

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-I & II(NEW) EXAMINATION – WINTER 2022

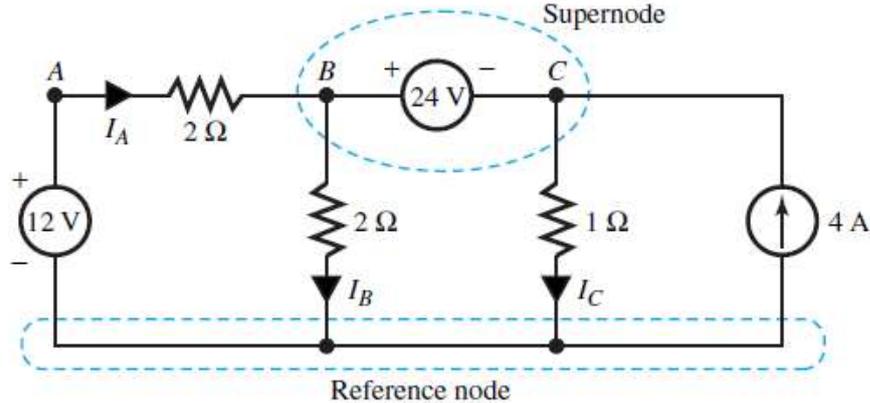
Subject Code:2110016**Date:16-03-2023****Subject Name:Basic Electronics****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

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

Q.1	Objective Question (MCQ)	Mark
	<p>(a) Choose an appropriate option from the following</p> <ol style="list-style-type: none">1. The linearity of the circuit network is determined by which theorem (a) KVL (b) KCL (c) Maximum power transfer (d) Super position2. The conductance is inverse of which parameter (a) Inductance (b) Resistance (c) Capacitance (d) Reluctance3. The resistance $R_1 = 6\Omega$ and $R_2 = 12\Omega$ connected in parallel than total resistance will be (a) 18Ω (b) 72Ω (c) 2.5Ω (d) 0.25Ω4. Source resistance of Ideal voltage source is (a) Infinite (b) Zero (c) 100Ω (d) $100k\Omega$5. To increase current capacity of a cell several cells should be connected in (a) Series (b) Parallel (c) ammeter (d) voltmeter6. How many minimum NAND gate required to make AND gate (a) 4 (b) 2 (c) 3 (d) 17. An open loop gain of an ideal operational amplifier is (a) 0 (b) α (c) 200000 (d) 100	07
	<p>(b) Choose an appropriate option from the following</p> <ol style="list-style-type: none">1. The Digital Circuit which accepts one input and produces many output is known as (a) Encoder (d) De-multiplexer (c) Multiplexer (d) Decoder2. In computer CPU stands for (a) Central Power Unit (b) Central Processing Unit (c) Cheap Processing Unit (d) Common Power Unit3. For automatic control the system should be (a) Open loop (b) Closed loop4. In signal processing system AM means (a) Audio Mode, (b) Amplitude Modulation (c) Average Modulation (d) Audio Meter5. An operational amplifier IC 741 has total number of input pins (a) 3 (b) 5 (c) 2 (d) 4	07

6. For decimal number 11 the BCD is
 (a) 0011 (b) 1100 (c) 10001000 (d) 00010001
7. An amplifier is used to increase
 (a) frequency (b) signal level (c) phase (d) noise

- Q.2** (a) Define conductor, semi-conductor and insulator. **03**
 (b) Explain ideal current source and ideal voltage source with circuit symbol and i-v curves. **04**
 (c) Explain resistance strain gauge with basic diagram. **07**
- Q.3** (a) Explain in brief Thevenin equivalent circuit. **03**
 (b) Explain star-delta transformation with equation and diagram. **04**
 (c) Find the current in each resistor by nodal analysis for circuit of Figure **07**



- Q.4** (a) Draw and explain close loop inverting amplifier with OPAMP **03**
 (b) Define (i) CMRR (ii) Input bias current (iii) PSRR (iv) Slew rate. **04**
 (c) Explain application of OPAMP as an integrator and differentiator. **07**
- Q.5** (a) Draw the AND, OR, NOT gate using NOR gate. **03**
 (b) What is modem? Explain in brief various types of modems. **04**
 (c) Explain 3 to 8 decoder with block diagram, truth table and logic diagram. **07**
- Q.6** (a) Discuss in brief basic elements of digital communication system. **03**
 (b) Write short note on interference. **04**
 (c) Explain in detail various multiplexing systems used in communication. **07**
- Q.7** (a) Give classification of feedback control system. **03**
 (b) Explain various types of transmission medium used in communication. **04**
 (c) Explain various analog communication system with application. **07**
