

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: ME220

Course Name: MANUFACTURING TECHNOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three questions. Each question carries 10 marks.

- 1 a) How are patterns classified? Describe the various types of allowances provided in patterns. (5)
- b) Define gating ratio and illustrate the components of a gating system with a neat diagram (5)
- 2 a) Explain the process of hot chamber die casting with neat sketch and justify the drawback of hot chamber die casting with respect to casting of different metals. (6)
- b) Describe the procedure of making castings by the investment castings with appropriate sketches. (4)
- 3 a) Why rolling is an important industrial metal forming operation? Justify, how roll separating force can reduce in rolling process. (5)
- b) With suitable sketches explain the stages involved in shape rolling of structural sections (5)
- 4 a) Explain rolling geometry and different types of rolling mills? (6)
- b) Why the surface finish of a rolled product is better in cold rolling than hot rolling? (4)

PART B

Answer any three questions. Each question carries 10 marks

- 5 a) (i) What is isothermal forging? (6)
- (ii) Explain the features of an impression die and closed die forging process
- b) Sketch and explain the sequence of steps involved in the manufacturing of connecting rod using forging process. (4)
- 6 a) Explain briefly with neat sketches different processes of extrusion and also discuss their relative merits and demerits. (5)
- b) What is wire drawing process? What are the factors control the wire drawing process? (5)
- 7 a) Explain six point location principle and its importance in manufacturing. (6)
- b) Write a short notes on the following locating methods (4)
- i) Locating from circular surfaces. ii) Concentric locating
- 8 a) What is a clamp? Describe general principle of clamping. (6)
- b) Differentiate between vacuum clamping and magnetic clamping. (4)

PART C

Answer any four questions. Each question carries 10 marks.

- 9 a) With a neat sketch, explain the rubber forming process. How does it differ from rubber hydro forming process? (5)
b) What are the factors affecting shearing operation? (5)
- 10 a) Enumerate the following with simple sketches (6)
(1) Stretch forming
(2) Deep drawing
b) Explain the various properties of sheet metal. (4)
- 11 a) Differentiate between conventional spinning and shear spinning. (4)
b) What is Heat Affected Zone (HAZ)? Explain the parameters affecting HAZ. (6)
- 12 a) How an arc is produced in arc welding process and how does penetration vary for DCSP and DCRP? (6)
b) Compare leftward and rightward techniques used in gas welding. (4)
- 13 a) Why solid-state welding processes are preferred over fusion welding processes during the joining of dissimilar metals? Explain any one of the solid-state welding process and highlight their advantages. (6)
b) Analyze different types of welding flames in oxy-acetylene gas welding with neat sketches. (4)
- 14 a) Differentiate between brazing and soldering and explain the role of flux in these processes. (6)
b) Explain the capillary action in brazing process. (4)