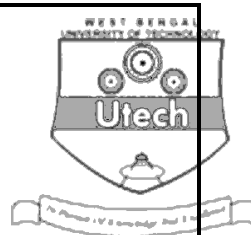


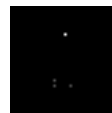
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[Full Marks : 70

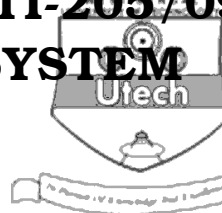
36015 (07 / 07)



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CS / M.Tech (MT) / SEM-2 / MTI-205 / 09
MATERIAL HANDLING SYSTEM
SEMESTER - 2



Time : 2 Hours]

[Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions.

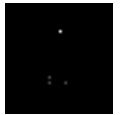
5 × 14 = 70

1. a) What do you understand by “principles of material handling” ? 2
 b) State and explain any four of the material handling principles along with your suggestions to achieve these principles in shop floor. 8
 c) What are the advantages and disadvantages of unitization and handling of unit loads ? 4

2. a) What do you mean by “systems concept” of material handling ? 6
 b) What is sized bulk material and how will you specify its average size ? 2
 c) How packaging is relevant to material handling ? What are the common packing methods ? 6

3. a) Classify materials handling equipment into basic equipment type and briefly define these types. 7
 b) What are the major specifications of a forklift truck ? 4
 c) Explain with a sketch the capacity rating of a FLT. 3

4. a) Find the carrying capacity of a 3 roll troughed belt conveyor for a free flowing material, in terms of belt width and trough angle. 6
 b) Why in a belt conveyor, belt tensioning is necessary ? Describe two different arrangements for belt tensioning. 6
 c) What is a closed belt conveyor ? 2



5. a) State the basic constructional feature and advantages of a trolley conveyors. What are the different types of trolley conveyors used ? 6
- b) Explain the dynamic phenomena in a chain-sprocket drive. 6
- c) Why wire ropes preferred over chains in hoisting equipment ? 2
6. a) Work out the analytical expression for total resistance to motion of loads on a horizontal unpowered roller conveyor. 6
- b) What is the requisite inclination angle of a gravity roller conveyor ? 3
- c) Explain the method of discharging of a positive discharge bucket elevator. In these elevators, how the buckets are fixed to the moving element ? 5
7. a) What is the power required for conveying material in a horizontal screw conveyor ? 2
- b) Why is value of “artificial frictional coefficient” so large in a screw conveyor ? 2
- c) Explain, with a line diagram, functioning of a negative pressure pneumatic conveyor. What are its advantages and disadvantages ? 7
- d) Define “regular lay” and “lang lay” wire ropes. What difference do they make in operation ? 3
8. a) Why multiple pulley system is used in hoisting mechanism ? 2
- b) Explain working principle of a grab bucket. 4
- c) Explain with suitable sketch, working of a hand operated travelling hoist. 4
- d) What is a wharf crane ? What are the different types of wharf cranes ? What is “level buffing system” and what is its importance in the operation of a wharf crane ? 4

END