Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– 1st / 2nd • EXAMINATION – SUMMER • 2014

Subject Code: 2110016 Date: 25-06-2014

Subject Name: Basic Electronics

Time: 02:30 pm - 05:00 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.**

Q.1 Objective Questions

Choose an appropriate option from the following. **14**

1. In hydraulic system, Quantity named Flow is described as a Output flow rate F_o, and in electrical quantity it is described as a_____.
(a) Voltage , (b) Current, (c) Capacitance, (d) Inductance

2. To find the linearity of the circuit network which theorem is used?
(a) KCL, (b) KVL, (c) Superposition, (d) Maximum Power Transfer

3. For the operational amplifier with inverting configuration the change in the phase of the output voltage is _____.
(a) 180^o, (b) 90^o,(c) 270^o, (d) 45^o

4. Which one is the Linear application design by Op-amp ?
(a) Integrator, (b) Voltage Regulator, (c) Multiplier, (d) Comparator

5. The equivalent Decimal of the BCD $(001110001001)_{BCD}$ is_____.
(a) $(388)_{10}$, (b) $(386)_{10}$, (c) $(380)_{10}$, (d) $(389)_{10}$

6. Which are the logic gates kwon as a Universal Gates?
(a) XOR, AND, (b) AND, OR, (c) NAND, NOR, (d) XNOR,OR

7. By using which theorem we can replace the whole circuit network in single voltage and resistor network?
(a) Superposition, (b) Maximum power Transfer, (c) Norton's Theorem, (d) Thevenin's Theroem

8. In the given pulse modulations, which one is not the type of pulse modulation?
(a) PWM, (b) PSK, (c) PPM, (d) PAM

9. Even signals are stratify the property for signal x(t)=_____.
(a) x(-t), (b) -x(t),(c) -x(t)/4, (d) -x(t)/2

10. A radio station transmitting AM wave with 1 MHz frequency band having a wavelength of _____.
(a) 3 meter, (b) 300 meter, (c) 0.3 meter, (d) 30 meter

11. Commercial FM radio broadcasting utilizes a frequency band _____.
(a) 90 MHz to 110 MHz, (b) 70 MHz to 120MHz, (c) 110 MHz to 180MHz, (d) 88MHz to 108MHz

12. In Which process Sampling is used?
(a) Frequency Division, (b) Signal amplification, (c) Signal attenuation, (d) Digital Modulation

13. Feedback control system in which the control action is dependent upon the _____.
(a) Input, (b) Output, (c) Compactness, (d) Cost of System.

14. For the unit step response of the control system, rise time is given by the value from _____of its final value.
(a) 10% to 90%, (b) 20% to 99 %, (c)10 % to 80% , (d) 30% to 100%.

Q.2	**(a)**		Explain in brief about Lumped circuit elements called resistor and capacitor.	**07**
	(b)	(1)	Write a short note on Ammeter and Voltmeter.	**04**
		(2)	Explain WYE-DELTA transformation in brief with necessary equations and circuit diagrams.	**03**
Q.3	**(a)**		Determine the voltage across the 20 Ohm resistor in the following circuit of Figure.(a) with the application of superposition theorem.	**07**

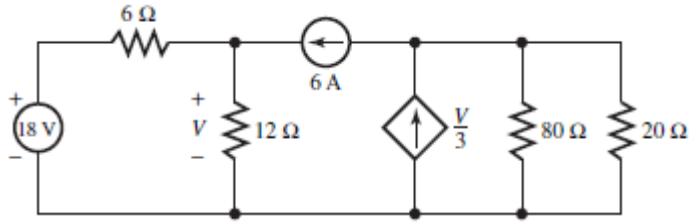

Figure.(a)

	(b)		Write about Differential amplifier using Op-amp with necessary circuit diagram and equations.	**07**
Q.4	**(a)**		Describe band pass active filter using Operational amplifier with necessary diagrams and equations.	**07**
	(b)	(1)	For the switching function F = A(A'+B), draw a corresponding set of logic blocks and write the truth table.	**03**
		(2)	Reduce the given function using K-map. F(A,B,C,D) = $\sum m_i$ (1,3,5,7,8,9,13,14).	**04**
Q.5	**(a)**	(1)	Write Short note on SR flip flop with circuit diagram and truth table.	**03**
		(2)	Draw only ISO-7 layer model block diagram of an OSI for computer Networks.	**04**
	(b)		Explain in detail Pulse modulation with necessary diagrams.	**07**
Q.6	**(a)**	(1)	Draw only functional block diagram of signal processing system.	**03**
		(2)	Explain in brief Product Modulation and Demodulation with necessary diagrams.	**04**
	(b)		Write short not on Cellular communication system.	**07**
Q.7	**(a)**	(1)	Define Waveguide, Transmission lines and Antenna.	**03**
		(2)	Explain any four rules of Block diagram reduction for control system with necessary block diagrams.	**04**
	(b)	(1)	Draw and explain the typical unit step response (Transient Response) of the control system.	**07**

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