PART A (Compulsory. Each sub-question carries 1 mark)

Q.1. Expand the following [8 marks]
   a) DFM    b) CSF  c) OPT  d) PWP  e) CNC  f) SPM  g) CRP  h) CIM

Q. 2. State True or False (Do not reproduce the statements) [8 marks]
   i) An international business organization is a firm that engages in cross border transactions.
   ii) Class A world class manufacturer should have inventory turns in the range of 25 to 30 per year.
   iii) Distinctive competencies are core competencies.
   iv) The term world-class manufacturing was introduced by Masquelier.
   v) Order winner is a criterion that differentiates products or services of a firm from another.
   vi) External exchange of die can be achieved while the machine is running.
   vii) Manufacturing is the bedrock on which the economic wealth of nation is built.
   viii) PDF 417 is a linear barcode symbology.

Q.3. Fill in the blanks. (Do not reproduce the statements) [8 marks]
   i) In the 21st century __________ will be the primary competitive motive of business.
   ii) __________ flexibility is the company’s ability to introduce new products and modifications to current products.
   iii) Integration of supply chain requires ______ orientation
   iv) ______ inspection looks for errors before they become defects.
   v) Flexibility in manufacturing is referred as ______ manufacturing.
   vi) Good ______ are vital link in the supply chain
   vii) Cusum charts are used to detect __________ in variation.
   viii) The tool that operationalizes pull production system is ______.

Q. 4. Match A and B [8 marks]

<table>
<thead>
<tr>
<th>No.</th>
<th>A</th>
<th>B</th>
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<tbody>
<tr>
<td>1.</td>
<td>Concurrent engineering</td>
<td>A Drastic improvement in performance</td>
</tr>
<tr>
<td>2.</td>
<td>ASRS</td>
<td>B Reduction in labour force</td>
</tr>
<tr>
<td>3.</td>
<td>Reengineering</td>
<td>C Integrated design team</td>
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<td>4.</td>
<td>Downsizing</td>
<td>D Computer controlled warehouse</td>
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<td>5.</td>
<td>Lean production</td>
<td>E Customer centric</td>
</tr>
<tr>
<td>6.</td>
<td>Theory of constraints</td>
<td>F Group technology</td>
</tr>
<tr>
<td>7.</td>
<td>TQM</td>
<td>G Use of minimal amount of resources</td>
</tr>
<tr>
<td>8.</td>
<td>Cell</td>
<td>H Focus on bottlenecks</td>
</tr>
</tbody>
</table>
PART B

(Attempt any 3. Each question carries 16 marks)

Q.4. a) What is world-class manufacturing? Explain the concept using Schonberger’s model. 8 marks
   b) Explain Time based competition. 8 marks

Q.5. a) Discuss the characteristics of world class customers [8 marks]
   b) Explain the contributions of Deming to TQM [8 marks]

Q.6. a) What is process capability and capability ratios? [8 marks]
   b) Explain the features and significance of MBO. [8 marks]

Q.7. a) Explain the lean production tools. [8 marks]
   b) Explain the goals and criteria of Malcom Baldrige National Quality Award [8 marks]

Q.8. Write short notes any four [4 x 4 = 16 marks]
   a) Theory of constraints
   b) Rapid prototyping
   c) Four absolutes of quality
   d) Cost of quality
   e) POP system

PART C

Q. 10. Case study - Compulsory

Perlos (Texas) Inc., is a subsidiary of the Perlos Corporation, which is based in Nurmijaravi, Finland. Located in Fort Worth, Texas, the Perlos manufacturing facility produces a variety of plastic components for mobile phones. The Texas plant produces parts exclusively for Nokia, the world’s leading producer of cell phones. Although some of the parts produced at Perlos plant are shipped to Nokia plants around the world, most are sent to the Nokia plant just across the street from Perlos. With around 500 employees and 300 robots, Perlo’s two-year old plant is a state-of-the art facility for injection molded plastic components. The plant operates 24 hours a day.

Perlos uses a JIT approach to production control, including Kanaban cards. Nokia provides Perlos with forecasts for six months in the future and provides a blanket purchase order for plastic components. Production and delivery of components are controlled by Kanban cards. Perlos does not produce anything unless there is a Kanban card authorizing it to do so. If Noika increases production rate for cell phones during a week, then Perlos must also increase or decrease its production rate for plastic components.

Perlos make frequent deliveries of parts to Noikia throughout each day to support Noika’s production plan. The parts delivered to Nokia are not packaged, which would slow Nokia’s use of the parts, but rather they are placed on partitioned plastic trays holding a standard number of parts. After Noika uses the parts, the empty trays are then returned to Perlos for reuse. There are no wasted packaging materials, such as cardboard boxes, with the parts provided to Nokia’s Fort Worth Plant.

Questions:
1) Centre to JIT philosophy is elimination of waste. How this is taken care of in Perlos plant?
2) Explain the concepts of JIT as mentioned in the case study.
3) JIT production is important before moving on to JIT supply. Substantiate.
4) JIT supply helps in reducing package waste. Discuss.

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