1. Write the correct answer of the following:

(ii) \text{Linear Programming is a}:\hspace{1cm}(a) \text{Operations research approach's.}

(iii) \text{Constrained optimization technique is}:\hspace{1cm}(i) \text{Scientific approach's.}

(iv) \text{Technique for economic allocation of limited resources is}:\hspace{1cm}(i) \text{Intuitive approach's.}

(v) \text{Mathematical technique in a decision-making process is}:\hspace{1cm}(a) \text{Operations research approach's.}

2. The following information relating to a type of raw material is available:

- Annual demand: 2,400 units
- Lead time: Half month
- Half-monthly Lead time: 6 days
- Economic Order Quantity and total inventory cost of the particular raw material:
- Inventory cost per order: Rs. 4
- Unit price: Rs. 2.40
- Ordering cost per order: 2% per annum
- Interest Rate: 10% per annum
- Stock Cost: 10% per annum
- Stock Interest Rate: 2% per annum
- Annual demand: 2,400 units

3. Discuss the role of material handling system in improving the productivity of a company.

4. Write the dual of the following LP problem:

\[
\max Z = x_1 - 2x_2 + 3x_3
\]

Subject to the constraints:

\[
\begin{align*}
2x_1 + x_2 + x_3 & \leq 10 \\
x_1 + x_2 - 3x_3 & \leq 2 \\
2x_1 - 2x_2 - x_3 & \geq 6 \\
x_1 - x_2 + x_3 & \geq 0
\end{align*}
\]

5. What conditions would you recommend scheduling by PERT?
(c) The graphical method of LP problem uses:
   (i) Objective function equation
   (ii) Constraint equations
   (iii) Linear equations
   (iv) All of the above

(d) The GP approach attempts to achieve each objective:
   (i) Sequentially
   (ii) Simultaneously
   (iii) Both (i) and (ii)
   (iv) None of the above

(e) The assignment problem:
   (i) Requires that only one activity be assigned to each resource
   (ii) Is a special case of transportation problem
   (iii) Can be used to maximize resources
   (iv) All of the above

(f) Which one of the following is correct formula of re-order level?
   (i) \( ROL = B + LdR \)
   (ii) \( ROL = B \)
   (iii) None of the above
   (iv) Both (i) and (ii)

(g) Average inventory will be equal to:
   (i) \( B + q^* \)
   (ii) \( B + q^*/2 \)
   (iii) \( B \)
   (iv) All of the above

(h) The method used for solving an assignment problem is called:
   (i) Reduced matrix method
   (ii) MODI method
   (iii) Hungarian method
   (iv) None of these

(i) Two person zero sum game means that the:
   (i) Sum of losses to one player is equal to the sum of gain to other
   (ii) Sum of losses to one player is not equal to the sum of gains to other
   (iii) Both (i) and (ii)
   (iv) None of the above

(j) Managerial decision are based on:
   (i) An evaluation of quantitative data
   (ii) The use of qualitative factors
   (iii) Numbers produced by formal models
   (iv) All of the above

2. Explain the concept of Production Management. What are the duties and responsibilities of Operations Manager? Explain.

3. Explain ABC analysis. What are its advantages and limitations, if any?

4. Compare and contract CPM and PERT. Under