PHYSICS

AAKASH INSTITUTE ENGLISH

Mock test 18

Example

1. Which of the following is a V-T curve for isobaric process?

A. 

B. 

C. 

D. 

Answer: C

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2. If one mole of gas doubles its volume at temperature T isothermally then work done by the gas is

A. $-RT\log_e 4$

B. $RT\log_e 2$

C. $-RT\log_{10} 2$

D. RT

Answer: B

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3. For an adiabatic process if volume becomes $\frac{1^{nd}}{32}$ of initial value then pressure become

(Take y= 1.4, if P is initial pressure)

A. 2 P`

B. 4 P`

C. 128 P`

D. 8 P`

Answer: C

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4. iIn isochoric process change ib internal energy of the gas in $\triangle$ T temperature rise for 2 mole is

A. $2C_p \triangle T$

B. $\frac{C_V}{2} \triangle T$

C. $2C_V \triangle T$

D. Zero

Answer: C

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5. For an adiabatic process :

A. $\triangle U = 0$

B. $\triangle U + \triangle W = 0$

C. $\triangle W = 0$

D. $\triangle V = 0$

Answer: B

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6. If a pair of linear equations is consistant , then the lines represented by them are

A. 3 RT

B. RT

C. 6 RT

D. 2 RT

Answer: C

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7. A gas expands from $2m^3$ to $2.5m^3$ at constant pressure 10^3 pa, the work done is

A. 50 J

B. 25 J

C. 500 J

D. 250 J

Answer: C

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8. Calculate the work done (in joules) when 0.2 mole of an ideal gas at $300K$ expands isothermally and reversible from an initial volume of 2.5 litres to the final volume of 25 litres.

A. Isothermally

B. Isobarically

C. Adiabatically

D. Same for all three process

Answer: C

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9. A gas is compressed at a constant pressure of 50 N/m^2 from a volume of $10m^3$ to a volume of $8m^3$. Energy of 200 J is then added to the gas by heating. Its internal energy is

A. Increases by 300 J

B. Increases by 200 J

C. Increases by 400 J

D. Increases by 100 J

Answer: A

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10. During an adiabatic process, the pressure of a gas is found to be proportional to the square of its absolute temperature. The γ for the gas is

A. $\frac{3}{2}$

B. $\frac{5}{4}$

C. $\frac{7}{5}$

D. 2

Answer: D

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11. The slope of P-V graph for isochoric process is

A. Zero

B. Infinite

C. One

D. Two

Answer: B

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12. Which of the following formula is correct ?

[Where symbols have their usual meaning]

A. $C_V = \frac{R}{\gamma - 1}$

B. $C_p = \frac{\gamma R}{\gamma - 1}$

C. $\frac{C_p}{C_V} = \gamma$

D. All of these

Answer: D

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13. A wire of resistance 8R is bent in the form of a circle. What is the effective resistance between the ends of a diameter AB?

A. 0.75

B. 0.60

C. 0.80

D. 0.50

Answer: D

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14. A reversible engine converts one-sixth of heat input into work. When the temperature of sink is reduced by $62^{\circ}C$, its efficiency is doubled. Find the temperature of the source and the sink,

A. 372 K

B. 310 K

C. 400 K

D. 645 K

Answer: A

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15. A carnot engine whose sink is at 290 K has an efficiency of 30%. By how much the temperature of the source be increased to

have its efficiency equal to 50%, keeping sink temperature constant

A. 200 K

B. 250 K

C. 125 K

D. 300 K

Answer: C

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16. The mathematical aptitude score of 10 computer programmers with their job performance is given below :

Mathematics scores	7	5	1	4	3	0	2	6	8	9
Job performance rating	8	16	8	9	5	4	3	8	17	12

Calculate the Spearman's coefficient of rank correlation and interpret the result.

A. 0.2

B. 0.3

C. 0.5

D. 1.3

Answer: D

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17. A carnot cycle consists of

A. Two irreversible isothermal process and two irreversible adiabatic process

B. Two irreversible isothermal process and two reversible adiabatic process

C. Two reversible isothermal process and two reversible adiabatic process

D. Two reversible isothermal process and two irreversible adiabatic process

Answer: C

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18. Efficiency of a heat engine working between a given source and sink is 0.5 . Coefficient of

performance of the refrigerator working between the same source and the sink will be

A. 1.5

B. 25

C. 0.25

D. 4

Answer: A

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