Register No.:

321

October 2017

Time – Three hours
(Maximum Marks: 75)

[N.B: (1) Q.No. 8 in PART – A and Q.No. 16 in PART – B are compulsory. Answer any FOUR questions from the remaining in each PART - A and PART - B.

(2) Answer division (a) or division (b) of each question in PART-C.

(3) Each question carries 2 marks in PART – A, 3 marks in Part – B and 10 marks in PART – C.]

PART – A

1. What is meant by pressure head?
2. Define compressibility.
3. What is turbulent flow?
4. Write down the formula to find the theoretical discharge of a double acting reciprocating pump.
5. What are the different types of impellers used in centrifugal pumps?
6. Draw the ISO symbol of FRL unit.
7. What is 3/2 DCV?
8. State any two demerits of hydraulic systems.

PART – B

9. Explain the method of measuring local atmospheric pressure.
10. What is continuity equation? Explain.
11. State Bernoulli's theorem and write its few applications.
12. Write the expression for the work done by the jet on a series of moving plates on the circumference of a revolving wheel.
13. State the difference between Kaplan turbine and Francis turbine.
14. What is FRL unit? Explain briefly.
15. Explain the working of a pressure regulator.
16. List out the elements of hydraulic system with a line diagram.

PART – C

17. (a) (i) A gauge fitted to a compressor shows a reading of 30kN/m². Compare the corresponding absolute pressure in (a)kN/m² and (b) "m" of water.

(ii) Explain the working of hydraulic jack with a neat sketch.

(Or)

(b) (i) What are the precautions to be followed in setting up and operation of manometer?

(ii) Explain the working of Bourdon tube pressure gauge with a simple sketch.

18. (a) (i) What are the hydraulic co-efficients? Explain briefly.

(ii) Using Chezy's formula, determine the head lost due to friction in a pipe of 80mm diameter and 35m length. The velocity of flow is 2 m/s and C=100.

(Or)

(b) (i) Compare Venturimeter and Orificemeter.

(ii) Two reservoirs are connected by a pipe line of length 500m. The difference in level between the reservoirs is 10m. If the maximum discharge is 0.2m³/s, calculate the required size of the pipe. Assume f=0.005.

19. (a) A jet of water 80mm diameter moves with a velocity of 15m/s and strikes a series of vanes moving with a velocity of 10m/s. Find (a) the force exerted by the jet, (b) work done by the jet per second and (c) efficiency of the jet.

(Or)

(b) Explain the governing of Pelton wheel with a neat sketch.

20. (a) (i) Explain the use of shuttle valve in pneumatic circuits.

(ii) List out the merits of pneumatic system.

(Or)

(b) (i) Explain the working of 5/2 DCV with a neat sketch.

(ii) Draw the circuit diagram for the direct control of single acting cylinder and explain.

21. (a) (i) Explain the spring loaded type accumulator.

(ii) Explain radial piston pump with a sketch.

(Or)

(b) (i) Explain the various essential qualities of a good hydraulic fluid.

(ii) Explain the hydraulic circuit used for the table movement of a surface grinding machine.
