



TED (15) – 3022

Reg. No. ....

(REVISION — 2015)

Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

FLUID MECHANICS AND PNEUMATICS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define Pascal's law.
2. Define laminar and turbulent flow.
3. What is vena contracta ?
4. Define flash point and fire point.
5. List the main components of pneumatic system.

(5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain capillarity and surface tension.
2. Explain differential manometer.
3. List the assumptions of Bernoulli's theorem.
4. What are the advantages of triangular notch over rectangular notch ?
5. Illustrate the working of a vane pump.
6. Explain weight loaded accumulator.
7. List the advantages of pneumatic system.

(5 × 6 = 30)

## PART — C

Marks

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

## UNIT — I

- III (a) Calculate the specific weight, mass density and specific gravity of a liquid having a volume of 5 cubic meter and weighing 40 KN. 7
- (b) Explain the total pressure acting on a vertically immersed surface in a liquid. 8

OR

- IV (a) Explain Bourden tube pressure gauge. 7
- (b) A differential U-tube manometer connects two pressure pipes A and B. The pipe A contains carbon tetrachloride having a specific gravity 1.6 under a pressure of 130 KPa. The pipe B contains oil of sp.gravity 0.7 under a pressure of 220 KPa. The Pipe A lies 3m above pipe B. Find the difference in mercury level in the manometers when assuming the left limb mercury level is coinciding with the centre of the pipe B. 8

## UNIT — II

- V (a) Explain pitot tube. 7
- (b) A venturimeter is placed in a horizontal pipe of 60 mm diameter through which water is flowing. The diameter of the throat is 30 mm. Determine the discharge through the pipe in liters per minute when the venturi head is 450 mm of water. Take  $C_d = 0.98$ . 8

OR

- VI (a) Explain the loss of head in pipes. 7
- (b) A pipe 600m long is conveying water with a velocity of 1.3 m/s. Find the suitable diameter of the pipe, if the loss of head due to friction is 3.5 m. Take  $f = 0.01$ . 8

## UNIT — III

- VII (a) Explain the advantages of Fluid Power. 7
- (b) Illustrate the working of external gear pump. 8

OR

- VIII (a) Explain the working of a pilot operated check valve. 7
- (b) Explain the hydraulic circuit for robotic arm with a neat diagram. 8

## UNIT — IV

- IX (a) Explain Air filters. 7
- (b) Illustrate wedge operated clamp. 8

OR

- X (a) What are the advantages of pneumatic system ? 7
- (b) Explain hydropneumatic system and its applications. 8