

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 133402****Date: 23-12-2014****Subject Name: Electrical Drives & control****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain types of electric drives. **07**
(b) Explain classes of duty for drives. **07**
- Q.2** (a) Explain Characteristics of DC series motor and explain why series motor is never started on NO-load condition. **07**
(b) For a 4 pole, 3 phase, 50 Hz induction motor ratio of stator to rotor turns is 2. On a certain load, its speed is observed to be 1455 rpm when connected to 415 volts supply. Calculate 1) Frequency of emf in running condition. **07**
2) Magnitude of induced emf in the rotor at standstill. Assume star connected stator.
- OR**
- (b) A DC shunt motor runs at a speed of 1000 rpm on no load taking a current of 6 ampere from the supply, when connected to 220volts DC supply. Its full load current is 50 Amp. Calculate its speed on full load. Assume $R_a = 0.3 \text{ ohm}$ and $R_{sh} = 110 \text{ ohm}$. **07**
- Q.3** (a) Explain split phase induction motor with neat diagram. **07**
(b) Explain Autotransformer starter with neat diagram. **07**
- OR**
- Q.3** (a) Explain shaded pole induction motor with neat diagram. **07**
(b) Explain 2 point starter with neat diagram. **07**
- Q.4** (a) Explain speed control methods of DC series motor. **07**
(b) A 250volt dc shunt motor has a shunt field resistance of 200 ohms and an armature resistance of 0.3 ohm. For a given load, motor runs at 1500 rpm drawing a current of 22amps from the supply. If a resistance of 150 ohms is added in series with the field winding, find the new armature current and the speed. Assume load torque constant and magnetization curve to be linear. **07**
- OR**
- Q.4** (a) Explain speed control methods of DC shunt motor. **07**
(b) Explain voltage/frequency speed control method for induction motor. **07**
- Q.5** (a) Explain classification of Chopper. **07**
(b) Compare VSI and CSI. **07**
- OR**
- Q.5** (a) Explain single phase full bridge inverters for AC drives. **07**
(b) Explain Half bridge Inverter with Inductive load. **07**
