Register No.:

9001

October 2025

Time – Two hours
(Maximum Marks: 60)

N.B.
1. Answer all questions under Part-A. Each question carries 1 mark.
2. Answer any 5 questions under Part-B. Each question carries 2 marks.
3. Answer any 3 questions under Part-C. Each question carries 10 marks.

PART – A

1. A pattern is used in foundry for :
   a) Pouring molten metal
   b) Making mould cavity
   c) Cooling the casting
   d) Strengthening the sand

2. In a crucible furnace, metal is melted in :
   a) Crucible pot
   b) Hearth
   c) Lining
   d) Chamber

3. In gravity die casting, molten metal enters the mould :
   a) By suction
   b) By pressure
   c) By centrifugal force
   d) By gravity alone

4. Cold shut occurs when
   a) Two streams of molten metal do not fuse properly.
   b) Sand particles mix with metal
   c) Mould collapses
   d) Casting cracks during cooling

5. The most used arc welding method in industries is :
   a) Carbon arc welding
   b) Gas welding
   c) Metal arc welding
   d) Friction welding

6. The reducing (carburizing) flame in gas welding is used for :
   a) Stainless steel
   b) Aluminum and nickel
   c) Cutting
   d) Cast iron

7. Radiography is useful for detecting :
   a) External porosity only
   b) Hardness variation
   c) Internal defects like voids and blowholes
   d) Surface roughness

8. Slag inclusion defects can be avoided by
   a) Cleaning each weld pass properly
   b) Using smaller electrodes
   c) Applying more current
   d) Using less flux

9. Hot working improves :
   a) Machinability
   b) Thermal conductivity
   c) Ductility and toughness
   d) Electrical resistance

10. Roll forging is mostly used for axles and rods because :
    a) The hammer blows distribute heat uniformly
    b) The dies are kept open to allow free expansion
    c) The operation is carried out at room temperature
    d) The shaped rolls gradually reduce cross-section

11. The operation in which the edge of the sheet is rolled into a circle is known as :
    a) Notching
    b) Piercing
    c) Shaving
    d) Curling

12. A hydraulic press is preferred for deep drawing
    a) It consumes less power in shearing
    b) It avoids spring back during bending
    c) It provides steady pressure during stroke
    d) It works at higher speed than mechanical press

13. Purpose of sizing is :
    a) Powder production
    b) Improve dimensional accuracy
    c) Mixing particles
    d) Increase powder flow

14. The product obtained after compaction but before sintering is called
    a) Finished part
    b) Sintered part
    c) Porous product
    d) Green compact

15. What is the primary purpose of the annealing process in heat treatment?
    a) To increase hardness
    b) To remove internal stresses and soften the material
    c) To improve wear resistance
    d) To refine grain structure and make the material brittle.

16. Which of the following form of iron is magnetic in nature?
    a) α (Alpha)
    b) δ (Beta)
    c) γ (Gamma)
    d) λ (Delta)

17. For assembling screws with high torque in production, select :
    a) Electric screwdriver
    b) Impact wrench
    c) Hand drill
    d) Hammer drill

18. The function of a turret indexing mechanism is to:
    a) Rotate workpiece
    b) Change cutting tools quickly
    c) Hold cutting fluids
    d) Control feed rate

19. A catch plate is used with :
    a) Mandrel
    b) Chuck
    c) Steady rest
    d) Vice

20. Choose the correct tool-holding device for drilling multiple holes at different angles.
    a) Adapter
    b) Turret
    c) Arbor
    d) Collet

PART – B

21. Mention any two defects found in casting.
22. What are the essential qualities of core?
23. State two applications of MIG welding.
24. Why is Non-Destructive Testing (NDT) preferred?
25. Differentiate hot forging and cold forging.
26. What is the principle of extrusion?
27. What is infiltration?
28. State the function of a steady rest.

PART – C

29. Enumerate the various defects in casting and discuss the causes and remedies.
30. Explain the Carbon arc welding process with a neat sketch.
31. Explain the working of a mechanical press with any one driving mechanism.
32. Explain the step-by-step procedure to manufacture parts by powder metallurgy process.
33. Explain the construction and working of a Four-Jaw Independent Chuck with neat sketch.
