

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –**

**RAIGAD -402 103**

**Semester Examination Winter– Nov - 2019**

**Branch: ELECTRICAL ENGINEERING**

**Subject: Electrical Machine-I (BTEEC401)**

**Date: - 28/11/2019**

**Sem.: -IV**

**Marks: 60**

**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 a) What is the three-phase transformer? Compare the advantages and limitations of a single unit of three winging transformer with a bank of three single- phase units forming a three phase transformer. (6)
- b) i) Write down EMF equation of single phase transformer and Derive the condition for maximum efficiency of single phase transformer. (6)

Or

ii) Explain in details hysteresis and Eddy- current losses in the magnetic circuit

- Q.2 a) What is the necessity of parallel operation of transformer? Discuss the condition to be satisfied for parallel of two transformers. (6)
- b) i) A 3-phase bank of three single-phase transformer are fed from 3-phase 33kv (Line-to-line) it supplies a load of 6000kVA at 11 kV (line-to-line). Both supply and load are 3-wire. Calculate the voltage and kVA rating of single-phase transformer for all possible 3-phase transformer connection. (6)

Or

ii) Explain open delta and scott connection in three-phase transformer with neat diagram.

- Q.3 a) Explain construction and Working of DC machine with neat diagrams. (6)
- b) Derive the equation for mechanical force acting on current carrying conductor placed in magnetic field. (6)
- Q.4 a) Draw a neat diagram of lap and wave winding used in a DC Machine. (6)  
Distinguish between the this windings
- b) An 8kW, 230 V, 1200 rpm DC shunt motor has  $R_a=0.7$  ohm. The field current is adjusted until, on no load with a supply of 250V, the motor runs at 1250 rpm and draws armature current of 1.6 A. A load torque is the applied to the motor shaft, which causes the  $I_a$  to rise to 40 A, and the speed falls to 1150 rpm. Determine the reduction in the flux per pole due to the armature reaction. (6)
- Q.5 a) Why starter is necessary for DC motor? Describe with neat diagram working of three-point starter. (6)
- b) From basic principles derive the expression of shift torque equation of DC motor. (6)
- Q.6 a) Explain construction and working of reluctance motor. (6)
- b) Explain the permeant magnet stepper motor and their applications. (6)

Paper End

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**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –**  
**RAIGAD -402 103**  
**Semester Examination – Nov - 2019**

**Branch: Electronics and Telecommunication**

**Subject:- Electrical Machines and Instruments (BTESC401)**

**Date:- 26/11/19**

**Sem.:- IV**

**Marks: 60**

**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

	<b>Marks</b>
<b>Q.1</b>	
a) Derive the e.m.f. equation of the d.c. machine. State clearly the meaning and units of the symbols used.	6
b) A 220 V dc shunt machine has an armature resistance of 0.5 ohm. If the full load armature current is 20A, find the induced emf when the machine acts as: 1. Generator 2. Motor	6
<b>Q.2</b>	
a) What are the different methods of speed control of 3-phase induction motor?	6
b) Explain the construction of synchronous generator.	6
<b>Q.3</b>	
a) Explain the working principle of permanent magnet stepper motor.	6
b) Explain the operation of a 2-phase variable reluctance motor.	6
<b>Q.4</b>	
a) Explain the principle, working and construction of LVDT. What is meant by residual voltage?	6
b) A platinum thermometer has a resistance of $100\Omega$ at $25^\circ\text{C}$ . Find its resistance at $65^\circ\text{C}$ if the platinum has a resistance temperature coefficient of $0.00392/^\circ\text{C}$ .	6
<b>Q.5</b>	
a) Explain different methods for measurement of thickness.	6
b) Write a short note on: Digital tachometer.	6
<b>Q.6</b>	
a) Give classification of recorders.	6
b) Explain with neat diagram galvanometer type strip chart recorder.	6

Paper End

**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

**Q.1.****(Marks)  
(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.  $f = 60 \text{ Hz}$     2.  $f = 50 \text{ Hz}$  ? 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)**

- Define transducer and explain the classification of transducer. (03)
- Explain construction and working principle of LVDT. What is meant by residual voltage? (04)
- A platinum thermometer has a resistance of  $100\ \Omega$  at  $25^\circ\text{C}$ . Find its resistance at  $65^\circ\text{C}$  if the platinum has a resistance temperature coefficient of  $0.00392 / ^\circ\text{C}$ . (05)

**Q.5. (12)**

- What is accelerometer? Enlist the types of accelerometer. (04)
- Explain the principle of sound measurement. (04)
- Write a short note on dynamometer type wattmeter. (04)

**Q.6. (12)**

- Give classification of recorders. (03)
  - Explain with neat diagram galvanometer type strip chart recorder. (03)
  - Write a short note on: (06)
    - circular chart recorder
    - X-Y recorder
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**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY.**  
**LONERE – RAIGAD -402 103**  
**Semester Examination – December - 2019**

**Branch: Electrical Engineering**

**Sem.:- IV**

**Subject with Subject Code:- Electrical Installation and Estimation Marks: 60**  
**BTEEC403**

**Date:- 20/05/2019**

**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.a) What are the prominent factors considered while preparing an estimate?**

**(4)**

**b) What is the permissible voltage drops for Industrial and domestic load**

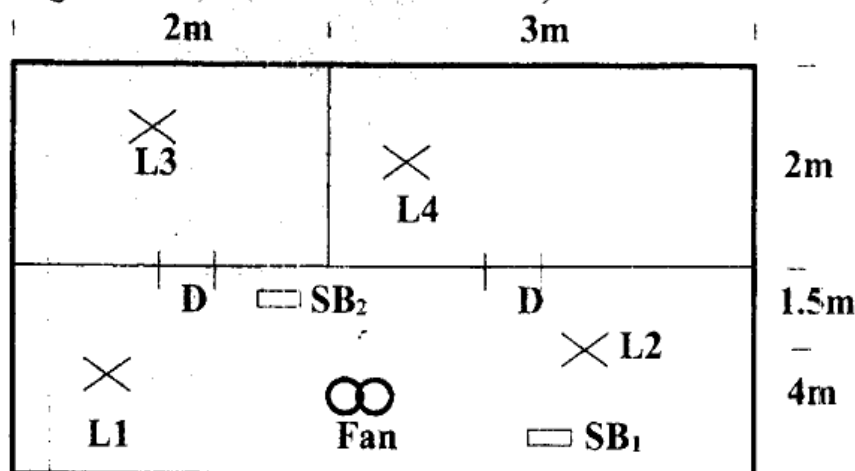
**(4)**

**c) Explain the importance of prize catalogue**

**(4)**

**Q2a) Figure below shows three rooms along with electrical accessories**

**Number of lights:- 04 ,Number of Fan: - 01 ,Number of switch Boards:- 02**



**Typical House Plan (D represents Door)**

**a) Device number of Sub Circuits**

- b) Calculate length and size of wire
- c) Prepare an Estimate including the quantity of material, its cost and labour charges (9)

b) Explain the specification of Tube light and Electric heater (3)

Q3) a) Explain the typical Tendering process along with comparative Statements (4)

b) What are the objectives of purchase department (4)

c) Enlist the advantages of Centralised and De-centralised purchasing process (4)

Q.4.a) Explain the arrangement of single bus -bar type of substation (6)

b) Explain different types of switches used in Electrical Installations (4)

c) What are the materials used in Insulations (2)

Q5) a) Explain different types of

i) Screwdrivers      ii) Pliers      iii) Wrench and blowlamps (6)

b) What are the Instruments used in measurement for a residential substation of 11 KV , having load 80 KVA, also suggest their ratings

Q6) a) Explain: Cleat type, Casing type , Conduit type and Metal Sheath wiring (6)

b) Explain the wiring diagram for AC motor control along with its protection circuit (6)

END