

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3161508****Date:15-12-2022****Subject Name:Production Planning and Control****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- |   | MARKS     |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
|---|-----------|--------|------|------|------|------|------|------------------|--------|-----|-----|-----|-----|-----|-----|
| <b>Q.1</b> (a) Define PPC.  | <b>03</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (b) Discuss the scope of PPC.   | <b>04</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (c) Explain the role of PPC deptt. in improving overall manufacturing performance of the organization.  | <b>07</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>Q.2</b> (a) What is aggregate planning?  | <b>03</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (b) Discuss briefly Computer Integrated Manufacturing (CIM).  | <b>04</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (c) Explain crucial functions of PPC and the concerned departments.   | <b>07</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>OR</b>   |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (c) What should be the main functions of PPC department in following industries :<br>(i) Ball Bearing mfg. (ii) Paint Mfg. (iii) Ceramic Tiles Mfg.   | <b>07</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>Q.3</b> (a) What is the use of sales forecasting in PPC?   | <b>03</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (b) Explain moving average method of sales forecasting.   | <b>04</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (c) Use method of least squares to fit a straight line trend using following data, and find trend values. Also find expected values for year 2022:  | <b>07</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Year</th> <th style="padding: 5px;">2017</th> <th style="padding: 5px;">2018</th> <th style="padding: 5px;">2019</th> <th style="padding: 5px;">2020</th> <th style="padding: 5px;">2021</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Sales<br/>(lakhs)</td> <td style="padding: 5px; text-align: center;">56</td> <td style="padding: 5px; text-align: center;">65</td> <td style="padding: 5px; text-align: center;">75</td> <td style="padding: 5px; text-align: center;">84</td> <td style="padding: 5px; text-align: center;">78</td> </tr> </tbody> </table>  |           | Year   | 2017 | 2018 | 2019 | 2020 | 2021 | Sales<br>(lakhs) | 56     | 65  | 75  | 84  | 78  |     |     |
| Year  | 2017      | 2018   | 2019 | 2020 | 2021 |      |      |                  |        |     |     |     |     |     |     |
| Sales<br>(lakhs)  | 56        | 65     | 75   | 84   | 78   |      |      |                  |        |     |     |     |     |     |     |
| <b>OR</b>   |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>Q.3</b> (a) What do you mean by MRP?   | <b>03</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (b) What are the inputs to process planning?  | <b>04</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (c) What is 'Route sheet'? State how it differs from 'Operation sheet' of an engineering component. Also explain its significance for PPC.  | <b>07</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>Q.4</b> (a) What is capacity planning and control?   | <b>03</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (b) What is purpose of capacity planning and control?   | <b>04</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (c) Following is the period demand forecast for a company :   | <b>07</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Period</th> <th style="padding: 5px;">1</th> <th style="padding: 5px;">2</th> <th style="padding: 5px;">3</th> <th style="padding: 5px;">4</th> <th style="padding: 5px;">5</th> <th style="padding: 5px;">6</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Demand</td> <td style="padding: 5px; text-align: center;">220</td> <td style="padding: 5px; text-align: center;">330</td> <td style="padding: 5px; text-align: center;">360</td> <td style="padding: 5px; text-align: center;">240</td> <td style="padding: 5px; text-align: center;">180</td> <td style="padding: 5px; text-align: center;">200</td> </tr> </tbody> </table> |           | Period | 1    | 2    | 3    | 4    | 5    | 6                | Demand | 220 | 330 | 360 | 240 | 180 | 200 |
| Period  | 1         | 2      | 3    | 4    | 5    | 6    |      |                  |        |     |     |     |     |     |     |
| Demand  | 220       | 330    | 360  | 240  | 180  | 200  |      |                  |        |     |     |     |     |     |     |
| Consider following plans and choose between the two.  |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (i) Produce for average demand through out the periods, change the work force level to meet the balance.  |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (ii) Produce 200 units every period and meet the balance by subcontracting.   |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| Cost data as per : Hiring cost Rs. 100/person, Firing cost Rs. 75/person,<br>Subcontracting cost Rs. 75/unit  |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>OR</b>   |           |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| <b>Q.4</b> (a) What is need of scheduling?  | <b>03</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |
| (b) Explain the scope and importance of sequencing for any organization   | <b>04</b> |        |      |      |      |      |      |                  |        |     |     |     |     |     |     |

- (c) Use Johnson's rule to find out the best sequence and find total idle time for following data : **07**

Job	1	2	3	4	5	6
Lathe	6	4	3	9	10	9
Milling	5	7	5	11	8	7

- Q.5** (a) List out methodologies of line balancing. **03**  
(b) How line balancing technique can be applied in any organization/Industry? **04**  
(c) Differentiate between Gantt chart and Machine load chart. **07**

**OR**

- Q.5** (a) What is ERP? **03**  
(b) Discuss MPC system schema. **04**  
(c) What is dispatching? Explain the procedure of decentralizing dispatching system. **07**

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