College: S. S. College, Jehanabad

Department: Physics

Class: B.Sc. Part-I

Subject: Thermodynamics/Assignment

Teacher: Mr M. K. Singh

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Test is online available on GOOGLE CLASS ROOM with code ccoefti

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Thermodynamics

This test is for B.Sc(H) Physics, Part I students.
For each question four options are available. Only option is correct.
* Required

1. Email address *

2. Name

3. College Roll Number

4. Admission Year

Mark only one oval.

- 2018
- 2019

5. 1. What remains constant in the isothermal process? 1 point

Mark only one oval.

- Pressure
- Volume
- Temperature
- Heat

6. 2. In adiabatic process ..... energy is not exchanged. 1 point

Mark only one oval.

- Heat
- Kinetic
- Mechanical
- Potential

7. 3.The process in which volume remains constant. 1 point

Mark only one oval.

- Isobaric
- Isochoric
- Adabatic
- Isothermal

8. 4. First law of thermodynamics can be expressed as 1 point

Mark only one oval.

- dQ = dU + dW
- dU = dW
- dU = dQ+ dW
- dQ = dU - dW

9. 5. An engine working between 800K and 400K then what is efficiency of engine? 1 point

Mark only one oval.

- 50%
- 55%
- 45%
- 52%

10. 6. If 400 joules of energy is absorbed by a working substance at a lower temperature and 200 joules of work is done on it by an external agency then find its co efficient of performance. 1 point

Mark only one oval.

- 200%
- 155%
- 245%
- 152%

11. 7. Heat Capacity can be represented as 1 point

Mark only one oval.

- Ratio of change in temperature to change in heat
- Ratio of change in pressure to change in temperature
- Ratio of change in heat to change in temperature
- Ratio of change in volume to change in temperature

12. 8. Find the efficiency of Carnot's engine working between steam point and ice point. * 1 point

Steam point of water is 100 C and ice point is 0C.

Mark only one oval.

- 25.6%
- 26%
- 27%
- 26.81%

13. 9. Two Carnot engines E1 and E2 are coupled together. The engine E1 draws heat from the source at 1200 K and rejects to a reservoir at temperature T K .The engine E2 receives the heat rejected by E1 and in turn rejects to another reservoir at temperature 300K. What is the value of T if the work outputs of both the engines are equal? 1 point

Mark only one oval.

- 700 K
- 750K
- 650K
- 600K

14. 10. Find the efficiency of Carnot engine working between 127 C and 27 C. It absorbs 80 calories of heat. How much heat is rejected. 1 point

Mark only one oval.

- 50
- 40
- 60
- 70

15. 11. Cp -Cv =? 1 point

Mark only one oval.

- R
- 2R
- 1.5R
- 2.4R

16. 12. An Engine whose temperature of source is 400 K takes 200 calories of heat and rejects 150 calories of heat to the sink. What is temperature of sink? 1 point

Mark only one oval.

- 350
- 300
- 450
- 400

17. 13. Efficiency of Carnot's engine is 1 point

T1 is temperature of source and T2 is temperature of sink

Mark only one oval.

- 1 - (T1/T2)
- T1/T2
- (T1/T2) -1
- T1 /(T1-T2)

18. 14. Coefficient of performance is defined as 1 point

Mark only one oval.

- Q2 /(Q1-Q2)
- Q2/Q1
- (Q1-Q2) /Q2
- 1 - (Q1 / Q2)

19. 15. The first law of thermodynamics is a statement of 1 point

Mark only one oval.

- Conservation of Energy
- Conservation of work
- conservation of momentum
- conservation of energy

20. 16. If heat is supplied to an ideal gas in an isothermal process 1 point

Mark only one oval.

- the internal energy of gas will increase
- the gas will do positive work
- the gas will do negative work
- the said process is not possible

21. 17. In carnot cycle, the first step is: 1 point

Mark only one oval.

- Isothermal expansion
- Isothermal compression
- Adiabatic expansion
- Adiabatic compression

22. 18. The efficiency of a Carnot engine is 0.4. If the temperature of the sink is 27 degree Celsius, the temperature of source is (in degree Celsius) 1 point

Mark only one oval.

- 127
- 500
- 227
- Option 4

23. 19. The gas law (PV) /T =Constant is true for 1 point

Mark only one oval.

- isothermal change only
- adiabatic change only
- both isothermal and adiabatic change
- none of these

24. 20. Internal energy of gas depends upon 1 point

Mark only one oval.

- Temperature
- Volume of gas
- pressure of gas
- size of molecule

25. 21. Reversible heat engine can be 100 % efficient, if the temperature of sink is 1 point

Mark only one oval.

- less than that of source
- equal to that of source
- 0 degree Celsius
- 0 K

26. 22. The physics underlying the working of a refrigerator closely resembles the physics underlying 1 point

Mark only one oval.

- ice formation
- Heat engine
- Vapour compression
- vaporization of water

27. 23. The door of running refrigerator inside a room is left open. Mark the correct statement 1 point

Mark only one oval.

- the room will be cooled slightly
- the room will be warmed up gradually
- the room will be cooled to the temperature inside the refrigerator
- the temperature room will remain unaffected

28. 24. The work done during an adiabatic expansion of an ideal gas is 1 point

Mark only one oval.

- W= (P1 V1 - P2 V2)* (1/(1-Y))
- W= (P1 V1 - P2 V2)* (1/(Y - 1))
- W = R (T2 - T1)
- W= RT1 log (V2/V1)

29. 25. Under adiabatic conditions, a certain mass of gas at NTP is expanded to three times its volume. Calculate the resulting temperature. Given Initial temperature T = 273 K and Y=1.4 1 point

Mark only one oval.

- 176 K
- 170 K
- 100 K
- 188 K

30. 26. In a reversible adiabatic process, entropy 1 point

Mark only one oval.

- increases
- remains unchanged
- decreases
- none of these

31. 27. The change in entropy of amole of an ideal gas, when the gas undergoes free expansion is 1 point

Mark only one oval.

- positive
- zero
- negative
- none of the above

32. 28. Entropy remains constant in 1 point

Mark only one oval.

- adiabatic process
- isothermal process
- isochoric process
- isolated process

33. 29. The entropy of a system in an irreversible process 1 point

Mark only one oval.

- increase
- decreases
- remain constant
- none of the above

34. 30. The unit of entropy is 1 point

Mark only one oval.

- Joule/Kelvin
- Kelvin
- Calorie
- None of the above

35. 31. A piece of ice is added to water in a cup. The energy is 1 point

Mark only one oval.

- increased
- decreased
- undergoes no change
- sometimes increase and sometimes decrease

36. 32. When water vapour condenses into water, its entropy 1 point

Mark only one oval.

- increases
- decreases
- remains unchanged
- first increases and then decreases

37. 33. Entropy is a measure of 1 point

Mark only one oval.

- perfect order
- available energy
- disorder
- none of the above

38. 34. Entropy is maximum in which state 1 point

Mark only one oval.

- solid
- liquid
- gas
- can be any form of matter

39. 35. In a natural process entropy 1 point

Mark only one oval.

- increases
- decreases
- remains the same
- none of the above

40. 36. Net entropy change of a system in Carnot's cycle 1 point

Mark only one oval.

- zero
- positive
- negative
- more than 1

41. 37. Which of the following represents a reversible process? 1 point

Mark only one oval.

- ds<0
- ds = 0
- ds >0
- none of these

42. 38. In the two gases at the same temperature 1 point

Mark only one oval.

- the average kinetic energy per molecule is equal
- the internal energy is equal
- the entropy is equal
- none of these

43. 39. What will be changed in entropy when 5 kg of water at 100-degree Celsius is converted into steam at the same temperature. 1 point

Given Latent heat of steam = 540 cal/gram

Mark only one oval.

- 7240
- 7325
- 7000
- 4503

44. 40. What will be changing in entropy when 10 kg of water at 100 degrees Celcius changes to vapour 1 point

Mark only one oval.

- 14477 cal/K
- 1500 cal/K
- 1400 cal/K
- 1542 cal /K