

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Winter Examination-2021

Subject Name: Turbomachines

Subject Code: 4TE07TMA1

Branch: B.Tech (Mechanical)

Semester: 7

Date: 14/12/2021

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

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- Q-1** **Attempt the following questions:** **(14)**
1. Nozzle efficiency is described as..... 01
 - A.Isentropic heat drop/useful heat drop
 - B.useful heat drop/isentropic heat drop
 - C.saturation temperature/supersaturation temperature
 - D.supersaturation temperature/saturation temperature
 2. The flow of steam in a nozzle is subsonic at..... 01
 - A.Throat B.Entrance C.Convergent portion
 - D.Divergent portion
 3. Under thermal equilibrium, flow of steam is..... 01
 - A.Isentropic B.Adiabatic C.Hyperbolic D.Polytropic
 4. The critical pressure ratio for initially superheated steam is.....as compared to initially dry saturated steam 01
 - A. More B.Less C.Same D.None of the above
 5. The person's reaction turbine has..... 01
 - A.Only moving blades
 - B.Only fixed blades
 - C.Identical moving and fixed blades
 - D.Fixed and moving blades of different shape
 6. There is enthalpy drop only in.....blades in case of an impulse steam turbine 01
 - A.Fixed B.Rotating C.Moving D.All of the above
 7. The blade friction in the impulse turbine reduces the velocity of steam by.....while it passes over the blades 01
 - A.10% to 15% B.15% to 20%
 - C.20% to 30% D.30% to 40%
 8. Maximum combustion pressure in a gas turbine is.....as compared to diesel engine 01
 - A.Same B.Less C.More D.None of the above
 9. In a gas turbine, high thermal efficiency is obtained in..... 01
 - A.Closed cycle B.Open cycle



- b) A turbojet engine having two jets takes air at velocity 200 m/s when flying at an altitude of 10000 m. The resistance or drag of the plane is 6500 N. the air fuel ratio is 5:1. The propulsive efficiency of jet is 50%. Calculate 1) absolute velocity of jet 2) mass flow rate of air enters 3) propulsive power **07**
- Q-8** **Attempt all questions** **(14)**
- a) Derive equation for thrust power, propulsive power and propulsive efficiency. **07**
- b) With neat sketch explain in detail about turbine blade attachment **07**

