



B.TECH DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Second Semester

EEE231:ELECTRICAL AND ELECTRONICS CIRCUITS

(Common to CSE/IT)

Time: Three Hours

Maximum Marks: 100

**Answer all the Questions:-
PART A (10 x 1 = 10 Marks)**

1. A kilowatt hour is a unit of
 - a) energy
 - b) Power
 - c) electric charge
 - d) electric current
2. When the resistors R_1 , R_2 and R_3 are connected in series, then the equivalent resistance R_{eq} is
 - a) $R_{eq} = R_1 + R_2 + R_3$
 - b) $R_{eq} = 1/R_1 + 1/R_2 + 1/R_3$
 - c) $R_{eq} = R_1 \times R_2 \times R_3$
 - d) $R_{eq} = R_1 / R_2 / R_3$
3. For a sinusoidal wave, form factor value is
 - a) 1.11
 - b) 1.231
 - c) 1.22
 - d) 1.414
4. Resonance occurs at
 - a) $X_L > X_C$
 - b) $X_L = X_C$
 - c) $X_L < X_C$
 - d) $X_L = 1/X_C$
5. The resistance of semiconductor
 - a) increases with increase in temperature
 - b) decreases with increase in temperature
 - c) constant with temperature
 - d) becomes infinity with increase in temperature
6. Diode is used as
 - a) voltage regulator
 - b) Amplifier
 - c) oscillator
 - d) a switch
7. The arrow on the symbol of transistor indicates
 - a) the direction of emitter current
 - b) the direction of collector current
 - c) the direction of base current
 - d) the bias of the emitter junction
8. MOSFET is used for
 - a) regulator control
 - b) maintaining constant voltage

resistance of 0.25Ω . Determine the emf of the battery if P.D. across 6Ω is 6 volts.

22. a) Derive expressions for impedance, power factor and current of a RL series circuit supplied with ac voltage source also draw the phasor diagram.

(OR)

- b) Derive the expressions for current, resonant frequency, quality factor of the circuit, bandwidth and draw the resonance curve for a series resonance circuit?

23. a) Explain the working of a PN junction diode in forward and reverse bias conditions and also sketch V-I characteristics.

(OR)

- b) Illustrate the construction, working of half wave rectifier and also mention its efficiency, transformer utilization factor, peak inverse voltage and ripple factor values.

24. a) With neat circuit diagram, explain the CE configuration of a NPN transistor with the input and output characteristic curves.

(OR)

- b) Illustrate the construction, working principle and operation of N-channel Enhancement MOSFET with its characteristics curves.

25. a) Examine the operation of RC phase shift oscillator and derive the expression for frequency of oscillation.

(OR)

- b) Analyze the operation of non-inverting comparator circuit with its transfer characteristics.
