

[67]

SARDAR PATEL UNIVERSITY

T.Y.B.Sc VIth Semester Examination, (under CBCS)

USO6CINS02

(Process Measurement Techqunie-II)

Wednesday, (27th March 2019)

10.00am to 01.00pm.

MARK :70

[10]

Q.1 Multiple choice questions.

- (1) In industrial organizations, _____ measurement are needed for providing the basis for controlling process and operations.
(a) process (b) flow (c) level (d) temperature
- (2) Which of the following example of variable force meter?
(a) current meter (b) anemometers (c) vane meter (d) pitot tubes
- (3) The linear relationship of turbine flow meter can be written as _____.
(a) $Q = kn$ (b) $Q = n/k$ (c) $Q = nk^2$ (d) $Q = n^2k$
- (4) Which of the following measuring large volumes of liquids in open channels?
(a) variable head and area flow meter (b) flow meter (d) current meter (d) ultra-flow meter
- (5) An electromagnetic flow meter must be mounted _____.
(a) vertically (b) horizontally (c) emf (d) any position
- (6) The strain gauge load cells convert force into _____ outputs which are provided by the strain gauges.
(a) electrical (b) mechanical (c) optical (d) dynamical
- (7) The proximity sensor is used in _____ field.
(b) Electric (b) magnetic (c) optical (d) thermal
- (8) The optical method to detect the angular twist of a _____ shaft.
(a) speeding (b) rotating (c) angular (d) twisting
- (9) Speed is defined as the _____ rate of motion.
(a) displacement (b) time (c) velocity (d) distance
- (10) The centrifugal force is proportional to the _____ of the rotation.
(a) force (b) speed (c) velocity (d) time

(PTO)

- Q.2 Short answer types question (Any Ten) [20]**
- (1) Definition: Nature of flow.
 - (2) Define the Quantity meters.
 - (3) Give the advantages of pitot tube.
 - (4) State the advantages of ultrasonic flow meter.
 - (5) State the advantages of hot wire anemometer.
 - (6) Give the characteristic features of hydraulic load cell.
 - (7) Definition and units of work and power.
 - (8) State the disadvantages of Pressducer load cells.
 - (9) Define: Speed and its units.
 - (10) Give the classifications of Tachometers.
 - (11) Draw the block diagram of inductive type pick-up tachometer.
 - (12) Define: stroboscope.
- Q.3 Give the theory of variable head meters and derive the Bernoulli's equation for venturimeter for incompressible fluid. [10]**
- OR**
- Q.3 Write a note on (i) Rotary vane type variable head flow meter. [10]**
(ii) Venturi nozzle head flow meter.
- Q.4 (a) Discuss the hot wire anemometer with necessary figure. [6]**
(b) Write a short note on electromagnetic flow meter. [4]
- OR**
- Q.4 (a) Discuss the ultrasonic flow meters with necessary equations and prove that frequency is directly proportional to voltage. [6]**
(b) Discuss the turbine flow meter. [4]
- Q.5 (a) Give the detailed note on scales and balances method for force measurement. [6]**
(b) Write a short note on Pneumatic force meter. [4]
- OR**
- Q.5 (a) Discuss the strain gauge load cell with necessary figure. [6]**
(b) Give a detailed note on proximity sensors. [4]
- Q.6 (a) Write a note on Capacitive pick-up tachometer. [6]**
(b) Define: Contact less electrical tachometers [4]
- OR**
- Q.6 (a) Write a note on tachogenerators in detail. [6]**
(b) Draw and discuss the revolution counter. [4]