KUMARAGURU college of technology
character is life

Register Number: ……..

B.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Third Semester

MECHANICAL ENGINEEING

EEE223**:** Electrical Machines and Drives

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. State the condition for Maximum Torque
   a) $R_2=sX_2^2$ b) $R_2=X_2$
   c) $R_2= sX_2$ d) $X_2=R_2$
2. Starting Torque of DC- serious motor is _____
   a) High b) Low
   c) Medium d) Zero
3. Mention the method of starting three phase Induction motor.
   a) Four Point b) Voltage/frequency
   c) Direct online d) No voltage release
4. Identify the function of starter in DC motor
   a) To energize the motor b) To improve the starting current
   c) To de energize the motor d) To limit the starting current
5. Identify modes of operation (duty) of the electric drives.
   a) Continuous duty b) Discontinuous duty
   c) Short time duty d) All the above
6. Name the component used in electric drive system.
   a) Capacitor b) Power Modulator
   c) Inductor d) Tachometer
7. Firing angle is denoted by
   a) β b) α
   c) δ d) T

8. What factors limit the maximum speed of field controlled DC Motor

a) Field Flux and Armature Voltage
b) Armature Resistance and Field Current
c) Field Flux and Armature current
d) Field Flux and Armature Resistance

9. Name the method of speed control applicable on the stator side of a three phase induction motor

a) Cascade control
b) Stator Voltage control
c) Slip power recovery scheme
d) By Adding External Resistance

10. State the advantage of Stator voltage control

a) Input power factor is low
b) Maximum torque
c) Response time is quick
d) Smooth motion is obtained

PART B (10 x 2 = 20 Marks)

11. Define Faradays Law.
12. Brief the operating principle of single phase Induction motor.
13. List the protective devices in a DC/AC motor Starter?
14. What is meant by regenerative braking?
15. Classify types of electric drives.
16. Enumerate the assumptions made while performing heating & cooling calculation of an electric motor.
17. Enlist the merits and demerits of Armature control method.
18. Define Duty cycle of a chopper.
19. Give the special features of static scherbius scheme.
20. State the reason why Frequency control method is not normally used.

PART C (5 x 14 = 70 Marks)

21. a) Elucidate the construction of DC Machine with neat sketch?

(OR)

b) Describe how Rotating EMF is produced and detail the working principle of three phase induction motor?

22. a) Draw and explain Three point starter of DC Motor.

(OR)

b) Enumerate the types of braking employed in DC Motors and brief Regenerative braking employed in DC Motors.

23. a) Explicate the factors influencing the selection of drives?

(OR)

b) Discuss in detail about the various types of electric drives.

24. a) Deliberate the Ward-Leonard speed control system with a neat circuit diagram. Also mention its advantages and disadvantages.

(OR)

b) Expound with neat sketch the operation of four quadrant chopper?

25. a) Describe speed control of three phase induction motor.

(OR)

b) Detail about Kramer Slip power recovery scheme.

****