicating the sequence for energizing the coils. **08**

c) Write a short note on UART and USB. **06**

UNIT - IV

6 a) With a neat block diagram explain the components of the basic communication System. **08**

b) Explain GSM System Architecture with neat diagram. **08**

c) Write a short note on CDMA technology. **04**

UNIT - V

7 a) What are the sustainable development goals? **06**

b) With a neat block diagram, explain sensor node of WSN. **08**

c) Explain the applications of sensor networks in smart agriculture. **06**

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