3506

C09-M–406

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BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2021

DME - FOURTH SEMESTER EXAMINATION

HYDRAULICS AND FLUID POWER SYSTEMS

Time : 3 hours] [*Total Marks* : 80

PART—A

4×5=20

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **four** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define pressure of a fluid and write SI unit for it.

2. List the different types of fluid flows.

3. What are the uses of syphon?

4. Write the equation for normal force exerted by the jet on stationary inclined flat plate with a neat diagram.

5. State the function of the parts of pelton wheel *(a)* Runner and *(b)* Casing.

6. Write the classification of hydraulic turbines.

7. State the function of a hydraulic pump.

8. What are the essential components of a hydraulic circuit?

9. State any three elements of pneumatic circuit.

10. What is a hydro-pneumatic system?

PART—B

15×4=60

Instructions : (1) Answer *any* **four** questions.

(2) Each question carries **fifteen** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Explain the working of U-tube manometer with a neat sketch.

12. State Bernoulli's theorem. What are the assumptions made in Bernoulli's theorem?

13. Find the maximum power transmitted to a power station through a hydraulic pipe 3 km long and 20 cm diameters, when the pressure at the power station is 600 kN/m^2. Take f = 0·0075.

14. A jet of water impinges on a moving vane with a velocity of 35 m/s with this force the plate moves with a velocity of 6 m/s. If the diameter of jet is 9·5 cm, find the force exerted on the plate;

15. Explain the working of Francis turbine with neat sketch.

16. Explain the working principle of centrifugal pump with a neat sketch.

17. Explain the working principle of hydraulic jack with a neat sketch.

18. List the advantages and applications of combined air and oil system.

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