

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (New) EXAMINATION – WINTER 2018****Subject Code:2133402****Date:28/11/2018****Subject Name:Electrical Drives and Controls****Time:10:30 AM TO 01:00 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) Describe the classification of Electric Drives **03**
(b) Differentiate between AC and DC Drive. **04**
(c) Explain the basic elements of an electric drive system with figure and also mention the advantages of an Electric Drive. **07**

- Q.2** (a) Define DC Shunt and DC Series Motor with a neat sketch. **03**
(b) A four pole, 3-phase, 50Hz, star connected induction motor has full load with slip of 4%, Calculate the speed of the motor on full load condition. **04**
(c) Explain Electric braking of DC shunt Motor **07**

OR

- (c) Derive the Torque equation of DC Motor and explain the characteristics of DC Series Motor. **07**

- Q.3** (a) Define the term Slip and Synchronous speed. **03**
(b) Differentiate between Squirrel cage and Slip ring induction Motors. **04**
(c) Classify the different types of Single Phase Induction Motor and explain any one of them with a neat sketch. **07**

OR

- Q.3** (a) Explain the necessity of starters for D.C Motor. **03**
(b) Explain the effect of slip on Rotor frequency & Rotor induced EMF. **04**
(c) Explain Induction motor as a transformer. **07**

- Q.4** (a) Why DC series motor should not be started without loaded conditions? **03**
(b) Write a short note on Ward-Leonard method of speed control. **04**
(c) Explain the types of Choppers with neat sketch. **07**

OR

- Q.4** (a) Explain any one of the speed control method for DC shunt Motor. **03**
(b) Write down the applications of DC Choppers. **04**
(c) Explain 3 point starter with a neat diagram. **07**

- Q.5** (a) Briefly explain the working of Star-Delta starter. **03**
(b) Explain Voltage/frequency control of AC Drives. **04**
(c) Explain Single phase Full Bridge Inverter with Inductive load **07**

OR

- Q.5** (a) Write down the merits and demerits of AC Drives. **03**
(b) Differentiate between Voltage Source Inverter (VSI) and Current Source Inverter (CSI). **04**
(c) Explain Single phase Half wave controlled rectifier with Resistive load. **07**
