

**(3 Hours)**

**Total marks: 80**

**NB**

1. Answer any four questions.
2. All questions carry 20 marks.
3. Illustrate the questions with neat sketches wherever required.
4. Answers to the questions must be grouped and written together.

Q.1 (A) List the advantages and challenges of using sheet metal for manufacturing. (10)

Q.1 (B) What are the methods of fastening a die block to a shoe. (10)

Q.2 (A) Describe the effect of various alloy elements in steel. (10)

Q.2 (B) Write short note on non – metallic materials that are important to the tool designer. (10)

Q.3 (A) Describe multiple bend dies. (10)

Q.3 (B) What is combination die? How it is different from a compound die? (10)

Q.4 (A) Explain the importance of cutting clearances. Recommend the cutting clearance each for Aluminium and stainless steel piercing operation for 2.5 mm thick and 0.8 mm sheet each. (10)

Q.4 (B) Draw a simple V- bending die naming all its major elements. (10)

Q.5 (A) Write short notes on (10)

a) Spinning Process

b) Dimpling process

Q.5 (B) Draw and explain simple and progressive die in reference with deep drawing dies. (10)

Q.6 (A) Write short note on non ferrous metals that are important to the tool and die designer. (10)

Q.6 (B) Explain the importance of software in die design. Name the typical software used in industry vis-à-vis sheet metal operation performed. (10)

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