

Day: Saturday  
Date: 17/11/2018

W-2018-2274

Time: 10.00 AM TO 01.00 PM  
Max. Marks:60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat diagram wherever necessary.

Q.1 a) Explain effect of temperature on R.T.C. (05)

b) At  $0^{\circ}\text{C}$ , a specimen of copper wire has its resistance equal to 4 milli-ohm and its temperature coefficient of resistance equal to  $(1/234.5)$  per  $0^{\circ}\text{C}$ . Find the value of its resistance and temperature coefficient of resistance at  $70^{\circ}\text{C}$ . (05)

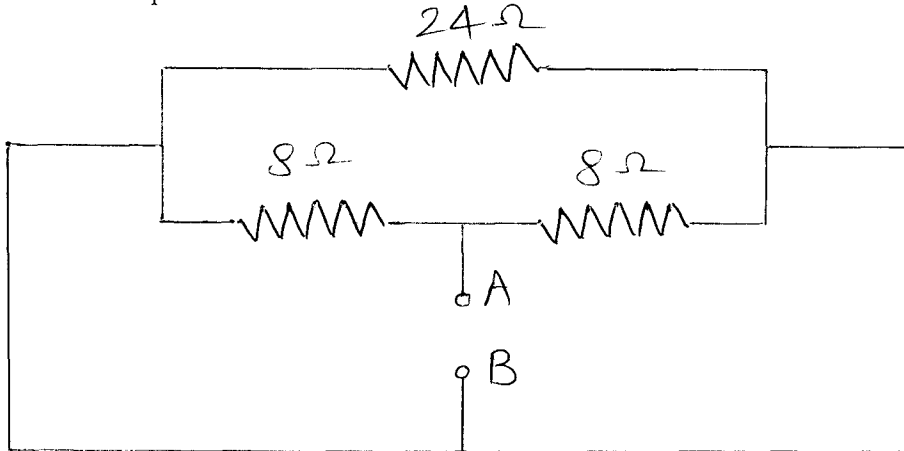
OR

Q.1 a) Define Work, Power and Energy and state their units. (05)

b) How to convert energy form one form to another? Explain mechanical to electrical energy conversion (05)

Q.2 a) State and explain Maximum Power Transfer Theorem. (05)

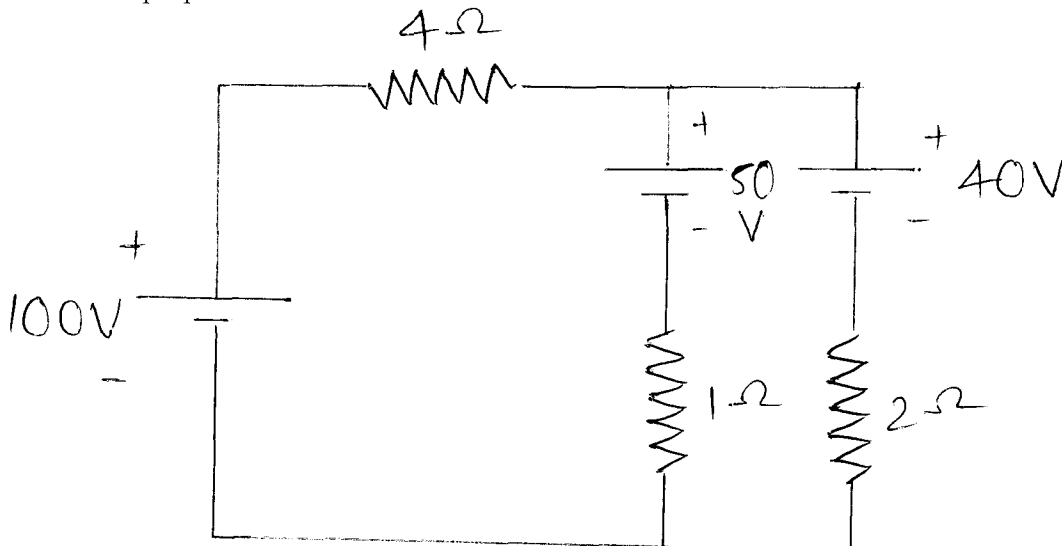
b) Find the equivalent resistance between A & B for the network shown below. (05)



OR

Q.2 a) State and explain Superposition Theorem. (05)

b) Calculate current flowing in  $1\Omega$  resistance for the network shown below using Superposition Theorem. (05)



- Q.3 a)** Explain absolute permittivity and relative permittivity. (05)  
**b)** Explain the charging of capacitor. (05)

**OR**

- Q.3 a)** Obtain expression for energy stored in a capacitor. (05)  
**b)** Two capacitors of  $2\ \mu\text{f}$  and  $4\ \mu\text{f}$  are connected in parallel and series across 100v D.C. supply. (05)  
Determine i) Energy stored on each capacitor ii) Equivalent capacitance of their combination in each case.

- Q.4 a)** Explain hysteresis loop related with magnetic circuit. (05)  
**b)** An iron ring of 100 cm mean diameter with an air gap of 2 mm width and  $10\ \text{cm}^2$  cross section has 1000 turns of copper wire on it. If the permeability of the material is 1500 and it is required to produce a flux density of  $1\ \text{Wb/m}^2$  in an air gap in the ring. (05)  
Find i) Reluctance of ring ii) Flux required  
iii) MMF required iv) Current produced

**OR**

- Q.4 a)** Compare electric and magnetic circuit. (05)  
**b)** How to determine efficiency and regulation by direct load test of a transformer. (05)

- Q.5 a)** Explain power triangle of R-L-C series circuit (05)  
**b)** A series R-L-C circuit has Resistance of  $50\ \Omega$ , Inductance for 0.1H and Capacitance of  $50\ \mu\text{f}$  connected in series across single phase 230 V, 50Hz AC supply calculate: (05)  
i) Current drawn by circuit  
ii) Power factor of the circuit  
iii) Active and reactive power consumed by circuit  
iv) Draw the phasor diagram.

**OR**

- Q.5 a)** Explain Active, Reactive, Apparent and Complex power. (05)  
**b)** A coil power factor 0.6 is in series with  $100\ \mu\text{f}$  capacitor. When connected to 50Hz supply, the potential difference across the coil is equal to the potential difference across the capacitance. Find the resistance and inductance of the coil. (05)

- Q.6 a)** List different wiring system and explain any one. (05)  
**b)** What is earthing? What is necessity of earthing? (05)

**OR**

- Q.6 a)** With suitable diagram explain Sodium Vapor Lamp. (05)  
**b)** What is tariff? Explain it in accordance with L.T. Bill. (05)

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