Answer any Five (5) Questions

1. (a) For a Piezoelectric Transducer, Show that,

$$voltage\ sensitivity\ = \frac{Electric\ field}{Stress} \quad (8)$$

(b) From the following figure describe which pair of metal is more suitable for thermocouple designing? And why? (2)

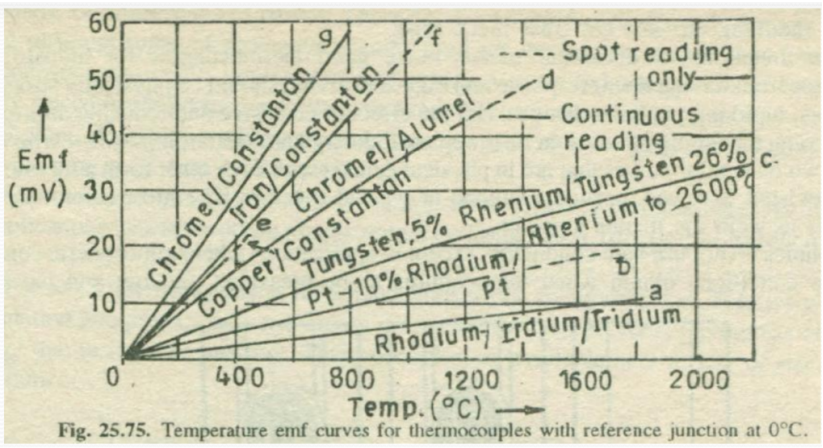

Fig. 25.75. Temperature emf curves for thermocouples with reference junction at 0°C.

2. (a) Explain in detail about LVDT and Bourdon tube transducers? Differentiate their primary and secondary parts with appropriate reasons? (8)
(b) Write 2 difference between Generator and Alternator (2)

3. (a) Determine developed torque and shaft torque of 220-V, 4-pole series motor with 810 conductors wave-connected supplying a load of 8 kW by taking 45 A from the mains. The flux per pole is 25 mWb and its armature circuit resistance is 0.8 Ω. (6)
(b) Write a short note on Stator and Rotor for an Alternator (4)

4. (a) Describe the three characteristics of a series motor? And comparison between series and shunt motor(8)
(b) What is the basic difference between thermistor and thermocouple? (2)

5. (a) Explain the reverse effect on an Alternator using the phase angle between Voltage V and Current I? (5)
(b) Considering the speed of a DC motor, show that,

$$N \propto \frac{Back\ EMF}{\Phi} \quad (5)$$

6. (a) For a Armature torque of a motor, show that,

$$T_a \propto \Phi_a \quad (7)$$

(b) What is PVT? Write 2 Application of a PVT? (3)