

B.TECH SEM – V (2007 COURSE) (ELECTRONICS) : SUMMER

- 2018

SUBJECT : INDUSTRIAL ELECTRONICS

Day : **Tuesday**
Date : **22/05/2018**

S-2018-2670

Time : **10.00 AM TO 01.00 PM**
Max. Marks : 80

N.B. :

- 1) Q. No. 1 and Q. No. 5 are **compulsory**. Out of the remaining attempt any **Two** questions from each section.
- 2) Figures to the right indicate **full** marks.
- 3) Answers to both the sections should be written in **separate** answer book.
- 4) Assume suitable data if necessary.

SECTION – I

- Q. 1**
- a) A 220V D.C. motor works with a constant flux. Its armature resistance is 0.5Ω . At no load it runs at a speed of 1200 r.p.m. & draws armature current of 4A. **(05)**
 - i) At a certain load, the armature current increases to 50A. Find the new speed.
 - ii) If, with the same load torque the speed is to be reduced to 90% of that obtained in part. What resistance should be inserted in the circuit?
 - b) A 4 pole, 3 ϕ , 50 Hz induction motor runs at a speed of 1470 r.p.m. Find the frequency of induced emf in the rotor. **(05)**
 - c) Describe the synchronous weld control circuit. **(04)**
- Q. 2**
- a) Derive the expression for the electromagnetic torque developed in D.C. motor. **(07)**
 - b) What are the speed control methods of D.C. shunt motor & D.C. series motor? **(06)**
- Q. 3**
- a) A 15 KW, 400 V, 3 ϕ , 6 Pole, 50 Hz induction motor runs at 970 r.p.m. at full load. The mechanical losses are total 520 W. Calculate rotor Cu loss & the efficiency of the motor at full load if the stator losses are 750W. **(07)**
 - b) How rotating magnetic field is achieved in two phase A.C. servo motor? **(06)**
- Q. 4**
- a) How does polyphase welding work? **(07)**
 - b) Explain the method of resistance welding with neat diagram. **(06)**

SECTION – II

- Q. 5**
- a) What is principle & theory induction heating? **(05)**
 - b) Give details of generation of ultrasonic wave using magnetostriction oscillator. **(05)**
 - c) Describe the three phase inverter with feedback diodes for speed control of induction motor. **(04)**
- Q. 6**
- a) What are the various application induction heating? **(07)**
 - b) Explain the electrodes used in dielectric heating? **(06)**
- Q. 7**
- a) Describe the applications in testing of material by ultrasonic waves. **(07)**
 - b) How ultrasonic waves are generated by piezo-electric generator? **(06)**
- Q. 8**
- a) Describe a circuit using Silicon Controlled Rectifier (SCR) for half wave control of D.C. motor. **(07)**
 - b) How speed of induction motor is controlled using rotor resistance control? **(06)**