

Answer all five questions

Time: 03 hours

- Q1 a. “Layout significantly influences the behaviour of people and their perception of the job, ultimately affecting job performance, motivation and satisfaction”.
- Identify and briefly explain the advantages of effective and efficient plant layout
- (08 marks)
- b. “Briefly explain what do you understand by the term maintenance, and describe the different types of preventive maintenance?”
- (06 marks)
- c. Consider a manufacturing enterprise that is suffering from low material productivity, and advise the management how the material productivity could be improved.
- (06 marks)
- (Total 20 marks)
- Q2 a) “Japanese JIT buying is superior to U.S traditional buying”. What ways the factors differ in each type of buying?
- (08 marks)
- b) “Product redesigning is important for maintaining the market share and business improvement”. Specify and discuss the related concepts in designing a product.
- (06 marks)
- c) “Purchasing is clearly an important area of managerial activity”. Briefly explain the functions of a purchasing manager.
- (06 marks)
- (Total 20 marks)

Q3 a) A company uses a special kind of components in the manufacture of its products, which it orders from outside suppliers. the necessary data are given below :

Demand	- 200,000 Units per annum
Ordering cost	- Rs.200 per order
Carrying cost	- 20% of item price
Basic item price	- Rs. 100 per unit

The company is offered the following discounts on the basis

For order quantities	400 - 799 less 2%
	800 - 1599 less 4%
	1600 and over less 5%

You are required to establish the most economical quantity to order.

(14 marks)

b) Identify and briefly explain the main objectives for holding stocks.

(06 marks)

(Total 20 marks)

Q4 a) Consider the following data set:

Job sequence	Job operation Time(days)	Job flow time (days)	Job due date (days)
A	5	5	6
B	17	22	20
C	14	36	18
D	9	45	12
E	10	55	12

By using shortest processing time (SPT) rule calculate the following:

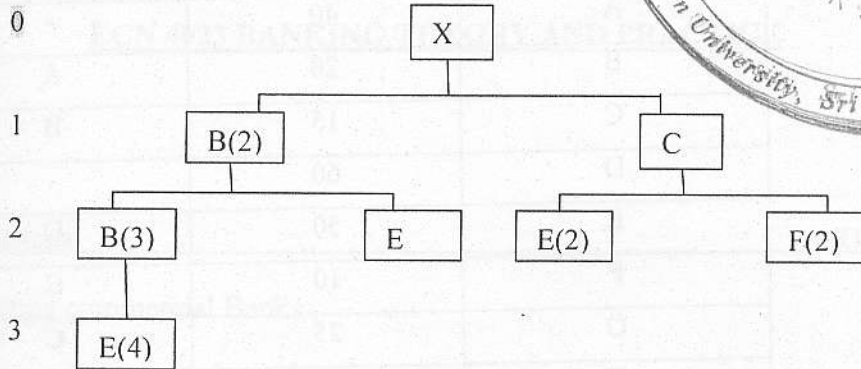
- I. Average flow time
- II. Average number of jobs in the system each day
- III. Average job lateness

(10 marks)

- b) Use the information presented in the following figure and answers the following questions.

A product structure tree for end item X

Level



- I. Determine the quantities of B, C, D, E and F needed to assemble one X.
- II. Determine the quantities of these components that will be required to assemble 10 Xs taking in to account the quantities on hand (i.e., inventory) of various components:

Component	On Hand
B	4
C	10
D	8
E	60

(10 marks)

(Total 20 marks)

- Q5 A company interested in balancing a production line that will manufacture an electronic football game to compete with the successful pocket-calculator size model of Mattel. Tasks, performance items, precedence relationships are shown:

Task	Performance Time (Seconds)	Must Follow
A	40	-
B	20	A
C	15	B
D	60	-
E	50	D
F	10	C
G	25	C
H	10	E
I	20	E
J	05	F,G,H,I
K	10	J

- a) Construct a precedence diagram for the tasks
(06 marks)
- b) To balance the line with a 60 second minimum cycle time, what is the theoretical minimum number of work station? (A seven hour day is worked)
(06 marks)
- c) Balance the line with longest operation time-rule, balancing to a 60 second cycle.
(08 marks)
- (Total 20 marks)