Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 02

Total No. of Questions : 18

B.Tech (ME) (2018 Batch)   (Sem.–4)
FLUID MACHINES
Subject Code : BTME-402-18
M.Code : 77547

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN Multiple Choice questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Write briefly :

Q1. What is the meaning of degree of reaction?

Q2. What is draft tube?

Q3. What is need of priming of a pump?

Q4. What is effect of cavitation?

Q5. What is scale effect?

Q6. What is fluid coupling?

Q7. What do you understand by governing of a Pelton turbine?

Q8. Define Negative Slip in reciprocating pump.

Q9. What is hydraulic accumulator?

Q10. What are vane pumps?

SECTION-B

Q11. A turbine is to operate under a head of 25 m at 200 r.p.m. The discharge is 9 m^3/s. If the overall efficiency is 90 percent. Determine :

    a) Power generated

    b) Specific speed of the turbine

    c) Type of turbine.

Q12. With the aid of a sketch explain the working of a Hydraulic Accumulator.

Q13. Derive the expression for maximum hydraulic efficiency of a Pelton wheel.

Q14. Explain why the suction lift of a pump cannot exceed certain limit?

Q15. The impeller of a centrifugal pump is 1m in diameter and rotates at 1500 rpm. The blades are curved backward and make an angle of 30° to the tangent at the periphery. Calculate the power required if the velocity of the flow at outlet is 20m/s. Determine the head to which water can be lifted when a diffuser casing reduces the outlet velocity to 60%.

SECTION-C

Q16. Derive expression for the force exerted by the jet of water on a series moving flat plate placed on the periphery of a wheel. Also find the maximum efficiency?

Q17. A Pelton turbine is required to produce 6MW power when working under a head of 300m. The turbine r.p.m. is 550 and the overall efficiency is 0.85. The turbine works with three jets. Determine :

    a) The diameter of the runner

    b) Discharge per second

    c) Diameter of the jet

    d) Number of buckets.

Q18. Explain the principle of operation, construction and working of a centrifugal compressor with necessary sketches.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.