BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B. TECH **SEMESTER : V**
BRANCH: PIE+ME **SESSION : MO/2023**

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)	Explain the process mechanics of explosive welding.	[5]	1	2
Q.1(b)	Discuss how can the heat diffusion within target material be controlled by using different process parameters of electron beam welding?	[5]	2	2
Q.2(a)	Show the paraxial and coaxial arrangements of hybrid laser GMAW process, hybrid laser GTAW process and hybrid laser PAW process?	[5]	2	3
Q.2(b)	Compare the advantages of welding process over the brazing and soldering processes?	[5]	2	4
Q.3(a)	Name the different techniques of underwater welding? Explain them in brief.	[5]	3	1
Q.3(b)	Discuss the problems when the welding is performed in underwater, low ambient temperatures and wind?	[5]	3	2
Q.4(a)	Outline the process how strain gauges are used to measure residual stresses in hole-drilling technique?	[5]	4	4
Q.4(b)	A steel plate, 150 mm wide and 12 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds. The strength of the welded joint should be equal to the strength of the plates to be joined. The permissible tensile and shear stresses for the weld material and the plates are 100 and 80 N/mm2, respectively. Find the length of each parallel fillet weld.	[5]	4	5
Q.5(a)	Discuss the factors affecting weldability.	[5]	5	2
Q.5(b)	Explain the advantages and limitations of automatic welding process.	[5]	5	2

::::::28/11/2023::::::M