# CORPORATE GROUP OF INSTITUTES, BHOPAL
## MODEL QUESTIONS OF BEEE (BE- 104)

UNIT 1

Que 1. Explain ideal voltage source and ideal current source with Neat diagrams. How ideal voltage source can be converted into ideal current source?

Que 2. Define the following terms:
(i)Active power   (ii) Reactive power (iii) Apparent power (iv) power factor, and Draw power triangle and establish relation among them

Que 3. Find out the current flowing through 10ohm resistance in the given circuit using nodal analysis.
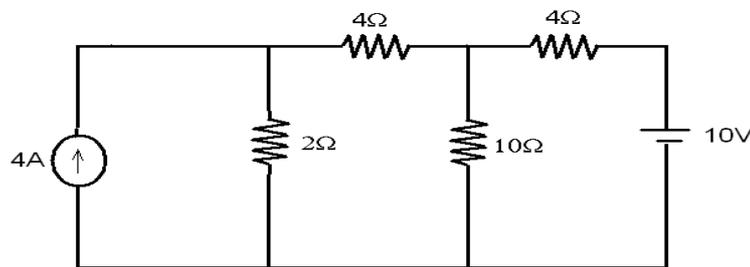
Que 4. A coil of inductance 0.08 H and negligible resistance is connected in series with a 15 ohm non-inductive resistance. The combined circuit is energized from a $200\sin\omega t$, 50 Hz supply calculates.

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(i)	Impedance of the circuit
(ii)	The current in the circuit
(iii)	Power absorbed by the circuit
(iv)	Power factor.

Que 5. State the venin's theorem? Find the current in the unknown **Resistance** of $R_L = 5\ \Omega$ using thevenins theorem?
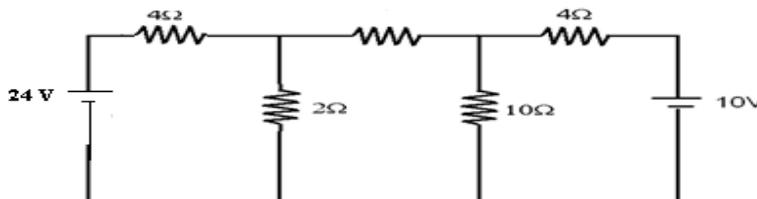
Que 6. Establish the voltage and current relationship between phase and   Line voltages in a 3- phase star connected circuit?

Que 7. State and explain superposition theorem with an example?

Que 8. Explain how star – delta transformation takes place? Derive their expression?

Que 9. Find out the current flowing through 5 Ω resistor in the given circuit using superposition theorem.
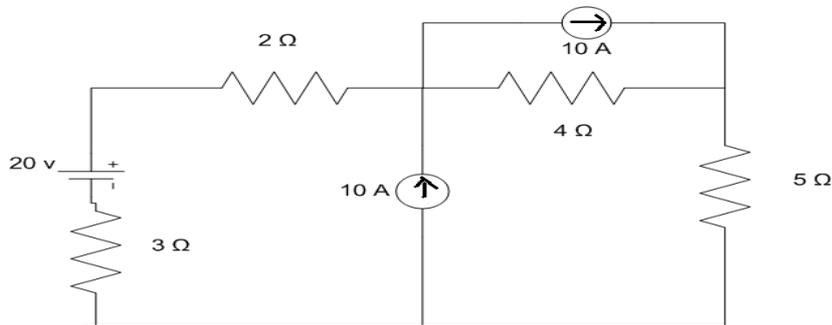
Que 10.) for a given series RLC circuit obtain the following: (i) impedance   (ii) current   (iii) power factor (iv) power consumed.

$V= V_m sin wt = 10 \sin 314t$
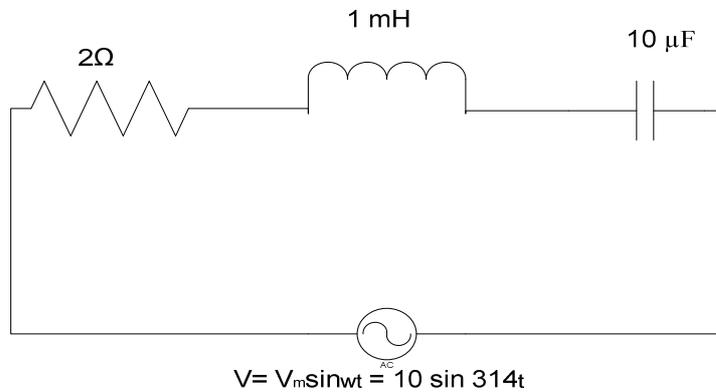
UNIT 2

Que 1. Compare Magnetic Circuit Vs Electric Circuit.

Que 2. The following readings were obtained for O.C. and S.C. tests on 8 kVA, 400/120 V, 50Hz transformer:

O.C. test (L.V. side): 120V, 4A,   75W

S.C. test (L.V side):   9.5 V, 20A   110W

Find

(i)   The equivalent circuit parameters referred to H.V. Side.
(ii)   Efficiency at half load and 0.8 P.F. lagging.

Que 3. Draw and explain the Phasor diagram of a single phase transformer under lagging load condition.

Que 4. Explain the construction and Working principle of a Single phase transformer? Draw its Equivalent circuit diagram showing parameter shifting?

Que 5. Derive the emf equation of transformer?

Que 6. Explain voltage regulation? If the parameters are given below of a 2KVA, 220/220V, 1ø, 50 Hz transformer, find the secondary side voltage when primary side voltage is 230V when winding are shifted from primary to secondary at 0.8 power factor lagging. Parameters are

$$r_1 = 2\Omega, \qquad r_2 = 3\Omega,$$

$$X1 = 0.5\Omega, \quad x_2 = 0.75\Omega,$$

Que 7. Draw the phasor diagram of transformer under

  (i) resistive load
  (ii) inductive load and
  (iii) capacitive load

Que 8. Explain open circuit test and short circuit test of a single phase transformer in detail calculating its each parameter? Consider an example?

Que 9. Derive condition for maximum efficiency.

Que 10. A 11KV/400V distribution transformer takes a no load primary current of 1 A, at a p.f. of 0.24 lagging then find out:

  (i) core loss current (ii) magnetizing current (iii) iron loss.

UNIT 3

Que 1. Classify DC generator on the basis of excitation given to field winding?

Que 2. An 8pole lap connected generator has useful flux per pole is of 0.05wb .If no load voltage at 400 rpm is 300 V find the no of conductors on the armature periphery.

Que 3. Draw torque-slip characteristics of 3-Φ induction motor. Explain concept of slip.

Que 4. A 3-Φ induction motor running at 960 rpm on full load. It is supplies form a 4 pole alternator running at 1500 rpm. Calculate full load slip and slip frequency of the motor.

Que 5. Explain in detail the construction and working principle of DC Generator?

Que 6. A 4 pole long shunt DC generator deleivers the power of 25 KW at 250 volts. The armature, series field, shunt field resistances are 0.24 Ω, 2 Ω, 25 Ω. Find the armature current and emf generated if the brush drop is 2 V

Que 7. Explain in details the construction and working principle of 3 – phase Induction motor?

Que 8. Derive torque equation? Also Explain torque – slip characteristic Curves?

Que 9. Derive the EMF equation of 3 phase induction machine?

Que 10. Explain the construction and working DC motor ? What is the importance of rotor back emf in DC motor?

Que 11. Explain in detail the classification of DC motor?

Que 12. Explain how rotating magnetic field is produced in 3 – phase induction motor?

UNIT 4

Que 1. Convert the following:

        (i) $(E5C9)_{16} = (\ )_2$
        (ii) $(63025)_8 = (\ )_{10}$
        (iii) $(87954)_{10} = (\ )_{16}$
        State and prove De Morgan's theorem

Que 2. What are universal logic gates explain. Why they are called so?

Que 3. What is a half adder and full adder? How is it realized using logic gates?

Que 4. With the help of circuit diagram & truth table explain the working of R-S flip flop.

Que 5. using 2 's complement substract $(100111)_2$ from $(110011)_2$?

Que 6. Explain in detail the ex – OR and ex- NOR gates?

Que 7. Convert the following into decimal (i)$(1001010.0101)_2$ (ii) $(12212)_3$ (iii)$(8.3)_9$

Que 8. Convert the following?

     (i) $(1270)10 = (\ )8$
     (ii) $(327)8 = (\ )2$
     (iii)$(17173) = (\ )16$
     (iv)$(FBA) 16 = (\ )2$
     (v) $(37.125)8 = (\ )10$

Que 9. Explain J.K flip flop using NAND gate?

Que 10. Explain basic gates?

UNIT 5

Que 1. What do you understand by intrinsic and extrinsic semiconductors ?

Que 2. Discuss the behavior of P-N junction diode under forward and reverse biasing.

Que 3. Compare CB, CE and CC configuration of BJT.

Que 4. Describe the need of biasing circuit. Discuss different methods of biasing.

Que 5. Discuss the behavior of P-N junction diode under forward and reverse bias condition and draw the V-I characteristics.

Que 6. Explain transistor biasing? Give its importance.

Que 7. Derive the relations between α, β and ϒ ?

Que 8. Explain the input and output characteristics of a common emitter transistor ?

Que 9. Compare metals, non metals and semi conductors ?

Que 10. Explain P type and N type semiconductors ? define dopping ?