M.E. First Semester (Production Tech. & Mgt.) (P.T.) (CGS)

13531 : Advanced Metal Forming and Casting Technology : 1 SPTM 2

P. Pages : 1 **AX - 3422**

Time : Three Hours * 0 8 5 2 * Max. Marks : 80

Notes : 1. Answer **Three** question from Section A and **Three** question from Section B.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.
4. Use of Drawing instrument is permitted.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) What is Spring back? Explain how can you reduce the effect of spring back on bending? **8**

b) Explain the theory of sheet metal cutting with neat sketch. **5**

2. a) What is center of pressure? Calculate center of pressure any component of your choice. **8**

b) What is spring back? How can you compensate its effect in bending? **5**

3. Design a suitable die of your choice for producing a washer of 50 mm diameter having a hole of 15 mm at the center from a 2mm thick M. S. sheet. **13**

4. Design a drawing die for a suitable component. **13**

5. a) Explain how will you calculate the number of passes required for reducing cross sectional area of an ingot? **7**

b) Explain the following series of passes with neat sketches : **7**
i) Diamond – Square passes. ii) Oval – Circular passes.

SECTION – B

6. Design and draw a multi-impression forging die for a component of your choice. **13**

7. Explain with a suitable example how the shape of a edging or rolling impression in forging die can be decided? **13**

8. a) What are the three sources of forging defects? Explain the causes and remedies of the following forging defects: **7**
i) Cracks. ii) Cold Shuts. iii) Mismatch.

b) What is Simpson's rule? Explain its application in forging die design with suitable example. **6**

9. Explain the steps involved in PMT using a suitable example of your choice. **13**

10. a) Describe with neat sketch the method of 'Investment casting'. List out some important specific applications and limitations of this process. **7**

b) Explain the following techniques of inspection of casting: **7**
i) Radiographic Inspection. ii) Ultrasonic Inspection.

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