

**B.Tech. – VIEP – MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

June, 2015

00356

**BIMEE-012 : PRODUCTION AND OPERATIONS
MANAGEMENT**

Time : 3 hours

Maximum Marks : 70

Note : Attempt any **five** questions. All questions carry equal marks. Use of calculator is permitted.

1. (a) Distinguish between Production Management and Industrial Engineering. 7
- (b) Compare and contrast the different types of production systems. 7
2. (a) Define process design. Explain its framework by means of a block diagram. 7
- (b) Discuss the various factors influencing capacity planning. 7

3. (a) Explain the various steps involved in time study. 7

(b) A worker operating on a machine performs the following elements : (a) The description of element (b) their observed time and (c) ratings are given below. Compute the standard time for the component. 7

Element	Description	Observed Time	Rating	Relaxation Allowance
A	Position the job	0.25	80%	10%
B	Switch 'ON' and lower drill	0.09	100%	11%
C	Drill hole	2.8	90%	12%
D	Raise drill and switch 'OFF'	0.05	80%	10%
E	Remove job from Jig	0.15	110%	11%

4. (a) What benefits can be derived from a good plant layout ? Mention the guiding principles in designing a layout of facilities. 7

(b) Distinguish the role of aggregate planning and master scheduling. 7

5. (a) Explain the various strategies associated with aggregate planning. 7
- (b) Define and explain 'Quality'. How do you perceive the role of a quality control manager in an organization? 7
6. A small project is composed of the following activities whose time estimates are given below :

Activity	Optimistic time (weeks)	Most likely time (weeks)	Pessimistic time (weeks)
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

Draw the network and determine :

- (a) the expected duration and variance for each activity.
- (b) the critical path and project completion time. 7+7

7. A manufacturer currently has 10 jobs for processing in his machine shop. The estimated processing times and due dates for the jobs are given below :

Job	1	2	3	4	5	6	7	8	9	10
Process time	5	5	6	20	8	12	14	7	10	6
Due date	20	20	10	40	50	60	50	40	60	80

The manufacturer follows the SPT rule for developing a working schedule.

- (a) What is the number of tardy jobs under SPT rule ? 5
- (b) Suggest a sequence to minimize the number of tardy jobs. 4
- (c) Compare the above two sequences with reference to mean flow time, mean lateness and the number of tardy jobs. 5
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