

SURYA POLYTECHNIC COLLEGE  
Department of Mechanical Engineering  
Manufacturing Technology - 1

**Model Exam**

Part -- A -- Answer all the question

Time: 3Hrs  
Marks: 100  
10x3=30

1. Name the properties of molding sand.
2. What are the functions of gating system?
3. Name the three kinds of gas flame and them by simple sketches.
4. Write briefly about hard facing.
5. State the advantage of hot working.
6. Define heat treatment and tempering.
7. Difference between thermoplastic and thermosetting plastic
8. List out the design rules for the powder metallurgy process.
9. State the different work holding devices and explain any one.
10. Explain knurling operation with a neat sketch.

Part – B – Answer any one division

5x14=70

11. (a)(i) Explain green sand molding procedure with neat sketches  
(ii) Explain with suitable sketches for CO<sub>2</sub> process of core making and its advantage.  
**(OR)**  
(b)(i) Describe with a sketch the operation of a induction furnace and its advantages.  
(ii) Explain any four defects in casting with sketches.
  
12. (a)(i) Explain TIG welding process with a neat sketch.  
(ii) Explain magnetic particle testing of weld.  
**(OR)**  
(b)(i) Sketch and explain Laser beam welding process.  
(ii) List out safety procedures followed in welding.
  
13. (a)(i) Explain construction and operation of hydraulic press.  
(ii) Explain the press working operation (i) Blanking, (ii) Notching,  
(iii) Lancing and (iv) punching  
**(OR)**  
(b)(i) Draw iron – carbon diagram and explain.  
(ii) Explain briefly (i) Induction hardening and (ii) cyaniding.

- 14.(a)(i) Explain twin screw extruder with a neat sketch.  
(ii) Sketch and explain gas injection molding process.

(OR)

- (b)(i) Explain the function of sintering furnace with a neat sketch.  
(ii) Describe the process of cold pressing and hot pressing in powder metallurgy.

- 15.(a)(i) Explain with the aid of a neat sketch the working of a tumbler gear mechanism.  
(ii) What are the essential difference between automatic and semi-automatic lathe.

(OR)

- (b)(i) Explain the progressive multi spindle automatic lathe with a neat sketch.  
(ii) Explain with suitable the working of "air operated chuck"

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Register No.:

Time: 3 hrs

(Max. Marks: 100)

- (Note: (i) Answer all question in PART-A  
(ii) Answer division (A) or (B) of each question in PART-B  
(iii) Each question carries 3 marks in PART-A and 14 marks in PART-B)

#### PART-A

1. What is cold working? Mention it's advantages.
2. List out the various moulding tools?
3. What is the difference between arc welding and gas welding?
4. List out the press working operations.
5. Mention the applications of centrifugal casting.
6. List out the factors for selecting pattern materials.
7. What is elastomer? Mention it's Properties.
8. Give examples of thermoplastics and thermosetting plastics.
9. What is bronze welding? Give its applications.
10. Mention the Specifications of capstan lathe and turret lathe.

#### PART-B

11. (i) (a) Explain the step by step procedure for prepare the greensand moulding process.(14)  
(OR)  
(ii) (a) Explain  $CO_2$  Process of core making(7)  
(b) What is Pressure die casting? Explain hot chamber die casting machine. (7)
12. (i) (a) Explain ultrasonic test in detail (7)  
(b) Explain MIG welding process in detail. (7)  
(OR)  
(ii) (a) What is the difference between arc welding and gas welding? (7)  
(b) What is the difference between Soldering and Brazing. (7)

13. (i) (a) Explain drop forging process in detail (7)

(b) Explain the construction and working principle of Mechanical Press forging in detail. (7)

(OR)

(ii) (a) Explain Bending operations in detail (14)

14. (i) (a) Sketch and explain gas injection moulding process in detail. (7)

(b) Explain the construction and working principle of reciprocating screw injection moulding. (7)

(OR)

(ii) (a) Explain with a neat diagram the atomization process for manufacturing of metal powders (7)

(b) Explain the construction and working principle of single Screw Extruder. (7)

15. (a) Explain the machining operations done on a lathe in detail (14)

(OR)

(b) Explain the construction and working principle of centre lathe.(14)