Q.26 State third law of thermodynamics. (CO1)
Q.27 How do you select a steam boiler? (CO5)
Q.28 Explain PMM of first and second kind. (CO1)
Q.29 Write short note on P-V-T surface. (CO3)
Q.30 What do you mean by latent heat of steam. (CO4)
Q.31 Classify the steam boilers according to the position of furnace. (CO5)
Q.32 Calculate the air standard efficiency of a Diesel cycle having compression ratio and expansion ratio 10. (CO2)
Q.33 What conditions must be satisfied for thermal reversibility of a cycle? (CO2)
Q.34 What are the uses of compressed air? (CO6)
Q.35 What are the advantages of multistage compression? (CO6)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Explain second law of thermodynamics by stating Kelvin-Plank and Clausius statements. (CO1)
Q.37 Explain construction and working of Babcock and Wilcox boiler with neat sketch. (CO5)
Q.38 What is an air compressor? Describe construction and working of a single stage reciprocating air compressor with labelled diagram. (CO6)

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4th Sem / Mech
Subject:- Thermodynamics - I

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 If there is no transfer of mass and energy to and from system, it is a (CO1)
a) Closed system b) Open system
c) Isolated system d) Constant flow system

Q.2 A gas which obeys all the gas laws under all conditions of temperature and pressure is called (CO1)
a) Perfect gas b) Natural gas
c) Real gas d) All of the above

Q.3 The state of a substance whose evaporation from its liquid state is complete is called (CO2)
a) Vapours b) Steam
c) Real gas d) Perfect gas

Q.4 The value of characteristic gas constant (R) for atmospheric (CO4)
a) 287 J/kg K b) 0.287 J/kg K
c) 2.87 J/kg K d) 28.7 J/kg K

Q.5 In an isothermal process, internal energy (CO2)

a) Increases b) Does not change

c) Decreases d) None of the above

Q.6 Second law of thermodynamics defines (CO1)

a) Internal energy b) Entropy

c) Temperature d) Heat

Q.7 For complete specification of superheated vapour, one needs (CO4)

a) Pressure

b) Temperature

c) Both pressure and temperature

d) Specific volume

Q.8 Babcock and Wilcox boiler is a (CO5)

a) Water tuber boiler

b) Multi tabular boiler

c) Externally fired boiler

d) All of the above

Q.9 The efficiency of Carnot cycle increases with (CO3)

a) The increase in highest temperature

b) The decrease in highest temperature

c) The decreases in lowest temperature

d) The increase in lowest temperature

Q.10 The volume of air delivered by the compressor is called (CO6)

a) Swept volume

b) Compression ratio

c) Compressor capacity

d) Mean effective pressure

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 Name different types of thermodynamic systems (CO2)

Q.12 Define thermodynamics. (CO1)

Q.13 State Avogadro's law. (CO1)

Q.14 What is the other name of constant volume process? (CO3)

Q.15 Define heat source. (CO3)

Q.16 Which parameter is represented by ordinate of a Mollier diagram? (CO4)

Q.17 Define internally fired boiler. (CO5)

Q.18 Give any two examples of water tube boilers. (CO5)

Q.19 What is the other name of Diesel cycle? (CO3)

Q.20 Write the function of Intercooler. (CO6)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Define macroscopic and microscopic thermodynamics. (CO2)

Q.22 Explain Zeroth law of thermodynamics. (CO1)

Q.23 Explain Boyle's law. (CO1)

Q.24 What is isobaric process? (CO3)

Q.25 Find the mass of a gas occupying $5.5m^3$ at 7 bar absolute and 200^oC. Take gas constant R=287 J/Kg K. (CO2)