

Code No: R32036

R10

Set No: 1

III B.Tech. II Semester Regular Examinations, April/May -2013

INDUSTRIAL ENGINEERING & MANAGEMENT

(Mechanical Engineering)

Time: 3 Hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss the functions of management.
(b) Describe the tools and techniques of Industrial Engineering.
2. (a) “For a good facility layout detailed analysis of material flow is essential” Discuss.
(b) What is breakdown maintenance and what are its advantages and disadvantages?
3. (a) Define Operations Management and discuss its salient features
(b) What are the Work measurement techniques? Explain any one of them.
4. (a) Define SQC. What are its benefits?
(b) Differentiate between inspection and quality control.
5. (a) What is HRM? What are its functions and objectives?
(b) Define the term job evaluation? Explain the process of job evaluation.
6. (a) Discuss the basic concepts of TQM.
(b) Explain the documentation procedure for ISO registration.
7. (a) Define value engineering. What are its benefits?
(b) What is Supply Chain Management? Explain.
8. The following table gives the activities and other relevant information in a construction project.

| Activity | Normal time (days) | Crash time (days) | Normal Cost(Rs) | Crash Cost(Rs) |
|----------|--------------------|-------------------|-----------------|----------------|
| 1-2 | 20 | 17 | 600 | 720 |
| 1-3 | 25 | 25 | 200 | 200 |
| 2-3 | 10 | 8 | 300 | 440 |
| 2-4 | 12 | 6 | 400 | 700 |
| 4-5 | 10 | 5 | 300 | 600 |
| 4-6 | 5 | 3 | 600 | 900 |
| 5-7 | 10 | 5 | 500 | 800 |
| 6-7 | 8 | 3 | 400 | 700 |

- (a) Draw the activity network of the project.
- (b) Find the total and free float for each activity. Using the above information crash the activities step-by-step until all paths are critical



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INDUSTRIAL ENGINEERING & MANAGEMENT

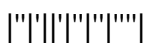
(Mechanical Engineering)

Time: 3 Hours**Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain the principles of management as listed out by Henry Fayol.
(b) What are the qualities of an Industrial Engineer?
2. Explain in detail the various types of production layouts
3. (a) Define work study. What are the advantages of the work study?
(b) Discuss various types of production.
4. (a) What do you mean by control chart and discuss control charts for attributes?
(b) Determine the control limits for $\sum X$ and R charts if $\sum X=357.50$, $\sum R=9.90$, number of subgroups =20. It is given that $A_2 =0.18$, $D_3 =0.41$, $D_4 =1.59$ and $d_2 = 3.735$. Also find the process capability.
5. (a) Discuss HRM and its environment with suitable illustrations.
(b) Explain the different techniques of job evaluation.
6. Explain the following
(a) Six Sigma (b) Quality circles
7. (a) "Value engineering is a powerful cost reduction tool". Justify.
(b) Discuss supply chain operation decisions
8. The utility data for a project is given below. The project is to be completed in 25 weeks. Do the necessary crashing and find increase in cost.

| Activity | Normal | | Crash | |
|----------|---------|-----------|-------|-----------|
| | (Weeks) | Cost (Rs) | Weeks | Cost (Rs) |
| 1-2 | 4 | 600 | 2 | 800 |
| 1-3 | 2 | 500 | 1 | 900 |
| 2-4 | 6 | 1,000 | 3 | 1,750 |
| 3-6 | 10 | 2,500 | 5 | 3,500 |
| 4-5 | 5 | 1,300 | 5 | 1,300 |
| 5-6 | 8 | 2,000 | 6 | 2,100 |
| 5-7 | 8 | 1,600 | 5 | 1,780 |
| 6-7 | 7 | 2,000 | 7 | 2,000 |



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Set No: 3

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INDUSTRIAL ENGINEERING & MANAGEMENT

(Mechanical Engineering)

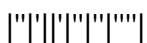
Time: 3 Hours**Max Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain Mc. Gregor's theory X and theory Y.
(b) Define Industrial Engineering. What is its importance?
2. What types of layout problems arises due to
(i) Migration of Industry (ii) The trend towards decentralization
3. (a) Define ergonomics and what are its objectives?
(b) Explain the factors in connection with selection of work for method study.
4. In a manufacturing process, the number of defectives found in the inspection of 15 lots of 400 items each is given below.

| Lot No. | No. of defective | Lot No. | No. of defectives | Lot No. | No. of defective | Lot No. | No. of defectives |
|---------|------------------|---------|-------------------|---------|------------------|---------|-------------------|
| 1 | 2 | 5 | 3 | 9 | 18 | 13 | 3 |
| 2 | 5 | 6 | 0 | 10 | 8 | 14 | 0 |
| 3 | 0 | 7 | 1 | 11 | 6 | 15 | 6 |
| 4 | 14 | 8 | 0 | 12 | 0 | | |

- (i) Determine the trial control limits for np chart and state whether the process is in control.
- (ii) What will be new value of mean fraction defective if some obvious points outside control limits are eliminated? What will be the corresponding upper and lower control limits and examine whether the process is still in control or not.
5. (a) Explain the qualities and the qualifications necessary for a good personnel manager.
(b) Discuss in detail the various wage incentive plans
6. (a) What are the benefits of TQM?
(b) Discuss the Crosby's approach for quality improvement.
7. (a) Define value. Discuss different types of values with examples.
(b) Discuss ERP



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R10**Set No: 3**

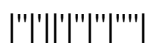
8. Tasks A,B,C...,H, I constitute a project. The precedence relationships are
 $A < D$; $A < E$; $B < F$; $D < F$; $C < G$; $C < H$; $F < I$; $G < I$.

Draw a network to represent the project and find the minimum time of completion of the project when time, in days, of each task is as follows:

| Task | A | B | C | D | E | F | G | H | I |
|------|---|----|---|----|----|----|----|----|---|
| Time | 8 | 10 | 8 | 10 | 16 | 17 | 18 | 14 | 9 |

Calculate the total, free and independent floats for each activity and also identify the critical path and find its duration?

FirstRanker



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Set No: 4

III B.Tech. II Semester Regular Examinations, April/May -2013

INDUSTRIAL ENGINEERING & MANAGEMENT

(Mechanical Engineering)

Time: 3 Hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. (a) How does Industrial Engineering help to increase the productivity of an organization?
(b) Describe the role of Industrial engineer
2. (a) What is preventive maintenance and what are its advantages and disadvantages?
(b) Enumerate the various factors to be considered in the design of plant layout.
3. Explain in detail the principles of motion economy
4. An item is made in lots of 200 each. The lots are given 100% inspection. The record sheet for the first 25 lots inspected showed that a total of 75 items were defective.
 - a. Determine the trial control limits for np- chart showing number of defectives in each lot.
 - b. Assume that all points fall within the control limits. What is your estimate of the process average fraction defective p' ?
5. (a) Define and explain the term Industrial Relations.
(b) Discuss in detail the various methods of merit rating.
6. (a) What is ISO9000 quality management system?
(b) What do you mean by Zero defects? Discuss
7. (a) What are the objectives of value engineering?
(b) Why is Supply Chain Management important?
8. A project consists of activities A,C, . . . , H, I, $x < y$ means that the activity x must be completed before y can start and $x, y < w$ means that w will start only after completion of activities x and y. With the notation construct the network diagram for the following constraints.

$$A < D, A < E, B < F; C < G; D < H; E, F < I$$

The project has the following time schedules of the above activities.

| Task | A | B | C | D | E | F | G | H | I |
|-------------------|----|----|----|----|----|----|----|---|---|
| Optimistic time: | 5 | 18 | 26 | 16 | 15 | 6 | 7 | 7 | 3 |
| Pessimistic time | 10 | 22 | 40 | 20 | 25 | 12 | 12 | 9 | 5 |
| Most likely time: | 8 | 20 | 33 | 18 | 20 | 9 | 10 | 8 | 4 |

Determine the following:

- (a) Draw the network diagram of activities and determine the critical path.
- (b) The probability of an event occurring at the expected completion date if the original scheduled time of completing the project is 41.5 weeks.

