R09

Code No: 56080

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, May - 2019
INSTRUMENTATION AND PROCESS CONTROL
(Bio-Technology)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Develop the first order transfer function for mercury in glass thermometer with neat diagram.
b) What is effect of static accuracy and response of thermometers? [8+7]

2.a) Write a short note on the refractometer and gas chromatography.
b) Describe in detail about thermocouple wells and thermocouple wires. [7+8]

3.a) Explain in detail about measurement of absolute pressure and gauge pressure.
b) How do you measure the pressure in corrosive liquids? Suggest a suitable instrument and explain it. [7+8]

4.a) Write short note on head flow meters and area flow meters.
b) Explain any one of viscosity meter. [7+8]

5.a) What are the biosensors? Write a note on the history of biosensors.
b) Describe in detail about environmental biosensors. [8+7]

6.a) What is meant by transfer function? Write a shot note on transport lag.
b) Define the following terms in second order system: [6+9]
i) Overshoot
ii) Decay ratio
iii) Rise time and period of oscillation.

7. What is meant by stability? How can you justify the system stability by using Routh criterion? [15]

8. Plot the Bode plot for transfer function $F(s) = \frac{10(s+5)}{(s+1)(s+5)(s+10)}$. [15]

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