Total No. of Questions – [06]

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G.R. No.	

PAPER CODE	P122-254 PE/BE

May 2022 / INSEM+ENDSEM

F. Y. M. TECH.(Mechanical Design Engineering) (SEMESTER – II)

COURSE NAME: Process Equipment Design

COURSE CODE: MEPA12204C

(PATTERN 2020)

Time: [3 Hours] [Max. Marks: 60]

(*) Instructions to candidates:

1) **All Questions are compulsory**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1)

a) Describe the process control system? [5 marks]

b) Sketch and Elaborate the Liquid level control system . [5 marks]

Q.2) Receiver of the reciprocating compressor consists of a cylindrical shell of 1000mm length and 500 mm inner diameter. It is closed by the hemispherical ends. The air pressure is limited to 40 bar. The efficiencies of the welded joints for the shell and ends are 0.9and 0.8 respectively. If the allowable tensile stress is 80 N / mm^2

Evaluate

i) The thickness of cylindrical shell. [5 marks]

ii) The storage capacity of the receiver [5 marks]

Q.3)

a) Evaluate the torsional stress in N/mm^2 due to offset piping of pressure vessel having thickness 10 mm, internal diameter 700 mm subjected to torque 225 Nm. [5 marks]

b) Describe different types support require for Tall vertical Pressure vessel [5 marks]

Q.4)

a) Classify flow patterns in agitated vessels [5 marks]

b) What is the reaction vessel? What are the applications of reaction vessel? [5marks]

Q.5)

a) Interpret Process flow Diagram with the help of example [5 marks]

b) Enumerate the requirements for designing compressed pipes? [5 marks]

Q.6) Describe in detail manufacturing process of Heat Exchanger [10 marks]

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