

PAPER – I
WELDER
(THEORY)
SEMESTER – II

TIME: 3 HRS.

MARKS: 150

Note: Attempt all the questions.

All questions carry equal marks.

This paper carries negative marking. 25 % marks will be deducted for each wrong answer.

Choose the correct answers: -

1. Unlike TIG welding, MIG welding -
 - (a) Requires no flux
 - (b) Requires no post-weld cleansing
 - (c) Uses consumable electrodes
 - (d) Provides complete protection from atmospheric contamination
2. In Gas Metal Arc welding, the electrode extended from the end of the contact tip to the arc is known as -
 - (a) Electrode length
 - (b) Electrode extension
 - (c) Electrode retention
 - (d) Electrode projection
3. Argon and helium are the two commonly used inert gases. Which one is preferred for MIG welding of copper?
 - (a) Helium
 - (b) Argon
 - (c) No preference
 - (d) Mixture of helium and argon
4. All commercially available electrodes contain deoxidizing metals. Which of the following is deoxidizing metal?
 - (a) Silicon
 - (b) Manganese
 - (c) Titanium
 - (d) All of these
5. MIG welding process is becoming increasingly popular in welding industry because of -
 - (a) Its easy operation
 - (b) Its high metal deposition rate
 - (c) Its low initial cost
 - (d) Both its easy operation and its high metal deposition rate
6. Projection welding can be regarded as a mass production form of _____ welding.
 - (a) Upset
 - (b) Spot
 - (c) Seam
 - (d) Butt

7. Which of the following is NOT true about globular metal transfer mode in Gas Metal Arc welding?
- (a) It uses inexpensive CO₂
 - (b) It can weld at high speed
 - (c) Both (a) and (b)
 - (d) It gives less spatter
8. Metals like columbium can be easily welded by _____ welding process.
- (a) TIG
 - (b) MIG
 - (c) Flash
 - (d) Electron beam
9. Which of the following welding processes is used for welding of sheet metals in automobile and aircraft industries?
- (a) Shielded metal arc welding
 - (b) Gas tungsten arc welding
 - (c) Thermit welding
 - (d) Resistance welding
10. Which of the following is an example of fusion welding?
- (a) Arc welding
 - (b) Forge welding
 - (c) Resistance welding
 - (d) Thermit welding with pressure
11. What is the form of flux used in submerged arc welding?
- (a) Paste
 - (b) Powder
 - (c) Granulated
 - (d) Coil
12. The type of filler metal normally used in submerged arc welding is -
- (a) Cored wire
 - (b) Bare wire
 - (c) Lightly coated wire
 - (d) Heavily coated wire
13. Which two items in MIG welding would need to be changed if the size of mild steel wire electrode is changed from 0.9 mm to 1.2 mm?
- (a) Contact tip and shroud
 - (b) Contact tip and drive rollers
 - (c) Gas diffuser and drive rollers
 - (d) Gas bottle and earth clamp
14. MAG process differs from MIG in that it uses _____ instead of inert gases.
- (a) Hydrogen
 - (b) Nitrogen
 - (c) CO₂
 - (d) All of these
15. Electroslag welding is -
- (a) An arc welding process
 - (b) A gas welding process
 - (c) A non-arc welding process
 - (d) A resistance welding process

16. Electroslag welding is done in -
(a) Flat position (c) Vertical position
(b) Overhead position (d) Any position
17. In atomic hydrogen welding a single phase AC arc is maintained between two _____ electrodes.
(a) Carbon steel (c) Tungsten
(b) Copper (d) Aluminium
18. Which statement applies to thermit welding?
(a) It needs no external source of current
(b) It is suitable for joining parts having heavy cross – section
(c) The slag formed in this process is Al_2O_3
(d) All of these
19. Steel is an alloy of -
(a) Chromium and iron (c) Iron and carbon
(b) Sulphur and phosphorous (d) Manganese and nickel
20. Post – heating of weld is applied -
(a) Immediately after welding (c) During welding
(b) Before welding (d) None of these
21. What does the term ‘pass’ refer to as regards welded joint?
(a) Depression in base metal (c) Shape of weld bead
(b) Each layer of weld bead deposited (d) Distance from electrode to metal
22. Metal particles expelled during welding are called -
(a) Porosity (c) Spatter
(b) Overlap (d) Undercut
23. The process of heating to a certain temperature and then quenching in order to make the metal tough is the heat treatment process called -
(a) Hardening (c) Tempering
(b) Annealing (d) Normalizing

24. For submerged arc welding, what is the effect of raising arc voltage but keeping all other parameters the same?
- (a) Weld bead width will increase
 - (b) Depth of penetration will increase
 - (c) Weld bead width will decrease
 - (d) Depth of penetration will decrease
25. What steps can be taken to prevent welding hazards in workshop?
- (a) Identify risks
 - (b) Evaluate hazards
 - (c) Establish control methods
 - (d) All of these
26. Thermit welding uses what to work?
- (a) Oxygen and acetylene combined to form a flame
 - (b) Resistance of two metals held under pressure
 - (c) Enveloping tungsten using hydrogen gas
 - (d) An exothermic reaction between aluminium powder and metal oxide
27. Rotation of one of the workpieces to be joined is required in -
- (a) Thermit welding
 - (b) Electroslag welding
 - (c) Friction welding
 - (d) TIG welding
28. Nickel based hardfacing alloys -
- (a) Increase wear resistance
 - (b) Are highly resistant to corrosion and heat
 - (c) Increase hardenability
 - (d) Cannot be deposited on carbon steels
29. Metal with highest resistivity and lowest conductivity is -
- (a) Copper
 - (b) Iron
 - (c) Nickel
 - (d) Titanium
30. The purpose of backing material at the root of a weld is -
- (a) To support molten weld metal
 - (b) A heat sink
 - (c) To prevent lack of fusion
 - (d) All of these
31. In welding, the area of base metal melted as determined on a cross-section of the weld is the -
- (a) Heat – affected zone
 - (b) Fusion zone
 - (c) Dead zone
 - (d) Twilight zone

32. In TIG welding the electrode manipulated by the welder is -
(a) Made of tungsten (c) Both (a) and (b)
(b) Not consumed (d) None of these
33. When visually inspecting the root bead of a single V – butt weld it should be checked for-
(a) Lack of root penetration (c) Tungsten inclusion
(b) HAZ hardness (d) Slag
34. A burn – through in a welded joint may occur if -
(a) Current is too low (c) Root gap is too large
(b) Root face is too large (d) Arc voltage is too high
35. If a welding inspector detects a type of imperfection not allowed by the application standard, he should -
(a) Ask for explanation
(b) Reject the weld
(c) Prepare a concession request
(d) Reject the weld only if he considers it to be harmful
36. If the unit of power is expressed in watt, which of the following is a correct relationship?
(a) Power (watt) = Ampere \times Volt (c) Power (watt) = Volt \times Ohm
(b) Power (watt) = Ampere \times Ohm (d) Power (watt) = Ampere \times Volt \times Ohm
37. If 100 mm thick plates are to be welded, which of the following processes should be selected so as to get high production rate with square edge preparation?
(a) Electroslag welding (c) TIG welding
(b) CO₂ welding (d) Friction welding
38. In which of the following non-destructive methods, there is no need for supply of electricity?
(a) X – ray test (c) Dye penetrant test
(b) Ultrasonic test (d) Hydraulic pressure test

39. The limitation of electron beam welding is -
(a) High equipment cost
(b) The size of work chamber is a constraint
(c) Rapid solidification rate can cause cracking in some materials
(d) All of these
40. Protective equipment not suitable for eye protection from welding radiation includes -
(a) Welding helmet with filter plates
(b) Clear safety goggles
(c) Safety goggles with filter plates
(d) Protective screens
41. Which of the following is not considered a type of metal transfer for GMAW?
(a) Short circuiting
(b) Spray
(c) Globular
(d) Droplet
42. The main types of welding joints are -
(a) Flat, square, angled, upright and vertical
(b) Horizontal, single-V, double-V, T-joint and overhead
(c) Butt, lap, corner, T-joint and edge joint
(d) Butt, single bevel, double bevel, plasma and edge joint
43. The main positions for welding pipes are -
(a) 1G, 2G, 3G, 4G
(b) 1G, 2F, 3F, 5G
(c) 1F, 2F, 5G, 6G
(d) 1G, 2G, 5G, 6G
44. The height of the weld face above the base metal in a groove weld is called as -
(a) Crown
(b) Weld reinforcement
(c) Buildup
(d) Face
45. A triangular – shaped weld symbol represents what type of weld?
(a) Fillet weld
(b) Bevel groove
(c) Flare groove
(d) V – groove
46. Which of the following should be removed in order to obtain a good dye penetrant test?
(a) Varnish
(b) Oxides
(c) Plating
(d) All of these

47. Which type of test uses a weighted pendulum which strikes a notched test specimen?

- (a) Brinell test
- (b) Fatigue test
- (c) Tensile test
- (d) Charpy impact test

48. In electron beam welding to eliminate the defect porosity, which has to be adjusted?

- (a) Spot size
- (b) Deflection
- (c) Weld penetration
- (d) Focal position / focus current

49. Which one of the following tests makes use of sound waves?

- (a) Radiographic test
- (b) Ultrasonic test
- (c) Dye penetrant test
- (d) Magnetic particle test

50. The process of hammering the weld metal immediately after it is deposited is called -

- (a) Tinning
- (b) Peening
- (c) Pressing
- (d) Dressing
