CLASS: BTECH
BRANCH: PIE

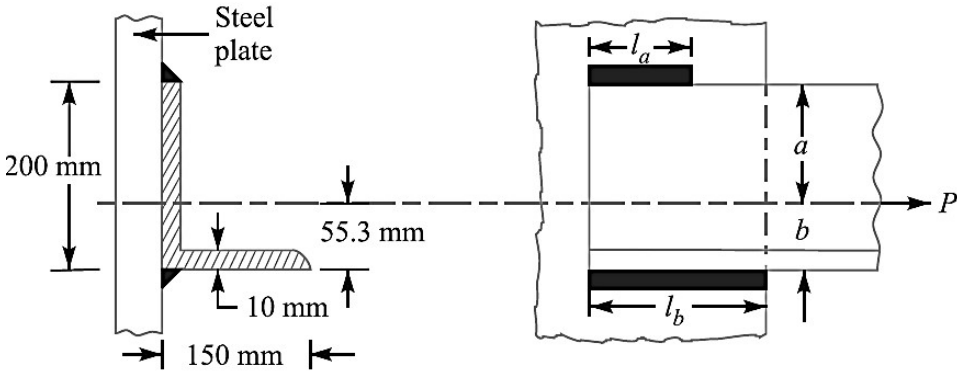SEMESTER : V
SESSION : MO/2024

SUBJECT: PE317 ADVANCED WELDING TECHNOLOGY

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Discuss the principle, process parameters, advantages, limitations, and applications of Explosive Welding.	[5]	1	2
Q.1(b)	Explain the principles, advantages, and limitations Laser Beam Welding and Electron Beam Welding.	[5]	1	2
Q.2(a)	Discuss the process and applications of the hybrid Laser GMAW, GTAW, and PAW methods.	[5]	2	2
Q.2(b)	Explain the working principle, equipment, and advantages of oxygen cutting in thermal cutting processes.	[5]	2	2
Q.3(a)	Describe the challenges and techniques involved in welding in different positions: horizontal, vertical, and overhead.	[5]	3	2
Q.3(b)	Compare wet and dry underwater welding processes and their industrial applications.	[5]	3	2
Q.4(a)	A 200 × 150 × 10 mm angle is to be welded to a steel plate by fillet welds as shown in Figure. If the angle is subjected to a static load of 200 kN, find the length of weld at the top and bottom. The allowable shear stress for static loading may be taken as 75 MPa.	[5]	4	3

			CO	BL
Q.4(b)	Define distortion in welding and describe the types of distortion observed in welded components. What methods can be used to eliminate or minimize distortion in welded components?	[5]	4	1
Q.5(a)	Define weldability. Explain the weldability of different materials such as cast iron, aluminum, copper, and titanium.	[5]	5	1
Q.5(b)	Describe the concept of robotized welding and its advantages in manufacturing industries.	[5]	5	2