No. of Printed Pages : 4
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3rd Sem / Mechanical Engg

Subject : Thermodynamic-I

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 The intercooler in multi-stage compressor stroke is done

a) To cool the air at delivery

b) To minimise the work of compressor

c) To cool air during compression

d) To enable compression in two stage.

Q.2 Which of the following is a water tube boiler.

a) Babcock and wilcox boiler

b) Lancashire boiler

c) Cachran boiler

d) Locomotive boiler

Q.3 Which form of the vapour has s behaviour close to that of perfect gas.

a) Wet vapour only

b) Dry saturated vapour

c) Wet and dry vapour

d) Superheated vapour

Q.4 When the expansion of the gas take place according to the law of perfect gas then the process is called

a) Polytropic process b) Hyperbolic process

c) Adiabatic Process d) Isothermal process

Q.5 The state of substance whose evaporation from its liquid state is complete is called

a) Vapour b) Steam

c) Real gas d) Perfect gas

Q.6 Relative efficiency is

a) Actual thermal efficiency / air standard efficiency

b) air standard efficiency/Actual thermal efficiency

c) Actual thermal efficiency*air standard efficiency

d) None of the above

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 In sugar mills _____boiler is used.

Q.8 Throttling process is reversible process.(True/False)

Q.9 The value of characteristic gas constant for air is 287j/kg K . (True/False)

Q.10 A homogenous mixture of two or more ideal gas is called an _____.

Q.11 Define boiler.

Q.12 Name any three thermodynamic property of steam.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Classify boilers in details.

Q.14 Define the following with an example

a) open system b) isolated system

Q.15 Explain the construction and working single stage reciprocating air compressor .

Q.16 What is a steam ? Explain its various types.

Q.17 State and explain first law of thermodynamic in brief.

Q.18 Write a short note on mountings and accessories of boiler.

Q.19 State Regnault's law.

Q.20 Enlist the various advantages of centrifugal compressor .

Q.21 Compare Otto cycle and diesel cycle.

Q.22 How do we obtain characteristic gas equation by combining Boyle and charles law ?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 In a diesel engine the compression ratio is 14:1 and the fuel is cut-off at 10 % of stroke. find the air standard efficiency of the engine. Take γ for air=1.4

Q.24 Derive an expression for work done, change in internal energy and rate of heat transfer for an adiabatic process .

Q.25 Explain the construction & working of rotary centrifugal air compressor in detail. Also write its