Paper Code: EOE-083	Roll No.										

B.Tech.
(SEM VIII) EVEN SEMESTER EXAMINATION, 2015-16
PRODUCT DEVELOPMENT

[Time: 3 hrs.]   **[Max. Marks: 100]**

Note:-Attempt all questions. All questions carry equal marks.

1. Attempt any **four** parts of the following: -   **[5x4=20]**

   (a) Discuss product design. What are the three phases of product design?
   (b) What steps are to be taken before considering the development of a new product?
   (c) Draw and explain Production-Consumption-Cycle.
   (d) Explain Original design, Adaptive design and Variant design.
   (e) Write a note on Design theory developments in world history.
   (f) Differentiate between Need based Development and Technology based Development. Give examples.

2. Attempt any **two** parts of the following: -   **[10x2=20]**

   (a) What is Morphology of Design? Draw the diagram showing its phases of primary design and phases related to Production-Consumption-Cycle.
   (b) Explain the Divergence, Transformation and Convergence phases of product design.

   (c) What is Creativity? Describe in brief, the characteristics of a creative designer and its advantages.

3. Attempt any **two** parts of the following: -   **[10x2=20]**

   (a) Define value. Comment on Value Analysis.

   (b) What do you understand by Decision making?
   A small scale industry sold all its output in 1965 for Rs. 1150000 at Rs. 11.50 per unit, the total fixed charges of the establishment amounted to Rs. 200000 per annum and the variable cost per unit of production was Rs. 7.50. The management wants to reduce the selling price to Rs. 11.00 per unit and to maintain the same amount of profit as before. How many more units should be produced and sold to give effect due to this decision?

   (c) What is Break-Even Analysis?
   Given:
Fixed cost	Rs. 30000
Variable cost	Rs. 2 per unit
Selling price	Rs. 10 per unit
Sales	Rs. 100000

   (i) Calculate profit if likely sale is Rs.140000.
   (ii) Calculate the turn over required if profit target of Rs. 60000 has been budgeted.
   (iii) What would be the selling price per unit, if BEP is brought down to 5000 units?

4. Attempt any two parts of the following: - **[10x2=20]**

   (a) Define reliability. Why its need has been felt in engineering design?
     In a system there are 10 components in series each with a reliability factor of 0.95. What is the overall reliability of the system? If each of the 10 components is in parallel and has individual reliability factor of 0.30 only, what is the system reliability?

   (b) What do you understand by man-machine interface? Give the classification of man-machine systems.

   (c) What is Ergonomics? For using the Anthropometric data in design which factors should be kept in mind?

5. Attempt any two parts of the following: - **[10x2=20]**

   (a) What is work study? Write the benefits and the steps involved in a complete work study exercise.

   (b) Explain SQC. What are the principles of SQC? Enlist some advantages of SQC?

   (c) What is Judgment based technological forecasting techniques? Explain their advantages and disadvantages.