

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, B. Tech. Dairy Technology 2019-20

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|------------|-----------------------|---------------|---------------------------------------|
| Semester | : V (V Dean) | Academic Year | : 2019-2020 |
| Course No. | : DE- 511 | Course Title | : Instrumentation and Process Control |
| Credits | : 2+1=3 | Total Marks | : 50 |
| Day & Date | : Tuesday, 07.01.2020 | Time | : 11.00 to 13.00 Hrs |

- Note :** 1) All questions from **Section 'A'** are compulsory.
2) Solve **Any Three** questions from **Section 'B'**.
3) Draw neat and well labelled diagram wherever necessary.

SECTION - 'A'

- Q. 1 A) Choose the most appropriate answer from the options given below. (05)
- Which of the following is not a temperature measuring device.
 - RTD
 - Thermocouple
 - Thermistor
 - None of these
 - Which liquid is used in Bourdon Tube Pressure Gauge?
 - Glycerine/Glycol
 - Oil
 - Water
 - Grease
 - SCADA is type of control system.
 - Remote control
 - Decentralized
 - Centralized
 - Field Based
 - Bimetallic thermometer is made up of type metals.
 - Similar
 - Dissimilar
 - Non-conductive
 - Pure
 - Quartz and Rochelle salts shall be used in type transducers.
 - Inductive
 - Capacitive
 - Electromagnetic
 - Piezo-electric
- B) Define / Explain the following. (05)
- Principle of RTD
 - Pitot tube
 - Response Time
 - SCADA
 - Offline sensors

- Q. 2 A) Match the following. (05)

Column 'A'

- Seeback Effect
- Rhodium and Molybdenum
- Teflon and Fiber glass
- PTC and NTC
- pH meter – Reference Electrode

Column 'B'

- Potassium Chloride
- Thermistor
- Rare metal thermocouples
- Open loop System
- Thermocouple
- RTD Insulators

(P.T.O.)

- B) State whether the following statement are True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) Rotameter is a variable head type flow meter.
 - ii) Thermistors generally have negative temperature coefficient.
 - iii) The process variable which is to be measured is called standard.
 - iv) Electromagnetic flow meters are used for fluids with conductivity.
 - v) Optical pyrometer is a contact type of temperature measuring device.

SECTION - 'B'

- Q. 3 A) Describe electromagnetic switching relay. (05)
B) Classify flow meters and explain any one in detail. (05)
- Q. 4 A) Explain Float Type Level Indicator with diagram (05)
B) What are the criteria for selection of instrument? (05)
- Q. 5 A) Differentiate Active Transducer v/s Passive Transducer (03)
B) What is RTD? Give the advantages and disadvantages of it. Explain its use in the industry. (03)
C) What are the types of Pyrometer? Explain any one in detail. (04)
- Q. 6 A) List Pressure measuring devices and explain one of them in detail. (03)
B) Explain the concept of capacitive transducer in details. (03)
C) Give the classification of instruments and explain any one. (04)
- Q. 7 Discuss about the basic elements of generalized measurement system. (10)
