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Name of the College (Please tick, symbol is given)	:	**COES**	✓	**CMES**		**COLS**	
Program/Course	:	**B Tech/Mechatronics Engineering**					
Semester	:	**VIII**					
Name of the Subject	:	**Materials Handling**					
Subject Code	:	**MEEL 451**					
Name of Question Paper Setter	:	**Mr. Ramesh M**					
Employee Code	:	**40000668**					
Mobile & Extension	:	**9997521817 Ext 1168**					

Note: Please mention additional Stationery to be provided, during examination such as Table/Graph Sheet etc. else mention "NOT APPLICABLE":

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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, April, 2017

Program/course: B Tech Mechatronics Engg | **Semester – VIII**
Subject: Materials Handling | **Max. Marks : 100**
Code : MEEL 451 | **Duration : 3 Hrs.**
No. of page/s: 2

SECTION A (4X5 = 20 marks)

1. Contrast on the relationship of material handling to plant layout.
2. Compare the product layout and process layout in material handling.
3. Highlight the different types of material cranes used?
4. Differentiate between mass flow bins and funnel flow bins.

SECTION B (4X10 = 40 marks)

5. Write about the selection of material handlings with the help of neat diagram.
6. Discuss the various steps involved in safe practice of lifting and moving materials.
7. Consider the ASIRS in which an S/R machine is used for each aisle. The length of the storage aisle = 280 feet and its height = 46 feet. Suppose horizontal and vertical speeds of the S/R machine are 200 feet/min and 75 feet/min. respectively. The S/R machine requires 20 sec to accomplish a P&D operation. Find: (a) the single command and dual command cycle times per aisle and (b) throughput per aisle under the assumptions that storage system utilization = 90 % and the number of single command and dual command cycles are equal.
8. Each aisle of a four-aisle AS/RS is to contain 60 storage compartments in the length direction and 12 compartments vertically. All storage compartments will be the same size to accommodate standard size pallets of dimensions: x = 42 in and J ""48 in. The height of a unit load e = 36 in. Using the allowances, a = 6 inches, b = 8 inches, and c = 10 inches, determine: (a) how many unit loads can be stored in the ASIRS, and (b) the width, length, and height of the AS/RS.

   OR

   What are the different accidents encountered by fork lift truck and explain their causes?

SECTION C (2X20 = 40 marks)

9. **(i)** What is material follow up? What is the role of purchase department in material follow up?
   (ii) When do you prefer decentralized dispatching to centralized dispatching? Explain their features.
10. **(i)** Suppose that a total of 50 SKUs must be stored in a storage system. For each SKU, average order quantity = 100 cartons, average depletion rate = 2 cartons/day and safety stock level = 10

cartons. Each carton requires one storage location in the system. Based on this data, each SKU has an inventory cycle that lasts 50 days. Since there are 50 SKUs in all, management has scheduled incoming orders so that a different SKU arrives each day. Determine the number of storage locations required in the system under two alternative strategies:

(a) randomized storage

(b) dedicated storage.

(ii) Write short notes on,

a. Screw Conveyors

b. Vibratory Conveyors.

OR

(i) How do you generate the various load chains, hooks and types of ropes used in material handling system?

(ii) Enumerate various carousel storage systems and AR/AS systems with example.

-------THE END-------