(Following Paper ID and Roll No. to be filled in your Answer Books)										
per ID : 151853	Roll No.									

B.TECH.

Theory Examination (Semester-VIII) 2015-16

FLUIDIZATION ENGINEERING

Time : 3 Hours

Max. Marks : 100

 $(2 \times 10 = 20)$

Note: Attempt all three sections.

Section-A

1. Define the following:

- (a) Particulate fluidization
- (b) Superficial and terminal velocity of the particles
- (c) Concept of minimum fluidization
- (d) Pneumatic transport
- (e) Pressure drop in fluidization
- (f) Bed porosity
- (g) Importance of fluidization

- (h) Emulsion phase
- (i) Slug flow
- (j) Spouted beds

Section-B

2. Attempt any five questions: $(10 \times 5 = 50)$

- (a) Describe the positive pressure pneumatic conveyors with a neat diagram.
- (b) Explain the single rising bubble model and also define 'wake region'.
- (c) Define Fast Fluidization. What is the significance of pressure drop in turbulent and fast fluidization?
- (d) Describe the bubble behavior in the bed.
- (e) Define entrainment and elutriation from fluidized beds.
- (f) Discuss the turbulent fluidized beds.
- (g) Describe the hydrodynamics and processing in spouted beds.
- (h) Describe the Mass transfer phenomenon between fluid and particles.

Section-C

Attempt any two questions:

(15×2=30)

- 3. Oil of specific gravity 0.9 and viscosity 3mNs/m² passes vertically upwards through a bed of catalyst containing of approximately spherical particles of diameter 0.1 mm and specific gravity 2.6. At approximately what mass rate of flow per unit area of bed will fluidization occur?
- 4. Describe Fluidization bed catalytic cracking in detail and write its application in the Chemical Industries.
- 5. Explain the concept and working of Fluid bed driers. Also define bound moisture, unbound moisture and equilibrium moisture in drying.