RF-3532
Second Year B. B. A. (Sem. IV) (CBCS) Examination
April/May - 2017
Production Management - II

Time : Hours ] [ Total Marks : 50

Instructions :
(1) Fill up strictly the details of ✔ signs on your answer book.

Name of the Examination :
SECOND YEAR B. B. A. (SEM. 4) (CBCS)

Name of the Subject :
PRODUCTION MANAGEMENT - II

Subject Code No. : 3532 Student's Signature

(2) Figures to the right indicate full marks allocated to that question.
(3) All questions are compulsory.

1 Answer following questions briefly : (any five) 10
(a) Convert following assignment problem into a balanced minimization format.

<table>
<thead>
<tr>
<th></th>
<th>Job 1</th>
<th>Job 2</th>
<th>Job 3</th>
<th>Job 4</th>
<th>Job 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker 1</td>
<td>12</td>
<td>27</td>
<td>16</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Worker 2</td>
<td>10</td>
<td>24</td>
<td>20</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Worker 3</td>
<td>Not Possible</td>
<td>28</td>
<td>12</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

(Figures are profit in thousands of rupees for combinations of jobs and workers)

(b) Define terms : “Operations Scheduling” and “Dispatching”.

(c) Define terms : “Quality” and “Quality Control”.

(d) Define terms : “Method Study” and “Work Measurement”.

(e) Explain the term : “Dispatching” and “Follow-up”.

RF-3532 ] 1 [ Contd...
(f) Today is 21st January and we are doing operations scheduling at 7.00 p.m. morning. There are five jobs which are to be scheduled. In the following table, delivery dates and work contents of these five jobs are mentioned. On delivery dates, jobs should leave factory at 7.30 p.m. Schedule these jobs as per Critical Ratio Rule and Least Slack Rule.

<table>
<thead>
<tr>
<th>Work Content in days</th>
<th>Job 1</th>
<th>Job 2</th>
<th>Job 3</th>
<th>Job 4</th>
<th>Job 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery Date</td>
<td>20th Feb</td>
<td>3rd Feb</td>
<td>9th Feb</td>
<td>28th Jan</td>
<td>27th Feb</td>
</tr>
</tbody>
</table>

(g) Today is 4th October, 2016. Forecast generated by Marketing Department for Finished Product FP2 is 16000 pieces for November 2016. Today’s stock of FP2 is 6000 pieces. In the remaining days of October 2013, Marketing department will sell 11000 units of FP2. At present, 13000 units of FP2 are in WIP (Work-in-Progress) form. Out of this WIP quantity 9000 pieces will be transferred to Finished Goods Warehouse in the third week of October and balance quantity shall be transferred in the first week of November. At the end of November 2016, company wants to keep 7000 pieces of FP2 as closing inventory. Find out closing inventory of FP2 on 31st October, 2016. What additional quantity of FP2 should be manufactured in November 2016 to satisfy Marketing forecast?

(h) Explain the term: “Waste”. Classify between avoidable waste and unavoidable waste.

2 (a) Answer any two:

1. Differentiate between terms: “Quality Control” and “Quality Assurance”.

2. Explain the term Quality Loss Function (QLF) in relation to Taguchi’s approach for quality assurance.

3. Explain Six-sigma approach.

(b) Answer any one:

1. Explain the process (methodology) of value analysis.
2. Write a short note on: “Two handed flow process chart”.

3 (a) Explain Capacity Requirement Planning Methodology with a flow diagram. Discuss various methods of capacity adjustment.

OR

3 (a) There are six jobs which are to be processed on three machines in the order of M1 → M2 → M3. Following are various processing timings. Find out the best order in which these six jobs are to be processed. What shall be total minimum completion time to complete all six jobs?

<table>
<thead>
<tr>
<th></th>
<th>Job 1</th>
<th>Job 2</th>
<th>Job 3</th>
<th>Job 4</th>
<th>Job 5</th>
<th>Job 6</th>
<th>Job 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine 1</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Machine 2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Machine 3</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

(Time in hours)

(b) Explain Master Production Schedule (MPS) Methodology with a flow diagram and highlight relationship of MPS with Material Requirement Planning and with Capacity Requirement Planning.

OR

(b) A college has six teachers and five subjects are to be taught. One teacher will teach only one subject. Any teacher can teach any subject but for each combination of teacher and subject, number of students who will pass that subject, shall be different. In the following matrix, these values are mentioned.

<table>
<thead>
<tr>
<th></th>
<th>$S_1$</th>
<th>$S_2$</th>
<th>$S_3$</th>
<th>$S_4$</th>
<th>$S_5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_1$</td>
<td>60</td>
<td>80</td>
<td>140</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>$T_2$</td>
<td>120</td>
<td>60</td>
<td>20</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>$T_3$</td>
<td>140</td>
<td>60</td>
<td>160</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>$T_4$</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>$T_5$</td>
<td>100</td>
<td>120</td>
<td>180</td>
<td>140</td>
<td>100</td>
</tr>
<tr>
<td>$T_6$</td>
<td>140</td>
<td>160</td>
<td>40</td>
<td>140</td>
<td>100</td>
</tr>
</tbody>
</table>

}[ Contd...]
Find the best combination of teachers and subjects. Which teacher will sit idle? What can be the maximum possible number of students who will pass all subjects?

4 For following manufacturing operation, prepare Man and Machine chart after suggesting all possible improvements. Also find out cycle time.

- Worker picks up raw material from tray – 1 minute
- Worker loads raw material piece in machine – 1 minute
- Worker starts machine by using a lever – 1 minute
- Machine runs automatically with auto-stop at the end – 5 minutes
- Worker unloads finished piece – 1 minute
- Machine throws waste material automatically – 2 minutes
- Worker inspects finished piece – 1 minute
- Worker packs finished piece in box – 2 minutes
- Worker marks entry in the job-card – 1 minute

OR

4 Answer any two:

(1) Explain various indirect time study techniques.

(2) Explain various types of time allowances that we may have to consider while converting Normal Time into Standard Time during work-measurement (time study) process.

(3) Define the term: ‘Work-station’. Explain work-station chart as a method study recording technique.

(4) Explain various ways to classify or to break an operation or a job in to time elements during work-measurement process.