

Ex/PT 32D/87/2005

**B. PRINTING ENGG PART-I EXAMINATION, 2005**

( 2nd Semester )

**MECHANICAL HANDLING OF MATERIALS**

Time : Three hours

Full Marks : 100

Answer Q. No, 1 and any *four* from rest.

1. (a) How improper storing and handling of blankets and rollers in a offset press affect the print quality ?

(b) How can you use a rigid arm elevator in a web offset press ?

(c) Why drive unit is preferably located at the head end of a belt conveyor ?

(d) Why centrifugal discharge type elevator is sensitive to overloading and under loading ? 4×5

2. (a) Describe with a neat sketch the device suitable for handling orates of glass bottles to serve different floors of a multistoried building.

(b) Describe with a neat sketch the device suitable for homogeneous mixing of two or more materials while conveying. 10+10

[ Turn over

( 2 )

3. (a) What are the essential parameters to be considered in designing a gravity roller runway ? Show these with a neat sketch,

(b) What is angle of repose for bulk materials ? How can you determine this angle for sand ? How does it affect in determining the width of a flat belt conveyor ?

10+10

4. State the differences between the suction system and the pressure system of handling bulk materials by pneumatic means.

Suggest a suitable device for unloading grains from a railway wagon and store it on a storage bin and sketch the arrangement with the necessary accessories. 20

5. (a) Find out the width of the belt of a horizontal 3-roller troughed belt conveyor designed to convey 150 tons / hr of 30 mm sized fine coal at a speed of 2.5 m / sec. The side idlers are set at angles of  $30^\circ$ . Bulk weight of granular fine coal is  $0.8 \text{ ton} / \text{m}^3$  and its static angle of repose is  $45^\circ$ .

(b) On what factors belt width and capacity of a belt conveyor carrying packed loads are dependent and how? 12+8

6. (a) Explain the device with a neat sketch suitable for handling rotogravure cylinders weighing nearly a ton.

(b) How do you handle and store plates properly in an offset printing press ?

( 3 )

(c) Name some of the handling equipments used commonly in printing and publishing houses. 10+6+4

7. Write short notes on ( any *four* ) 4×5

- (a) Characteristic hump size
  - (b) Super capacity bucket elevator
  - (c) Cut-flight screw conveyor
  - (d) Angle of repose
  - (e) Roller conveyor for small packaged items.
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