



GIET UNIVERSITY, GUNUPUR - 765022
M. Tech (First Semester) Examinations, January - 2024
MPCMT1020 - Casting and Welding Technology
 (Manufacturing Technology)

Time: 3 Hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**

Q.1. Answer all questions	CO#	Blooms Level
a. Differentiate the terms 'mould' and 'core'.	CO1	K2
b. Write the essential constituents of moulding sand.	CO1	K1
c. Why the section of a sprue reduces downwards?	CO1	K1
d. Calculate the permeability number of sand if it takes 1min 25sec to pass 2000 cm ³ of air at a pressure of 5 gm/sec ² through standard sample.	CO1	K2
e. Define "Arc blow"? How can it be avoided?	CO4	K1
f. Differentiate between brazing and braze welding.	CO2	K2
g. Define the working of friction stir welding.	CO2	K1
h. Differentiate between seam and spot welding.	CO2	K2
i. "Visual testing is inherently part of all other NDT methods". Justify the Statement.	CO3	K2
j. Generalize the limitations of the NDT method.	CO3	K1

PART – B**(10 x 5=50 Marks)**Answer ANY FIVE questions

	Marks	CO#	Blooms Level
2. Explain the various steps involved in an investment casting process with a neat sketch. Define the main materials used for making the investment pattern?	10	CO1	K4
3.a. Explain the continuous casting process and give its applications.	5	CO1	K3
b. Name the various defects that occur in sand casting and state their probable causes and remedies.	5	CO4	K3
4. Describe welding? Classify the welding processes. Explain the Electric Arc welding process with neat sketch and state its applications.	10	CO2	K4
5.a. Explain the different zones which are formed during welding.	5	CO4	K4
b. Explain with a neat sketch, the working principle of oxy-acetylene welding.	5	CO2	K3
6. A welding operation takes place on an aluminum alloy plate. A pipe 2.5 in. in diameter, with a 0.20 in. wall thickness and a 2 in. length, is butt welded onto a section of 6 in. by 6 in. by 0.25 in. angle iron. The angle iron is of an L shape and	10	CO2	K3

has a length of 1 foot. If the weld zone in a gas tungsten arc welding process is approx one-half inch wide, what would be the temperature increase of the entire structure due to the heat input from welding only? What if the process were an electron beam welding operation with a bead width of 0.08 in.? assume that electrode requires 1500J and the aluminum alloy requires 1200J to melt one gram.

- | | | | | |
|-------|--|---|-----|----|
| 7.a. | Explain various methods of magnetizing and demagnetizing the materials with neat sketch. | 5 | CO3 | K4 |
| b. | Explain the methods involving LPT. | 5 | CO3 | K4 |
| 8. a. | Write Short notes on Principal requirements of penetrants. | 5 | CO3 | K3 |
| b. | Describe the principle of ultrasonic testing with suitable block diagram. | 5 | CO3 | K4 |

--- End of Paper ---