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Question Paper Code : 21844

B.E/B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Third Semester

Mechanical Engineering

ME 2201/ME 32/PR 1204/080120005/10122 ME 302 — MANUFACTURING TECHNOLOGY-I

(Common to Industrial Engineering, Industrial Engineering and Management, Mechanical and Automation Engineering and Fifth Semester Mechanical Engineering [Sandwich])

(Regulations 2008/2010)

(Common to 10122 ME 302 — Manufacturing Technology – I for B.E. (Part-Time) Second Semester — Mechanical Engineering — Regulations 2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What factors are to be considered in calculating the shrinkage allowance?

2. What are the essential requirements of a core sand?

3. What are the functions of a good flux in welding?

4. What is a spelter and give the composition of some commonly used spelters?

5. What are the effects of cold working?

6. Define hot isostatic forging.

7. What is spring back effect and how it is overcome in sheet metal work?

8. What are the various types of sheet metal dies?

9. What are reinforced plastics and where is it applied?

10. What are the industrial uses of fibres and filaments?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What design considerations are needed to be followed in pattern design and explain how patterns are constructed? (8)

(ii) With the help of neat sketch, describe in detail, the process of producing components by pressure die casting? (8)

Or

(b) (i) Describe the procedure of making castings by the true centrifugal casting and write its advantages and disadvantages. (8)

(ii) List the various mechanical tests carried on castings? Enumerate the tensile test and its importance in testing castings. (8)

12. (a) (i) Explain in brief the functions of various coatings on a welding rod. (6)

(ii) Explain in detail the plasma arc welding process and write its applications and demerits. (10)

Or

(b) (i) Explain with neat sketch the principle of resistance welding. Differentiate between upset welding and flash welding. (8)

(ii) Enumerate the various welding defects with causes of occurrence and describe a method of detecting cracks on a weld surface. (8)

13. (a) (i) How are forging processes classified and explain with sketches the various forging processes? (10)

(ii) Explain with neat sketches the process of tube drawing of metals.(6)

Or

(b) (i) Describe the principle of rolling and the various sequence of operation of production of V-shape angles. (8)

(ii) Classify the extrusion processes and explain with sketches the various extrusion processes. (8)

14. (a) (i) Describe the various methods of rubber pad forming and where are these processes used. (10)

(ii) Write a short notes on the following

(1) Sheet bending

(2) Perforating (2 × 3 = 6)

Or

(b) (i) Explain the principle, working and applications of magnetic pulse forming process. (10)

(ii) Enumerate the differences between recovery and recrystallization in the mechanical working of metals. (6)

15. (a) (i) Describe with a neat sketch the procedure for producing plastic films and sheets by extrusion process. (8)

(ii) Enumerate the various processes of joining plastics. (8)

Or

(b) (i) Describe with suitable illustrations the procedure of producing plastic components by injection moulding. (8)

(ii) Discuss in detail the various thermosetting and thermoplastic compounds and their application. (8)