

April 2025

*Time - Three hours*  
*(Maximum Marks: 100)*

[N.B. Answer all the questions, choosing any two subdivision from each question. Each subdivision carries 10 marks.]

1.
  - (a) Write about the pattern making allowances.
  - (b) Explain the construction of pit and oil fired crucible furnace with neat sketch.
  - (c) Describe about gravity die casting process with neat sketch.
  - (d) Explain about centrifugal casting process with neat sketch.
2.
  - (a) Explain the working of MIG welding process with neat sketch.
  - (b) Explain about oxy-acetylene welding process with neat sketch.
  - (c) Write about the following resistance welding processes: (5+5)
    - (i) Butt welding
    - (ii) Projection welding
  - (d)
    - (i) Write the differences between soldering and brazing process. (3)
    - (ii) Discuss about any one non-destructive test for welded joints. (7)
3.
  - (a) Explain about smith forging operations with neat sketch.
  - (b)
    - (i) Write the advantages of hot working process. (3)
    - (ii) Explain roll forging operation with neat sketch. (7)

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- (c) Explain the working of hydraulic press with neat sketch.
- (d) Write notes on the following Press working operations: (7+3)
- (i) Bending
  - (ii) Lancing
4. (a) Write the following methods of manufacturing metal powders: (5+5)
- (i) Atomization
  - (ii) Compacting
- (b) (i) Explain about sintering of metal powders. (7)
- (ii) Write any three design rules to be followed while selecting powder metallurgy process. (3)
- (c) Describe the iron – carbon equilibrium diagram.
- (d) Write notes on the following: (5+5)
- (i) Annealing
  - (ii) Normalizing
5. (a) Explain any two work holding devices used in lathe with neat sketches.
- (b) Write about the following tool holding devices: (5+5)
- (i) Arbor
  - (ii) Spring collet
- (c) Explain the construction of hand drill with neat sketch.
- (d) Discuss the construction of electric screw driver with neat sketch.
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