

315367

12526

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: **10****
- a) Define term Customer need identification.
 - b) Name four types of consumer products.
 - c) Define term ‘Design by Evolution’.
 - d) Define product architecture.
 - e) List any two principles of ‘Ergonomics’.
 - f) Classify term ‘Product Value’.
 - g) State the necessity of QFD (Quality Functional Deployment) during development of new products.

P.T.O.

- 2. Attempt any THREE of the following: 12**
- a) Explain any four principles of Good Product Design.
 - b) Explain process of development of 'Product Architecture of a Spanner'.
 - c) Draw block diagram indication main elements of Industrial Design.
 - d) Explain term VEJP (Value Engineering Job Plan) with example.
- 3. Attempt any THREE of the following: 12**
- a) Explain following Characteristics of New Product Development with suitable example :-
 - i) Development time
 - ii) Development cost.
 - b) Differentiate between Slot and Bus architecture on the basis of flexibility, simplicity, scalability and cost effectiveness.
 - c) Explain 'Importance of VOC (Voice of Customer)' using block diagram.
 - d) State following principles related to Rapid Prototyping :-
 - i) Iterative Development
 - ii) Layer by layer approach.
- 4. Attempt any THREE of the following: 12**
- a) State eight phases of process development.
 - b) Explain importance of following aspects of Aesthetics in product design.
 - i) Symmetry
 - ii) Colour.
 - c) Explain term DFM (Design for Manufacturing) with suitable example.
 - d) State importance of Product Life cycle with diagram.
 - e) Differentiate between FDA and SLS 3-D printer based on resolution, accuracy, material used and applications.

- 5. Attempt any TWO of the following: 12**
- a) Explain Tyco Product Development with suitable example.
 - b) Determine PLC (Product Life Cycle) of a bicycle.
 - c) Explain working of 'SLA 3-D Printer' with neat sketch.
- 6. Attempt any TWO of the following: 12**
- a) Explain Industrial Design Process.
 - b) Draw House of Quality relationship matrix for 'Air compressor'.
The Air compressor does not meet user expectations regarding noise, safety, air delivery and power consumption.
 - c) Draw House of Quality (HoQ) diagram for a helmet manufacturing company based on safety, light weight, stylish, cost as per demand of customer.
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