R09

Code No: C8004

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations, April 2011
INDUSTRIAL ELECTRICAL & ELECTRONICS
(MECHATRONICS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks
- - -

1) a. Draw the characteristics curves of DC shunt and series motors. Use these curves to explain the applications for which these motors are used.
b. Write the principle of operation of induction generator? [6+6]

2) a. With the help of a neat sketch explain the construction and working principle of switched reluctance motor.
b. What do you mean by doubly fed induction machine and explain in what way it is useful in the operation of power system network? [6+6]

3) a. Explain the construction and working principle of linear synchronous machines.
b. Mention the applications of
i) PMDC machines
ii) PMSM machines
iii) Write the advantages and disadvantages of linear induction motor? [12]

4) a. Draw output and transfer characteristics of common emitter NPN transistor.
b. Explain the principle of operation of UJT.
c. Write the applications of high speed detectors and opto interrupter devices. [12]

5) a. Calculate the Z-transform of the system having transfer function 1/(1+2s) subjected to a step input sampled at 3Hz.
b. Explain the structure of a computer controlled system.
c. Write the merits of a digital controller over the analog controller. [12]

6) a. A220V DC shu8nt motor drawn no-load armature current of 2.5A when running at 1400rpm.Determine its speed when taking an armature current of 60A, if armature reaction weakens the flux by 3%
b. Explain any two starting methods of induction motors. [6+6]

7) a. Explain the construction and working principle of brushless DC machine
b. Discuss briefly about
i) LOR
ii) LED
iii) LCD
iii) Plasma displays [12]

8) Write short notes on
a. Programmable logic devices.
b. Opto electronic devices.
c. Special operational amplifiers. [12]

******