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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; Aug. / Sep. - 2020

Product Design and Manufacturing

Mandya

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **TWO** full questions, selecting **ONE** full question from **UNIT - I** and **UNIT - II**.

ii) Answer any **THREE** full questions, choosing from **UNIT - III**, **UNIT - IV** and **UNIT - V**.

UNIT - I

- 1 a. What are the essential factors of product designs? Explain any four of them. 15
 b. Describe Production-Consumption cycle. 5

OR

- 2 a. List the seven phases of morphology and explain first three phases. 12
 b. Describe the role of allowance, process capability and tolerance in detailed design and assembly. 8

UNIT - II

- 3 a. Mention the Eilon recommended techniques to enhance aesthetic appeal in product design. 10
 b. Explain importance of the Three S's of product design. 10

OR

- 4 a. What are the basic design considerations? Explain each of them briefly. 10
 b. Describe the various types of models designed by Industrial designer. 10

UNIT - III

- 5 a. Explain the various general productivity requirements for designer parts and machining techniques. 15
 b. Write a note on design of powder metallurgical parts. 5
 6 a. Explain with a neat sketch the design factors for rubber parts. 15
 b. Mention and explain the guidelines to be used for designing plastic gears. 5

UNIT - IV

- 7 a. Discuss the SIDDAL's classification of design approaches. 10
 b. Explain the following respect to design :
 i) Linear programming 10
 ii) Optimization by differential calculus
 8 a. Discuss the design for safety, reliability and environment considerations. 10
 b. Mention and discuss the ten aspects of manufacturing that will Lower the cost of product. 10

UNIT - V

- 9 a. Define Anthropometry. Explain the significance of Anthropometry in product design. 10
- b. Discuss the man-machine information exchange with a neat sketch. 10
- 10 a. List and explain the five step process of value analysis job plan. 14
- b. Mention the steps of the creative process. 6

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