

SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY**ADITYA SILVER OAK INSTITUTE OF TECHNOLOGY****BE - SEMESTER-I • MID SEMESTER-II EXAMINATION – WINTER 2018****SUBJECT: Basic Mechanical Engineering (3110006) (CE/ME/EC/CL/AE etc...)**

DATE: 21-12-2018

TIME: 02:00 pm to 03:30 pm

TOTAL MARKS:40

- Instructions:**
- 1.Q. 1 is compulsory.
 2. Figures to the right indicate full marks.
 3. Assume suitable data if required.

- Q.1 (a) What is Dryness fraction? List the methods of measuring the dry fraction. Explain the throttling type of calorimeter with neat sketch. [05]
- (b) Give the uses of compressed air. [05]

- Q.2 (a) Draw Air standard petrol cycle on P-V & T-S diagram. Derive its efficiency equation with usual notations. [06]
- (b) Calculate the total amount of heat required to produce 7 kg of steam at pressure of 8 bar and temperature 258°C from the water at 40°C take specific heat of steam = 2.1 KJ/Kg.K and the $C_{pw} = 4.187$ KJ/Kg.K. [05]
- (c) What is Priming? Why priming is required in Centrifugal pump but not in Reciprocating pump. [04]

OR

- Q.2 (a) Classify the Centrifugal pump. Explain Vortex centrifugal pump with neat sketch. [06]
- (b) An engine operates on the ideal diesel cycle has a maximum pressure of 45 bar and a maximum temperature of 1500 °C. The pressure & temperature of air at the beginning of compression stroke & 1 bar and 27°C respectively. Find the air standard efficiency of the cycle. [05]
- (c) Explain the Multi-staging in Reciprocating compressor? [04]

- Q.3 (a) Derive an equation for work done in case of a single stage single acting reciprocating air compressor neglecting clearance. [06]
- (b) Classify the Clutches. Explain the Centrifugal clutch with neat sketch? [05]
- (c) Classify the Coupling. Explain Oldham coupling with neat sketch. [04]

OR

- Q.3 (a) Explain Modified Carnot cycle with P-V & T-S diagram. [06]
- (b) Classify the Brakes. Explain the Internal Expanding shoe brake? [05]
- (c) Classify the Rotary pump. Explain Vane pump with neat sketch? [04]