Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MMTP-302(C)

M.E./M.Tech., III Semester

Examination, June 2017

Pumps, Blowers and Compressors

(Elective-II)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data if requried.

1. Explain Law of Momentum. Derive the Euler's equation of motion for one dimensional flow. 14

2. What do you understand by free vortex flow and forced vortex flow? Explain in brief. 14

3. Define centrifugal pump and its principle. Also explain the working of centrifugal pump with the help of suitable diagram. 14

4. a) Discuss the characteristic curves useful in indicating the performance of centrifugal pump for different speeds. 7

   b) Explain the phenomenon of cavitation in hydraulic machines. Also write its effects on performance of hydraulic machines. 7

5. A centrifugal pump running at 1500 r.p.m. with impeller diameter of 200 mm. discharge 0.12 m^3/s of water working against a head of 40 m with an efficiency of 90%. Calculate 14

   i) The specific speed,

   ii) The performance of a similar pump twice its size keeping the speed constant,

   iii) The performance of a similar pump twice its size keeping the speed keeping diameter constant,

   iv) The performance of a similar pump if the speed is doubled as well as size is doubled

6. a) Explain turbo blowers with the help of suitable diagram and also write their characteristics. 7

   b) What is centrifugal compressor? How does it differ from an axial flow compressor? 7

7. a) Write and explain the different terms used in fan. Also describe the similarity laws of fan. 7

   b) Draw and explain characteristics curves of fan. 7

8. Write short notes on : 14

   i) Phenomenon of surging in compressor,

   ii) Slip coefficient or slip factor in centrifugal compressor,

   iii) Various heads and efficiencies involved in centrifugal pump.

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