

Model Test Paper
B.E. Sem.- II Examination (CE/EC/EE)

Enroll. No.: _____

Subject: Basic Electronics (2110016)

Date:

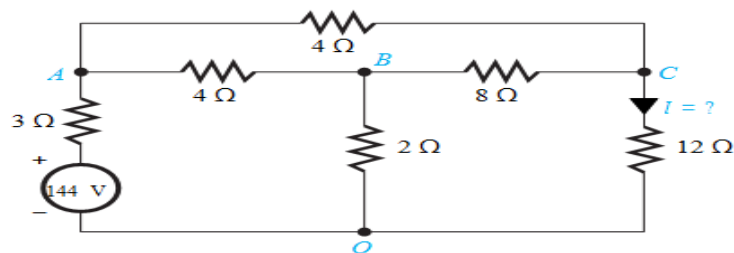
Time : 10:30 a.m. to 1:00pm

Total Marks : 70

Instructions: 1. Question No. 1 is compulsory. Attempt any four out of remaining six questions.
2. Assume suitable data if necessary
3. Figure to the right indicate full marks

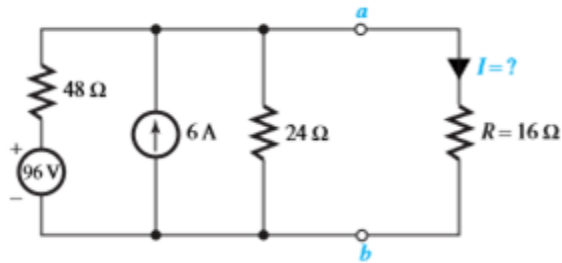
- Q - 1**
- | | | |
|-----------|---|----------|
| 1 | $(365.24)_8 = (\quad)_{10}$ | 1 |
| | a) 542.5213 b) 245.5213 c) 245.3125 d) 542.3125 | |
| 2 | In design of ripple counter using J-K flip flop the inputs of all flip flop is | 1 |
| | a) J=1, K=1 b) J=0, K=0 c) J=0, K=1 d) J=1, K=0 | |
| 3 | Which one from the following is not available in ISO-OSI model? | 1 |
| | a) Session b) Transportation c) Security d) Physical | |
| 4 | Voltage follower configuration of OPAMP used for | 1 |
| | a) Amplification b) Impedance matching c) Adder d) Subtractor | |
| 5 | Typical value of CMRR and Slew rate for OP-AMP 741 are _____ and _____ respectively | 1 |
| | a) 90 db, 0.5 V/ μ sec b) 90 db, 0.5 μ V/sec c) 9 db, 0.5 μ V/sec
d) 90 db, 0.5 V/sec | |
| 6 | x(t) is said to be Odd signal if $x(-t)=$ _____? | 1 |
| | a) x(t) b) -x(t) c) -x(-t) d) 1 / x(t) | |
| 7 | Which signal processing operation used to separate signals of two different frequencies? | 1 |
| | a) Amplification b) Filtering c) Equalizing d) Sampling | |
| 8 | For an ideal current source, the source resistance is _____ | 1 |
| | a) Zero b) Infinite c) Very small d) Nonzero | |
| 9 | While applying the super position theorem, the _____ is replaced by an open circuit. | 1 |
| | a) Ideal Voltage Source b) Ideal Current Source c) Capacitor
d) Any Dependent Source | |
| 10 | A 12 V source has an internal resistance of 90 Ω . If a load resistance of 20 Ω is connected to the voltage source, the load power, PL is | 1 |
| | a) 2.38 mW b) 2.38 W c) 238 mW d) 23.8 W | |
| 11 | Performance in presence of noise in binary FSK is _____. | 1 |
| | a) Poor b) Better than ASK c) Better than FSK d) Poor than ASK | |
| 12 | Minimum bandwidth of an AM is _____. | 1 |
| | a) fm b) 2 fm c) 0.5 fm d) 2.5 fm | |
| 13 | A feedback control system is also called a _____. | 1 |
| | a) Recursive system b) Linear system c) Open loop System | |

- d) Closed loop System
- 14 Laplace transform is applicable for _____. 1
- a) Linear time invariant (LTI) systems b) Stable systems
c) Any continuous system d) Stable and unstable LTI systems
- Q - 2 A Explain NOR gate as universal gate. 5
 B Explain OP-AMP as inverting amplifier. Derive equation for gain the same. 5
 C What is signal? List various types of signals and explain any two of them. 4
- Q - 3 A What is K-map? Explain 3 variables K-map in detail. 5
 B With a neat block diagram explain various signal processing operations involved in 5
 digital communication systems.
 C Draw equivalent circuit of ideal OP-AMP and list its characteristics. 4
- Q - 4 A What is sampling? Explain concept of Nyquist rate. 5
 B Explain OP-AMP application as integrator. 5
 C Explain successive approximation type ADC. 4
- Q - 5 A What is transformer? Explain principle of operation of the transformer. 5
 B Define following terms; 5
1. Electric field intensity
 2. Electric potential
 3. Magnetic flux density
 4. Mutual inductance
 5. Semiconductor
- C Use delta–wye transformation for network reduction and determine the current 4
 through the 12-Ω resistor in the circuit shown below.



- Q - 6 A What is transfer function? Give elementary block diagram of closed loop system 5
 and find its transfer function.
 B What is digital communication? Explain PCM transmitter and receiver with block 5
 diagram.
 C Compare AM, FM and PM. 4

- Q - 7 A** Consider the circuit shown below. Reduce the portion of the circuit to the left of terminals $a-b$ to (a) A Thevenin equivalent and (b) A Norton equivalent. Find the current through $R=16\ \Omega$, and comment on whether resistance matching is accomplished for a maximum power transfer.



- B** Explain super-heterodyne receiver.

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