

W - 634

Total No. of Pages : 4

Seat No.	
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**B. E. (Mechanical) (Semester - VIII) Examination, May - 2014**

**INDUSTRIAL ENGINEERING (New)**

**Sub. Code : 49418**

**Day and Date : Saturday, 17- 05 - 2014**

**Total Marks : 100**

**Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) Attempt any three questions from each section
  - 2) Figures to the right indicate full marks.
  - 3) Draw sketches wherever required.
  - 4) Assume suitable data if required, and state them clearly.

**SECTION - I**

**Q1) a)** Explain with block diagram, inputs and outputs of MRP. **[8]**

b) Annual demand of items is 12000 units. set up cost is Rs. 50/-

Inventory carrying cost is Rs 5/year Items are produced at 50 units / day if working days are 300 find out economic lot size time required to produce one batch and total cost. **[8]**

**Q2) a)** Compare different production systems. **[8]**

b) From following sales data calculate forecast by least square method of July August **[8]**

Month	Jan	Feb	March	April	May	June	July
Sales (unit)	85	80	90	84	95	93	100

**P.T.O.**

Q3) a) Which factors affects process planning [8]

b) From following data, draw network, find critical path, project duration.

Crash activities systematically and find project duration & cost [9]

Activity	Normal		Crash	
	Time days	Cost(Rs)	Time days	Cost (Rs)
1 – 2	4	150	2	350
1 – 3	5	100	1	200
2 – 4	10	100	5	400
3 – 4	3	80	1	100
4 – 5	8	100	6	200

Assume  
indirect cost  
Rs. 50/ day

Q4) a) Describe method of deciding optimum inventory and it's benefits. [8]

b) Time required on each machine is given below find sequence of job for minimum total elapsed time and idle time [9]

Job.	Time				
	A	B	C	D	E
Machine 1 (Hrs)	6	4	5	5	3
Machine 2 (Hrs)	5	4	6	8	3
Machine 3 (Hrs)	8	10	9	11	11

SECTION - II

Q5) a) Draw multiple activity chart for three machines indicating its use. [8]

b) Time study shows cumulative time in minutes as follows

Relaxation allowance 10 %

Contingency allowance 3 %

Cycle (Minutes)

Element	1	2	3	4	Rating factor
1	10	48	92	136	90
2	26	58	106	150	80
3	37	80	125	171	100

Calculate standard time and output per shift of 8 hours If worker produces 12 jobs in shift find his efficiency (Abnormal times not to be considered)[8]

Q6) a) What are objectives of merit rating [8]

b) In work sampling study of 100 Hrs, jobs produced were 50 in total number of observations of 5000 idle observations were 500 performance rating 90% total allowance 15 %

Calculate standard time. [9]

Q7) a) Explain "Compatability" in human engineering application. [8]

b) Calculate earning of three workers producing 25, 30, 35 pieces standard time is 15 minutes labour rate is Rs. 20/Hr.

Follow Taylor differential piece rate system 80 % of standard piece rate for below standard performance & 120% of standard piece rate for standard & above standard performance. [8]

W - 634

- Q8) a) Methods of improving productivity [6]  
b) How make or buy decision is taken [6]  
c) Relation between plant layout and material handling system [5]

