

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMEISTER END THEORY EXAMINATION, B.Tech. Dairy Technology 2018-19

Semester : VI (New Syllabus)
Course No. : DE-610

Academic Year : 2018-2019
Course Title : Instrumentation & Process Control

Credits : 2+1=3
Day & Date : Friday, 28.06.2019

Total Marks : 50
Time : 11.00 to 13.00 Hrs.

- Note :** 1) Section "A" is Compulsory.
2) Solve **Any Five** questions from Section "B"
3) The use of scientific tables, charts and calculator is allowed in case of engineering courses.

SECTION - 'A'

Q.1 A) Choose the most appropriate answer from the options given below. (05)

- i) The value of 1mm of Hg column is equal to
 - a) 1.333 N/m²
 - b) 13.33 N/m²
 - c) 133.3 N/m²
 - d) 1333 N/m²
- ii) A data-representation element performsof the signal
 - a) transmission
 - b) translation
 - c) manipulation
 - d) none of these
- iii) A potentiometer is basically a
 - a) deflection as well as null-type instrument
 - b) deflection-type instrument
 - c) a digital instrument
 - d) null-type instrument
- iv) Rotameters are
 - a) a variable head flow meter
 - b) vortex type of flow meter
 - c) a variable area flow meter
 - d) none of the above
- v) Optical pyrometers are.....
 - a) direct instruments
 - b) indirect instruments
 - c) Both a) and b)
 - d) none of the above

B) Give short definitions of the following. (05)

- i) Passive transducer
- ii) Precision
- iii) Recording instruments
- iv) Sensitivity
- v) Accuracy

Q.2 A) Replace the underlined word to make the statement technically correct. (05)

- i) The electronic controllers are very slow in action.
- ii) Sensitivity may be defined as the ability of instrument to respond closely to the true value of measured variable under reference conditions.
- iii) LVDT is the example of primary transducer.
- iv) Bimetallic thermometers are based on changes in electrical resistance caused by varying temperature.
- v) Hot wire flow meters measure the heat lost to the flowing fluid which depends upon the pressure of liquid.

(P.T.O.)

B) Match the following.

(05)

- | | |
|-----------------------|--------------------------------------|
| i) Hair hygrometer | a) Radiation temperature measurement |
| ii) Optical pyrometer | b) Measurement of temperature |
| iii) Thermocouple | c) Measurement of pressure |
| iv) Bourdon tube | d) Measurement of weight |
| v) Strain gauge | e) Humidity measurement |

SECTION – 'B'

- Q.3 Write the principle and construction of resistance type temperature sensor (RTD). (06)
- Q.4 Describe the construction and working of ultrasonic flow meter. (06)
- Q.5 Discuss the construction and working of U-tube manometer. Write its merits also. (06)
- Q.6.
- a) Differentiate between primary and secondary transducer. (02)
 - b) Discuss about pneumatic proportional controllers. (02)
 - c) State the principle of strain gauge. (02)
- Q.7.
- a) Explain the construction of LVDT with diagram. (03)
 - b) Classify the types of transducers. (03)
- Q.8.
- a) Discuss the types of pressure measuring devices. (02)
 - b) What are different types of control actions? (02)
 - c) Write the types of flow meters. (02)
- Q.9.
- a) Write the difference between absolute and secondary equipments. (02)
 - b) Indicate the basic instrumentation system with block diagram. (04)
