KUMARAGURU
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M.E DEGREE EXAMINATIONS: JAN 2015

(Regulation 2014)

First Semester

INDUSTRIAL ENGINEERING

P14IET102: Operations Management

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. For which of the following options is make-to-stock strategy feasible?   [K$_2$]
    1. To produce custom based products from sub-assemblies
    2. To make standardized products with high volumes
    3. To accommodate flexibility and offer variety
    4. Where forecast is reasonably accurate

    a) Option 2 and 4   b) Option 1 and 4

    c) Option 1 and 2   d) Option 3 and 4

2. Which of the following are the factors on which the choice of a forecasting   [K$_1$]
    method depends?
    1. Data availability 2. Product life cycle 3. Accuracy required 4. Volume of
    demand

    a) Option 1 and 2   b) Option 2 and 4

    c) Option 1 and 3   d) Option 1 and 4

3. Consider the below mentioned statements: [K$_1$]
    1. Without the forecast, no production function can be taken up.
    2. Forecasts are subject to market dynamics and many other predictable
        parameters which will be known and controllable. State True or False:

    a) 1 – True 2 - True   b) 1-False, 2-True

    c) 1-False, 2-False   d) 1-True, 2-False

4. ABC is a soap producing company. The profits of the company have increased by 20% this year. The demand for the soaps increased at a high level and also the customers expect faster delivery. Which of the following manufacturing strategies should the company adopt to ensure immediate delivery of the soaps? [K₃]

   a) Assemble-to-order
   b) Make-to-Made
   c) Make-to-stock
   d) Service

5. Match the following

   1.Physical operations   A.Manufacturing

   2.Locational   B.Transportation

   3.Exchange   C.Retail operations [K₁]

   4.Physiological   D.Health care

   5.Informaional   E.Communication

   a) 1 A 2 B 3 C 4 D 5 E
   b) 1 A 2 C 3 B 4 D 5 E
   c) 1 E 2 B 3 C 4 A 5 D
   d) 1 A 2 B 3 D 4 C 5 E

6. Following is the steps(jumbled) to solve line balancing problems [K₃]

   1.Identify the Task

   2.Evaluate effectiveness and efficiency

   3.Apply heuristics to assign task to each station

   4.Identify precedence requirement

   5.Calculate minimum number of workstations required to produce desired output

   6.Seek further improvement

   Identify the correct sequence

   a) 1-5-3-4-2-6
   b) 1-4-5-3-2-6
   c) 1-6-5-4-3-2
   d) 1-4-2-6-3-

7. Aggregate planning is the is a --------------------- activity to Master production schedule [K₂]

   a) Preceding activity
   b) Succeeding activity
   c) Concurrent activity
   d) No relation between two activities

8. KANBAN card is a --------type of production system [K₁]

a) Pull   b) push

c) continuous   d) intermittent

9. In ERP implementation process , ------------- phase concerns Human resource   [K₁]

   a) Gap analysis   b) Re engineering

   c) Training and development   d) Configuration

10. Assertion JIT is a production methodology which aims to improve overall   [K₃]
    productivity through elimination of waste.

    Reason   1. JIT is a manufacturing system whose goal is to optimize processes
    and procedures by continuously pursuing waste reduction

    Reason 2. JIT implementation leads to more WIP and reduced lead time

    Reason 3. Due to JIT product cost is increased

    a) 1,2,3 are true   b) 1 – true ,2,3 are false

    c) 1,2,3 are false   d) 1,2, are true and 3 is false

PART B (10 x 2 = 20 Marks)

11. Compare the characteristics (any four) of continuous production and cellular production   [K₁]

12. Why the knowledge of operations management is essential for the success of today's organizations?   [K₂]

13. [K₂]

1. Opinion survey method	A. Quantitative method of forecasting
2.Marketting trials	B. Qualitative method of forecasting
3 Weighted moving average method	C .Qualitative method of forecasting
4.Exponential smoothing	D.Quantitative method of forecasting

    Match the correct answer

14. The -----------------accounts for the gradual shifting of the time series over a long period of time.   [K₁]

    Any regular pattern of sequences of values above and below the trend line is attributable to the -----------------of the series.

15. 1.------------- answers What do we want to produce and when production schedule and when?   [K₂]

2.--------------- answers How many are already scheduled to be available in each future period

3.----------- answers How many more we need to obtain for each future period

4.------------ answers When to order these amounts so they will be available when needed

Select the correct answer from the following

1.Master production schedule 2.bill of materials3.Inventory status file 4.Net requirement 5.planned order release

16.   [K₂]

Aggregate planning strategy	Method	Cost1.
1.	Produce in earlier period and hold until product is demanded	Cost of holding inventory
2.Change the size of the work force to vary production level in accordance with demand		
3.	Subcontract work to other firms	

Write suitable answer in the empty boxes

17. List the four pillars of Lean manufacturing   [K₁]

18. In line balancing cycle time is the ratio between ------------------- and -------------- ---------------------------   [K₁]

19. The general sequencing problem is to determine the ------------------- from amongst possible sequences that minimizes the total ----------------------   [K₁]

20. The term **performance** efficiency used in calculating the OEE of an equipment is defined as the ratio between --------------------- and ------------------------------   [K₁]

PART C (6 x 5 = 30 Marks)

21. Write any two examples for each component of "TIME SERIES" used in forecasting technique. [K₂]

22. Explain with examples (any three) the roll of Technology management in improving the productivity of operations in service industry. [K₁]

23. Draw the product structure diagram for a computer table and chair and prepare bill of material. [K₂]

24. List any five objectives of assembly line balancing. [K₁]

25. Write the Johnsons Sequencing Algorithm. [K₁]

26. List any five principles of "Just in Time " Technology. [K₁]

PART D (4 x 10 = 40 Marks)

27. Explain the different types of forecasting techniques used in practice. [K₁]

28. Compare Traditional and lean manufacturing (with at least 8 parameters) [K₂]

29. A company manufactures the customer durable products and the company intends to develop an aggregate plan for six months starting from July to December. The following information is available [K₃]

Month	July	August	September	October	November	December
demand	500	600	650	800	900	800
Working days	22	19	21	21	22	20

Cost details

Materials	Rs100/unit
Inventory carrying cost	Rs10/unit/month
Cost of stock out	Rs 20/unit/month
Cost of subcontracting	Rs 200/unit
Hiring and training cost	Rs 50/worker
Layoff cost	Rs100/worker
Labour hours required	Rs4/unit
Regular time cost for first 8 hours	Rs 12.5/hour
Overtime cost	Rs18.75/hr
Beginning inventory	200 units
Safety stock required	nil

30. A company is setting an assembly line to produce 192 units per eight hour shift. The information regarding work elements in terms of times and immediate predecessors are given   [K3]

Work elements	Time	Immediate predecessors
A	40	None
B	80	A
C	30	D,E,F
D	25	B
E	20	B
F	15	B
G	120	A
H	145	G
I	130	H

J	115	C,I

(i) What is the desired cycle time? (3)

(ii) What is the theoretical number of stations? (3)

(iii) What is the line efficiency and balance delay? (4)

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