

TED (10)-3052

(REVISION-2010)

Reg. No.

Signature

THIRD SEMESTER DIPLOMA EXAMINATION IN AUTOMOBILE
ENGINEERING—OCTOBER, 2011

FLUID MECHANICS AND MACHINERY

[Time : 3 hours

(Maximum marks : 100)

PART—A

Marks

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

1. Define specific gravity.
2. State Bernoulli's Theorem.
3. Describe negative slip in reciprocating pump.
4. Define fire point.
5. Define steady flow.

(5x2=10)

PART—B

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

1. Explain the working of piezometer.
2. Describe total energy and total head of liquid in motion.
3. List the advantages of triangular notch over rectangular notch.
4. Write short notes on 3 types of priming in pumps.
5. Describe vane pump with neat sketch.
6. Sketch and explain the working of simple pressure relief valve.
7. Explain the working of simple globe valve with a neat sketch.

(5x6=30)

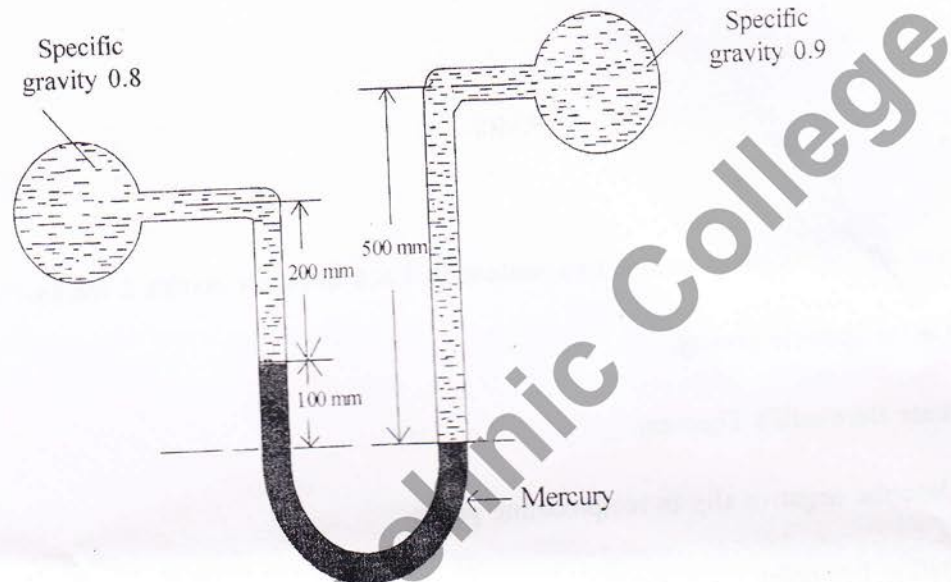
PART—C

Marks

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

UNIT - I

- III (a) Explain inverted differential manometer with a neat diagram. 8
- (b) The differential manometer containing mercury was used to measure pressure difference in two pipes containing different liquid as shown in figure. Find the pressure difference.



OR

- IV (a) Calculate the total pressure of an isosceles triangular plate of base 4 m and altitude 4 m when it is immersed vertically in an oil of specific gravity 0.9. The base of plate coincide with the free surface of oil. 7
- (b) Explain atmospheric pressure. 5
- (c) State Pascal's law. 2
- (d) A circular plate 3 m diameter is immersed in water in such a way that its greatest and least depth below the free surface are 4 m and 1.5 m respectively. Find the total pressure on one face of the plate. 2

UNIT - II

- V (a) List any four differences between orifice and notch. 6
- (b) The head of water over an orifice of diameter 40 mm is 10 m. Find the actual discharge and actual velocity of the jet at vena contracta. 9
- $C_d = 0.6$ and $C_v = 0.98$.

OR

- VI (a) Water is supplied to a college campus having 3000 students from a reservoir, which is built 5 km away from the campus. Each student requires 200 litres of water per day. Daily requirement is pumped in 16 hrs. The diameter of the supply pipe is 120 mm. Determine loss of head due to friction. Darcy's constant is 0.008. 7
- (b) A pipe 8 m long and its smaller end having diameter 100 mm at the ground level. Its larger end having diameter 300 mm at a height 2.73 m from the ground level. Determine the difference of pressure between two sections of the pipe. The velocity of water at smaller section is 2 m/sec. 8

UNIT - III

- VII (a) Explain the working of a centrifugal pump with a neat diagram. 8
- (b) Describe the working of air vessel with a neat sketch. 5
- (c) Briefly explain the term "manometric head" in centrifugal pump. 2

OR

- VIII (a) Describe the working of a single acting reciprocating pump with a neat sketch. 9
- (b) List the disadvantages of cavitation. 3
- (c) Describe the method of vacuum priming. 3

UNIT - IV

- IX (a) Sketch and explain solenoid control valve. 5
- (b) Describe the working of a semi rotary actuator with a neat diagram. 5
- (c) Sketch a two way pool type directional control valve and explain its working. 5

OR

- X (a) Describe air lubricator with a neat sketch. 5
- (b) Sketch and explain tandem cylinder actuator. 5
- (c) Sketch and explain air filter. 5

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