November 2022

Time – Three hours
(Maximum Marks: 100)

[N.B.   1.   Answer all questions under Part-A each question carries 3 marks.
2.   Answer all the questions either (A) or (B) in Part-B each question carries 14 marks.]

PART – A

1.   List out any three different thermodynamic processes.

2.   Distinguish between point function and path function.

3.   Define reversible and irreversible processes.

4.   What are the applications of steady flow energy equation?

5.   How the I.C engines are classified?

6.   Mention the types of valve actuating mechanism.

7.   What are the requirements of good fuel?

8.   Write down the combustion equations of solid fuels.

9.   Define C.O.P.

10.   State any three comparisons of comfort and industrial air conditioning.

PART – B

11.   (a)   State and explain the laws of perfect gases.

(Or)

(b)   0.5kg of air at 180°C expands adiabatically to 3 times its original volume during the expansion; the temperature is decreased to 20°C. Work done during expansion is 53kN – m. Find C_P, C_V and R.

[Turn over.....

12. (a) Derive an expression for air standard efficiency of Otto cycle in terms of pressure and compression ratio.

(Or)

(b) What will be the loss in ideal efficiency of a diesel engine with the compression ratio of 14, if the fuel cut off is delayed from 6% to 9% of the stroke.

13. (a) Describe the working of four stroke cycle petrol engine with neat sketch.

(Or)

(b) Explain fuel supply system in petrol and diesel engine.

14. (a) Explain the Morse test for finding out the indicated power of a multi cylinder engine.

(Or)

(b) Describe Bomb calorimeter with neat sketch.

15. (a) Explain the reversed Carnot cycle and derive an expression of C.O.P for refrigeration.

(Or)

(b) With the help of a neat sketch, explain the working of a central air-conditioning plant.