

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3161508****Date:10-07-2023****Subject Name:Production Planning and Control****Time:10:30 AM TO 01:00 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.

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|------|------|------|------|------|------|------|----------------------|------|------|------|------|------|------|------|------|--|
| <b>Q.1</b> (a) What do you mean by PPC?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>03</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (b) Discuss the importance of PPC in modern manufacturing industry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>04</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) Explain crucial functions of PPC and the concerned departments.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>Q.2</b> (a) What is Scheduling?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>03</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (b) Discuss the purpose of capacity planning and control.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>04</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) Discuss types of production and their basic characteristics.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) What should be the main functions of PPC department in following industries :<br>(i) Ceiling fan mfg. (ii) Pharmaceutical Mfg. (iii) Aeroplane Mfg.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>Q.3</b> (a) What is sales forecasting?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>03</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (b) Explain least square method of sales forecasting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>04</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) The sales pattern of an automobile gear manufacturing company is as follows :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Year</th> <th style="padding: 2px;">2015</th> <th style="padding: 2px;">2016</th> <th style="padding: 2px;">2017</th> <th style="padding: 2px;">2018</th> <th style="padding: 2px;">2019</th> <th style="padding: 2px;">2020</th> <th style="padding: 2px;">2021</th> <th style="padding: 2px;">2022</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Sales<br/>(Rs.Crores)</td> <td style="padding: 2px;">22.8</td> <td style="padding: 2px;">25.2</td> <td style="padding: 2px;">28.0</td> <td style="padding: 2px;">31.3</td> <td style="padding: 2px;">32.4</td> <td style="padding: 2px;">29.5</td> <td style="padding: 2px;">32.7</td> <td style="padding: 2px;">35.6</td> </tr> </tbody> </table> | Year      | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Sales<br>(Rs.Crores) | 22.8 | 25.2 | 28.0 | 31.3 | 32.4 | 29.5 | 32.7 | 35.6 |  |
| Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015      | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |      |                      |      |      |      |      |      |      |      |      |  |
| Sales<br>(Rs.Crores)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 22.8      | 25.2 | 28.0 | 31.3 | 32.4 | 29.5 | 32.7 | 35.6 |      |                      |      |      |      |      |      |      |      |      |  |
| Compute the 3 yearly moving trend and find out the sales forecast for the year 2023.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>Q.3</b> (a) State the inputs to MRP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>03</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (b) Benefits and Limitations of MRP II.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>04</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) Discuss Economics order quantity of manufacture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>Q.4</b> (a) What is process planning?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>03</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (b) Briefly explain factors influencing effective capacity of the plant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>04</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) Explain the information generated as a result of process planning.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| <b>Q.4</b> (a) What is assembly line balancing ?.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>03</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (b) Discuss procedure for evaluating a production control system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>04</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |
| (c) A company produces the toys. Operations are given below.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>07</b> |      |      |      |      |      |      |      |      |                      |      |      |      |      |      |      |      |      |  |

Operation no.	1	2	3	4	5	6	7	8	9	10	11
Immediate Predecessor	-	-	1,2	3	4	4	5	6	6	9	7,8,10
Time (In Minute)	4	2	5	3	4	2	7	6	3	5	3

Fix cycle time of 8 Minute. Find out :

- (i) Min. no. of work stations
- (ii) Line efficiency

- Q.5** (a) What is job sequencing? **03**  
(b) State assumptions underlying Johnson's algorithm for sequencing. **04**  
(c) Discuss Aggregate production planning and the nature of APP with respect to various strategies associated with APP. **07**

**OR**

- Q.5** (a) What is Master Production Schedule? **03**  
(b) Briefly explain Line of Balance technique. **04**  
(c) Describe the main features and methodology of implementation for ERP. **07**

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