

Roll No

ME-5001 (CBGS)**B.E. V Semester**

Examination, November 2018

Choice Based Grading System (CBGS)**Turbo Machinery***Time : Three Hours**Maximum Marks : 70**Note:* i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Explain the difference between an impulse and a reaction turbine. 7
- b) Write the application of second Law of Thermodynamics in Turbo Machines. 7
2. a) Explain in brief pressure compounding in impulse steam turbine. 7
- b) What do you mean by Governing? Discuss the various methods of steam turbine governing in short. 7
3. The velocity of steam at inlet to a single row impulse turbine is 400 m/s and nozzle angle is 20° . The mean blade speed is 150 m/s and the axial thrust on the blade is estimated to be zero make calculations for: 14
 - a) Inlet and outlet angles of moving blades.
 - b) Power developed for a steam flow rate of 1.5 kg/s.
 - c) Magnitude and direction of velocity of steam at exit.
 Neglect the effect of friction when passing through blade passages.

4. a) How do you classify the hydraulic turbines? 7
- b) What are unit quantities of a hydraulic turbomachine? Explain their importance. 7
5. A Pelton wheel is to be designed for the following specifications:

Shaft power = 11,772 kW; Head 380 metres; speed = 750 r.p.m.; overall efficiency = 86%; jet diameter is not to exceed one - sixth of the wheel diameter. Determine:

 - i) The wheel diameter
 - ii) The number of jet required
 - iii) Diameter of the jet.
 Take $K_{v_1} = 0.985$ and $K_{u_1} = 0.45$ 14
6. a) Compare the axial flow and centrifugal compressors. 7
- b) Define surging and efficiency of Axial flow compressor. 7
7. With the help of neat sketch, explain fluid coupling and Torque converter. <https://www.rgpvonline.com> 14
8. Write short notes any three of the following. 14
 - a) Hydraulic press
 - b) Hydraulic intensifier
 - c) Degree of reaction of steam turbine
 - d) Specific speed of a turbine
 - e) Principle of centrifugal blower
