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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
B.Tech.

SEM: III - CARRY OVER THEORY EXAMINATION - JUNE (2021 - 2022)

Subject: Manufacturing Technology-I

Time: 3 Hours

Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A

20

1. Attempt all parts:-

- | | | |
|------|--|---|
| 1-a. | Alloys of which of the following metal is not used for hot chamber die casting? (CO1) | 1 |
| | (a) Tin | |
| | (b) Lead | |
| | (c) Zinc | |
| | (d) Iron | |
| 1-b. | Which of the following is not a part of the pattern at most times? (CO1) | 1 |
| | (a) Mould cavity | |
| | (b) Cope | |
| | (c) Molten metal | |
| | (d) Core | |
| 1 | The use of CO ₂ was to _____ the sand mould. (CO2) | 1 |
| | (a) Harden | |
| | (b) Soften | |
| | (c) Dry | |
| | (d) Clean | |
| 1 | The additives in sodium silicate are _____ (CO2) | 1 |
| | (a) Sugar | |
| | (b) Dextrin | |
| | (c) Molasses | |
| | (d) Zircon | |
| 1-e. | Which of the following processes is not the type of bulk forming process in the metal forming? (CO3) | 1 |
| | (a) Bending | |
| | (b) Rolling | |
| | (c) Forging | |
| | (d) Extrusion | |
| 1-f. | Process which is done above the recrystallization temperature? (CO3) | 1 |
| | (a) Hot forging | |
| | (b) Cold forging | |
| | (c) Impact forging | |
| | (d) Gradual pressure forging | |

1-g.	Which machine do you require when you need to cut the sheet metal at 45 or 90 degrees? (CO4)	1
	(a) Bending	
	(b) Drilling	
	(c) Tapping	
	(d) Notching	
1-h.	Which sheet is used while making a food container? (CO4)	1
	(a) Galvanised iron	
	(b) Mild steel	
	(c) Tin	
	(d) None of these	
1-i.	Which of the following can be easily be welded from flash butt welding process? (CO5)	1
	(a) Tin	
	(b) Lead	
	(c) Cast irons	
	(d) Carbon steel	
1-j.	How are the metals to be welded connected to each other in spot welding? (CO5)	1
	(a) Electric contact	
	(b) Magnetic field	
	(c) Mechanical pressure	
	(d) Direct contact	
2. Attempt all parts:-		
2.a.	Define casting. (CO1)	2
2.b.	Define pattern allowances. (CO2)	2
2.c.	What are the four major drawbacks of hot working? (CO3)	2
2.d.	What is punching operation ? (CO4)	2
2.e.	How do you classify welding process? (CO5)	2
SECTION B		30
3. Answer any <u>five</u> of the following:-		
3-a.	Explain any four types of patterns used in foundry with a neat sketch.(CO1)	6
3-b.	What are the types of moulding sand and explain any two type of moulding sand.(CO1)	6
3-c.	Enlist the applications of investment casting process.(CO2)	6
3-d.	Discuss casting defects with causes and remedies. (CO2)	6
3.e.	Describe process of washer making with the help of progressive die. How does compound die differ from progressive die in washer making? (CO3)	6
3.f.	Explain the different types of bending process. (CO4)	6
3.g.	Explain the advantages and limitations of oxy-acetylene welding. (CO5)	6
SECTION C		50
4. Answer any <u>one</u> of the following:-		
4-a.	Explain the pressure die casting process with a neat sketch? Also write its advantages and disadvantages. (CO1)	10
4-b.	Describe the centrifugal casting process with a neat sketch? (CO1)	10
5. Answer any <u>one</u> of the following:-		
5-a.	A cubic casting of 50 mm side undergoes volumetric solidification shrinkage and volumetric solid contraction of 4% and 6% respectively. No riser is used. Assume uniform cooling in all directions. The side of the cube after solidification and contraction is (CO2)	10

- 5-b. A cube and a sphere made of cast iron (each volume 1000 cm³) were cast under identical conditions. The time taken for solidifying the cube was 4 s. The solidification time (in s) for the sphere is _____.(CO2) 10
6. Answer any one of the following:-
- 6-a. How does a compound die differ from progressive die? Giving a neat sketch, describe construction features and working of compound die.(CO3) 10
- 6-b. What is deep drawing? Discuss deep drawing operation. Also explain various defects in deep drawing. (CO3) 10
7. Answer any one of the following:-
- 7-a. A strip initial width 6.0 mm is drawn by tapered die to a final width of 5.5 mm in a state of plane strain take, $t = 10$ mm, $2\alpha = 20^\circ$, $\mu = 0.05$ and $\sigma_y = 250$ N/mm². Find the stress when (i) $\sigma_{xb} = 0$. (CO4) 10
- 7-b. Describe the process of wire-drawing. What is the material of drawing die? Why is "in Process" annealing done? Give an idea of wire drawing speed. (CO4) 10
8. Answer any one of the following:-
- 8-a. Classify the sold state welding process and explain friction welding with neat sketch. (CO5) 10
- 8-b. Define Submerged arc welding process with neat sketch what are its advantages and disadvantages. (CO5) 10