(DME 415)

B. Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Final Year)

MECHANICAL ENGINEERING

Paper - V : Mechatronics

Time : 3 Hours **Maximum Marks : 75**

Answer question No. 1 compulsory ***(15)***

Answer ONE question from each unit ***(4 x 15 = 60)***

1) Answer the following briefly :

a) Define the term sensor. **(2)**

b) Give two difference between open loop and closed loop systems. **(3)**

c) List out classification of transducers. **(3)**

d) Digital to Analog conversion. **(3)**

e) Discuss the classification of control systems. **(2)**

f) Name the different timers. **(2)**

Unit - I

2) a) Describe in detail about selection of sensors. **(7)**

b) What are the different data presentation elements? Explain any one of them in detail. **(8)**

OR

3) a) Why signals conditioning elements are necessary. Explain in detail about Quantizing theory. **(8)**

b) Explain magnetic recording displays. **(7)**

Unit – II

4) a) Sketch and explain block diagram representation for 2 degrees of freedom mechanical system model. **(7)**

b) Write comparison between Pneumatic and hydraulic actuation systems. **(8)**

OR

5) a) Explain the building blocks of a Thermal system and show the block diagram. **(7)**

b) Define system response. Explain the time response analysis of mechanical system. **(8)**

Unit – III

6) a) What are different types of closed loop controls? Explain PID and two step controller with diagram? **(8)**

b) What are Karnaugh maps? Explain them in detail. **(7)**

OR

7) a) Distinguish between control and discrete process with an example. **(8)**

b) What are the different types of logic gates? Explain them with truth table. **(7)**

Unit – IV

8) a) What are the features of programming controllers? Explain. **(8)**

b) What are the different types of times? Explain any one of them. **(7)**

OR

9) a) Explain basic structure of **(7)**

i) PLC
ii) Ladder diagrams
iii) Counter

b) Explain pick and place robot in detail. **(8)**

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