

GUJARAT TECHNOLOGICAL UNIVERSITY
BE/PDDC- SEMESTER- 1st / 2nd • EXAMINATION – WINTER 2018

Subject Code: 110006**Date: 05/01/2019****Subject Name: Elements of Mechanical Engineering****Time: 10:30 AM TO 1:00 PM****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Answer the following questions in brief. **07**
1. Define the specific heat of a substance.
 2. State the Zeroth law of thermodynamics.
 3. What is difference between closed system and Isolated system?
 4. Define Heat and work.
 5. State the five forms of energy.
 6. What is difference between high grade and low grade energy?
 7. Define brake power and indicated power.
- (b)** Give detail classification of fuel and write short note on solid fuel. **07**
- Q.2 (a)** With neat sketch explain separating calorimeter. **07**
- (b)** For adiabatic process derive relation between pressure, volume and temperature. **07**
Also derive equation for work done and heat transfer.
- Q.3 (a)** Explain with neat sketch construction and working of a Cochran boiler. **07**
- (b)** State the methods of governing of IC Engine. Explain Quality and Quantity **07**
methods of governing in brief.
- Q.4 (a)** Derive an expression of air standard efficiency of Diesel cycle. **07**
- (b)** Explain the working of 2 stroke petrol engine with neat sketch. **07**
- Q.5 (a)** What is the function of a pump? Explain working of centrifugal pump with neat **07**
sketch.
- (b)** Derive equation of work required for a single stage single acting reciprocating air **07**
compressor undergoing polytropic compression considering clearance volume.
- Q.6 (a)** With a neat sketch explain the working of vapour compression refrigerant **07**
system. Draw p-h and T-S diagram also.
- (b)** Classify different types of Clutch. Describe single plate clutch with neat sketch. **07**
- Q.7 (a)** Write note on the following engineering materials **07**
(i) Cast iron (ii) Timber (iii) Diamond
- (b)** What are belt drives? List various belt drives and explain cross belt drive. **07**
