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**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
MID TERM EXAMINATION - DEC 2023**

Semester : Semester I - 2023

Course Code : MEC1004

Course Name : Sem I - MEC1004 - Elements of Mechanical Engineering

Program : B. TECH

Date : 11-DEC-2023

Time : 2:30 PM - 4:00 PM

Max Marks : 50

Weightage : 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE FIVE QUESTIONS

5 X 2=10M

1. Which Refrigerant is responsible for Ozone layer Depletion?
a) Chlorofluro Carbon (CO1) [Knowledge]
b) Hydrofluro Carbon
c) Both
d) None of the above
2. The energy that cannot be used to run vehicles
a) Solar energy (CO1) [Knowledge]
b) Chemical Energy
c) Electrical Energy
d) None of these
3. Why AC is not called as Refrigerator?
a) Both are work producing devices (CO1) [Knowledge]
b) AC controls temperature only.
c) Both are similar device
d) As it simultaneously controls temperature, velocity and humidity of air.
4. Whose function is to release heat to the atmosphere?
a) Condenser (CO1) [Knowledge]
b) Evaporator
c) Compressor
d) Expansion Device

5. Which part of Engine connects Piston and Crank?

- a) Piston Pin
- b) Connecting Rod
- c) Crankshaft
- d) Piston Rings

(CO2) [Knowledge]

PART B

ANSWER ALL THE TWO QUESTIONS

2 X 10 = 20M

6. Suppose we have an ice cube at -100 Degree Celsius and heat energy at constant pressure is being supplied to convert it into steam of 150 Degree Celsius. Draw Temperature-Heat line diagram for this process and clearly mention all the process.

(CO1) [Comprehension]

7. An **internal combustion engine (ICE or IC engine)** is a heat engine in which the combustion of a fuel occurs with an oxidizer (usually air) in a combustion chamber that is an integral part of the working fluid flow circuit. Draw a well labelled diagram of an Internal Combustion Engine along with the function of each part.

(CO2) [Comprehension]

PART C

ANSWER ALL THE TWO QUESTIONS

2 X 10 = 20M

8. Convert the following units:

- 1. 5 atm into kPa
- 2. 25 m of H₂O into mm of Hg
- 3. 1700 torr into bar
- 4. 715 mm of Hg into atm
- 5. 280 psi into kPa

(CO1) [Application]

9. Suppose you have an ice cube of 800 grams at – 20 Degree C and it is being converted into steam of 110 Degree C. So, how much heat should be supplied to convert ice into steam? Take latent heat of fusion is 334 kJ/kg and latent heat of vaporization is 2260 kJ/kg. Specific heat of ice, water and steam are 2.108 kJ/kg K, 4.187 kJ/kg K and 1.996 kJ/kg K respectively.

(CO1) [Application]