

<b>7E7015</b>	Roll No. _____	[Total No. of Pages : 4]
<b>7E7015</b>		
<p><b>B.Tech. VII Semester (Main) Examination, Dec. - 2015</b></p> <p><b>Mechanical Engineering</b></p> <p><b>7ME5A Operations Management</b></p>		

**Time : 3 Hours**

**Maximum Marks : 80**  
**Min. Passing Marks : 24**

**Instructions to Candidates:**

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly).*

**Unit - I**

1. a) Describe the operations function and nature of operations manager's job.
- b) What is the difference between efficiency, effectiveness and productivity in context with business organization?
- c) What do you understand by the term "Competitiveness" of an organization? What are the various ways that Business organizations compete? (5+5+6)

**OR**

1. a) How does the number of periods in a moving average affect the responsiveness of forecast? (3)
- b) A company records indicates that monthly sales for a seven-month period are as follows:

Month	Sales (000, unit)
Feb	19
Mar	18
Apr	15
May	20
Jun	18
July	22
Aug	20

- i) Forecast the sales for September using the following:
- Linear trend equation.
  - A five-month moving average
  - Exponential smoothing technique using smoothing constant equal to 0.20 and assuming a March forecast of 19,000.
  - A weighted average method using weights of 0.60 for August, 0.30 for July, and 0.10 for June. (4+2+2+2)
- ii) Which method seems least appropriate? Why? (3)

**Unit - II**

2. a) Discuss the factors that cause organizations to redesign their products or services?
- b) Briefly describe the five process types, and indicate the kinds of situations in which each would be used.
- c) Discuss the importance of product and process matrix. (5+5+6)

**OR**

2. a) Contrast design capacity and effective capacity.
- b) What is meant by "capacity in chunks," and why is that a factor in capacity planning?
- c) Why is capacity planning one of the most critical decisions a manager has to make? (5+5+6)

**Unit - III**

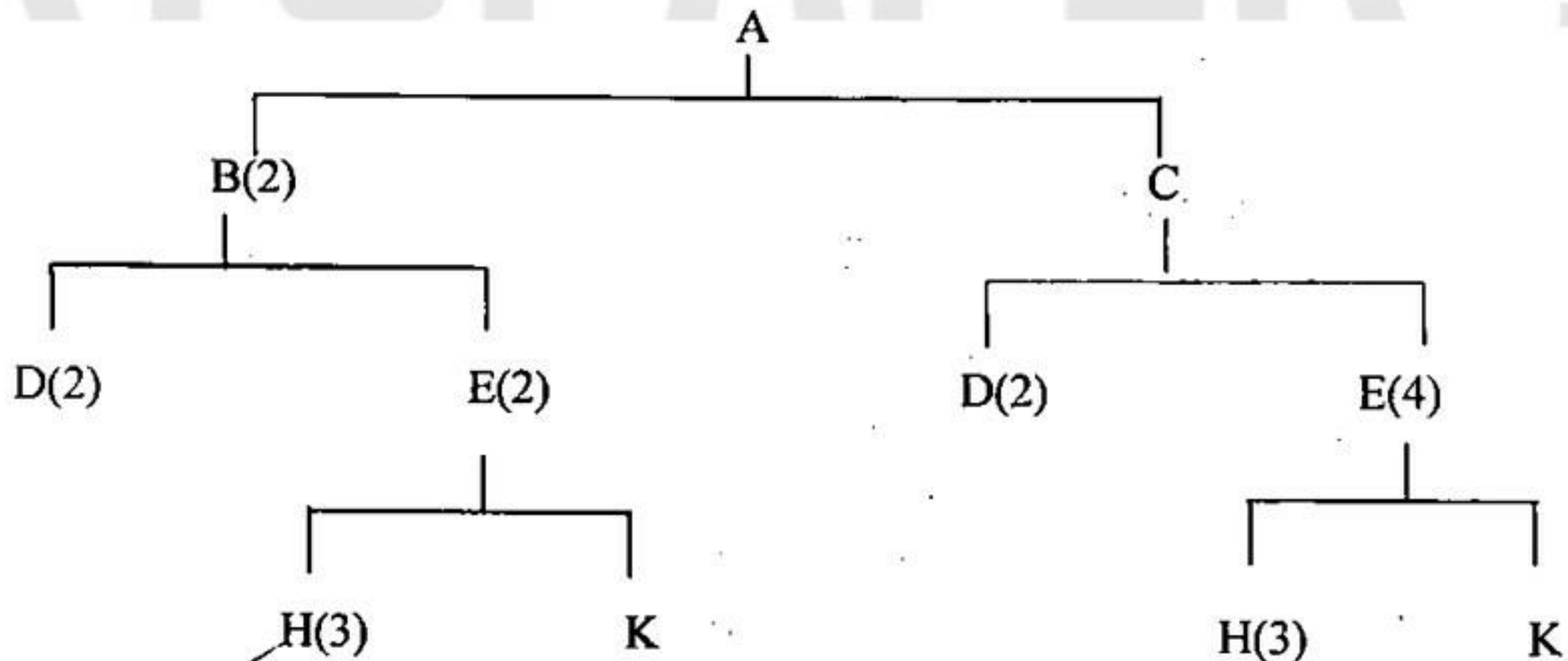
3. a) Discuss the various factors that influence location decisions with examples?
- b) A toy manufacturer produces toys in five locations throughout the country. Raw materials (Primarily barrels of powdered plastic) will be shipped from a new, centralized warehouse whose location is to be determined. The monthly quantities to be shipped to each location are the same. A coordinate system has been established, and the coordinates of each location have been determined as shown below. Determine the coordinates of the centralized warehouse.

Location	(X, Y)
A	3, 7
B	8, 2
C	4, 6
D	4, 1
E	6, 4

(8+8)

OR

3. a) Briefly discuss the advantages and disadvantages of each of the following aggregate planning strategies:
- Maintain a level rate of output and let inventories absorb fluctuations in demand.
  - Vary the size of the workforce to correspond to predicted changes in demand requirements.
  - Maintain a constant workforce size, but vary hours worked to correspond to predicted demand requirements.
- b) Develop a material requirements plan for component H. Lead times for the end item and each component except B are one week. The lead time for B is three weeks. Sixty units of A are needed at the start of week 8. There are currently 15 units of B on hand and 130 of E on hand, and 50 units of H are in production and will be completed by the start of week 2. (6+10)



Unit - IV

4. a) What is the ultimate goal of a JIT system? What are the supporting goals? What are the building blocks?
- b) What are some of the main obstacles that must be overcome in converting from a traditional system to JIT? (8+8)

OR

4. A Group of six jobs is to be processed through a two-machine flow shop. The first operation involves cleaning and the second involves painting. Processing times are as follows:

PROCESSING TIME (HOURS)

Job	Work Center 1	Work Center 2
A	5	5
B	4	6
C	8	9
D	2	7
E	6	8
F	12	15

- i) Determine a sequence that will minimize the total completion time for this group of jobs.
- ii) Determine the throughput time and idle time at the work center. (16)

**Unit - V**

- 5. a) Why does supply chain management provide a competitive advantage to the firms using it?
- b) Explain the Bullwhip effect. What are its implications in supply chain management? (8+8)

**OR**

5. Draw the network for the data given in the table below and find the optimum duration and associated total project. Assume the indirect cost to be Rupees 185 per day.

Activity	Predecessors	Normal Time days	Normal Cost (Rs)	Crash Time (days)	Crash Cost (Rs)
A	-	3	300	1	400
B	-	4	600	2	750
C	A	6	800	3	1300
D	B	7	1300	4	1540
E	C,D	8	1600	6	1920
F	C,D	9	1700	6	2210
G	E,A	5	800	3	1080
H	F, B	6	900	4	1190

**(16)**