



### **Part – B**

***(Answer all the questions)***

4. a) The effective (RMS) voltage of a sinusoidal wave is 10V. Using the basic definition of effective (RMS) voltage, clarify this information. [2 ½]  
b) The form factor of a wave is 1. What sort of waveform it is? Justify your answer. [1+1 ½]
5. A series combination of a resistance of 10 Ohms, inductive reactance of 20 Ohms and a capacitive reactance of 25 Ohms is excited by a sinusoidal voltage. The current passing through the circuit is 1A.  
i. Draw a neat circuit diagram for the circuit stated above.  
ii. Draw a neat phasor diagram for the circuit.  
iii. Is the current leading or lagging the supply voltage? Justify.  
iv. Find out the phase angle between the supply voltage and current. [1+1+1+2]
6. a) Show that the line voltage is  $\sqrt{3}$  times the phase voltage in case of star connected 3-phase system. [3]  
b) Draw the connection of a single phase fan rated 230V A.C., 50 Hz and a 3-phase motor rated 400V A.C. 50 Hz, to a star-connected 3-phase 400 V(line), 50Hz system,. [2]
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