# CBCS Scheme

USN | | | | | | | | | |

15ME62

## Sixth Semester B.E. Degree Examination, June/July 2018

# Computer Integrated Manufacturing (Model QP)

Time: 3 hrs Max marks: 80

**Note:Answer any FIVE full questions, choosing one full question from each module**

<table>
<tr><td colspan="3"><u>Module-1</u></td></tr>
<tr><td>1</td><td>a.</td><td>Define Manufacturing lead time Production rate, Utilization & availability ,Work in process with mathematical expressions (08 Marks)</td></tr>
<tr><td></td><td>b.</td><td>An average of 10 new orders is started through a certain factory each month. An order consists of an average 75 parts to be processed through 8 machines in the factory .The operation tome is 25 min.The non operation time is 10 hours and the setup time is 5 hrs.The plant operates 175 hrs/month and there are 20 machines in the plant. Determine i) Manufacturing lead time ii) Plant capacity iii) Utilization iv) Work in process v) TIP ratio. (08 Marks)</td></tr>
<tr><td colspan="3">OR</td></tr>
<tr><td>2</td><td>a.</td><td>Differentiate between upper bound and lower bound approach to analyse automated flow lines without storage buffers. (08 Marks)</td></tr>
<tr><td></td><td>b.</td><td>A transfer line has ten station with an ideal cycle time of 30 sec. The frequency of the line stop occurrence is 0.06stop/cycle on an average.When a stop occurs, it takes an average of 5 min to make repairs. Determine<br>i) Average production time ii) Average production rate iii) Line efficiency iv) Proportion of down time (08Marks)</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3"><u>Module-2</u></td></tr>
<tr><td>3</td><td>a.</td><td>Explain the functions of a graphics package. (08Marks)</td></tr>
<tr><td></td><td>b.</td><td>A square with an edge length of 10 units is located on the origin with one of the edge at an angle of 30° with positive x-axis. Calculate the new position of the square if it is rotated about z-axis by an angle of 30° in clockwise direction. (08Marks)</td></tr>
<tr><td colspan="3">OR</td></tr>
<tr><td>4</td><td>a.</td><td>Explain Generative type CAPP system with the help of a block diagram. (08Marks)</td></tr>
<tr><td></td><td>b.</td><td>What is Material requirement planning? Explain the structure of MRP system. (08Marks)</td></tr>
<tr><td></td><td></td><td><u>Module-3</u></td></tr>
<tr><td>5</td><td>a</td><td>Explain various components of FMS with a neat block diagram. (10 Marks)</td></tr>
<tr><td></td><td>b</td><td>Explain applications and benefits of FMS. (06Marks)</td></tr>
<tr><td></td><td></td><td>OR</td></tr>
<tr><td>6</td><td>a</td><td>Explain the objectives of line balancing. (06Marks)</td></tr>
<tr><td></td><td>b</td><td>Use Kilbridge and Westers method to assign the workstation to each element and compute the balance delay and balance efficiency. . (10 Marks)
<table>
<tr><td>Work element</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr>
<tr><td>$T_e$(min)</td><td>0.25</td><td>0.45</td><td>0.35</td><td>0.4</td><td>0.32</td><td>0.2</td><td>0.27</td><td>0.7</td><td>0.6</td><td>0.38</td><td>0.5</td><td>0.43</td></tr>
<tr><td>Preceded by</td><td>-</td><td>1</td><td>1</td><td>1</td><td>2</td><td>2,3</td><td>4</td><td>4</td><td>5</td><td>6,7</td><td>8</td><td>9,10,11</td></tr>
</table></td></tr>
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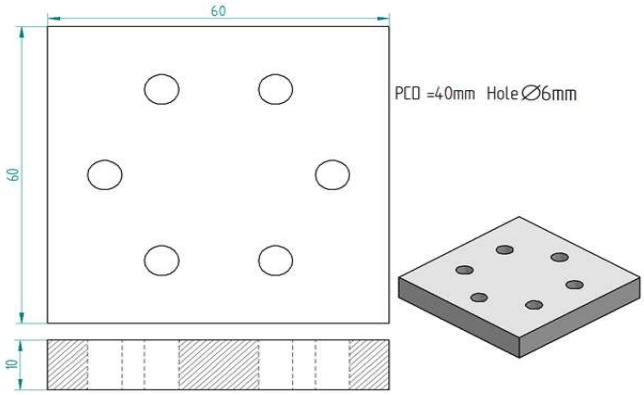
| | | **Module-4** |
| **7** | a | State the advantages ,disadvantages and applications of CNC machine tools. **(08Marks)** |
| | b | Write the Part program to mill the profile of the part as shown in fig 1 **(08Marks)**   fig.1 |
| | | **OR** |
| **8** | a | Explain four methods of programming the robot. **(08 Marks)** |
| | b | Explain with a neat sketch the T-R-L AND T-R-R robots. **(08 Marks)** |
| | | **Module-5** |
| **9** | a | Explain the different stages involved in additive manufacturing process. **(08 Marks)** |
| | b | Explain with a neat sketch the Selective laser sintering process **(08 marks)** |
| | | **OR** |
| **10** | a | Explain how big data and cloud computing can support IOT. **(08 marks)** |
| | b | Explain the application and benefits of Industry 4.0 . **(08 marks)** |