

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B.Tech. (D.T.) Degree Course 2017-18**

Semester	: II (V Dean)	Academic Year	: 2017-2018
Course No.	: DE-206	Course Title	: Boilers and Steam Generation
Credits	: 1+1=2	Total Marks	: 50
Day & Date	: Wednesday, 13.06.2018	Time	: 11.00 to 13.00

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

- i) Calorific value of Anthracite is approximately .....
  - a) 25000 kJ/kg
  - b) 12000 kJ/kg
  - c) 14000 kJ/kg
  - d) 1000 kJ/kg.
- ii) Bomb calorimeter is used to determine the calorific value of .....
  - a) Solid fuels only
  - b) Liquid fuels only
  - c) Solid as well as liquid fuels.
  - d) Gaseous fuels.
- iii) The draught produced by steel chimney as compared to that produced by brick chimney for the same height is .....
  - a) Less
  - b) More
  - c) Same
  - d) May be more or less
- iv) The function of the following fitting in a boiler is to prevent the pressure exceeding maximum limit .....
  - a) Feed check valve
  - b) Blow off cock
  - c) Safety valve
  - d) Fusible plug
- v) The oxygen percentage by volume in air is .....
  - a) 21 %
  - b) 23%
  - c) 30%
  - d) 79%

B) Define the following. (05)

- i) Renewable energy
- ii) Superheated steam
- iii) Wet steam
- iv) Calorific value
- v) Fire tube boilers

Q. 2 A) Draw neat labeled diagrams of following (05)

- i) Fusible plug
- ii) Water level indicator
- iii) Pressure gauge
- iv) Steam trap
- v) Safety valve

(P.T.O.)

- B) Correct the given statement. (05)
- i) The function of the fusible fitting in a boiler is to prevent the pressure exceeding maximum limit.
  - ii) Steel chimney is less efficient than brick chimney.
  - iii) Calorific value of diesel is higher than petrol.
  - iv) Only one water level indicator is mounted on the boiler.
  - v) Solar energy has a limitation as it remains constant.

**SECTION - 'B'**

- Q. 3 A) Explain the types of fuels used. Give calorific values of at least three commonly used fuels. (05)
- B) Differentiate between fire tube and water tube boilers. Explain any one in detail. (05)
- Q. 4 A) Explain the layout of steam line in a dairy plant. What points would you take care of while laying the steam line? (05)
- B) What do you mean by boiler mountings and accessories? Enlist three each. (05)
- Q. 5 A) How Mollier chart is helpful? What are the properties that can be read from the Mollier chart. (03)
- B) Explain the quality of steam. How it is measured? (03)
- C) What are steam traps? List the types of steam traps. Explain any one type. (04)
- Q. 6 A) Differentiate between natural and artificial draught (03)
- B) Explain wind and geothermal energy. What are their limitations? (03)
- C) Explain the working of Bomb Calorimeter. (04)
- Q. 7 Discuss the process of steam generation and explain the various types of steam in detail. (10)

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