

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS), SRIKAKULAM

DEPARTMENT OF PHYSICS

Paper:HEAT & THERMODYNAMICS

CLASS:II MPCS, MPC & MPWT

MID 1 EXAM

YEAR 2023-24

EXAM DATES:5TH -7TH OCT 2023

TIME:2H

Total Marks:30

SECTION-A

1X8=8M

ANSWER THE FOLLOWING

1. A] Deduce an expression for the thermal conductivity of a gas on the basis of kinetic theory of gases?

(OR) B] Explain the change in entropy of reversible and irreversible processes?

SECTION-B

3X4=12M

ANSWER THE THREE OF THE FOLLOWING

2. What do you mean by transport phenomena?

3. What is the mean by mean free path of the molecule of gas?

4. Write the assumptions of kinetic theory of gases?

5. A Thermos flask containing coffee is vigorously shaken. then answer the following: i] does its temperature rise? ii] has heat been added to it? iii] has work been done on it? & iv] has its internal energy changed?

6. Derive an expression for the work done in an isothermal process?

7. Explain the change in entropy when ice changes into steam?

SECTION-C

5X2=10M

ANSWER ALL THE FOLLOWING

8. Define mean free path? 9. Explain heat and temperature? 10. Calculate the efficiency of reversible engine operates between the temperatures 200°C and 120°C

11. Write the failures of Carnot's engine? 12. Write the uses of T-S diagram?

SECTION-C

5X1=5M

ANSWER THE FOLLOWING

13. K.E. of gas molecules is zero at:

(a) 0°C (b) 273°C (c) -273°C (d) none of the above

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14. For an ideal gas

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a] Size of molecules is negligible. (b) There is no force of attraction or repulsion amongst the molecules. (c) It strictly obeys the gas laws. (d) All of the above.

15. What is thermodynamics?

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a) study of the relationship between heat and other forms of energy b) study of the conversion of chemical energy to other forms of energy
c) study of the relationship between mechanical energy to other forms of energy d) study of the conversion of mechanical energy to other forms of energy

16. What is the value of the absolute thermodynamic temperature scale?

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a) 3K b) 0K c) 1K d) 4K

17. Which of the following is true?

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a) for an isolated system, $dS \geq 0$ b) for a reversible process, $dS = 0$ c) for an irreversible process, $dS > 0$ d) all of the mentioned
