ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : SEPTEMBER 2009

REGULATIONS – 2007

THIRD SEMESTER : ELECTRICAL AND ELECTRONICS ENGINEERING

070280009 - DC MACHINES AND TRANSFORMERS

TIME : 3 Hours **Max.Marks : 100**

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. Give examples for singly excited systems.
2. Write the expression for the coenergy.
3. Define pole pitch.
4. Write the expression for the emf equation of an alternator?
5. What is the function of brushes?
6. List the types of armature winding.
7. Draw the internal characteristics of dc shunt generator.
8. Define armature reaction.
9. A 220V dc motor has an armature resistance of 0.75Ω. It is drawing an armature current of 30A, driving a certain load. Calculate the back emf in the motor under this condition.
10. What is the condition for maximum power in dc motors?
11. Give any four applications of dc series motors.
12. What is the necessity of starter for a dc motor?
13. Compare core and shell type transformers.
14. Define voltage regulation of a transformer.
15. What are instrument transformers?
16. What are the different types of three phase transformer connections?
17. Name the various tests performed on the transformers.
18. Define all day efficiency of a transformer.

19. What is retardation test?
20. What are the advantages of swinburne's test?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Derive the expression for energy in a multiple excited system. State the assumptions made.

22. (a) Explain the magnetization characteristics of dc shunt generator. (8)
    (b) Write a short note on the applications of various types of generators. (4)

23. A dc shunt generator has shunt field winding resistance of 100Ω. It is supplying a load of 5kW at a voltage of 250V. If its armature resistance is 0.22Ω, calculate the induced emf of the generator.

24. Explain any two speed control methods for a dc shunt motor.

25. Explain the operations of a three point starter with a neat diagram

26. Explain about the saving of copper in autotransformer.

27. Explain in detail the procedure for finding out the efficiency and regulation of a transformer with OC and SC tests.

28. How will you measure the efficiency of a machine using Hopkinson's test?

*****THE END*****