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**B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2012**

**MANUFACTURING ENGINEERING BRANCH**

**FIFTH SEMESTER**

**MF 9302 – METAL FORMING TECHNOLOGY**

**(REGULATIONS 2009)**

Time: 3 Hrs

Answers All questions

Max. Marks: 100

**PART – A (10 x 2 = 20 Marks)**

1. Name the four methods of classifying forming process.
2. List any four differences between hot working and cold working.
3. What is meant by formability?
4. List any two differences between direct and indirect extrusion?
5. What is meant by minimum bend radius?
6. What is meant by spring back effect?
7. List any four differences between cold and hot isostatic pressing.
8. List any four differences between conventional and high speed forming.
9. List any four needs of powder metallurgy components.
10. Compare components produced by casting, forging and powder metallurgy routes.

**PART – B (5 x 16 = 80 Marks)**

11. With simple sketches briefly explain

- i. Powder forging (8)
- ii. Powder rolling (8)

12a(i). Define engineering stress, engineering strain, true stress and true strain. (8)

12a(ii). State any four differences between slip and twinning? (8)

OR

12b. Describe the following with neat sketch

- i. Elastic and Plastic deformations (8)
- ii. Point and line defects (8)

13a. Write briefly about the following with neat sketches.

- i. Any four forging defects (8)
- ii. Any four rolling methods (8)

OR

13b. Write briefly about the following with neat sketches.

- i. Mannesmann process (8)
- ii. Extrusion defects (8)

14a(i). Differentiate shearing and drawing processes with neat sketches. (8)

14a(ii). State any four differences between blanking and fine blanking with neat sketches. (8)

OR

14b(i). Explain any one HERF process with neat sketches. (12)

14b(ii) State the advantages and limitations of super plastic forming process? (4)

15a. Briefly describe orbital forming process (8)

15b. Briefly describe isothermal forming process. (8)

OR

15b. Explain rubber pad and hydro forming with simple sketches. (16)