

University of Ruhuna- Faculty of Technology
Bachelor of Engineering Technology
Level 3 (Semester 1) End Examination, July 2020

Course Unit: ENT 3172 Welding Techniques
Time Allowed: 3 hours

Answer all Five (05) questions, each question carries Ten marks

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- Q1. a) What is meant by a "Joining Process"? Classify them. (3 Marks)
- b) Explain the working principle of Resistance Spot Welding (RSW) and its advantages and limitations. (4 Marks)
- c) What measures can be taken to reduce the resistance between the electrode and the work-pieces in (RSW)? (3 Marks)
- Q2. a) Define lap joint and butt joint with neat sketches. (3 Marks)
- b) What are the factors considered in welding design? (3 Marks)
- c) How Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW) processes are differentiated from each other on the basis of process, parameters, equipment, uses and applications. (Use neat sketches wherever possible) (4 Marks)
- Q3. a) List out and briefly explain external and internal welding defects (three defects for each). (3 Marks)
- b) List out three (03) major Destructive Testing (DT) popularly available for Welding. (3 Marks)
- c) What is the meaning of Non-Destructive Test (NDT)? Explain the advantages of NDT over DT. (4 Marks)

- Q4. a) What are the NDT methods commonly used for detection of surface weld defects or discontinuities?
(3 Marks)
- b) Discuss the liquid penetrant testing and eddy current testing with suitable sketches.
(3 Marks)
- c) Enumerate the principle of performing magnetic particle inspection on weld joints. List down the advantages and disadvantages.
(4 Marks)
- Q5. a) Describe the process of Sub-Merged Arc Welding (SMAW) with the aid of a clear sketch.
(3 Marks)
- b) What is the working principle of Electron Beam Welding, explain it with a neat sketch?. Also mention the advantages, disadvantages and applications.
(4 Marks)
- c) How can you use Laser in welding? What are the advantages of laser Welding over Electron Beam Welding?
(3 Marks)