Code No: 14056

FACULTY OF ENGINEERING

BE 2/4 (Inst.) II-Semester (Backlog) Examination, March /April 2021

Subject :Thermodynamics and Fluid Mechanics

Time:2 Hours **Max. Marks: 75**

PART – A

Note: Answer any Seven Questions **(7x3 = 21Marks)**

1. Discuss the principles increase in entropy in irreversible process
2. Define first law of thermodynamics
3. Write short notes on thermal efficiency of turbines
4. Classify different gas turbines
5. Define dynamic and kinematic viscosity
6. Differentiate between steady and un-steady flow
7. List out the devices used for measurement of discharge
8. Explain co-efficient of discharge
9. What do you understand by dynamic similarity? Explain
10. Briefly explain Hagen Poiseuille equation

PART – B

Note: Answer any Three Questions **(3x18 = 54Marks)**

11 An air standard Diesel cycle has a compression ratio of 16 and the heat transferred to the working fluid per cycle is 1900 kJ/kg. At the beginning of the compression stroke, the pressure is 1 bar and the temperature is 302 K. Calculate the thermal efficiency

12 Steam with absolute velocity of 321 m/s is supplied through a nozzle to a single stage impulse turbine, the nozzle angle is 25^{o}. The mean diameter of blade rotor is 1.2 m and it has a speed of 2250 rpm. Find suitable blade angle for zero axial thrust. If the blade velocity co-efficient is 0.95 and steam entering flow rate is 10 kg/s. Calculate the power developed.

13 a) Determine the viscosity of a liquid having kinematic viscosity 6.5 stokes and specific gravity 1.96.
b) Classify fluid flows with a neat graph. Explain in detail.

14 a) Derive Bernoulli's equation of motion. State its assumptions.
b) State impulse momentum equation with its application.

15 a) Distinguish between Laminar and turbulent flows.
b) Derive expression of critical Reynolds number.

16 a) Derive work done and efficiency of multi-stage compressors.
b) List out merits and demerits of an open cycle gas turbine from a closed cycle gas turbine

17 a) Detail classification of gas turbines
b) Explain principles of increase in entropy in irreversible process
c) Expression of work done in steam turbine

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