

Printed Pages : 3



ECH053

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 151853**

Roll No.

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**B.Tech**

(SEM. VIII) THEORY EXAMINATION 2014-15

**FLUIDIZATION ENGINEERING**

Time : 3 Hours]

[Total Marks : 100

- Note: (1) Attempt **ALL** questions.  
 (2) Assume suitable data, if required.  
 (3) **All** question carry equal marks.

**1** Attempt any **FOUR** parts of the following: **5x4=20**

- (a) Compare the different fluidized beds in chemical process industries.
- (b) Explain the significance of Prandtl number in fluidization.
- (c) Describe pressure balance in circulation system in fluidization.
- (d) Define superficial and terminal velocity of the particles.
- (e) Enumerate the industrial applications of fluidization.
- (f) Explain the emulsion phase in bubbling fluidized bed.

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- 2 Attempt any **TWO** parts of the following: **10x2=20**
- (a) With the help of a neat diagram explain the principle of Spouted bed fluidization.
  - (b) Define 'minimum fluidization'. Also give the advantage and disadvantage of fluidization.
  - (c) Discuss the mechanism of elutriation of solids from a fluidized bed into the freeboard.
- 3 Attempt any **TWO** parts of the following: **10x2=20**
- (a) Define 'Fast fluidized bed'. Also discuss the flow characteristic in the regime of fast fluidized bed.
  - (b) Define 'Slug flow'. Also discuss pneumatic conveyors along with its applications in process industries.
  - (c) Enumerate heat transfer characteristics of gas-solid fluidized system with the help of suitable example.
- 4 Attempt any **TWO** parts of the following: **10x2=20**
- (a) Enumerate various applications of fluidized bed combustors with the help of suitable example.
  - (b) Discuss designs procedure of multistage system with their advantages and disadvantages.
  - (c) Discuss the working principles of Fluid bed drier with its application in the chemical process industries.

- 5** Write short notes on any FOUR parts of the following: **5x4=20**
- (a) Wake region
  - (b) Coalescence of bubbles
  - (c) Entrainment model
  - (d) Bound & Unbound moisture
  - (e) Bed porosity
  - (f) Reynold's number