Printed Pages : 3

ECH053

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

PAPER ID : 151853

Roll No. | | | | | | | | | | |

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.

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