Enroll. No. _____

SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

BE - SEMESTER– II • MID SEMESTER- I EXAMINATION – SUMMER 2019

SUBJECT: BASIC MECHANICAL ENGINEERING (3110006) (IT)

DATE: 14-03-2019 **TIME: 12:00 pm to 01:30 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) Comparison between work and heat. [03]

(b) During testing of single cylinder two stroke petrol engine following data is obtained Breake torque 640 nm, Cylinder diameter 21cm, Speed 350 rpm, Stroke 28 cm, mean effective pressure 5.6 bar, oil consumption 8.16 kg/hr, C.V. 42705 KJ/Kg. [07]
Determine: (1) Mechanical efficiency, (2) Indicated thermal efficiency, (3) Brake thermal efficiency, (4) Brake specific fuel consumption.

Q.2 (a) 0.67 kg of gas at 14 bar & 290 ^{o}C is expand to four times the original volume according to the law $pv^{1.3}$= constant. [06]
Calculate:
(1) The original & final volume of the gas
(2) The final temperature of gas
(3) The final pressure of gas
Take R= 0.287 KJ/Kg.K

(b) Derive Mayer's equation. [05]

(c) Zeroth and First Law of Thermodynamics. [04]

OR

Q.2 (a) Explain with a neat sketch split air conditioner. State their advantages. [06]

(b) Explain with the help of neat sketch the working of a four stroke petrol engine. [05]

(c) Derive work done for Adiabatic process. [04]

Q.3 (a) Explain "Economiser" as an accessory of boiler with neat sketch. Also give its advantage and disadvantages. [06]

(b) Differentiate between 4-stroke and 2-stroke engine. [05]

(c) Show the function and location of the following in the boiler plant [04]
(1) Steam stop valve
(2) Pressure gauge
(3) Blow off cock
(4) Fusible plug

OR

Q.3 (a) Explain Babcock and Wilcox boiler with neat sketch. [06]

(b) Explain Vapour Compression Refrigeration (VCR) system used in refrigeration with P-V and T-S diagram. [05]

(c) Derive work done, change in enthalpy, change in internal energy for Isothermal process. [04]

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