KUMARAGURU
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Register Number: ……..

B.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Third Semester

EEE261: ELECTRICAL MACHINES AND POWER SYSTEMS

(Common ECE/EIE)

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which of the following motor has the constant speed?
   a) Series motor b) Shunt motor
   c) Cumulatively compound motor d) Differentially compound motor
2. The armature of DC Generator is laminated to
   a) Reduce the bulk b) Provide the bulk
   c) Insulate the core d) Reduce eddy current loss
3. The path of a magnetic flux in a transformer should have
   a) High resistance b) High reluctance
   c) Low resistance d) Low reluctance
4. While conducting short – circuit test on a transformer the following side is short circuited
   a) High voltage side b) Low voltage side
   c) Primary winding d) Secondary winding
5. The difference between the synchronous speed and the actual speed of an induction motor is known as
   a) Regulation b) Back lash
   c) Slip d) Lag
6. Star – delta starter of an induction motor
   a) Inserts resistance in rotor circuit b) Inserts resistance in stator circuit
   c) Applies reduced voltage to rotor d) Applies reduced voltage to stator
7. A synchronous machine is called as doubly excited machine because
   a) It can be over excited b) It has two sets of rotor poles
   c) Both its rotor and stator are excited d) It needs twice the normal exciting current
8. If the field of a synchronous motor is under excited, the power factor will be

a) Lagging b) Leading

c) Unity d) More than unity

9. Which of the following materials offers highest resistance

a) Copper b) Aluminium

c) Steel d) Tungsten

10. The insulating material of a cable should have

a) Low cost b) High dielectric strength

c) High mechanical strength d) All of the above

PART B (10 x 2 = 20 Marks)

11. What is meant by armature reaction?
12. List the different methods of speed control of DC shunt motors.
13. Define the voltage regulation of a transformer
14. What are the losses in a transformer? How will you minimize them?
15. Name the speed control methods of induction motor
16. What are the different type of starters to be used in 3 phase induction motor?
17. What are the advantages of synchronous motor?
18. What are the different types of stepper motor?
19. What are the advantages of DC transmission over AC transmission
20. What are the major sources of energy used for generation of electric power?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain with neat sketches the principle of operation of DC generator. (7)

(ii) Derive the emf equation of a DC machine (7)

(OR)

b) (i) Explain with neat sketches the principle of operation of DC motor. (7)

(ii) Derive the torque equation of a DC motor (7)

22. a) Explain the construction and working of a single phase transformer.

(OR)

b) Explain with the help of circuit diagrams how efficiency and regulation of single phase transformer is predetermined by conducting open-circuit and short circuit test.

23. a) Explain the construction and principle of operation of three phase induction motor in detail.

(OR)

b) (i) Explain double field revolving theory as applied to a single phase induction motor. (6)

(ii) What are the methods of making single phase induction motor self-starting and explain any one method ion detail. (8)

24. a) Explain the construction and working of synchronous machine.

(OR)

b) (i) Explain the working reluctance motor. (7)

(ii) Draw and explain the operation of Hysteresis motor. (7)

25. a) Explain the generation, transmission and distribution structure of electric power system.

(OR)

b) (i) Explain in detail about the various types of cables with diagrams. (7)

(ii) Explain in detail about different types of insulators. (7)

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