

KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2012 Admission
IVth Semester Final Examination- July -2014

Cat. No: Meen.2205

Title: Boiler and Steam Engineering (1+1)

Marks: 80
Time: 3 hours

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

- 1) Barrel calorimeter is used to find out _____ of the steam.
- 2) Reversible adiabatic process is also called _____ process.
- 3) The function of _____ is to indicate the level of water in the boiler.
- 4) Based on the tube content, Cornish boiler is an example for _____ boiler.
- 5) _____ is defined as the heat liberated in KJ by complete combustion of 1Kg of fuel.
- 6) Specific heat of water at constant pressure is usually taken as _____ KJ/Kg K.
- 7) Molecular mass of oxygen is _____.
- 8) Boiling point of water, at normal atmospheric pressure, is _____ °K.
- 9) For steam, pressure corresponding to critical point is _____ bar.
- 10) $2C + O_2 = 2CO$. In the chemical equation 1 Kg of C requires _____ Kg of O_2 .

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

- 1) Explain the terms: a) wet steam b) dry saturated steam and c) super heated steam.
- 2) Distinguish between natural draught and artificial draught.
- 3) Function of a superheater in boilers.
- 4) Mollier chart and its uses.
- 5) Requirements of a good fuel.
- 6) Advantages of liquid fuels over solid fuels.
- 7) Factors influencing selection of steam boiler.
- 8) Function and working of feed check valve in boilers.
- 9) Boiler efficiency.

- 10) Advantages of mechanical draught.
- 11) Requirements or conditions for proper combustion in boilers.
- 12) Name any six boiler accessories.

III. Write short essays on: [Answer ANY SIX questions] (6*5=30 marks)

- 1) Discuss function and location of an economiser in a boiler.
- 2) Explain experimental determination of calorific value of fuel by Boy's Gas Calorimeter.
- 3) Compare fire tube and water tube boilers.
- 4) Explain lever safety valve and spring loaded safety valve in boilers.
- 5) Notes on over feed system and under feed system in fuel bed combustion for boilers.
- 6) Explain steam jet draught.
- 7) Discuss heat losses in a boiler.
- 8) Derive an expression for Height of chimney (draught).

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

- 1) Explain any one experimental method for determining the dryness fraction of steam with neat diagram.
 - 2) Explain with neat sketch, the construction and working of Cochran boiler.
-