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INSTITUTE OF MANAGEMENT
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JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA

PGDM / PGDM (M) / PGDM (SM)

SECOND TRIMESTER (Batch 2025-27)

END TERM EXAMINATIONS, JANUARY 2026

SET-1

Course Name	**OPERATIONS MANAGEMENT**	Course Code	**20502**
Max. Time	**2 hours**	Max. Marks	**40 MM**

INSTRUCTIONS:
a. All Questions are compulsory.
b. This is a closed book examination.
c. Only calculators are allowed. Use of mobiles and any other electronic device prohibited.
d. Answers should be rich in content and **pointwise.** Avoid unnecessarily long answers.

Read the short case below and answer the following questions:

Case: Hightone Electronics Inc.

George Gonzales, operations director of Hightone Electronics Inc. (HEI), sat quietly at the conference table overlooking the lobby of the corporate headquarters office in Palo Alto, California. He reflected on the board meeting that had just adjourned and the challenge that lay ahead for him. The board had just announced their decision to start an Internet-based division of HEI. Web based purchasing in the electronics industry has been growing rapidly. The board felt that HEI needed to offer online web based purchasing option to all its customers to maintain the competitive position. The board looked to George to outline the key operations management decisions that needed to be addressed in creating a successful Internet-based online business. The next board meeting was just one week away. He had his work cut out for him.

Hightone Electronics Inc. was founded in Palo Alto, California, over 50 years ago. Originally, the company provided radio components to small repair shops. HEI Products were available to customers through third party brick and mortar specialty stores selling electronic / electrical components and equipment. Tie up with such stores helped HEI leverage the specialty store's existing customer base.

HEI built its reputation on high quality products and after sales service. As time passed, HEI began manufacturing and supplying more than just radio parts, adding items such as fuses, transformers, computers, and electrical testing equipment. The expansion of the product line had been coupled with an increase in the number and type of customers the company served. Although the traditional repair shops still remained a part of the company's market, technical schools, universities, and well-known corporations in the Silicon Valley were added to the list of customers.

Today HEI operates it's only manufacturing facility at Palo Alto with the same dedication that it had when it was first founded. Customer satisfaction, product quality and service remain it's top priority. HEI manufactures and stocks it's products at strategically located DCs across the country for delivering it's products to the downstream customers. Most orders from HEI's B2B (Business-to-Business) customers are fulfilled within 48 hours, and all components are warranted for a full year. HEI sells over 22,000 different items.

Expanding HEI to include online web-based selling seems to be a natural extension of it's existing sales and distribution channel that the company already does successfully. George Gonzales agrees that the company has no choice but to move in this competitive direction. However, George does not agree with the opinion of the board that this would be "business as usual." He believes that there are many operations decisions that need to be identified and addressed. As he stated in the meeting, "Having a slick website is one thing, but making sure the right product is delivered to the right location is another. Operations is the key to making this happen." His challenge for the next board meeting was to identify the key operations decisions and persuade the board that these issues needed serious consideration.

Q1.

Is George Gonzales correct in his assessment that this would not be "business as usual"? Recall that HEI wishes to continue its reputation of high quality and service. Discuss any 3 key operations strategy decisions and any 2 planning decisions that need to be considered by George Gonzales for successful Internet-based online business.

(5 Marks)

Q2.

Pies Galore is a junior team member of George Gonzales and is presently working to forecast demand of one of the company's product i.e. electrical testing equipment. Pies Galore would like to use exponential smoothing to forecast demand for the next month. However, she is not sure whether to use a high or low value of α. To take the decision, she would like to compare the forecast accuracy of a high and low α on historical data. She has decided to use smoothing constant α = 0.6 for the high value and α = 0.2 for the low value.

Given the following historical data, which value of α do will you recommend to Pies Galore for predicting demand accurately? (use MAD to gauge forecast accuracy)

Month	Demand (nos.)
1	425
2	299
3	355
4	450
5	490
6	375

(assume demand for Month 1 as both demand and forecast of Month 1)

Also, briefly explain the rationale in selecting an appropriate value i.e. high or low value of the smoothing constant α vis-à-vis demand pattern?

(5 Marks)

Q3.

Tara McCoy is the Materials Manager at HEI. Tara is responsible for purchasing and inventory management of variety of parts and components that HEI uses in its manufacturing. Recently, as demand for its finished goods has increased, Tara had difficulty in managing parts/components inventory for a particular category of finished product; materials department has frequently run out of some crucial parts required for manufacturing the finished product and seem to have an endless supply of others.

In an effort to control inventory more effectively, Tara would like to classify their inventory of parts according to the ABC approach. Following is a list of selected parts and the annual usage and unit value for each:

Item	Annual Demand	Unit Price ($)
101	500	0.50
102	1,500	0.20
103	5,000	1.00
104	250	4.50
105	1,500	1.20
201	10,000	0.75
202	1,000	1.35
203	1,500	0.20
204	500	0.80
205	100	. 2.50

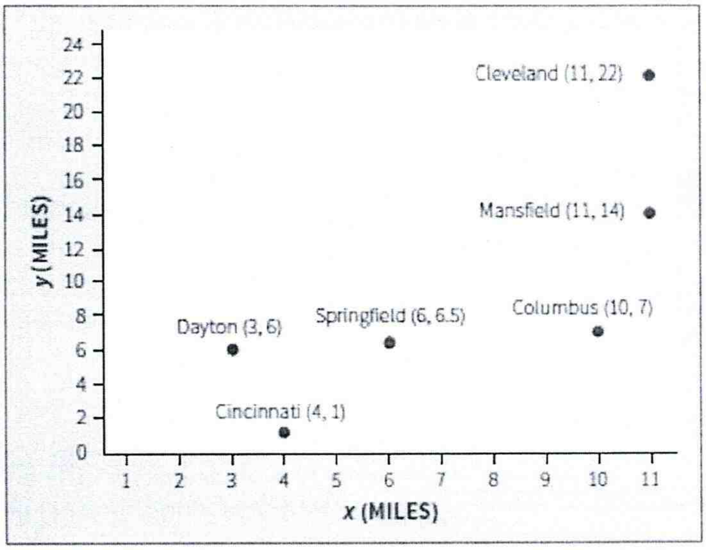
Propose an ABC classification scheme for better inventory management of above mentioned parts.

(5 Marks)

Q4.

Santa Cruz is the Logistics Manager at HEI. Santa is considering where to locate HEI's new warehouse in order to service its four partner stores located in four Ohio cities: Cleveland, Columbus, Cincinnati, and Dayton. Two possible sites for the warehouse are being considered. One is in Mansfield, Ohio, and the other is in Springfield, Ohio.

Location map is shown below which depicts the location of four stores i.e. Cleveland (11,22); Columbus (10,7); Cincinnati (4,1); Dayton (3,6) as well as two potential warehouse locations – Mansfield (11,14); Springfield (6,6.5)



Santa Cruz has also compiled the expected loads between the four cities and the upcoming warehouse based on projected market demand.

City	Load between City and Warehouse
Cleveland	15
Columbus	10
Cincinnati	12
Dayton	4

Use the centroid method to determine and recommend to Santa Cruz best location for the upcoming warehouse.

(5 Marks)

Q5.

HEI's plans to build it's new corporate office. George Gonzales, Operations Director wants the new office layout should be efficient and employee friendly. George must finalise where to locate the various departments and service facilities in the corporate office. George has learned that locating each department appropriately will help in keeping unnecessary transit time to a minimum and thus it will boost employee productivity. Data collected on potential movements of employees between various departments based on past experience is shown below.

Construct a layout diagram for HEI's new corporate office on a 2x3 grid that minimizes nonadjacent movements of employees.

	Load Summary Chart To					
Deptt. - From	**1**	**2**	**3**	**4**	**5**	**6**
1		100	75		100	60
2	10			45	60	
3	30				85	
4	100	50			70	
5	25	70	30	40		65
6	65				35	

(5 Marks)

Q6.

Santa Cruz, Logistics Manager at HEI is receiving complaints from one of the HEI's major retailer in California regarding delays in receipt of shipment of ordered items. Develop a cause and effect diagram for the possible causes of late deliveries to the retailer.

(5 Marks)

Q7.

Santa Cruz, Logistics Manager at HEI is also concerned about the high inventory levels of many high value products at company's DCs. Recommend specific means to reduce the levels of cycle inventory and safety inventory at company's DCs.

(5 Marks)

Q8.

a. List the dimensions of quality for a customer who will buy HEI's products online at it's upcoming online website and for a customer who buy's HEI products at it's partner brick and mortar retail store.

b. Discuss the quality problems that HEI may face in it's Internet-based online business and how it might deal with such quality problems.

(2+3=5 Marks)

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