

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Turbomachines

Subject Code: 4TE07TMA1

Branch: B.Tech (Mechanical)

Semester: 7

Date: 23/03/2017

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)

- a) The effect of friction in the nozzle flow as compared to isentropic flow is to
 - (A) Increase exit velocity
 - (B) decrease exit velocity
 - (C) Increase exit velocity and entropy
 - (D) decrease exit velocity and entropy.
- b) During isentropic flow the mach number achieved at the throat is
 - (A) Subsonic
 - (B) Supersonic
 - (C) Sonic
 - (D) Hypersonic
- c) Nozzles are more efficient than diffusers because of
 - (A) Less wake formation
 - (B) Less or no flow separation
 - (C) less friction
 - (D) less skew boundary layers
- d) In impulse reaction turbine which one is true?
 - (A) Energy transfer in fixed blade
 - (B) Energy transfer in rotating blade
 - (C) Energy transfer in both blade
 - (D) None of above.
- e) In impulse steam turbine which one is true?
 - (A) Energy transfer in Nozzle
 - (B) Energy transformation in nozzle
 - (C) Energy transfer in rotor
 - (D) None of above.
- f) The optimum ratio of blade velocity to steam velocity in impulse reaction turbine is
 - (A) $\cos\alpha$
 - (B) $\cos\alpha/2$
 - (C) $\cos\alpha/3$
 - (D) $\cos\alpha/4$
- g) In Parsons turbine the degree of reaction R is
 - (A) 0
 - (B) 0.5
 - (C) 1
 - (D) None of above.
- h) The efficiency of modern gas turbine lies in the range of
 - (A) 25-30%
 - (B) 30-35%
 - (C) 35-45%
 - (D) 45-55%
- i) Write the application of gas turbine
- j) List the different types of combustion chamber
- k) On which principle jet propulsion engine is working?
- l) Turbofan engine is preferred over turbojet due to
 - (A) High propulsive efficiency
 - (B) High Thrust
 - (C) Reducing noise
 - (D) All of above.
- m) The fan pressure ratio in turbofan engine is in the range of
 - (A) 2-4
 - (B) 4-6
 - (C) 6-8
 - (D) 8-10
- n) The specific fuel consumption in kg/Nh for turbojet engine range from
 - (A) 0.05-0.1
 - (B) 0.1-0.2
 - (C) 0.2-0.4
 - (D) 0.4-0.6



