C   Reg. No. :

Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. The resistors values in delta network that is equivalent to a star   CO1- U
   containing three 120 Ω resistors is _____

   (a) 360Ω each   (b) 240Ω each   (c) 180Ω each   (d) 120Ω each

2. The form factor of sinusoidal wave form is ____   CO2- U

   (a) 1.414   (b) 1.11   (c) 0   (d) 1.5

3. When the power transferred to the load is maximum, the efficiency of   CO3- U
   power transfer is

   (a) 25%.   (b)100%.   (c) 75%.   (d) 50%

4. In a series resonance circuit, series resonance occurs when?   CO4- U

   (a) $X_L = 1$ (b) $X_C = 1$ (c) $X_L = X_C$ (d) $X_L = - X_C$

5. The value of the time constant in the R-L circuit is?   CO5- U

   (a) L/R   (b) R/L   (c) R   (d) L

PART – B (5 x 3= 15 Marks)

6. State Kirchhoff's current law   CO1- U

7. A sinusoidal voltage represented by the equation 100 sin 503t. What is the
   frequency and time period?   CO2- U

8. Write the expression to find the load by using Norton's equivalent circuit   CO3- U

9. Write the relation between self and mutual inductance   CO4- U

10. What is damping ratio?   CO5- U

PART – C (5 x 16= 80Marks)

11. (a) Find the current through 3 Ω resistor in the circuit shown in below   CO1-App   (16)
fig:
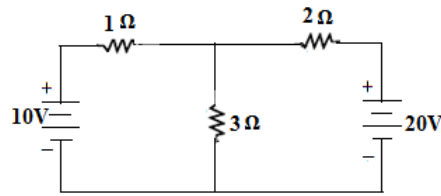
Or

(b) Derive the expression for start connected resistance into delta   CO1-Ana   (16)
connected resistance.

12. (a) Derive an expression for power and power factor of an RC series   CO2-Ana   (16)
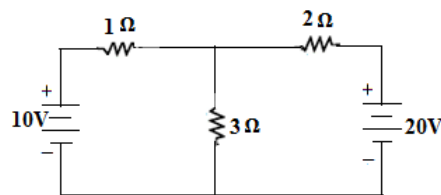circuit

Or

(b) Two impedance $Z_1 = (6 + j8)\,\Omega$ and $Z_2 = (3 - j4)\,\Omega$ are   CO2-App   (16)
connected in parallel. This combination is connected across 230V,
50HZ AC supply. Calculate the current in each branch, total current
and total power consumed by the circuit

13. (a) compute the current through the 6 ohm load resistance in the   CO3-App   (16)
following figure shown below by applying upper position
theorems
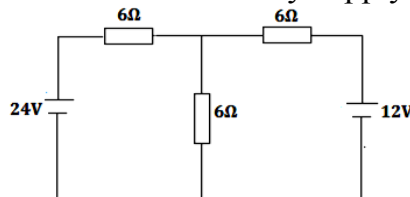
Or

(b) (i) State and explain the procedure for Norton's theorems   CO3-Ana   (8)

(ii) In the circuit of figure ,find the current through the batteries by   CO3-App   (8)
mesh method

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14. (a) In the parallel RLC circuit, calculate resonant frequency, bandwidth CO4-App (16)
Q-factor and power dissipated at half power frequencies.
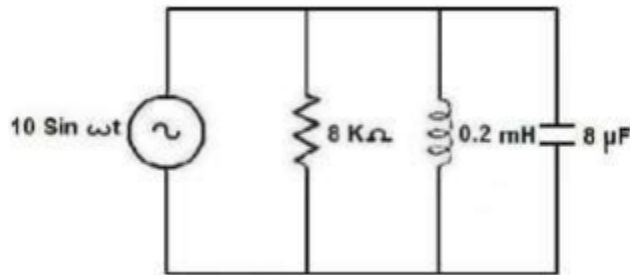
Or

(b) (i) Obtain the expression for resonant frequency, bandwidth and Q- CO4-U (8)
factor for Series R-L-C circuit

(ii) Compare series and parallel resonance. CO4-U (8)

15. (a) Derive an current response of RC series circuit with an excitation CO5-App (16)
of Vsin(wt)

Or

(b) Derive the transient response of RC series circuit when the switch CO5-Ana (16)
is closed at t=o

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