BME-013

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00205   Term-End Examination

June, 2015

BME-013 : PRODUCTION MANAGEMENT

Time : 3 hours *Maximum Marks : 70*

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

1. (a)   What are the elements of production strategy ? Explain the production strategy formulation process.

    (b)   A new computer parts unit is to be set up. The unit will supply parts to five existing computer assembly units located as shown in the table :

Location	Coordinates	Volume per day
A	200, 400	180
B	400, 250	150
C	300, 100	300
D	150, 300	200
E	180, 210	250

Determine the new location by the centroid method.   *5+5=10*

2. (a) What is Break-Even Analysis (BEA) ? Discuss the various applications of Cost-Volume-Profit analysis.

(b) Explain the basic conventions used in a network. Why are dummy activities used in activity-on-arrow (AOA) project networks ?

5+5=10

3. (a) An initial forecast of 28 is given. If $\alpha = 0.1$, use the exponentially smoothing method to forecast for the next period for the following demand :

30, 30, 23, 28, 25, 24, 29, 25

(b) What do you mean by aggregate planning ? Discuss the difference between chase strategy and level strategy. *5+5=10*

4. (a) Derive the expression of EOQ in classical EOQ model with demand rate uniform and replenishment rate infinite.

(b) Define Supply Chain Management. What are the objectives of SCM ? *5+5=10*

5. (a) What is the purpose of Material Requirements Planning (MRP) ? Discuss the input and output of an MRP.

(b) What are the factors involved in the successful implementation of ERP ? Describe the role of IT in enterprise modelling, with relevant example. *5+5=10*

6. (a) Enumerate the different tools for capacity planning. Explain the Decision Tree approach for capacity planning.

(b) Elemental timings (in minutes) for four element cycles in a shop floor study are as follows :

Element	Cycle observed timings					Rating
	1	2	3	4	5	
A	0·09	0·08	0·09	0·10	0·09	90
B	0·12	0·11	0·12	0·11	0·12	110
C	0·13	0·13	0·14	0·12	0·12	100
D	0·07	0·06	0·06	0·08	0·07	120

Assuming total allowances of 15%, calculate the standard time and standard production per 8-hour shift. *5+5=10*

7. (a) Explain the various factors of logistics with special reference to transportation.

(b) Explain the nine rules for bottleneck-scheduling in "Theory of Constraint (TOC)". *5+5=10*

8. (a) Five orders have been received at the beginning of the week. Scheduling data is given in the following table :

Jobs	Processing Time (days)	Due date (days hence)
A	2	7
B	4	6
C	3	5
D	1	2
E	6	6

All orders are to be processed only on one machine. Schedule the jobs according SPT, LPT and FCFS rules and compare them.

(b) Differentiate between variable and attribute type control charts. Also, give the expressions for LCL and UCL in case of $\overline{X}$ chart, R chart and P chart. *5+5=10*

9. (a) What is JIT ? How does it differ from traditional manufacturing ? What are the prerequisites for implementing JIT ?

(b) An electronic company makes communication devices for military contracts. The company just completed two contracts. The Navy contract was for 2300 devices and took 25 workers two weeks (40 hours per week) to complete. The Army contract was for 5500 devices that were produced by 35 workers in three weeks.

(i) Calculate the productivity for Navy and Army contracts.

(ii) On which contract were the workers more productive ? *5+5=10*

10. Write short notes on any *five* of the following : *5×2=10*

(a) Balance Scorecard

(b) Predetermined Time Standard (PTS)

(c) Economies of Scale

(d) Operating Characteristic Curve

(e) Master Production Schedule (MPS)

(f) Learning Curve

(g) Poka-Yoke

(h) Selective Inventory Management