

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

**CLASS: BE
BRANCH: PROD/MECH**

**SEMESTER: VII
SESSION : MO/2019**

SUBJECT : PE7009 ADVANCE WELDING TECHNOLOGY

TIME: 1.5 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

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- Q1 (a) How solid-state welding is different from fusion welding? [2]
(b) Illustrate the process mechanics of cold welding. [3]
- Q2 (a) How can a circular weld contour be produced using ultrasonic welding? [2]
(b) How different metallurgical factors like allotropic transformation, recrystallisation and surface oxides of metals affect diffusion welding process and quality of diffusion weld? [3]
- Q3 (a) Why the depth of penetration in weld is increased with vacuum during electron beam welding process? [2]
(b) Explain with suitable illustration how a keyhole is produced and maintained during high intensity electron beam welding process. [3]
- Q4 (a) How laser beam is different from normal light? [2]
(b) How can heat input to target material during laser beam welding be controlled using different process parameters? [3]
- Q5 (a) Why welding in underwater condition is more challenging as compared to normal atmospheric condition? [2]
(b) Why is direct current with electrode negative used during underwater shielded metal arc welding? [3]
- Q6 (a) How cofferdam can be used to perform underwater welding in one atmosphere dry condition? [2]
(b) How cavity welding is used to weld in a water free environment? [3]

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