

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – VI (NEW).EXAMINATION – WINTER 2016

Subject Code: 2160102**Date: 24/10/2016****Subject Name: Fundamentals of Jet Propulsion****Time: 10:30 AM to 01:00 PM****Total Marks: 70****Instructions:**

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

- Q.1** (a) Explain the working principle of jet engines and give the classification for the same. **07**
- (b) Explain the need of thrust augmentation and the methods of thrust augmentation in brief. **07**
- Q.2** (a) Derive the choking condition for the variable area duct and explain the effect of back pressure on convergent nozzle. **07**
- (b) Explain requirements of combustion chamber and needs of it **07**
- OR**
- (b) Derive Mach Area relation for nozzles. **07**
- Q.3** (a) Explain pulse jet engine with neat sketch. **07**
- (b) Explain need for subsonic and supersonic inlets. **07**
- OR**
- Q.3** (a) Write a note on factors affecting the performance of combustion chamber. **07**
- (b) Write a short note on effect of back pressure for flow through C-D nozzle. **07**
- Q.4** (a) Derive thrust equation for jet engines. **07**
- (b) Draw and explain Brayton cycle with intercooling. **07**
- OR**
- Q.4** (a) Draw and explain simple Brayton cycle for jet engines. **07**
- (b) Draw and explain Brayton cycle with Intercooling and Reheating. **07**
- Q.5** (a) Explain the factors affecting the performance of turbojet engine. **07**
- (b) Explain inlets for ramjet engine diffuser operations. **07**
- OR**
- Q.5** (a) Explain zones of combustion chamber. **07**
- (b) Explain effect of compressor pressure ratio and cycle temperature ratio on performance of turbojet engine. **07**
