Ref. No.: Ex/PG/ProdE/T/1210A/2024

M.E. PRODUCTION ENGINEERING FIRST YEAR SECOND SEMESTER EXAM 2024

CONCURRENT ENGINEERING (PT)

Time: Three Hours **Full Marks:100**

PART-I (60 Marks)

Answer any THREE questions

1. a) What is Concurrent Engineering? What are the needs of Concurrent Engineering?
   b) Why is concurrent engineering known as Life Cycle Engineering?
   c) Why is concurrent engineering known as Time Compression Engineering?
   d) Distinguish between Traditional Engineering and Concurrent Engineering approach.

   (5+4+4+7)

2. a) What do you mean by Time to Market?
   b) What do you mean by concurrent engineering culture?
   c) What are the steps of concurrent engineering?
   d) What are the factors related to the product as well as the company to be considered for implementation of concurrent engineering?

   (3+5+6+6)

3. a) Distinguish between Prototype and Sample.
   b) What is product formation? How is it different from product development?
   c) Discuss about the characteristics features of various classes of models for product development.

   (3+5+12)

4. a) What is Reverse Engineering? What are the objectives of it? Explain the steps of Reverse Engineering.
   b) What is Rapid Tooling? Explain about various types of it. How is Rapid Tooling applied in Investment Casting?

   (8+12)

5. a) What is ideal quality? What are the types of quality loss function?
   b) What is Robust Design? What are the steps of Taguchi Method of Robust Design?
   c) Discuss on Signal to Noise ratio analysis for determining the optimal combination of four process parameters of three levels and predicted value of response.

   (5+5+10)

[Turn over

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M.E. PRODUCTION ENGINEERING FIRST YEAR SECOND SEMESTER - 2024

Subject: Concurrent Engineering (PT)

Time: 3 hours **Full Marks: 100**

Part: II (40 Marks)

(Use Separate Answer Scripts for Each Group)

Answer any four questions

1. Elucidate rapid prototyping and write down the role of rapid prototyping in modern manufacturing. What are the steps involved in rapid prototyping? **(5+5=10)**

2. (a) Draw different steps of stair effecting as a function of layer thickness. (b) Elaborately explain about the Solid FreeForm fabrication (SFF). **(5+5=10)**

3. (a) Draw the different types of support requirements for rapid prototyping.(b) What is Laser stereo lithography? Draw the schematic of stereo lithography. **(3+2+5=10)**

4. Draw theschematic diagram of Laminated Object Manufacturing process and explain the steps required for this process. Write down the specific application of LOM. **(7+3=10)**

5. Expound the schematic diagram of Selective Laser Sintering process. Explicate the salient features of Selective Laser Sintering. Write down the advantages and disadvantages of SLS. **(5+3+2=10)**

6. Draw the schematic diagram of Fused Deposition Modeling (FDM) and explain the mechanism. **(10)**