

August 2021

MATERIAL HANDLING*Time Allowed: 1 Hour**Full Marks: 35***Answer to Question No. 1 is compulsory and Answer any two questions from the rest.**

1. Answer the following questions (any ten): 2x10

Choose the correct answer from the given alternatives:

- i. What are bulk loads? (a) Lump of material, (b) Single rigid mass, (c) Homogeneous particles, (d) Heterogeneous particles.
- ii. The capacity of a crane is expressed in terms of- (a) Span, (b) Type of drives, (c) Tons, (d) None of the mentioned.
- iii. Angle of wrap is relating to which part of the belt conveyor? (a) Roller, (b) Hopper, (c) Tension unit, (d) Pulley.
- iv. Screw conveyors are suitable for- (a) Abrasive material, (b) Unit load, (c) Semi-solid materials, (d) All of the mentioned.
- v. The trough is caused to oscillate in- (a) Belt conveyor, (b) Screw conveyor, (c) Vibrating conveyor, (d) None of the mentioned.
- vi. The type of belt used in bucket elevator is- (a) Duck type, (b) Solid woven cotton, (c) Stitched canvas type, (d) All are correct.
- vii. In pneumatic systems the medium used is- (a) Air, (b) Liquid, (c) Hydrogen, (d) Oil.

Fill in the blanks:

- viii. The belt conveyor capacity depends upon the cross-section of load & _____ of the belt.
 - ix. Loading efficiency for free-flowing material is _____.
 - x. Bucket elevators are not suitable for the vertical lifting of _____ materials.
 - xi. Blower is used in _____ conveyors.
 - xii. The medium used to carry materials in hydraulic system is _____.
 - xiii. AGVS, also known as _____.
2. a) What are the essential requirements of a good material handling system?
b) How are materials categorized? 4+3.5
 3. Explain the working principle of E.O.T crane by a schematic diagram. 7.5
 4. a) In a neat sketch, show the general arrangement of a belt conveyor system and label the different important parts.
b) How the conveyor belt is designated? 4+3.5
 5. Derive an expression of capacity for flat and troughed belt conveyors. 7.5
 6. Explain the basic working principle of a screw conveyor. 7.5

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| 7. | a) | State the advantages, and applications of vibratory conveyor. | |
| | b) | What are the different types of vibrating conveyor? | 4+3.5 |
| 8. | | Briefly explain types of bucket elevators. | 7.5 |
| 9. | a) | Explain positive pressure pneumatic conveying system. | |
| | b) | What are the advantages of pneumatic conveyors? | 4+3.5 |
| 10. | a) | What is AGVs? | |
| | b) | Write down the applications of AGVs. | 4+3.5 |
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