| Seat No.: | |
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| Deal IVO | |

Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY BE- VIIth SEMESTER-EXAMINATION - MAY/JUNE- 2012

| Subject | | | 06/2012 |
|----------|------------|--|----------|
| Time: 02 | 2:30 բ | e: Industrial Drives & Control -II om – 05:00 pm | arks: 70 |
| Instruct | | : npt all questions. | |
| | | e suitable assumptions wherever necessary. | |
| | | res to the right indicate full marks. | |
| | _ | tions/ symbols used have usual meanings. | |
| Q.1 | (a) | Draw the speed torque characteristics of A.C. induction motor for variable speed drive application. | 07 |
| | (b) | Discuss IM's behavior for non-sinusoidal source voltages. | 07 |
| Q.2 | (a) | Explain how the speed and torque of induction motor can be varied by rotor voltage control. | 07 |
| | (b) | Explain with diagram slip power recovery scheme. OR | 07 |
| | (b) | Discuss stator voltage control method for (i) Constant load –torque and (ii) Fan type loads. | 07 |
| Q.3 | (a) | "Variable frequency operation is possible with synchronous motor". Justify the statement. | 07 |
| | (b) | Explain the concept of dynamic modeling of 3-Ø induction motor. | 07 |
| | | OR | |
| Q.3 | | ÷ | 07 |
| | (b) | Derive the stead-state equivalent circuit from the dynamic equation of the IM. | 07 |
| Q.4 | (a) | With the help of block diagram representation, explain an indirect vector-controlled induction motor drive. | 07 |
| | (b) | A three phase , 460V, 60 Hz, eight-pole , Y-connected induction motor has Rs = 0.08 Ω , Rr' = 0.1 Ω , Xs = 0.62 Ω , Xr' =0.92 Ω and Rm = 6.7 Ω . The no-load loss = 300 W. At a motor speed of 850 rpm. Draw (i) Approximate equivalent circuit. ii) the synchronous speed and (iii) the slip. OR | 07 |
| Q.4 | (a) | Discuss PWM inverter drive. | 07 |
| | (b) | Discuss parameter sensitivity in vector control for IM. | 07 |
| Q.5 | (a) | Discuss converter circuit for SRM. | 07 |
| | (b) | Explain basic principle of DTFC. | 07 |
| | | OR | . – |
| Q.5 | | Describe control of SRM drive in detail. | 07 |
| | (b) | Enlist various methods of closed loop control for IM .Discuss any one in detail. | 07 |
