Final Assessment Test (FAT) - APRIL/MAY 2023

Programme	B.Tech	Semester	Winter Semester 2022-23
Course Title	METAL CASTING AND WELDING	Course Code	BMEE302L
		Slot	F1+TF1
Faculty Name	Prof. Narayanan R	Class Nbr	CH2022235001648
Time	3 Hours	Max. Marks	100

PART-A (10 X 10 Marks)
Answer any 10 questions

01. Sketch the different types of risers used in sand casting and why risers are not used in die casting.
02. A test specimen of moulding sand (50.8 mm dia × 50.8 mm long) is placed in a specimen tube. The time taken for 2000 cm^3 of air at a pressure of 980 Pa (10 g/cm^2) to pass through the specimen is 25 minutes. Calculate the permeability number and discuss the factors affecting the permeability.
03. Brief the technical advantages of the following patterns with the sketch.
(i) Solid pattern. (ii) Loose piece pattern.
(iii) Skeleton pattern. (iv) Sweep pattern.
04. Explain the investment casting process with the sketch and mention the application.
05. With a neat sketch explain the difference between an Electric furnace and a Cupola furnace.
06. Comment on technical aspects of the following defects in casting:
(i) Blow holes. (ii) Misrun.
(iii) Cold shut. (iv) Mismatch.
(v) Hot tear.
07. Discuss the fundamental feature distinguishing solid-state welding from fusion welding, brazing, and Soldering.
08. In Oxygen Acetylene Gas Welding, describe the characteristics of neutralizing, reducing, and oxidizing flames. How could a welder tell the difference between those flames? Discuss each flame type's suitability for specific materials and welding scenarios.
09. Explain briefly the following welding processes :
(i) Friction welding (ii) Explosive welding
10. Enumerate the metallurgical transformation in and around weldment with respect to heat flow.
11. A 25 mm thick steel housing is suspected to have cracks deep inside. Suggest a non-destructive technique to identify these cracks and describe the operation.