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May 2026

B. Tech. (ME) (Sixth Semester)

WELDING TECHNOLOGY (PEC-ME-605-21)

Time : 3 Hours] [*Maximum Marks : 75*

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) Differentiate between the principles of welding and casting process. **1.5**

   (b) Why is acetylene gas preferred in gas welding ? **1.5**

   (c) What is the difference between the electrode and filler rod in welding ? **1.5**

(d) Why are transformer-rectifier welding machines used ? 1.5

(e) Name any *three* shielding gases in welding. 1.5

(f) Write name of any *three* non-arc welding processes. 1.5

(g) What is the use of borescopes in testing welds ? 1.5

(h) List any *three* advantages of X-ray testing. 1.5

(i) Write any *three* applications of robotic welding. 1.5

(j) Name any *three* types of welding robots. 1.5

Part B

2. Explain in detail about the welding equipment and accessories used in oxy-acetylene welding with the help of neat diagram. 15

3. What are the main components of an arc welding power source ? Discuss the working principle of inverter type welding power source. Also write its advantages over conventional power sources. 15

4. Illustrate the welding setup for Tungsten Inert gas welding and discuss its equipment and accessories. Also write down the procedure for electrode preparation. 15

5. Throw detailed light on the working principle and set up of Electron Beam Welding (EBW) using neat illustrations. Also discuss its advantages and limitations. 15

6. Compare destructive and non-destructive testing of weld joints. Explain X-ray testing in detail citing its applications, advantages and limitations. 15

7. Write short notes on the following :

(a) Dye-penetrant test 5

(b) Automated welding 5

(c) Robot selection mechanism 5

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