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BIMEE-012

01127

B.Tech. MECHANICAL ENGINEERING (BTMEVI)

Term-End Examination
June, 2013

BIMEE-012 : PRODUCTION AND OPERATIONS MANAGEMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any five** questions. Use of non-programmable scientific calculator is permitted.*

1. (a) Define production and operations management. Discuss different types of production systems with suitable examples. 7+7

(b) Explain the steps in new product development.

2. (a) What is the purpose of work measurement ? Explain its various applications. 7+7

(b) In a welding shop, a direct time study was done on a welding operation. One inexperienced industrial engineer and one experienced industrial engineer conducted the study simultaneously. They agreed precisely on cycle time (shown in table 1) but their opinion on rating the worker differed. The experienced engineer rated the

worker 100 percent and the other engineer rated the worker 120 percent. They used a 0.10 percent allowance fraction.

Table 1

Cycle Time (in minutes)	Number of Times observed
20	02
24	01
29	01
32	01

From the above statement,

(i) Determine the standard time using the experienced engineer's worker rating.

(ii) Find the standard time using the worker rating of inexperienced industrial engineer.

3. (a) What are the factors affecting plant location ? Explain the use of break-even analysis for plant location decision with a suitable example. 7+7

(b) What are the benefits that accrue due to a good plant layout ? Mention the guiding principles in designing a layout of facilities.

4. (a) What do you mean by aggregate planning ? List and explain various pure strategies and mixed strategies. 7+7

(b) What are the basic input for MRP ? Discuss the similarities and differences between the traditional MRP and MRP II.

5. (a) Distinguish between design capacity and system capacity. Briefly explain different long-term and short - term capacity strategies. 7+7

(b) Define and explain 'Quality'. How do you perceive the role of a quality control manager in an organization ?

6. The procedence relationship for nine activities is given in Table - 2. Draw the network diagram. Find critical path and different floats/slack. 14

Table 2

Activity	A	B	C	D	E	F	G	H	I
Duration Days	9	9	10	4	7	3	8	7	0
Precedence	-	-	-	A	B	C	D,E,F	C	G,H

7. There are five jobs in waiting for getting processed on a machine. Their sequence of arrival, processing time, and due-date are given in Table 3. Schedule the jobs using FCFS, SPT, LCFS, and STR rules. Compare the results. **14**

Table 3

Job (in sequence of Arrival)	Processing Time (Days)	Due Date (i.e. Days From Now)
J_1	4	6
J_2	5	7
J_3	3	8
J_4	7	10
J_5	2	3