

**MBA - MARKETING/FINANCE/HR/
PRODUCTION & OPERATIONS
MANAGEMENT (MBABM)**

Term-End Examination

December, 2014

**MBME-022 : PRODUCTION PLANNING AND
CONTROL**

Time : 3 hours

Maximum Marks : 100

Note :

- (i) *Section I is compulsory.*
- (ii) *In Section II, solve any **five** questions.*
- (iii) *Assume suitable data wherever required.*
- (iv) *Draw suitable sketches wherever required.*
- (v) *Italicized figures to the right indicate maximum marks.*

SECTION I

1. Read the given case and answer as directed :

Ronil Industries has a central PPC department working on the planning of manpower and inventory. The company works on a single shift basis of 9 hours duration. Company produces automobile components. Each unit of the component requires 5 labour-hours to be produced at a labour cost of ₹ 80 per hour (Regular Rate) or ₹ 110 per hour (Overtime Rate).

Units can be subcontracted at a cost of ₹ 600 per unit where as the in-house manufacturing cost (including labour and other expenses) is estimated at ₹ 500 per unit. There are currently 25 workers involved for this job. The hiring and training cost of the additional contract workers are ₹ 4,000 per person where the lay-off cost for a person is ₹ 3,000.

There is no beginning inventory and the inventory carrying cost is estimated to be ₹ 50 per unit annually. Stock out cost is estimated as ₹ 70 per unit per month.

The demand and number of days for each month are given in Table below :

Month	April	May	June	July	August	September
Demand (Number of units)	500	400	350	420	500	480
Working days in a month	25	26	26	24	23	26

Company's policy is to maintain the constant workforce of 25 while preparing the aggregate plans. Suggest an optimal aggregate plan out of the following :

1st Plan – Maintain and build inventory or incur stock out cost.

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2nd Plan – Use overtime and allow the idle time to meet the demand.

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SECTION II

2. Sohan Industries at Nagpur manufactures oil paints used for domestic painting purposes. The raw material required for manufacturing the paint is purchased from a vendor nearby to the factory. Although the lead time for receiving the material is fixed, the demand during this lead time varies. The Factory Manager of Sohan Industries determines the optimal level of inventory stock depending upon the probability of the demand of raw material during the lead time. He has determined the following probability values from the past experience.

Demand of raw material in litres	55	58	60	62
Probability	0.2	0.3	0.28	0.22

The carrying cost and stock out cost for the raw material is ₹ 10 per litre and ₹ 25 per litre respectively.

Suggest the optimal level of – Reserve Stock, Safety Stock and Buffer Stock of the raw material.

5+5+4

3. The following data relates to the inventory in a company :

Item	Axle	Bearing	Chassis
Price per unit (₹)	4,500	6,500	8,000
Carrying cost (₹ per unit per year)	50	50	70
Ordering cost (₹ per order)	200	300	250
Annual requirement (no. of units)	600	800	700
Space required (sq. feet per unit of item)	2.5	4	8

Determine the optimal order quantities for the three items considering available space in the stores as 8,000 sq. feet.

5+5+4

4. A firm in Chennai dealing with consumables for shipping companies has the following inventory folio :

Annual usage = 30,000 units

Ordering Cost = ₹ 150 per order

Carrying Cost = 10% of the average inventory

Unit cost = ₹ 30

Lead time = 15 working days

Total working days = 280 days per annum

It is observed from the past data that the demand during lead time (DDLT) has been up to maximum level of 100 units per day. Keeping this level in mind,

Determine :

- (i) The Reorder level 5
 - (ii) Average level of inventory stock held. 5
 - (iii) The ordering cost and carrying cost associated with fixed order inventory policy. 4
5. Production Kan-ban and conveyance Kan-ban is to be implemented in tandem in an organization. How will you implement both the Kan-bans in a transport company? 14
6. (a) How will you implement $y = ax^2 + bx + c$ in making the sales forecasting? State the procedure. 6
- (b) A Bank Manager wants to perform FSN analysis for improving its operations. Explain how you will perform the same. 8

7. (a) While making production and operations planning for making food items, JIT principles can be widely used. Explain this phenomenon by giving suitable examples and the relevant justification. (3 examples at least)

8

(b) Will you use Production inventory model at wholesale dealer ? Justify your answer with suitable examples.

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