UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B TECH -MSNT	**Semester – V**
Subject (Course): Production and Operations Management	**Max. Marks : 100**
Course Code : MHEG 452	**Duration : 3 Hrs**
No. of page/s: 02 (Two)	

SECTION A (20 Marks)

1. Distinguish between productivity and efficiency.
2. Explain the purpose of establishing control limits for forecast errors.
3. Explain the term life cycle.
4. List the inputs and outputs of Master production schedule.

SECTION B (40 Marks)

5. A drycleaner uses exponential smoothening to forecast equipment usage at its main plant. August usage was forecasted to be 88 percent of capacity; actual usage was 89.6 percent of capacity. A smoothening constant of 0.1 is used.
   a. Prepare a forecast for September
   b. Assuming actual September usage of 92 percent, prepare a forecast for October usage.

6. Compute the total cost of aggregate plan for the following unit cost
   Regular Output: Rs 40
   Overtime: Rs 50
   Subcontract: Rs 60
   Average Inventory balance: Rs 10

Month	Jan	Feb	Mar	Apr	May	Jun
Forecast Output	300	320	320	340	320	320
Regular	300	300	300	300	300	300
Overtime	20	20	20	20	20	20
Subcontract	0	0	0	0	0	0

7. Consider the following single machine scheduling problem

Job j	1	2	3	4	5
Processing time	5	8	7	8	10
Due Date	12	14	12	9	20

Determine the optimal sequence that will minimize the mean flow time and mean tardiness
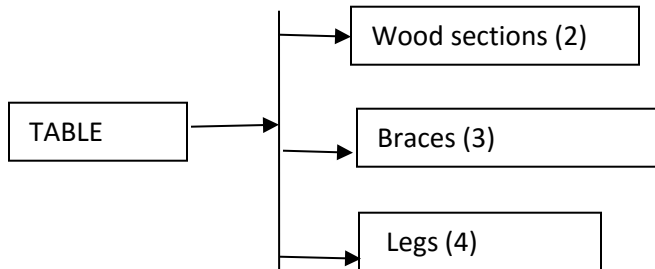
8. Explain the impact of technology on product and service design.

OR

Explain the steps involved in the design of product and services.

SECTION C (40 Marks)

9. A table is assembled with using three components as shown

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                        ┌──────────────────────┐
                   ┌───► │ Wood sections (2)    │
                   │     └──────────────────────┘
┌──────────┐       │     ┌──────────────────────┐
│ TABLE    │ ─────►│────►│ Braces (3)           │
└──────────┘       │     └──────────────────────┘
                   │     ┌──────────────────────┐
                   └───► │ Legs (4)             │
                         └──────────────────────┘
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The company that makes the table wants to ship 100 units at the beginning of the day 4, 150 units at the beginning of day 5, and 200 units at the beginning of day 7. Receipts of 100 wood sections are scheduled at the beginning of day 2. There are 120 legs on hand. There are 60 braces on hand. Lead-time (in days) for all the items shown in the following table. Prepare MRP using lot-for-lot ordering.

Quantity	Lead time
1-200	1
201-550	2
551-999	3

10. An organization requires the operations management for the industrial strategy, operations policy and conversion process. How do these elements relate to one another? How does it relate to the accomplishment of the organization objectives?

OR

Explain the modern production tools and its significance to productivity improvement.

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