

Q1 Internal energy of isolated system can

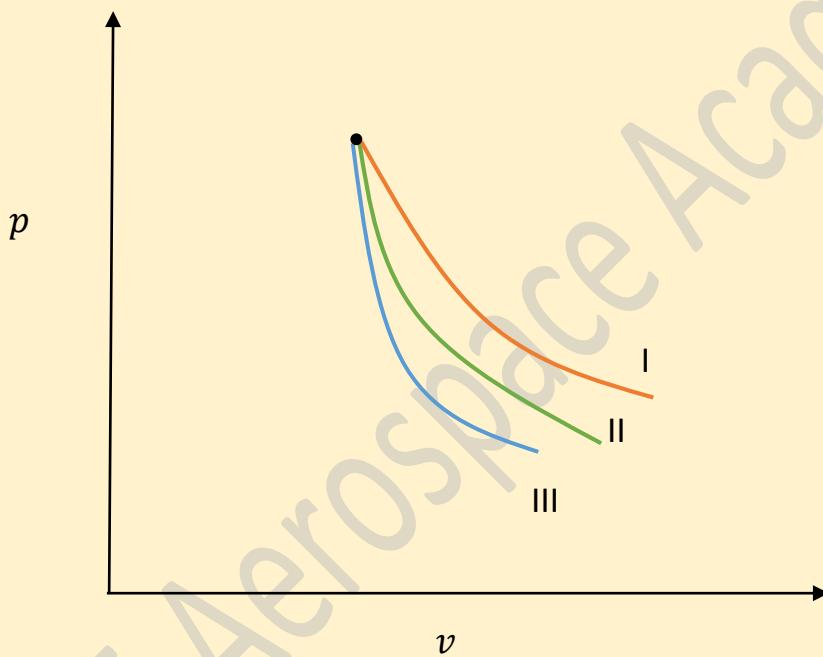
- A) Increase B) decrease C) remains constant D) can increase or decrease

Q2 Air is required to heat by two different process

Process 1 - at constant pressure and process 2 - at constant volume.

By how much percentage, Heat required in process 1 will be higher than heat required in process 2 if increase in temperature in both case is equal

Q3 Three process (isentropic process, constant temperature process, polytropic process $p v^{1.8}$) are shown on $p v$ diagram below.



Which path belongs to isentropic Process?

- A) I B) II C) III D) can't predict

Q4 For an ideal gas, how many independent properties are there?

Q5 process is govern by the law $p v^n = c$, what is the value of n if process is constant temperature process.

Q6 Control volume means

- A) An isolated system
B) Specified mass
C) Affixed to region in space

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D) A closed system

Q7 Isentropic process is

- A) Reversible adiabatic
- B) Reversible isothermal
- C) Irreversible adiabatic
- D) Pure adiabatic

Q8 which of the following is not the property of a system

- A) Temperature
- B) Pressure
- C) Specific volume
- D) Heat

Q9 during constant pressure process volume of a system decreases to the three times of original volume. What will be the final temperature of system if initial temperature is 27 degrees Celsius

- A) 81 degree Celsius
- B) 900 degree Celsius
- C) 627 degree Celsius
- D) None of the above

Q10 Cyclic integral of a property is always

- A) Positive
- B) Negative
- C) 0
- D) Indeterminate

Q11 If molecular mass of air is 28.94, then the value of gas constant R for air is?

Q12 Range of adiabatic index γ is

- A) infinite
- B) 1 to 1.67
- C) 1005 to 1147
- D) 1.33 to 1.4

Q13 Calculate the C_p and C_v value for nitrogen (N_2) if $\gamma_{N_2} = 1.4$

Q14 polytropic process is governed by $pV^n = c$ if n is very large, then that process will be termed as

- A) Constant pressure process
- B) Constant volume process
- C) Constant temperature process
- D) Adiabatic process

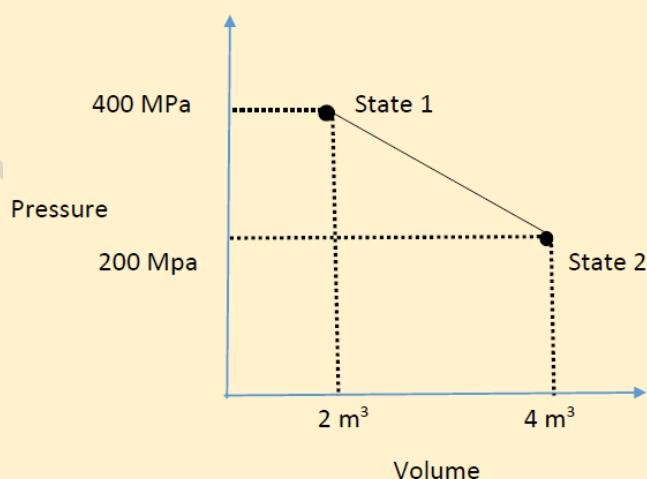
Q 15 Find difference of $C_p - C_v = \text{KJ/kgK}$, for nitrogen, oxygen and air.

Q 16 write down 2 T-ds equation

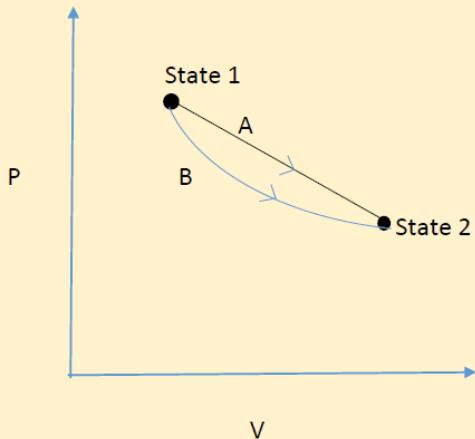
Q 17 which line has more slope on T-S plane

- A) Constant pressure
- B) constant temperature
- C) Constant volume
- D) both A and B

Q 18 Find out the work done for given process, when system changes its state from state 1 to state 2



Q 19 Two different Path (A&B) between 2 states taken by system is shown in figure. Then Which of the following is correct?



- A) $Q_A = Q_B$
- B) $Q_A > Q_B$
- C) $Q_A < Q_B$
- D) Cannot predict from given data

Q 20 Derive the displacement work done formula for Polytropic process given by

$$pv^n = c$$

Q 21 1 kg of air expands isothermally in piston cylinder arrangement from 6 bar and 0.015 m^3 to final volume of 0.1 m^3 . Find final pressure, temperature, change in internal energy and heat transferred.



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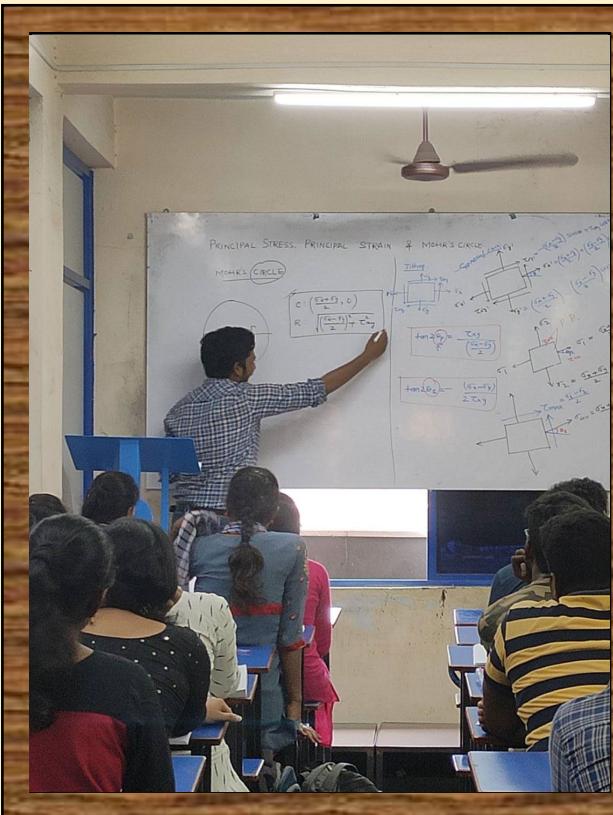
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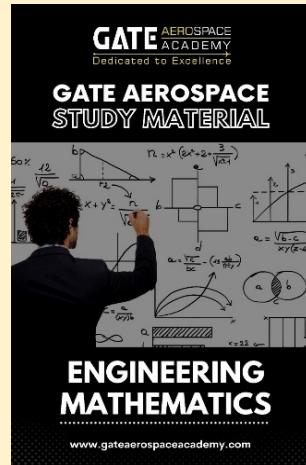
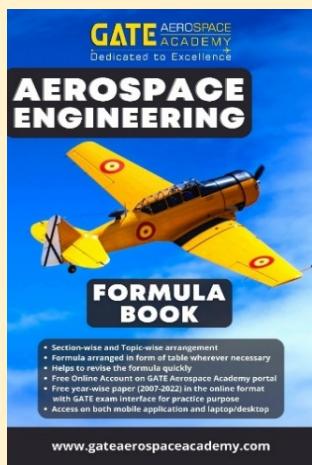
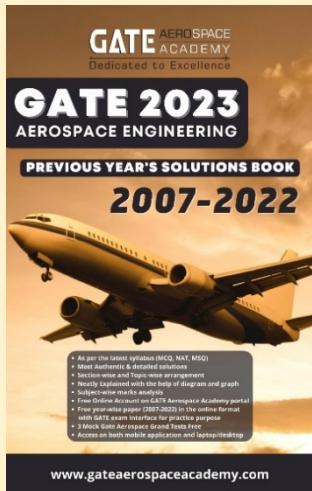
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