

- 1) As Carnot cycle is not used in practical life then why we are studying this cycle.
- 2) What is thermodynamic temperature scale, derive its expression from T-S diagram.
- 3) Explain 4-stroke diesel cycle, on T-S diagram at which point will you design the engine and why?
- 4) Whether material properties are dependent on temperature. If yes, then how
- 5) Design the engine cylinder for 4-stroke diesel engine
- 6) Explain Lamé's equations and draw stress distribution for radial and hoop stress.
- 7) What is radius of gyration?
- 8) Design the flywheel for 4-stroke diesel engine and draw its T- θ diagram.
- 9) What is tonne of refrigeration?
- 10) Have you seen the pot made up of soil (mud), which is used for cooling of water? How water cools in this pot? Draw its process on psychrometric chart.
- 11) Why cooler is not used in Mumbai? Draw the process of air cooler on psychrometric chart.
- 12) Design air conditioner for a given room under summer conditions.
- 13) Draw comfort chart?
- 14) There is a cylinder of height h filled with water and from the height H above this cylinder a mass m is dropped, draw velocity vs. time graph for this case.
- 15) What is terminal velocity?
- 16) What will be the velocity if you drop a mass (m) in an open ground from height h , when it reaches ground?
- 17) The velocity expression which you obtained in Q.16 is independent of mass, whether it means if you drop two different masses from same height, they would reach ground at the same time.
- 18) Draw velocity vs. time and acceleration vs. time graph for different displacement vs. time graphs
- 19) Why aeroplane flies at very large heights?
- 20) What is the need of long runway for aeroplane?
- 21) Draw temperature profile when hot water is flowing in the pipe and there is cold air outside the pipe.
- 22) Draw thermal and hydro dynamic boundary layers for the same case.
- 23) What is fully developed flow and if you double the diameter of pipe, then upto what length there will be entry length and when this flow will be called as fully developed flow?
- 24) Draw Rankine Cycle and give physical significance of every point.
- 25) Why don't we feed the steam from turbine to boiler? If lower line brought to $y=0$ then what is the efficiency and physical situation?
- 26) What is Pascal's law and hydrostatic Paradox?
- 27) Draw SFD and BMD for all possible cases of loading



- 28) Different modes of Heat transfer, which is the 4th one.
- 29) What is the basis of shaft design?
- 30) Where to place a centrifugal pump along vertical head line
- 31) Log profile in heat exchanger? Concave or Convex?
- 32) While inflating a balloon P and V both are increasing, does it violate Boyles law, Explain.
- 33) What is the difference between True and Engg strain?
- 34). Draw Stress-strain diagrams for different materials.
- 35) Shear profile in a cross section of a beam.
- 36) In Pelton wheel turbine cup, both outward and inward speed are equal. Explain.
- 37) Explain Cavitation and Water Hammer
- 38) Why wind speed is high in summer
- 39) Heat transfer on Horizontal and Vertical plates
- 40) What are TEMA standards?
- 41) Yield point for Aluminium does not exist. How to we calculate its yield point
- 42) Difference between Pump and Compressor
- 43) Explain PMMs.
- 44) Design of air duct.
- 45) What is Charles law and Boyle's law?
- 46) If two cylinders connected by a pipe to allow the gases to diffuse, then draw the PV and TS diagrams of process.
- 47) Why we opt PV in some cases while TS diagrams in others?
- 48) What is draft Tube?
- 49) If petrol is poured in CI engines and Diesel is poured in SI engines, what happens?
- 50) As entropy is a measure of randomness, how do you explain the constancy of entropy in an isentropic expansion though the volume is increasing?
- 51) An earthen pot maintains lower temperature compared to surroundings without any work input, does it violate second law of thermodynamics, explain.
- 52) What is Idling and cruising, what type of mixture is required during maximum power conditions
- 53) Draw stress strain curves for different FLUIDS
- 54) Hot and cold water flows in two different pipes of same dimensions, in which pipe frictional (viscous) losses are more

