Code: D-16 **Subject: INDUSTRIAL ENGINEERING**
Time: 3 Hours **Max. Marks: 100**

NOTE: There are 11 Questions in all.

- **Question 1 is compulsory and carries 16 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Answer any THREE Questions each from Part I and Part II. Each of these questions carries 14 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or best alternative in the following: (2x8)

a. The additional time which a non-critical activity can consume without increasing the project duration is known as

(A) Float. **(B)** Slack.
(C) Total Float. **(D)** Critical Path.

b. Cutting a bar on a power saw or driving a nail in wood is

(A) Procedure. **(B)** Storage.
(C) Inspection. **(D)** Operation.

c. A stitch in time procedure aimed at avoiding breakdown is known as

(A) Corrective Maintenance. **(B)** Preventive Maintenance.
(C) Scheduled Maintenance. **(D)** Predictive Maintenance.

d. If 'U' is Annual Usage, 'P' is Procurement Cost, 'C' is cost per piece and 'I' is cost of carrying inventory, then EOQ is given by

(A) $\sqrt{\frac{2UP}{CI}}$. **(B)** $\sqrt{\frac{2CP}{UI}}$.
(C) $\sqrt{\frac{2CI}{UP}}$. **(D)** $\sqrt{\frac{2UC}{PI}}$.

e. The method by which the merit of the persons doing a job is rated, is called

(A) Job Evaluation. **(B)** Job Description.
(C) Job Analysis. **(D)** Merit Rating.

f. Free-rein leadership is also known as
(A) Laissez Faire Style. **(B)** Authoritarian Style.

(C) Democratic Style. **(D)** Task Master Style.

g. The method of scheduling the activities within the limits of their total float such that fluctuations in load or resource requirements are minimised is known as

(A) Updating. **(B)** Smoothing.
(C) Optimising. **(D)** Crashing.

h. 'MAPI' method in equipment replacement means

(A) Machinery Access Processing Institute.
(B) Machined Allied Processing Institute.
(C) Machinery Allied Production Industries.
(D) Machinery Allied Products Institute.

PART I
Answer any THREE Questions. Each question carries 14 marks.

Q.2 a. Discuss the application of Industrial Engineering. **(7)**

b. Explain the factors affecting Productivity, Manufacturing and Services. **(7)**

Q.3 a. Discuss the concept and factors governing plant location. **(7)**

b. Explain the different steps involved in developing a product. **(7)**

Q.4 What is the difference between method study and work measurement? State the objectives of each. **(14)**

Q.5 a. Discuss the objectives and importance of plant maintenance. **(7)**

b. Explain any three distinct leadership styles. **(7)**

Q.6 Write short notes on any **TWO** of the following:-

(i) EOQ.
(ii) Job Evaluation.
(iii) Line Balancing.
(iv) Application of Computers in Network Techniques and Linear Programming.

(2 x 7 =14)

PART II
Answer any THREE Questions. Each question carries 14 marks.

Q.7 a. Discuss the roles and functions of an industrial engineer. **(5)**

b. What is the difference between the production function and the production system. **(4)**

c. What is a combination layout? **(5)**

Q.8 a. Who carries out in process inspection? What does it aim to check? **(7)**

b. "A chart representing a process is called a process chart." Discuss the different types of process charts. **(7)**

Q.9 a. "Operation research aids in solving diverse business problems." Explain. **(7)**

b. Discuss the methods used in selection of alternatives in replacement analysis. **(7)**

Q.10 a. Explain Douglas Mcgregor's theory X and Y of motivation. **(7)**

b. Discuss the functions and objectives of Materials Management. **(7)**

Q.11 Write short notes on any **TWO** of the following: -

(i) Merit Rating.
(ii) ABC Analysis.
(iii) Work Study.
(iv) Discipline . **(7 x 2)**