

Department of Mechanical Engineering
B. Mechanical 4th Year 2nd Semester Examination 2018

MATERIAL HANDLING

Time: 3 Hours

Full Marks: 100

Answer any FIVE questions
(Assume any data, if required)

1. (a) What are the main factors on which the choice of material handling equipments depends? Discuss in detail.
(b) What is the difference between unit load and bulk load? How are they characterized? How does bulk weight of a bulk material differ from its specific weight? What is static and dynamic angle of repose? [10+ (2 + 2 +3 + 3)]

2. (a) What type of material handling system is suggested in case of a machine shop?
(b) How is material handling system being classified on the basis of unit load and bulk load?
(c) What are the basic objectives of Material Handling System? [6+10+4]

3. (a) What is the full form of E.O.T crane? Mention the specification of an E.O.T crane.
(b) What are the advantages and limitations of it? How this crane is specified?
(c) Explain the long travel arrangement and cross travel of an EOT crane. Draw a schematic diagram of a bottom block. Why it is used? [(2 + 2) + (4 + 2) + (5 + 5)]

- 4.(a)Find the design load per fall if the capacity of the main hoist is 250T, Number of falls = 8 , F.O.S = 6 and Friction loss = 3%.
(b) Explain different types of cranes are used in warehouses and ship yards.
(c) On which factors the stability of a jib crane depends? [6+10+4]

[Turn over

5. (a) What are the different types of bucket elevators used in industry? State main factors on which the bucket speed of an elevator depends.
(b) Show with neat sketches, different types of buckets used on bucket elevators and state their uses. [(7 + 3) + 10]
6. (a) Draw a neat sketch of a belt conveyor system with side view along with its essential parts.
(b) Why and when troughing of the belt in a belt conveyor is necessary? Show any one methods of troughing. [10+10]
7. Write short explanatory note on *any two* of the following: [(10x2)=20]
- (a) Robot configurations and drive systems
 - (b) Types of chains used in conveying equipments
 - (c) Braking system of a EOT crane
 - (d) Application of Robots in manufacturing industry