

Seat No.: _____

Enrollment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- 1st / 2nd EXAMINATION (NEW SYLLABUS) – SUMMER 2016

Subject Code: 2110016

Date:03/06/2016

Subject Name: Basic Electronics

Time:02:30 PM to 5:00 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 Question (MCQ)

(a) Choose an appropriate option from the following. 07

1. Power is defined as the rate of transfer of _____ with respect to time.
(a) Charge (b) Current (c) Energy (d) Voltage
2. Mesh analysis is based on
(a) KVL (b) KCL (c) Both (d) Law of conversion of energy
3. If the network elements such as resistances, capacitances, inductances are not physically separable, then it is known as
(a) Lumped Network (b) Distributed Network
(c) Unilateral Network (d) Bilateral Network
4. Which of the following is not applicable to the nonlinear network?
(a) Thevenin (b) Norton (c) Superposition (d) KCL
5. For Non inverting amplifier the phase shift between input and output is
(a) 270° (b) 45° (c) 180° (d) 0°
6. Which one is Linear Application of Op-Amp?
(a) Comparator (b) Differentiator
(c) Schmitt trigger (d) Log Amplifier
7. The decimal equivalent of Binary (1111110) is
(a) 125 (b) 128 (c) 255 (d) 126

(b) Choose an appropriate option from the following. 07

1. The Digital Circuit which accepts many input and produces only one output is known as
(a) Encoder (d) Demultiplexer (c) Multiplexer (d) Decoder
2. Out of following signal, _____ is a Random Signal.
(a) Sine Wave (b) Cosine Wave (c) Noise (d) Triangle Wave
3. The antisymmetrical signal is also known as _____ Signal.
(a) Even (b) Odd (c) Energy (d) Power
4. Out of following _____ is digital Pulse Modulation.
(a) PAM (b) PPM (c) PCM (d) PWM
5. AM Radio broadcasting utilizes a frequency band
(a) 30kHz-300kHz (b) 300kHz-3MHz
(c) 30Hz-300Hz (d) 30MHz-300MHz
6. Which of the following is used for AM Detection
(a) Slope detector (b) Zero Crossing detector
(c) Envelope detector (d) Phase locked loop
7. If $r(t)$ is input, $c(t)$ is the output and $G(s)$ is the transfer function, then for an impulse input
(a) $G(s)=C(s)$ (b) $G(s)=R(s)C(s)$
(c) $G(s)=R(s)$ (d) $G(s)=0$

- Q.2** (a) Explain Coulomb's First and Second Law. **03**
(b) Explain Kirchoff's Voltage law and Current law in Short. **04**
(c) Explain Thevenin's theorem with suitable Example. **07**
- Q.3** (a) Give the Classification of Electric Network. **03**
(b) Draw the logic symbol and truth table of following gates. **04**
1. AND 2. OR 3. EX-OR 4. NOR
(c) Write short note on JK flip flop with logic diagram and truth table. **07**
- Q.4** (a) Reduce the given Boolean expression using K-map. **03**
 $F(A,B,C) = \sum m(0,2,3,5)$
(b) Write short note on Star topology. **04**
(c) Explain ideal characteristics of ideal Op-Amp in detail. **07**
- Q.5** (a) Give the classification of signals. **03**
(b) Explain inverting configuration of Op-Amp. **04**
(c) Draw and explain basic elements of digital communication system. **07**
- Q.6** (a) What is multiplexing? Compare FDM and TDM **03**
(b) Write short note on Waveguides. **04**
(c) Draw and explain the block diagram of superheterodyne AM radio receiver. **07**
- Q.7** (a) Compare Open Loop and Closed Loop Systems. **03**
(b) Explain transient response and steady state response of system with diagram. **04**
(c) Explain any seven rules for block diagram reduction of control system with necessary diagram. **07**
