Code No: 153BR **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year I Semester Examinations, February -2024
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	What are the basic ingredients of moulding sand and their functions?	[2]
b)	Discuss various additives used in moulding sand and their application.	[3]
c)	What is meant by weldability of metals?	[2]
d)	Classify welding processes.	[3]
e)	Differentiate soldering and brazing.	[2]
f)	Explain explosive welding with neat sketch.	[3]
g)	What are the different types of rolling mills?	[2]
h)	What is spring back effect in bending?	[3]
i)	Describe coining and spinning methods.	[2]
j)	Explain power requirements in piercing operation.	[3]

PART – B

(50 Marks)

2.a) Explain the principle of shell moulding process with neat sketch. Also discuss the advantages, limitations and applications of shell moulding process.
b) Describe various materials used for making patterns. [7+3]

OR

3.a) Explain Investment casting process. Discuss advantages and applications of the process.
b) Sketch and explain different types of patterns. [5+5]

4.a) The heat transfer efficiency in arc welding of a plate using a current of 250 A at 20 V is 90%. The heat required to melt the material is 10 J/mm^3. If the cross-sectional area of the weld joint is 30 mm^2 and the travel speed is 5 mm/s, find the melting efficiency of the process?
b) Discuss different Welding Positions with neat sketches. [6+4]

OR

5.a) Explain resistance welding process with neat sketch. Discuss its applications.
b) Discuss different types of welds along with its advantages, limitations and applications. [7+3]

6.a) With neat sketch explain TIG welding? List out its advantages, limitations and applications.
b) Classify solid state welding processes. [7+3]

OR

7.a) Explain submerged arc welding. Also mention its applications.
b) Explain briefly about Friction Stir Welding. [5+5]

8.a) Derive the expression for roll separating force and power in rolling.
b) In a two-pass wire drawing process, there is a 40% reduction in wire cross-sectional area in1st pass and further 30% reduction in 2nd pass. What is the overall reduction? [7+3]

OR

9.a) What are the forces and power requirement in sheet metal forming operations?
b) What is deep drawing operation? Explain with a neat sketch. [6+4]

10.a) Explain about drop Forging and Rotary forging in detail.
b) In open-die forging, a disc of diameter 200 mm and height 60 mm is compressed without any barreling effect. The final diameter of the disc is 400 mm. What is the true strain value? [7+3]

OR

11.a) What is extrusion? Derive an expression for extrusion force.
b) Explain Tube extrusion process. List out the applications. [7+3]

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