Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no.....

Name of the Program and semester: **BBA Semester 4**
Name of the Course: **PRODUCTION AND OPERATIONS MANAGEMENT**
Course Code: **BBA 402**
Time: 3 hours Maximum Marks: 100

Note:
(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)

a. Discuss the impact of lean production on operations. Explain the two-card Kanban system [CO2]

b. Define sales forecasting. Briefly explain the quantitative and qualitative methods of forecasting. [CO1]

c. Ten samples of 15 parts each were taken from an ongoing process to establish a p control chart. The samples and the number of defectives in each are shown in the following table. [CO3,4]

Sample	1	2	3	4	5	6	7	8	9	10
n	15	15	15	15	15	15	15	15	15	15
Number of defects	3	1	0	0	0	2	0	3	1	0

i) Develop a p chart for 95% confidence interval. (1.96 standard deviation)
ii) Plot the points on the chart and comment whether the process is under control

Q2. (2X10=20 Marks)

a. Define Production management. Identify the input, resources, primary transformation and desired output of the following: a warehouse, an automobile factory and a logistics company. [CO1,2]

b. "Layout decisions affect the efficiency of operations" Explain different types of plant layouts and their relevance to efficiency of operations. [CO 2]

c. ABC Ltd manufactures sports equipment. To improve efficiency, the company has invested in new machinery. Calculate partial productivities and the all factor productivity and analyze whether there has been any productivity improvement. [CO3,4]

	Last year	After new machinery	Cost data
Production	2,000	2,000	
Labour (hours)	600	550	Rs 35/hour
Material (Kg)	100	90	Rs 105/Kg
Capital invested	20,000	22,000	
Energy (BTU)	6,000	5,700	Rs 35/BTU

Q3. (2X10=20 Marks)

a. Differentiate between product design and development. Describe the stages of bringing a new product to market. [CO2]

b. Is JIT a philosophy or a collection of techniques? Analyze the impact of JIT on operations of a manufacturing firm. [CO 5]

c. Use the data given in table below to develop a forecast using 3 month moving averages. Also calculate

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forecast error and MAD. [CO3]

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Demand	37	40	41	37	45	50	43	47	56	52	55	54

Q4. (2X10=20 Marks)

a. Write short notes on any two of the following: [CO 1]

i) Material process charts

ii) Job enrichment

iii) Standardization and specialization

b. What is the importance of maintenance management? Explain measures of maintenance performance: MTBF, MTTR and availability. [CO2]

c. A stop watch time study was made of an assembly task that involved four elements. On the basis of the observations below, develop a time standard for this task. (Allowances are 15% of the normal time) [CO3]

	CYCLE TIME OBSERVED					
Job element	1	2	3	4	5	**Performance rating**
A	0.04	0.04	0.03	0.03	0.04	**100%**
B	0.12	0.10	0.09	0.10	0.10	**90%**
C	0.16	0.24	0.15	0.16	0.16	**115%**
D	0.13	0.13	0.12	0.14	0.14	**120%**

Q5. (2X10=20 Marks)

a. What are the key factors that influence selection of a plant location? How do they impact the overall efficiency and cost-effectiveness of a manufacturing facility? I llustrate your answer with suitable examples. [CO 2,5]

b. Describe the key functions and procedures involved in purchasing, and differentiate between the types of storekeeping methods commonly used in organizations. [CO 1,2]

c. ABC Corporation purchases 8,000 transistors each year as components in minicomputers. The unit cost of each transistor is Rs 10, and the cost of carrying one unit in inventory for a year is Rs 3. Ordering cost is Rs 30 per order. What are the optimal ordering quantity, the expected number of orders placed each year, and the expected time between orders? Assume 200-working days in a year [CO3]