

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER- VII EXAMINATION – SUMMER 2026

Subject Code:3172402

Date:01-06-2026

Subject Name: Industrial Drives and Control

Time: 02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Discuss the applications of servo motor drives. **03**
(b) Discuss advantages & application of traction drives. **04**
(c) Describe the concept of vector Control of Induction Motor **07**

- Q.2** (a) Discuss the working of solar powered battery operated drives. **03**
(b) Explain the various control strategy to operate solar powered electrical drives. **04**
(c) Draw & explain Speed Torque Characteristics of DC Separately excited, Shunt & Series Motors. **07**

OR

- (b) Discuss the terminology in accordance with phase controlled converter: Pulse Width, Firing Angle **07**

- Q.3** (a) Draw only the continuous conduction mode AC-DC converter for DC motor drive. **03**
(b) Write a detailed note: regenerative braking of induction motor. **04**
(c) Enlist the drive selection criteria for induction motor. **07**

OR

- Q.3** (a) Derive the expression for flux vector estimation by Current Model. **03**
(b) “Stator voltage control method is not suitable for constant load torque drive”, Justify the statement. **04**
(c) Discuss steady state & transient stability of an electrical drive. **07**

- Q.4** (a) Write a brief note on working of rotor resistance based speed control method. **03**
(b) Draw block diagram of Electric Drive & discuss each component in brief. **04**
(c) Explain the concept of Load equalization in context with the Electric Drive **07**

OR

- Q.4** (a) Draw only closed loop control of stator voltage control through Power Electronics Modulator. **03**
(b) State the factors affecting while selection of electric Motor & Drive. **04**
(c) Discuss: Dynamic d-q model of synchronous machines. **07**

- Q.5** (a) Derive equation for slip power **03**
(b) Discuss operation of basic Kramer drive. **04**
(c) Explain the working of 3-Phase semi controlled rectifier. **07**

OR

- Q.5** (a) Write a brief note on Scherbius drive for slip ring induction motor. **03**
(b) Discuss the importance of Freewheeling Diode. **04**
(c) Draw & discuss the working of single phase semi controlled rectifier with Motor load. **07**
