

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-I & II(NEW) EXAMINATION – SUMMER 2023

Subject Code:2110016

Date:11-08-2023

Subject Name:Basic Electronics

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

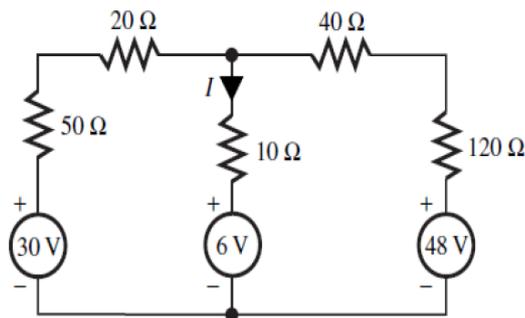
1. Question No. 1 is compulsory. Attempt any four out of remaining Six questions
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

### Q.1 Objective Question (MCQ)

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1. Ohm's law ( $V = IR$ )
  - (a) Can be applied to a.c similar to that of d.c.
  - (b) Can be applied to a.c. but after replacing R by Z (impedance)
  - (c) Can never be applied to a.c
  - (d) None of the above
2. If 10 mA current flows through a 5 K $\Omega$  resistance then the power dissipation in it would be \_\_\_\_\_
  - (a) 5 mW
  - (b) 50 mW
  - (c) 500 mW
  - (d) None
3. Unit of capacitance is \_\_\_\_\_.
  - (a) Ampere
  - (b) Volt
  - (c) Henry
  - (d) Faraday
4. While applying super position theorem, \_\_\_\_\_ is replaced by open circuit.
  - (a) current source
  - (b) voltage source
  - (c) resistance
  - (d) all of these
5. The Digital Circuit which accepts many input and produces only one output is known as
  - (a) Encoder
  - (d) Demultiplexer
  - (c) Multiplexer
  - (d) Decoder
6. A control system in which the control action is somehow dependent on the output is known as
  - (a) closed loop System
  - (b) semi closed loop system
  - (c) open system
  - (d) None of the
7. The equivalent Decimal of the BCD (001110001001)BCD is \_\_\_\_\_.
  - (a) (388)<sub>10</sub>,
  - (b) (386)<sub>10</sub>,
  - (c) (380)<sub>10</sub>,
  - (d) (389)<sub>10</sub>
8.  $X(t) = -X(t)$  is the property of
  - (a) Even signal
  - (b) Odd signal
  - (c) Periodic signal
  - (d) Aperiodic signal
9. Wireless mobile cells are \_\_\_\_\_ in shape
  - (a) pentagon
  - (b) hexagon
  - (c) circular
  - (d) square
10. PAM stands for
  - (a) Pulse And Modulation
  - (b) Pulse Analog Modulation
  - (c) Pulse Altitude Modulation
  - (d) Pulse Amplitude Modulation
11. Which are the logic gates known as a Universal Gates?
  - (a) XOR, AND,
  - (b) AND, OR,
  - (c) NAND, NOR,
  - (d) XNOR, OR
12. Out of following signals \_\_\_\_\_ is an even signal.
  - (a) Cosine wave
  - (b) Sine wave
  - (c) Triangle wave
  - (d) None of the above.
13. Minimum bandwidth of an AM wave is \_\_\_\_\_.
  - (a) fm
  - (b) 2fm
  - (c) 0.5fm
  - (d) 4fm
14. A control system with feedback has
  - (a) maximum error
  - (b) minimum error
  - (c) zero error
  - (d) infinite error

- Q.2** (a) Explain Kirchhoff's Voltage law. **03**  
 (b) Write a short note on Ammeter and Voltmeter. **04**  
 (c) Explain WYE-DELTA and DELTA-WYE transformation using necessary equations and circuit diagrams. **07**
- Q.3** (a) Draw circuit diagram of Inverting operational amplifier & explain in brief. **03**  
 (b) List out ideal characteristics of ideal Op-Amp. **04**  
 (c) Explain the working of a Low pass filter using an Op-Amp. **07**
- Q.4** (a) Reduce the given Boolean expression using K-map. **03**  
 $F(A,B,C) = \sum m(0,2,3,5)$   
 (b) State and Prove De Morgan's laws. **04**  
 (c) Find out current through  $10 \Omega$  resistor. **07**



- Q.5** (a) Define Waveguide, Transmission lines and Antenna. **03**  
 (b) What is modulation? Why modulation is required? **04**  
 (c) Draw the block diagram of a Communication system. Explain each block. **07**
- Q.6** (a) Compare Microprocessor and Microcontroller. **03**  
 (b) Classify network topologies and draw each one of them. **04**  
 (c) Draw and explain ISO-7 layer model block diagram of an OSI for computer Networks. **07**
- Q.7** (a) Compare Open Loop and Closed Loop Systems. **03**  
 (b) Define a control system. Classify them and state their advantages. **04**  
 (c) Explain any seven rules of Block diagram reduction for control system with necessary block diagrams. **07**

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