X20834 Reg. No. :

Question Paper Code : X20834

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
AND APRIL/MAY 2021
Third/Fifth Semester
Mechanical Engineering
ME 6302 – MANUFACTURING TECHNOLOGY – I
(Common to Mechanical Engineering (Sandwich) Industrial Engineering,
Industrial Engineering and Management, Mechanical and Automation Engineering)
(Regulations 2013)
(Also common to : PTME 6302 – Manufacturing Technology – I for B.E. (Part – Time)
– Second Semester – Mechanical Engineering
(Regulation 2014)

Time : Three Hours Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. List the different types of patterns.
2. Write the application of core prints.
3. Why shielding of weld area during welding is required ?
4. How does the seam welding is an application of spot welding ?
5. Why is it necessary to condition the metal before hot rolling ?
6. Give a few examples of hot forged products.
7. Estimate the force required for punching a 25 mm diameter hole through a 3.2 mm thick annealed titanium alloy Ti-6A*l*-4V sheet at room temperature. The UTS for this alloy can be assumed to be 1000 MPa.
8. Name any two superplastic materials.
9. Name the various methods of processing thermoplastics.
10. Define film blowing.

PART – B **(5×13=65 Marks)**

11. a) i) How are patterns classified ? Describe any two types with sketches and state the uses of each of them. **(7)**

ii) Enumerate the casting defects and suggest suitable remedies. **(6)**

(OR)

b) i) Explain the process of centrifugal casting with suitable sketch and state its specific applications. **(8)**

ii) What are the main characteristics of a mould sand ? **(5)**

12. a) i) Explain various welding positions with neat sketch. **(7)**

ii) Explain the submerged arc welding process with neat diagram. **(6)**

(OR)

b) i) Explain the arc welding process with neat sketch. **(7)**

ii) Describe the ultrasonic welding process with neat diagram. **(6)**

13. a) Sketch and explain the various types of Rolling mill arrangements used in a Rolling process. **(13)**

(OR)

b) Sketch and explain the differences between impression die forging and precision forging (near net shape forging) operations. **(13)**

14. a) Write short notes on the following :

i) Shearing **(3)**

ii) Blanking **(3)**

iii) Clearance in shearing **(3)**

iv) Springback in bending **(4)**

(OR)

b) With neat diagrams explain the process of Rubber pad forming and Hydroforming. **(13)**

15. a) i) Explain how plastic sheets are manufactured by thermo forming method. **(7)**

ii) Explain the process of transfer moulding and its applications. **(6)**

(OR)

b) i) Enumerate various methods of bonding thermoplastics. **(7)**

ii) Enumerate injection moulding of plastic products. **(6)**

PART – C **(1×15=15 Marks)**

16. a) Explain the design considerations to be followed when designing a part for the casting process.

(OR)

b) Sketch and explain the sequence of steps in manufacturing a connecting rod using the forging process.

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