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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2019

Course: B. Tech in Electrical Engineering

Sem: III

Subject Name: Fluid Mechanics and Thermal Engineering

Subject Code: BTEEC303

Max Marks:60

Date: 30/05/2019

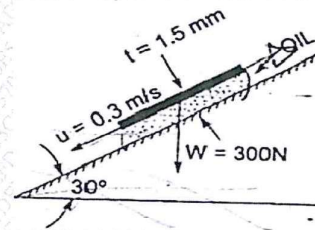
Duration: 3 Hr.

Instructions to the Students:

1. Solve ANY FIVE questions out of the following..
2. Use of non-programmable scientific calculators is allowed.
3. Assume suitable data wherever necessary and mention it clearly.

Q. 1 Solve Any Two of the following.

- A) State the Pascal's law of static pressure and prove that pressure at a point is same in all directions in a static fluid. 6
- B) Calculate the dynamic viscosity of oil, which is used for lubrication between a square plate of size 0.8 m x 0.8 m and an inclined plane with angle of inclination 30° as shown in Fig. The weight of the square plate is 300 N and it slides down the inclined plane with a uniform velocity of 0.3 m/s. The thickness of oil film is 1.5 mm. 6



- C) Define and explain the following fluid properties. Viscosity, specific gravity, specific volume, specific weight, surface tension, compressibility. $1 \times 6 = 6$

Q.2 Solve the following.

- A) Explain the Reynolds's experiment for visualization of types of fluid flow with suitable neat sketch. 6
- B) Explain the major and various minor losses in flow through the pipes with their respective mathematical equations. 6

Q. 3 Solve Any Two of the following.

- A) Explain the first and second law of thermodynamics with suitable example. $3+3=6$
- B) Differentiate between enthalpy and entropy. $3+3=6$
- C) List out and explain the various performance parameters of the internal combustion engines 6

Q.4 Solve Any Two of the following.

- A) Classify the various types of air compressor. 6
- B) Explain the working of multistage compressor using the p-v diagram with perfect/imperfect inter cooling. 6
- C) Mention the important application of compressed air and advantage of multistage compression process over single stage compression process for the same pressure ratio. 6

Q. 5 Solve the following.

- A) Differentiate between the COP' and efficiency of a system as well as between vapour compression refrigeration system and vapour absorption refrigeration system. $3+3$
- B) Explain the working of a domestic refrigerator with neat sketch. 6

Q. 6 Solve the following.

- A) Explain the various psychrometric processes involved in air conditioning using Psychrometric chart. 6
- B) With the help of a suitable sketch explain the working of a split air conditioner; also mention the advantages over window air conditioning system. 6

END

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