B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Third Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

UO7EC301 Electrical Machines and Power System

Three hours   Maximum Marks: 100

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

speed of a D.C. motor cn be controlled by varying

   a) Flux/pole   b) Resistance of armature circuit   c) Applied voltage   d) all

What will happen if both field and armature currents are reversed

   a) Motor stop   b) Motor run in opposite direction

   c) Motor run in the original direction   d) None

A transformer has negative voltage regulation when its load power factor is

   a) Zero   b) unity   c) Leading   d) Lagging

The main purpose of performing open circuit test on a transformer is to measure its

   a) Copper loss   b) core loss   c) total loss   d) none

5. When load is placed on a three phase induction motor, its speed

   a) Increase   b) Decrease   c) Constant   d) Exactly half the speed

6. When load is placed on a three phase induction motor, its slip

   a) Increase   b) Decrease   c) Constant   d) Exactly half the speed

7. A steeper motor is a _____ device

   a) Mechanical   b) Electrical   c) analogue   d) incremental

8. The rotor of a stepper motor has no

   a) Windings   b) commutator   c) brushes   d) All the above

9. Types of transformer connected at the distribution side

   a) Star   b) Delta   c) No restriction   d) No transformer

10. The power for a typical home is derived from a transformer using

   a) 1 wire   b) two wire   c) 3 wire   d) 4 wire

PART B (10 x 2 = 20 Marks)

11. What is the working principle of DC generator?

12. What are the types on D.C. Motor?

13. What is the condition for maximum efficiency in a transformer?

14. Why the secondary of a CT should never be left open?

15. How the induction motor is co-related with transformer?

16. Express the %slip of induction motor.

17. Synchronous motor can not be started directly. Why?

18. Name the any two special machines.

19. Differentiate generation ,transmission and distribution

20. What are the different type of loads connected in power system

PART C (5 x 14 = 70 Marks)

21. a. Explain the construction, principle of operation of a DC motor with a neat ske

(OR)

b. Describe the performance characteristics of a DC generator.

22. a. (i) Derive the condition for maximum efficiency of transformer.

(ii) A 25 KVA, single phase transformer has 250 turns on the primary and 40 turn:
secondary winding. The primary is connected to 1500 volt, 50 Hz mains. Calc
primary and secondary currents at full load (b) secondary EMF (c) Maximum
the core.

(OR)

b. (i) Derive the EMF equation of single phase transformer

(ii) A 25 KVA, single phase transformer has 500 turns on the primary and 50 turn:
secondary winding. The primary is connected to 3000 volt, 50 Hz mains. Calcu
primary and secondary currents at full load (b) secondary EMF (c) Maximum
the core

23. a. A 3 phase induction motor having a 6 pole, star connected stator winding runs (
50 Hz supply. The rotor resistance and standstill reactance are 0.12ohm and 0.
per phase. The ration of stator to rotor turns is 1.8. full load slip is 4%. Calcu
developed torque at full load maximum torque and speed at maximum torque.

(OR)

b. Discuss the construction details of three phase induction motor and also its type

a. (i) Explain the operating principle, EMF equation of three phase alternator. (10)

(ii) Brief about the types of rotor of alternator (4)

(OR)

b. Write short notes on (i) Reluctance motor (ii) Hysteresis motor

25. a. Explain about power system structure with neat diagram

(OR)

b. Describe brief about insulators and cables used in power system.

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neat sketch

40 turns on
s. Calculate
ximum flux

50 turns o
s. Calculate
ximum fl

g runs on
n and 0.8
%. Calcul
rque.

ts type

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