

KERALA AGRICULTURAL UNIVERSITY
B.Tech (Food.Engg) 2012 and Previous Admission
IVth Semester Final Examination- (Re-Examination) -June/July -2015

Cat. No: Meen.2205

Marks: 80.00

Title: Boiler and Steam Engineering(1+1)

Time: 3 hours

I. Fill in the blanks [Answer ALL questions] (10 x 1=10)

- 1) The Mollier diagram is a chart on which enthalpy is the ordinate and _____ is the abscissa.
- 2) Throttling calorimeter is used for finding _____ of the steam.
- 3) Based on the tube content, Babcock and Wilcox boiler is an example for _____ boiler.
- 4) Molecular mass of nitrogen is _____.
- 5) For steam, temperature corresponding to critical point is _____ °C.
- 6) The ratio of mass of substance in Kg to the molecular mass of that substance is known as _____.
- 7) $2\text{CO} + \text{O}_2 = 2\text{CO}_2$. In the chemical equation 1 Kg of CO requires _____ Kg of O_2 .
- 8) When the steam contains moisture or particles of water in suspension, it is said to be _____.
- 9) Atmospheric pressure (1 atm) is specifically _____ mm of Hg.
- 10) The function of _____ is to remove sludge or sediments collected at the bottom most point in the water space in a boiler.

II. Write short notes on: [Answer ANY TEN questions] (10 x 3=30)

- 1) Explain the term 'critical point' with respect to Temperature-Entropy Chart of steam.
- 2) Distinguish between HCV and LCV of fuel.
- 3) Mention any three types of heat sources in boilers
- 4) Explain the terms: a) dryness fraction of steam, b) sensible heat of water and c) latent heat of vaporization.
- 5) Name any six boiler mountings.
- 6) Steam tables and their uses.

- 7) Function of a feed pump in a boiler.
- 8) Discuss main objects of a boiler trial.
- 9) Efficiency of Chimney (draught).
- 10) Main objectives of producing draught in boilers
- 11) Function and working of steam stop valve in a boiler.
- 12) Advantages of gaseous fuels.

III. Write short essay on: [Answer ANY SIX questions] (6 x 5=30)

- 1) Factors influencing boiler efficiency.
- 2) Explain the function of a separating calorimeter with neat sketch.
- 3) Explain flue gas analysis by Orsat apparatus.
- 4) Describe dead weight safety valve and high steam low water safety valve in boilers.
- 5) Steam traps in boilers.
- 6) Compare forced draught and induced draught.
- 7) Describe working of Benson boiler with neat sketch.
- 8) Obtain a condition for maximum discharge through the chimney (draught).

IV. Write Essay on: [Answer ANY ONE question] (1 x 10=10)

- 1) Explain the experimental determination of calorific value of fuel by Bomb Calorimeter with neat diagram.
 - 2) Describe with neat sketch, the construction and working of a locomotive boiler.
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