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BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL - 2019
DIPLOMA IN ELECTRICAL & ELECTRONICS ENGINEERING
A.C.MACHINES - I
FOURTH SEMESTER EXAMINATION

Time: 3 Hours   **Total Marks: 80**

PART - A   (10 x 3 = 30 Marks)

Note 1: Answer all questions and each question carries 3 marks

    2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Why is the Low Voltage winding of transformer is placed near the core?

2. Define All Day Efficiency

3. List the various losses in a single phase transformer

4. Write the functions of Breather in a Transformer

5. Draw the connection diagram of Star-star configuration of 3 phase Transformer

6. Briefly explain the principle of an Auto Transformer

7. Compare salient pole type rotor with cylindrical type rotor in any three aspects

8. What are the advantages of short pitched winding

9. Draw the scheme of exciting the main alternator field with main exciter

10. What will be the Effect of change in steam supply to an alternator when connected in parallel.

PART - B   (5 x 10 = 50 Marks)

Note 1: Answer any five questions and each question carries 10 marks

    2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. (a) Derive E.M.F equation of single phase transformer
    b) The EMF per turn of a 260/117 V, 1 KVA single phase power transformer is approximately 13 Volts. Calculate
    (i) The number of primary and secondary turns
    (ii) the net cross sectional area of the core, for a maximum flux density of the core of 1.4 Tesla

12. The secondary of a single phase transformer is supplying a current of 300A at a power factor of 0.8 lagging. The no-load current of the transformer is 5 A at a power factor of 0.2 lagging. Calculate the primary current and its power factor. Assume the ratio of transformation to be 3 and neglect voltage drops due to the impedance of the windings

13. A 20 KVA, 2500/250V, 50Hz single phase transformer gave the following test results:
    Open circuit test (on L.V Side) – 250V, 1.4 A, 105W
    Short circuit test (on H.V Side) – 104V, 8A, 320W
    i) Compute the approximate equivalent circuit parameters referred to High Voltage & Low Voltage sides.
    ii) Draw the equivalent circuit diagram referred to both the sides .

14. Two single phase transformers with an equal voltage ratio are running in parallel and supplying a load of 250kW at 0.8 p.f.lag. The equivalent impedances of the transformers as referred to secondary are (0.5+j4)Ω and (0.7+j9)Ω. Find the load shared by each transformer

15. a) Explain briefly the construction of a potential Transformer.
    b) Explain why the secondary of a Current Transformer is never open circuited

16. A 100 KVA, 220V, 50HZ 3   Alternator has effective armature resistance of 0.015Ω and an armature leakage reactance of 0.06Ω. Compute the Voltage induced in the armature winding when the alternator is delivering rated current at a Load PF of
    a) Unity   b) 0.8Lag

17. Explain with neat diagrams the procedure to conduct open circuit test & short circuit test on three phase alternater

18. Explain the procedure of synchronization of alternators using Lamps

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