| Reg. No. | | | | | | | | | | | | |
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| Question Paper Code | 11581 |
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022**

Fifth Semester

**Production Engineering**

**20PRPC503 - METAL FORMING TECHNOLOGY**

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

| | | Marks, K-Level, CO |
|---|---|---|
| 1. | What is Von-mises and Tresca yield criteria. | 2,K1,CO1 |
| 2. | Write the significance of recrystallisation in metal forming. | 2,K1,CO1 |
| 3. | List the factors which affect the rolling process. | 2,K2,CO2 |
| 4. | What is an impression die forging? | 2,K2,CO2 |
| 5. | Difference between forward and backward extrusion process. | 2,K2,CO3 |
| 6. | What is wire drawing? | 2,K1,CO3 |
| 7. | Define blanking. | 2,K1,CO4 |
| 8. | Compare combination die and progressive die. | 2,K2,CO4 |
| 9. | What is isothermal forging? | 2,K1,CO6 |
| 10. | What do you mean by superplastic forming process? | 2,K1,CO6 |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

| | | | |
|---|---|---|---|
| 11. | a) | Derive the expression for Von mises & distortion energy criterion. | 13,K2,CO1 |
| | | **OR** | |
| | b) | Differentiate between hot and cold working processes with advantages. | 13,K2,CO1 |
| 12. | a) | Derive the equation of force required for rolling process with a neat sketch. | 13,K2,CO2 |
| | | **OR** | |
| | b) | Explain the classification of forging process in detail. | 13,K2,CO2 |
| 13. | a) | Explain the following extrusion process<br>(i) Side extrusion<br>(ii) Hydrostatic extrusion. | 6,K2,CO3<br>7,K2,CO3 |
| | | **OR** | |

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*

b) With a neat sketch, explain about the mannessmann process of seamless pipe manufacturing. *13,K2,CO3*

14. a) With a neat sketch, explain the principle and working of stretch forming and plate bending processes. *13,K2,CO4*

**OR**

b) What is die? Explain About different types of dies in detail. *13,K2,CO4*

15. a) Explain the principle, working and applications of Laser forming and Hydro forming techniques. *13,K2,CO6*

**OR**

b) Explain the powder metallurgy process in detail. *13,K2,CO6*

**PART - C (1 × 15 = 15 Marks)**

16. a) Explain the Electro-hydraulic forming in detail with a neat sketch. *15,K3,CO5*

**OR**

b) Explain the explosive forming in detail with a neat sketch. *15,K3,CO5*