

Roll No.

320678(20)

**B. E. (Sixth Semester) EXAMINATION,
April-May, 2021
(New Course)
(Branch : Civil)**

INSTRUMENTATION IN FLUID MECHANICS

Time : Three Hours]

[Maximum Marks : 80

[Minimum Pass Marks : 28

- Note :** (i) Part (a) of each question is compulsory and carries 2 marks.
(ii) Attempt any *two* parts from (b), (c) and (d) of each question and carry 7 marks each.

Unit—I

1. (a) What do you mean by Data Acquisition system ? 2
(b) Explain the basic principle of transducer and also give the importance in the instrumentation system. 7
(c) Write a short note on thermocouple transducer with neat diagram. 7
(d) Explain the term calibration of instruments. How is it important in Instrumentation system ? 7

Unit—II

2. (a) What is pressure measurement system ? 2
- (b) What do you mean by manometer and also describe the U-tube manometer ? 7
- (c) Write a short note on Non contact probes with neat diagram. 7
- (d) The right limb of a simple U-tube manometer containing mercury is open to the atmosphere while the left atmosphere while the left limb is connected to a pipe in which a fluid of Sp. gravity 0.9 is flowing. The centre of the pipe is 12 cm. below the level of mercury in the right limb. Find the pressure of the fluid in the pipe if the difference of mercury level in the two limbs is 20 cm. 7

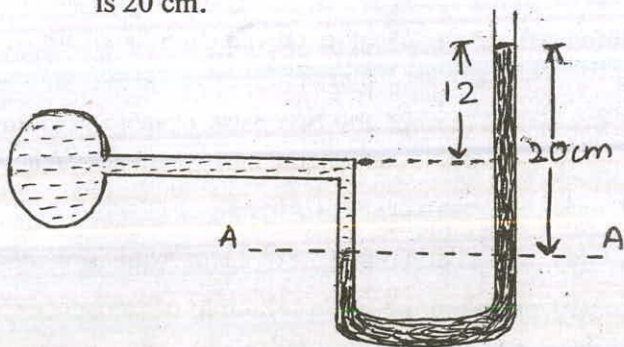


Fig.

Unit—III

3. (a) Explain the Laser Doppler Anemometer. 2
- (b) What do you mean by Anemometer ? Also explain the Hot wire anemometer. 7

(c) Write a short note on current meter and its types are also described. 7

(d) A pitot static in the at a 300 mm pipeline has one orifice pointing upstream and other perpendicular to it. The mean velocity in the pipe is 0.8 at the centered velocity. Find the discharge through the pipe if the pressure difference between the two orifice is 600 mm of water. Take $C_v = 0.98$ 7

Unit—IV

4. (a) What do you mean by Discharge of fluid ? 2

(b) Explain the working principle of venturimeter. 7

(c) Write a short note on Thermistor. 7

(d) Explain the orifice meter with the neat diagram. 7

Unit—V

5. (a) What do you mean by accuracy ? 2

(b) What do you understand by the term water level recorder ? Explain the right glass method for liquid level measurement. 7

(c) Write a short note on force measurements. 7

(d) Explain the importance of tracers in dispersion and diffusion studies. 7