(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 140860	Roll No.

B. TECH.

Theory Examination (Semester-VIII) 2015-16

PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 Hours *Max. Marks : 100*

Section-A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10=20)

(a) Explain the concept of five P's.

(b) What do you understand by operations strategy?

(c) What is the role of standardization in product design?

(d) Discuss the concept of service capacity.

(e) Explain earliest start and finish times.

(f) What are free float and independent float?

(g) Define MRP and MRP II.

(h) Briefly discuss master schedule.

(i) Differentiate between normal time and standard time.

(j) List various therblings.

Section-B

2. Attempt any five questions from this section. **(10×5=50)**

(a) What do you understand by product design? Discuss various steps involved in product design process.

(b) What are different strategies for service capacity planning? Also discuss various approaches for designing service processes.

(c) What do you mean by facility location? What are different factors involved in facility location planning?

(d) What is facility layout? Discuss different types of facility layouts.

(e) What do you understand by aggregate planning? Explain all the steps involved in effective aggregate planning.

(f) What is work design? What are various components of work design process? Explain.

(g) Discuss all the inputs and outputs in MRP system.

(h) What do you understand by operations management? Also discuss its scope.

Section-C

Note : Attempt any two questions from this section. **(15×2=30)**

3. (a) A limited company is planning to start a new factory for manufacturing steel utensils. It is considering three locations, namely, Bokaro, Jamshedpur and Bhilai. The fixed costs at the three locations have been estimated at Rs. 8.15 million, Rs 7.377 million and Rs 7.903 million respectively. The variable costs at the three locations are estimated at Rs 500 per unit, Rs 580 per unit and Rs 490 per unit respectively. The factory will have an annual production capacity of 10,000 steel utensils and in

the initial years, it will operate at 75% efficiency. Find the best location option, which has the lowest total cost of production. (5)

(b) A small project is composed of 7 activities whose time estimates are listed below. Activities are being identified by their beginning (i) and ending (j) node numbers: (10)

Activities		Time in weeks		
i	j	t_0	t_t	t_p
1	2	1	1	7
1	3	1	4	7
1	4	2	2	8
2	5	1	1	1
3	5	2	5	14
4	6	2	5	8
5	6	3	6	15

Now : (i) Draw the network.

(ii) Calculate the expected variances.

(iii) Find the expected project completion time.

(iv) Calculate the probability that the project will be completed at least 3 weeks than expected.

(v) If the project due date is 18 weeks, what is the probability of not meeting the due date?

4. (a) What do you understand by good quality? What is Deming's contribution to management of quality? (5)

(b) A machine operator has to perform three operations, namely plane turning, step turning and taper turning on a number of different jobs. The relevant data is tabulated as :

job	Time for plane turning (in min)	Time for step turning (in min)	Time for taper turning (in min)
1	3	8	13
2	12	6	14
3	5	4	9
4	2	6	12
5	9	3	8
6	11	1	13

Obtain optimal sequence of jobs as well as total elapsed time, and idle time for the three operations. (10)

5. (a) What are symptoms of a bad layout ? (5)

(b) What do you understand by principles of motion economy? Discuss. (5)

(c) What are different activities involved in operations scheduling process? (5)