04.11.2023 4020410 FMFP

Register No.:

944

October 2023

Time – Three hours
(Maximum Marks: 100)

[N.B. 1. Answer all questions under Part-A. Each question carries 3 marks.

2. Answer all the questions either (A) or (B) in Part-B. Each question carries 14 marks.]

PART – A

1. Define Specific gravity.
2. Define atmospheric pressure. How atmospheric pressure is measured?
3. List out the types of fluid flow.
4. List out the minor losses.
5. What is meant by cavitation? How cavitation is prevented?
6. Define theoretical discharge of pump. Write the formula to find theoretical discharge.
7. Compare of pneumatic system and hydraulic system.
8. Classify the accumulators.
9. Compare reciprocating and rotary compressor.
10. Draw the ISO symbol for 3/2 DCV and double acting cylinder.

PART – B

11. (a) Explain the construction and working of Hydraulic Press with a neat sketch.

(Or)

(b) (i) A circular plate of diameter 1.2 m placed vertically in water in such a way that the centre of the place is 2.5 m below the free surface of water. Determine: (a) Total pressure on the plate, (b) Position of centre of pressure. (7)

(ii) A square plate of 1m side is immersed vertically in water such that its centre is 4m below the water surface. Find the total pressure and centre of pressure.(7)

12. (a) Explain construction and working principle of venturimeter with a neat sketch.

(Or)

(b) A jet of water 250 mm diameter is discharging under a constant head of 53 m. Find the force exerted by the jet on a plate which is moving with a velocity 12 m/sec in the direction of jet. Take $C_V = 0.93$. Also calculate the work done by the jet per second.

13. (a) Explain the construction and working of Francis turbine with a neat sketch.

(Or)

(b) A centrifugal pump having an overall efficiency of 75 percent is discharging 30 lps water through a pipe of 150mm diameter and 125 m long. Calculate the power required to drive the pump if the water is lifted through a height of 25m. Take co-efficient of friction as 0.01.

14. (a) Explain construction and working of pressure compensated flow valve with a neat sketch.

(Or)

(b) With a neat circuit diagram, explain motion synchronization circuit.

15. (a) Explain the construction and working of centrifugal type rotary compressor with a neat sketch.

(Or)

(b) Draw and explain the operation of double acting cylinder using sequencing circuit.
