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PART – A

1. State zeroth law of thermodynamics.

2. List out the different types of units of pressure.

3. State Charle's law.

4. Define compression ratio.

5. Name the application of Pascal's law.

6. Define ideal fluid.

7. Define wetted perimeter.

8. Name the applications of SFEE.

PART – B

9. Derive $C_p - C_v = R$.

10. Explain the laws of perfect gas.

11. Compare isothermal and isentropic process.

12. What are the assumptions in deriving air standard efficiency?

13. Derive the SFEE equation for reciprocating compressor.

14. Define atmospheric pressure and gauge pressure.

15. Compare venturimeter and orificemeter.

16. Draw a sketch of a Bourdon's tube pressure gauge.

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PART – C

17. (a) A gas cylinder has got a volume of $0.03m^3$ and indicates a pressure of 800 kN/m² and temperature of 30°C. Find out the weight of the gas, if the value of gas constant of the gas is 0.27 kJ/kgK.

(Or)

(b) Explain the three types of thermodynamic system with an example.

18. (a) A gas is compressed isothermally from a pressure and volume of 100 kN/m² and 0.056m² respectively to a volume of 0.007m³. Find the final pressure and the work done on the gas.

(Or)

(b) Derive the heat transfer for polytrophic process.

19. (a) Compare the ideal and actual P–V diagrams.

(Or)

(b) In a diesel engine with the comparison ratio of 14, if the fuel cut off is delayed from 6% to 9% of the stroke. What will be the loss in ideal efficiency?

20. (a) Explain with a suitable diagram of a hydraulic press and a hydraulic jack.

(Or)

(b) Describe with a neat sketch of a diaphragm pressure gauge.

21. (a) Find the flow of water through a 0.4m × 0.15m venturimeter when the differential gauge connected in the mouth and throat is 0.25m of Hg, assuming the C_d is 0.98.

(Or)

(b) Using Chezy's formula, find the head lost due to friction in a pipe of 80mm diameter and length 35m. The velocity of flow is 2m/s. Take C is 100.

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