

Semester : II (V Dean)

Academic Year : 2024-2025

Course No. : DE-206

Course Title : Boilers and Steam Generation

Credits : 1+1=2

Total Marks : 50

Day & Date : Wednesday; 20/08/2025

Time : 2.00 hrs.

- Note :**
- 1) All questions from **Section 'A'** are compulsory.
 - 2) Solve **Any Three** questions from **Section 'B'**.
 - 3) Draw neat and well labeled diagram wherever necessary.

SECTION - 'A'

Q. 1 A) Define the following. (05)

- i) Superheated steam
- ii) Specific heat
- iii) Latent heat of vaporization
- iv) Calorific value of fuel
- v) Boiler draught

B) Match the pairs. (05)

Column 'A'

Column 'B'

- | | |
|---|--------------------------|
| 1) Boiler mounting | a) Carbon steel |
| 2) Boiler accessory | b) h_f |
| 3) Steam pipes material of construction | c) Feed water pump |
| 4) Latent heat of steam | d) Water level indicator |
| 5) Specific enthalpy of saturated water | e) L or h_{fg} |

Q. 2 A) State whether True or False. If false, rewrite the statement after making necessary corrections. (05)

- i) Dryness fraction of dry steam is 1.
- ii) In fire tube boiler the flue gasses surround the tubes.
- iii) Function of safety valve is to prevent excessive pressure building up in steam boiler.
- iv) Fusible plug protects heating surface area of the boiler against overheating damage.
- v) Economizer reduces the economy of boiler.

B) Choose the most appropriate answer from the options given below. (05)

- i) Molecular weight of oxygen

a) 32	b) 34
c) 23	d) 43
- ii) Which among the following is not a fire tube boiler

a) Lancashire boiler	b) Locomotive boiler
c) Cochran boiler	d) Babcock and Wilcox boiler
- iii) are provided in the flue passage to control the flow of flue gases

a) Agitators	b) Mixers
c) Dampers	d) Baffles

- iv) helps to remove sediments and precipitated sludge periodically when boiler is in operation
- | | |
|---------------------|------------------|
| a) Feed check valve | b) Blow-off cock |
| c) Steam scrubber | d) Vacuum pump |
- v) In locomotive boiler the draught is produced by
- | | |
|---------------------------|--------------------|
| a) chimney | b) Steam jet |
| c) An induced draught fan | d) Centrifugal fan |

SECTION - 'B'

- Q. 3 A) Define calorific value of fuel. Explain higher and lower calorific value of fuel. (05)
B) What do you understand from boiler draughts? (05)
- Q. 4 A) Write brief classification of boilers. (05)
B) Explain simple vertical tube boiler with neat diagram. (05)
- Q. 5 A) Define air compressor and give its detail classification. (03)
B) What is boiler efficiency? (03)
C) Explain the formation of steam with the help of temperature enthalpy graph. (04)
- Q. 6 A) Explain lever safety valve with neat diagram. (03)
B) State importance of steam table and Molier chart. (03)
C) A certain fuel contains carbon 86%, Nitrogen 2%, Oxygen 8% Sulphur 2% and remaining ash. Determine the higher and lower calorific value of the fuel. (04)
- Q. 7 Enlist different mountings and accessories of boilers. Explain any two mounting and two accessories with net diagram. (10)
