

**III B. Tech II Semester Supplementary Examinations, February-2022**  
**INSTRUMENTATION & CONTROL SYSTEMS**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**
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**PART -A****(14 Marks)**

1. a) What is the necessity of principles of measurement? [2M]
- b) How do you measure using bourdon pressure gauge in discuss briefly? [2M]
- c) Write short notes on working of rotameters. [2M]
- d) Write the working principle of electrical strain gauge. [3M]
- e) What do you understand by psychrometer? [3M]
- f) Write the advantages of control system of elements. [2M]

**PART -B****(56 Marks)**

2. a) Explain the characteristics of dynamic performance? What are the sources of errors in measurement system? [7M]
- b) Explain about functions description of measuring instruments also mention advantages. [7M]
3. a) Explain the mechanism of Thermocouple and Thermister. Also write their applications. [7M]
- b) Explain the working procedure of ionization pressure gauge along with a suitable diagram. [7M]
4. a) Discuss the purpose, significance and working of hot wire anemometer with a neat sketch. [7M]
- b) What is meant by seismic instrument and vibrometer? Also mention their advantages and disadvantages. [7M]
5. a) What are the different ways to measure stress and strain? And explain each one of them. [7M]
- b) Write a short notes on the following terms: [7M]
  - i) Rosettes
  - ii) Strain gauges
6. a) Explain the working principle of Sling psychrometer and absorption psychrometer. [7M]
- b) Discuss the purpose, significance of working of torsion meter and dynamometers. [7M]
7. a) Explain the working of servo meter with relevant diagram. Also discuss about each part. [7M]
- b) Explain about open and closed-loop control system with suitable block diagrams. Mention their practical applications. [7M]

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