

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 140667

Roll No.

**B.TECH.**

**Theory Examination (Semester-VI) 2015-16**

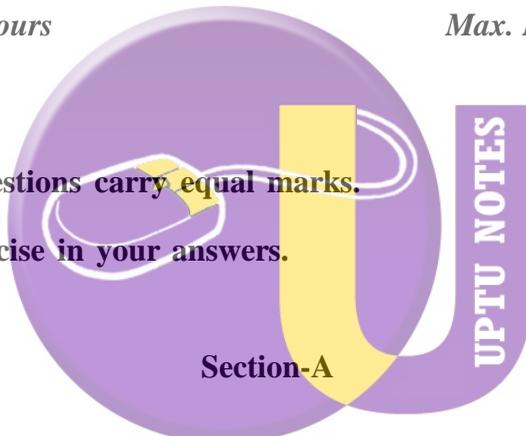
**PRODUCT DESIGN & DEVELOPMENT**

*Time : 3 Hours*

*Max. Marks : 100*

**Note :**

- (1) All questions carry equal marks.
- (2) Be precise in your answers.



**1. Attempt all questions :- (2×10=20)**

- (a) Who all form the extended team in Product Development Team?
- (b) What are the challenges involved in Product Development?

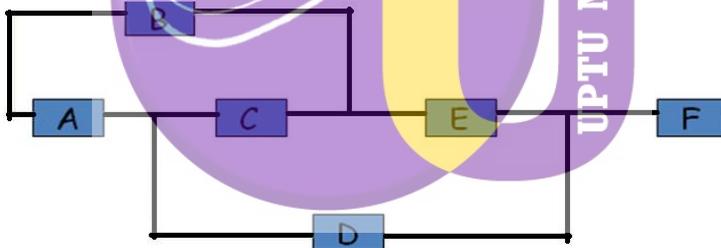
- (c) State four steps involved in establishing target specifications.
- (d) What are the common dysfunctions during concept generation?
- (e) What do you mean by Reliability of the product.
- (f) What are the different approaches used in concept selection?
- (g) What are the goals of product Design?
- (h) What are the criteria of ergonomics design?
- (i) What are the four uses of Prototyping?
- (j) What are the four elements of economic analysis in product development?

### Section-B

**2. Attempt any five of the following questions :- (10×5=50)**

- (a) What do you understand by brain storming & how the brainstorming is carried out?

- (b) What is feasibility study ? Discuss its importance related to product design.
- (c) What are the advantages of work study & explain the procedure of work measurement?
- (d) Explain the role of product simplification and product standardization in the product development.
- (e) What are the Environment and other safety considerations in product design and how they are implemented in product design.
- (f) Find the reliability of the system.



Given :

$$R_a=0.95, R_b=0.95, R_c=0.85, R_d=0.9, R_e=0.9, R_f=0.95$$

- (g) Write short note on following:
- (i) Failure rates (ii) MTTF (iii) MTBF .

- (h) What do you understand by Ideation techniques and how it is implemented in product development.

### Section-C

Attempt any two of the following questions :- (15×2=30)

3. Discuss all the factors performed while carrying out economic analysis during product development elaborately with a case study.
4. After market survey a customer collects the following data about four telephone instruments. Calculate the composite utility index for each brand and suggest which telephone instrument should be purchased.

Attribute of performance	Relative weight age	Limits of attributes	Telephone sets			
			A	B	C	D
Brand Name	25%	3(min)	7	5	5	4
Additional feature	15%	2(min)	5	3	4	3
Maintenance per year	10%	200(max)	50	100	100	150
Cost in Rs.	50%	3000(max)	2600	2000	2200	1700

5. Write short notes on following:
- (i) Technological Forecasting (ii) compatibility of display and control (iii) decision making under multiple criteria.