DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Semester Examination – May - 2019

Branch: Electronics and Telecommunication **Sem.:- IV**

Subject with Subject Code:- Electrical Machines and Instrumentation (BTESC401) **Marks: 60**

Date:- 14/05/2019 **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

(Marks)

Q.1. **(12)**

a. What is the principle of operation of a dc generator? (02)

b. State with reasons if the following statements are 'true' or 'false: (04)

i. Lap winding is useful for low voltage, high current machines.

ii. Wave winding is useful for high voltage, low current machines.

c. A 4 pole lap wound dc motor has 480 conductors. The flux per pole is 24mWb and the armature resistance is 1Ω. If the motor is connected to a 200 V dc supply and running at 1000 rpm on no load, calculate:

i. Back emf ii. Armature current

iii. Power output iv. Lost torque (06)

Q.2. **(12)**

a. State the difference between transformer and induction motor (three points) (03)

b. State and explain types of synchronous motor. (03)

c. A particular load is to be driven at about 700 r.p.m. What should be the number of poles for a three phase induction motor when : 1. f = 60 Hz 2. f = 50 Hz ? Calculate the actual speed in each case if rated slip is 4%. (06)

Q.3. **(12)**

a. State and explain the types of stepper motor. (03)

b. Give the comparison between AC and DC servomotors. (any 3 points) (03)

c. With the help of the neat diagrams, explain the operation of the capacitor start induction motors. (06)

Q.4. **(12)**

a. Define transducer and explain the classification of transducer. (03)

b. Explain construction and working principle of LVDT. What is meant by residual voltage? (04)

c. A platinum thermometer has a resistance of 100 Ω at 25° C. Find its resistance at 65° C if the platinum has a resistance temperature coefficient of 0.00392 /° C. (05)

Q.5. **(12)**

a. What is accelerometer? Enlist the types of accelerometer. (04)

b. Explain the principle of sound measurement. (04)

c. Write a short note on dynamometer type wattmeter. (04)

Q.6. **(12)**

a. Give classification of recorders. (03)

b. Explain with neat diagram galvanometer type strip chat recorder. (03)

c. Write a short note on: (06)

i. circular chat recorder

ii. X-Y recorder