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Code No. : 15546 S N/O

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**

*Accredited by NAAC with A++ Grade*

**B.E. (Mech. Engg.) V-Semester Supplementary Examinations, June-2023**

**Manufacturing Processes**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Compare wood and metal as pattern materials.	2	2	1	1
2.	Write a small note on directional solidification.	2	1	1	1
3.	Recall the advantages of die casting over the sand moulding process?	2	1	2	1
4.	What is the binder used in the CO <sub>2</sub> moulding process? State the process of hardening the mould.	2	1	2	1
5.	Interpret the need for edge preparation and cleaning of the surfaces to be welded	2	2	3	1
6.	Classify solid state welding processes.	2	1	3	1
7.	Define weldability. What are the requirements for good welding joint?	2	1	4	1
8.	Distinguish between spot welding and resistance seam welding?	2	1	4	1
9.	Distinguish between blanking and piercing? How is the clearance provided in blanking and piercing operations?	2	1	5	1
10.	Rephrase true stress and strain.	2	1	5	1
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Identify the solidification time for an 1100 mm diameter and 33 mm thick casting of aluminum, if the mould constant is 2.2 sec/mm <sup>2</sup> .	4	3	1	4
b)	Explain different types of pattern allowances.	4	2	1	3
12. a)	Recall the principle of Investment casting. Explain the process with advantages and limitations.	4	3	2	3
b)	With neat sketches discuss the process of blow moulding of plastic components. How does this process differ from the extrusion of plastics?	4	3	2	3

13. a)	Determine the melting efficiency in the case of arc welding of steel with a potential of 22 V and current 230 A. The cross-sectional area of the joint is 25 mm <sup>2</sup> and the travel speed is 6 mm/ s. Heat required to melt steel may be taken as 10 J/mm <sup>3</sup> and the heat transfer efficiency as 86 percent.	4	4	3	4
b)	Explain the types of flames in the oxy-acetylene welding process and list their applications.	4	2	3	3
14. a)	Construct the laser beam welding process and list its advantages and limitations.	4	3	4	3
b)	Inference the principle of the resistance welding process. Explain the principle and applications of projection welding.	4	2	4	3
15. a)	List the advantages of Cold working over Hot working with suitable examples	4	4	5	3
b)	Briefly explain the principle of rolling with a neat sketch.	4	3	5	3
16. a)	Explain various properties of moulding sand and its ingredients.	4	2	1	3
b)	Make use of a diagram to explain the Shell moulding process.	4	3	2	3
17.	Answer any <i>two</i> of the following:				
a)	Distinguish between Soldering and brazing	4	2	3	3
b)	Interpret the thermit welding process.	4	2	4	3
c)	Illustrate spinning process	4	2	5	3

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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