HKBK College of Engineering

Department of Electrical and Electronics Engineering

Subject: Basic Electrical Engineering Subject code: 21ELE13 Assignment 2

1. State the various advantages of three phase system over single phase system.
2. Derive the relation between line and phase quantities in a three phase star connected circuit. Derive the expression for the power.
3. Derive the relation between line and phase quantities in a three phase delta connected circuit. Derive the expression for the power.
4. Show that the two wattmeter are sufficient to measure the power in a three phase circuit. How power factor is obtained from two wattmeter readings?
5. Three coils each having resistance of 10 ohms and inductance of 0.02H are connected in star across 440V, 50Hz , 3 phase supply. Calculate the line current and total power consumed.
6. A balanced three phase star connected load draws power from 440V supply. The two wattmeter connected indicate W1 = 5KW and W2 = 1.2KW. Calculate power , power factor and current in the circuit.
7. Develop the construction of dc generator with neat sketch and explain the parts.
8. Explain the working principle of dc generator. Derive the e.m.f. equation of a d.c. generator.
9. Derive the torque equation of DC motor with usual notations.
10. A 4 pole, 1500 r.p.m. d.c generator has a lap wound armature having 24 slots with 10 conductors per slot. If the flux per pole is 0.04 Wb, calculate the e.m.f. generated in the armature. What would be the generated e.m.f. if the winding is wave connected.
11. An 8- pole lap connected armature has 40 slots 12 conductors per slot, generates a voltage of 500v.Determine the speed at which it is running if the flux per pole is 50mwb.
12. A shunt wound DC generator delivers 496A at 440V to load. The resistance of the shunt field coil is 110 ohms and that of armature winding is 0.02 ohms . Calculate the emf induced in the armature.
13. A 6 pole lap-connected DC series motor, with 864 conductors, takes a current of 110A at 480V. The armature resistance and the series field resistance are 0.18ohms and 0.02ohms respectively. The flux per pole is 50mWb. Calculate (i) The speed (ii) The gross torque
14. What is transformer?Explain the principle of operation of a single phase transformer?
15. Derive an emf equation of transformer with usual notation and define term transformation ratio.

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