

III B. Tech I Semester Supplementary Examinations, October/November -2019
PROCESS INSTRUMENTATION

(Common to Chemical Engineering, Petroleum Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

(22 Marks)

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|---|----|--|------|
| 1 | a) | Dynamic characteristics of an instrument. | [3M] |
| | b) | What is thermal well and name different thermal wells? | [4M] |
| | c) | What are the different types of spectroscopic analysis known and used? | [4M] |
| | d) | Discuss about density measurement. | [4M] |
| | e) | List out the flow meters used to find the flow of dry materials. | [4M] |
| | f) | What are the important applications of recording instruments? | [3M] |

PART -B

(48 Marks)

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|---|----|---|------|
| 2 | a) | Explain the principle and measurement of temperature by Bimetallic thermometers. | [8M] |
| | b) | Explain about the various elements of Instruments. | [4M] |
| | c) | Discuss about the response of thermometers. | [4M] |
| 3 | a) | State and explain the laws of thermoelectric circuits. | [3M] |
| | b) | Explain the working of a photoelectric pyrometer with a neat sketch. | [8M] |
| | c) | Explain in detail the desired properties of Industrial thermocouples. | [5M] |
| 4 | a) | How many methods are known for Gas Analysis? Discuss one of them. | [8M] |
| | b) | Explain the working and principle of any three liquid-column manometers with neat diagrams. | [8M] |
| 5 | a) | Explain briefly level measurements in pressure vessels. | [8M] |
| | b) | Explain briefly pressure measurement in open vessels. | [8M] |
| 6 | a) | Explain the principle and working of a venturimeter to measure flow rates. | [8M] |
| | b) | Explain how viscosity measurements are made using rotational viscometer? Explain. | [8M] |
| 7 | a) | Discuss in detail about Indicating and signaling instruments. | [8M] |
| | b) | Discuss the significance of the control center in a chemical process industry for controlling process operations. | [8M] |
