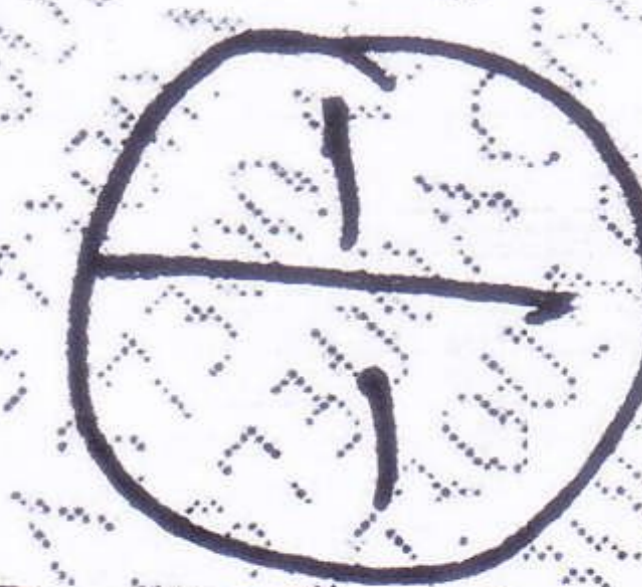


BE VII (CBGS) Electrical
Sub- Electrical m/c design.
(3Hrs)

Q.P.Code: 37326

Marks: 80

23/05/18



- NB. (1) Question no: 1 is Compulsory
(2) Solve any three questions out of remaining.
(3) Assume suitable data if required and Specify the same.

1. Answer the following: -

- a. Explain different types of magnetic material. [5]
b. Discuss design modification in stator of energy efficient motor. [5]
c. Explain effect of dispersion coefficient on maximum power factor. [5]
d. What is window space factor? [5]
- 2a Write short note on cross over winding and disc winding [10]
2b Derive the output equation of a three phase transformer. [10]
- 3a Derive the equation for leakage reactance calculation for a two winding core type transformer. [10]
3b. Develop output equation for induction motor in terms of main dimensions. [10]
- 4a A 11 KW, 3 phase, 6 pole, 50HZ, 220 V, star connected induction motor has 55 stator slots each containing 9 conductors. Calculate value of bar and end ring current. The number of rotor bars is 64. The machine has efficiency of 0.86 and power factor 0.85. The rotor mmf may be assumed as 85 % of stator mmf. [10]
4b Derive expression for magnetizing current per phase of 3 phase induction motor. [10]
- 5a 250KVA, 6600/400V, 3 phase, core type transformer has a total loss of 4800 W at full load. The transformer tank is 1.25m in height and 1m x 0.5m in plan. Design a suitable scheme for tubes if the average temperature rise is to be limited to 35° C. The diameter of tube is 50mm and is spaced 75mm from each other. The average height of tube is 1.05m. Specific heat dissipation due to radiation and convection is 6 and 6.5 W/m²- °C. Assume that convection is improved by 35% due to provision of tubes. [10]
- 5b. Discuss the various mechanical forces developed in transformer with sketches. Explain how they are taken care while fabrication. [10]
- 6a. Discuss the designing of end ring in the induction motor. [10]
6b Discuss rules of selecting rotor slots in induction motor [10]