



COLLEGE OF ENGINEERING, PUNE
(An Autonomous Institute of Government of Maharashtra)
SHIVAJI NAGAR, PUNE - 411 005

END Semester Examination
(ME-ILE14002) Steam Engineering
Branch: Mechanical Engineering

Course: B. Tech.

Semester: VIII

Year: 2014-2015

Max.Marks:60

Duration: 3 Hours

Date:20/11/2014

Time:- 2.00-5.00 pm

MIS No

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Instructions:

1. Figures to the right indicate the full marks.
2. Assume suitable data if necessary.
3. Use of steam table is permitted.
4. Mobile phones and programmable calculators are strictly prohibited.
5. Writing anything on question paper is not allowed.
6. Exchange/Sharing of anything such as stationery, calculator is not allowed.
7. Write your MIS Number on Question Paper

- Q1** a. "Steam is generated in the boiler at a high pressure and also distributed at a high pressure but for process heating application used at lower pressure." Justify the statement. Why the process steam boilers usually generate the steam at a pressure of at least 7 bar g? 5
- b (i) State in brief the necessity of steam trap in the steam line. 1
(ii) State the considerations for steam trap selection. 2
(iii) State different types of traps and write corresponding working principle. 2
- Q2** **Answer any TWO**
- a Explain Boiler Blow Down. What are the types of blow-down? State benefits of blow down control. 5
- b (i) What is waste heat? 1
(ii) Explain the importance of condensate recovery. Explain with a neat sketch working of condensate recovery system. 4
- c Explain with a neat sketch the working of "Pressure Powered Pump." 5
- Q3** **Answer any TWO**
- a List down all important components that make a steam distribution system. What are different energy efficiency opportunities to improve the energy efficiency of the steam distribution system? Discuss in brief any two. 5
- b Explain the importance of waste heat recovery. State different waste heat recovery equipments. Explain with the help of neat sketch working of a heat wheel. 5
- c What are the components of a basic control system? Which control valves are 5

most widely used in the automatic control of steam? Draw the neat labeled sketch of ball valve and globe valve.

Q4 Answer any TWO

- a Draw a schematic of a simple pressure reducing station. State different pressure reducing valves. Explain any one with neat sketch. 5
- b Explain the importance of insulation in steam piping system. What you mean by 'critical thickness of insulation' 5
- c Write a short note on Indian Boiler Regulations (IBR). 5

Q5 Answer any TWO

- a State and explain the reasons for condensate recovery. Draw a neat labeled diagram of a simple steam and condensate circuit, with condensate return to the boiler feed tank. State the types of condensate lines. 5
- b "In heat transfer applications steam with large degree of superheat is of little importance". Give any four points in support of this statement and discuss in brief any one. 5
- c (i) "For many reasons, steam is the most widely used commodities for conveying heat energy." List down any four reasons. 2
- (ii) ~~"In heat transfer applications steam with large degree of superheat is of little importance". Give any four points in support of this statement.~~ 3

Q6 Answer any TWO

- a Explain the importance of feed water quality and how it is maintained. 5
- b (i) Explain the concept of critical thickness of insulation and economic thickness of insulation. 4
- (ii) Why overhead HT electric cables are un-insulated. 1
- c State different methods of pressure measurement. Explain with neat sketch working principle of Bourdon's pressure gauge. 5