

KERALA AGRICULTURAL UNIVERSITY
B.Tech (Food. Engg) 2011 Admission
IIIrd Semester Final Examination- January/February -2013

Cat. No: Meen.2104

Marks: 80

Title: Boiler and steam Engineering (1+1)

Time: 3 hours

I. Fill up the blanks: (10x1=10)

1. _____ is normally used for determining the higher calorific value of solid fuels.
2. Calorific value of Anthracite is approximately _____
3. Triple point of water is _____
4. Datum for gauge pressure is _____
5. During throttling process on wet vapour _____ remains constant.
6. Molecular Volume of a perfect gas at 1 ATM and 0°C is _____
7. In order to determine the dryness fraction of steam by throttling calorimeter, the steam after throttling operation must be _____
8. For Locomotive boilers the draught is produced by _____
9. Thermal efficiency of a good steam generator may be _____
10. 1 mm of Hg is also denoted by _____ torr.

II. Write short notes / answers on ANY TEN (10x3=30)

1. Explain Solid fuels.
2. What is meant by dryness fraction of steam.
3. Explain boiler efficiency

4. Explain about entropy of steam and entropy of super heated steam
5. Explain about Atmospheric pressure, Absolute pressure and gauge pressure
6. What is the function of a fusible plug?
7. What is mean by saturation temperature and saturation pressure?
8. List out the advantages of liquid fuels.
9. Explain about sensible heat and latent heat.
10. List out the advantages of mechanical draught.
11. How can classify the boiler according to the use
12. Explain the main guiding principles in choosing a particular type of steam boiler.

III. Write short essays on ANY SIX of the following: (6x5=30)

1. The calorific value of fuel oil is 52300KJ/Kg in the oxygen bomb calorimeter at 15⁰C. Calculate the calorific value of fuel at constant pressure at 15⁰C. The average chemical formula of the oil is C₁₆H₃₂.
2. Explain the difference between enthalpy of wet steam and dry saturated steam.
3. What is the function of chimney in natural draught and artificial draught system?
4. Discuss how the steam generators are classified, give examples of each classification.
5. With the help of neat sketch, explain Cochran boiler. What are its special features?
6. Explain the main distinguishing factors of fire tube boilers and water tube boilers. Discuss the merits and demerits of each type.
7. Explain how the wet steam, dry saturated steam, and super heated steam is produced.
8. Why the safety valves are necessary in boilers.

IV. Write essay on ANY ONE (1x10=10)

1. Explain about the Experimental determination of the calorific value of fuel by Bomb calorimeter with a neat schematic.
2. With the help neat sketch, explain the working of locomotive steam boiler, clearly explaining the draught system used.

6. Explain the experimental determination of calorific value of fuel by bomb calorimeter with a neat schematic.