



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S4 (S, FE) / S4 (PT) (S, FE) / S4 (WP) (S) Examination December 2024 (2019 Scheme)

**Course Code: MET204****Course Name: MANUFACTURING PROCESS**

Max. Marks: 100

Duration: 3 Hours

**PART A***(Answer all questions; each question carries 3 marks)*

Marks

- |    |  |   |
|----|--|---|
| 1  | List any three advantages of using wax as pattern material in metal casting operations.  | 3 |
| 2  | What are the design requirements of riser in metal casting?  | 3 |
| 3  | What are the desirable properties of filler materials used in arc welding?   | 3 |
| 4  | Why surface preparation is necessary for butt welding work pieces having thickness more than 5 mm?   | 3 |
| 5  | What are the different ways to reduce roll force in rolling operation? Give any three.   | 3 |
| 6  | What is the purpose of providing backup rollers in four high rolling mills?  | 3 |
| 7  | Explain any three defects caused in wire drawing operation.  | 3 |
| 8  | List any three advantages of cold extrusion over hot extrusion.  | 3 |
| 9  | Estimate the force required for punching a 25 mm diameter hole through a 3.2 mm thick annealed titanium alloy Ti-6Al-4V sheet at room temperature. Given that the Ultimate tensile strength of this alloy at room temperature is 1000 MPa. | 3 |
| 10 | Explain briefly any three methods to overcome spring back during bending operation   | 3 |

**PART B***(Answer one full question from each module, each question carries 14 marks)***Module -1**

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|----|---|---|
| 11 | a) List the causes and remedies of any three casting defects.                     | 9 |
|    | b) Distinguish between hot chamber and cold chamber die casting operation         | 5 |
| 12 | a) With neat sketches, explain the three types of centrifugal casting operations. | 9 |
|    | b) Explain any two types of allowances provided on the pattern.                   | 5 |

**Module -2**

- 13 a) What are the functions of flux used in arc welding operation. 5  
b) Explain any three types of Resistance welding operations. 9
- 14 a) With neat sketch, explain shielded metal arc welding. What are its advantages and disadvantages 10  
b) What are the situations where soldering and brazing operations are preferred over welding operation? 4

**Module -3**

- 15 a) With neat sketches, explain planetary and tandem rolling mills used in metal rolling operations. 8  
b) With neat sketch, explain how of roll deflection occurs during rolling process. How can it be avoided? 6
- 16 a) Distinguish between hot rolling and cold rolling operation. 5  
b) With neat sketches, explain ring rolling, thread rolling and rotary rube piercing. 9

**Module -4**

- 17 a) Explain briefly any two defects each in forging and extrusion operations. 8  
b) List any three advantages and disadvantages of forging operation. 6
- 18 a) With neat sketches, explain Impact Extrusion and Hydrostatic extrusion processes. 8  
b) With a neat diagram, explain skew rolling and coining operation in metal forging 6

**Module -5**

- 19 a) Explain any three methods of locating surfaces. 6  
b) With neat diagrams, explain shear spinning and tube spinning. 8
- 20 a) With neat diagrams, explain any three types of clamps. 9  
b) With neat diagram, explain stretch forming operation of sheet metal forming. 5

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