

BACHELOR OF PRODUCTION ENGG. SUPPLEMENTARY EXAMINATION,2017(Old)
(3rd Year-1st Semester)
SUBJECT – Production Management

Time: Three hours

Full Marks: 100

Answer Question No. 1 and any *three* from the rest.

1. Answer (a) and any four from the following:
 - (a) What is a Production System? State various external and internal factors those influence the Production System. 4+8
 - (b) Explain the cycle of production functions and indicate their relative positions. 7
 - (c) Describe various existing organizational pattern of the firms on the basis of ownership. 7
 - (d) Differentiate between Master Scheduling and Detail Scheduling. Describe different types of production control systems. 7
 - (e) How "Queueing theory" can be utilized for controlling in process inventory? Explain some basic structures of queue. 7
 - (f) What are the different categories of inventory involved in a Production System? Describe various major cost factors associated with inventory. 7
 - (g) Explain Material Requirement Planning (MRP) within the context of overall planning for production. 7
2. Monthly demand in units for last one year is listed below. Determine the forecasted demand for the month of January of the next year using:
 - (a) Three period moving average.
 - (b) Exponential weighted moving average method with smoothing constant as 0.1
 - (c) Calculate the forecasted demands over as much of this period as possible and compare the accuracy of the two forecasts and comment on the practical implications of adopting these methods of forecasting.

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
215	208	195	200	191	185	180	180	181	205	225	235

5+5+10

3. (a) A scheduler has four jobs that can be performed in any of four centers. The cost per job is listed in the table below if they are performed in those work centers. Determine the allocation of jobs to work centers that results in the minimum cost, if jobs cannot be split.

Job	Work Centres			
	#1	#2	#3	#4
A	19	14	17	16
B	12	15	18	19
C	16	22	14	13
D	17	19	20	15

- (b) Using graphical method, determine the minimum time needed to process two jobs on six machines. The information about the machining sequence and the time required by each job on each machine is given below: 10

JOB 1						JOB 2						
M/c Sequence:	A	B	C	D	E	F	B	A	C	F	D	E
Time (Hours):	4	5	1	3	6	5	6	3	2	4	3	5

4. (a) What is recording level of an inventory policy? Deduce the Economic Order Quantity model for an organization and also identify limitations of this inventory model. 8
- (b) Consider an inventory situation in a manufacturing unit where milling cutters are ordered in boxes of one dozen per box. Annual demand is 400 boxes, the cost of placing an order is Rs. 12, and inventory carrying charges is 20 percent based on the average yearly inventory value. There are two price breaks as follow:

Quantity (Boxes)	Price per box (in Rs.)
1-49	2900
50-99	2800
100 or more	2700

Establish an optimum inventory policy.

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5. (a) What is balancing loss, how is it caused and how can it be reduced? 5
- (b) A company works an 8-hour day for 5 days per week. The production line is operated for only 7 hours per day to allow for needs as rest and delays. Given the information in the table below, determine the theoretical minimum number of stations if the line is designed for an output of 8400 units per week. Can the theoretical minimum number of stations be attained? Show a schematic of the minimum number of stations. What is the maximum possible efficiency? What is the actual possible efficiency? 5+3+3+2+2

Task :	a	b	c	d	e	f	g	h	i	j	k	l	m
Immediate Predecessor :	—	a	b	—	d	e	e	e	c,f,g,h	i	j	k	L
Task time (Seconds)	14	10	30	3	5	15	14	14	6	7	3	4	7

6. (a) In the context of MRP, explain following:
 (i) Inventory Status Records, (ii) Bill of Materials, and (iii) Explosion and Netting. 3X3
- (b) A manufacturing company produces two products A and B with the product structure shown below. It has orders for 150 units of product A in period 8 and 135 units of product B in period 8. The on hand inventory level of each item are A=5, B=2, C=135, D=300, E=356. When should be the orders released for each item and what should be the size of the orders? 5+6

