Printed Pages : 2 **Roll No.** | | | | | | | | | | | **EOE083**

B. TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

PRODUCT DEVELOPMENT

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Attempt all of the following questions: **10 x 2 = 20**

(a) Define product development and design

(b) Explain the term Test marketing

(c) What is meant by adaptation?

(d) What is meant by synectics?

(e) Define CAD CAM

(f) Define MTBF

(g) Define value engineering

(h) Define QFD

(i) Define concurrent engineering

(j) Write a need statement for hand charging system in a hostel dining hall.

SECTION – B

2. Attempt any five of the following questions: **5 x 10 = 50**

(a) What do you understand by design by evolution? Explain with examples.

(b) Define creativity. Explain difference between creative thinking and analytical thinking with an example.

(c) What is anthropometries data? Explain man-machine interaction cycle.

(d) Define reliability. Explain reliability of system in series & parallel with an example.

(e) Explain the checklist which facilitates carrying out of need analysis.

(f) A company produces four different designs of fountain pens. Their performance may be summarized as follows :

Performance parameter (Design)	**Writing time between refills (min.)**	**Nib life (months)**	**Cost**	**Writing Pressure**
A	35	24	10	0.30
B	15	30	8	0.20
C	55	20	20	0.40
D	30	18	12	.25
Min acceptable value	10	15	20	0.20

Assign proper weights to the quality dimensions and determine which design gives the maximum utility.

(g) A company makes curtain rods of size 2 mts in length. Three materials A, B and C are available. Each material calls for a different process & machine for manufacturing and their cost data is given as below.

Materials	**Items**		
	A	**B**	**C**
Raw material cost Rs./meter	2.25	2.75	3.00
Equipment cost Rs. /year	6000	5000	3000
Labor cost Rs. /rod	0.55	0.62	0.25

Plot the total cost v/s yearly production volume. If a sales volume of 10,000 rods/year is expected, which material should be used?

(h) Write brief notes on any TWO of the following

(i) Product life cycle1.

(ii) Bath tub curve

(iii) Design of displays

SECTION – C

Attempt any two of the following questions: 2 x 15 = 30

3. A truck has two tyres on the front side and four tyres on the rear axle; each having a failure rate of 0.001 per hour. Calculate the reliability for a 10 hour journey, if there is no stepney in the truck.

4. Explain the utility concept with an example. Also discuss the law of diminishing marginal utility.

5. What are the creative design routes or phases in product design? Explain with figure.