

**B.TECH SEM – V (2007 COURSE) (ELECTRONICS) : WINTER -
2017**

SUBJECT: INDUSTRIAL ELECTRONICS

Day: **Saturday**
Date: **13/01/2018**

Time: **02.30 PM TO 05.30 PM**
Max marks: 80

W-2017-2465

N.B:

- 1) Question No. 1 and 5 are **COMPULSORY**.
- 2) Out of remaining attempt any **TWO** questions from each section.
- 3) Answers to the two sections should be written in **SEPARATE** answer sheet.
- 4) Figures to the right indicate **FULL** marks.
- 5) Draw neat and labeled diagrams **WHEREVER** necessary.
- 6) Assume suitable data if necessary.

SECTION-I

- Q.1** a) A 3 Φ , 400V, 50 Hz, 4 pole, induction motor has star connected stator winding. The rotor resistance & reactance are 0.1 Ω and 1 Ω respectively. The full load speed is 1440 r.p.m. Calculate the torque developed on full load by motor. (05)
Assume stator to rotor turns ratio as 2:1.
- b) What are methods to start synchronous motor? (05)
- c) How heat is controlled in resistance welding? (04)
- Q.2** a) Derive the equation for torque developed by D.C. motor. (07)
- b) A 3 Φ , 4 pole, 50 Hz induction motor has slip ring rotor. The rotor winding is star connected with 0.2 Ω of resistance per phase and standstill reactance of 1 Ω /phase. Its open circuit emf between the slip rings is 120V. When stator is excited by a rated voltage its full load speed is 1440 r.p.m. Find rotor current & rotor power factor. i) At start ii) on full load condition. (06)
- Q.3** a) Describe the working and application of brushless dc motor. (07)
- b) Compare AC servo motor & DC servo motor. (06)
- Q.4** a) What is resistance welding technique & its types? (07)
- b) Explain the energy storage welding. (06)

SECTION-II

- Q.5** a) How ultrasonic detector is used for flaw detection in metals? (05)
- b) Write the application of induction heating in surface of hardening of steel. (05)
- c) What is HF power source? (04)
- Q.6** a) What is principle of induction heating? Write its theory and merits. (07)
- b) Describe the concept of dielectric heating. (06)
- Q.7** a) What are the various methods of ultrasonic wave generation? (07)
- b) How ultrasonic waves are used for cutting, machining & testing? (06)
- Q.8** a) What are the various methods to control the speed in induction motor? (07)
- b) How PLL can be used to control the speed of DC Motor? (06)

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