

Module: 4 and 5

Quiz Short questions:

1. The requirements of _____, _____ and _____ demand the use of advanced or non-conventional welding methods.
2. In the SAW process, the arc is _____ under a blanket of _____, hence it is not visible from outside.
3. The flux helps in removal of impurities in the form of _____ and can improve the properties of weld by addition of _____.
4. SAW gives higher _____, _____ and _____ as compared to other welding methods.
5. The polarity of DCEN (Direct Current Electrode Negative) gives _____, _____ and _____.
6. The resistance welding uses _____ to generate heat, which is a _____.
7. The heat generated in RW is given by _____.
8. Some examples of variant resistance welding processes are _____.
9. Explosive welding is primarily used for bonding sheets of corrosion-resistant metal to _____, particularly for _____.
10. The prime limitation of explosive welding is that _____.
11. The Friction Welding (FRW) is a _____ process that produces a weld under _____.
12. The principle of FSW is due to _____.
13. The electron beam welding process is mostly used in joining refractive materials such as _____; which are used in missiles.
14. In Laser welding, the heat input is localized, coherent and just sufficient to fuse the weld metal, thus the _____.

15. The diffusion welding can be achieved when _____.
16. HERF processes utilize the _____.
17. The rapid prototyping systems use an: _____ in building shapes and join _____ to form physical objects.
18. The SLS stands for _____ which can selectively manufacture models having _____ using laser and CAD technology.
19. Microwave processing is a _____ process enabling _____ processing of materials.
20. Power absorbed in microwave processing is given as: _____
21. In microwave processing, as the energy is absorbed within the material, the electric field _____.
22. In microwave processing, the heat is generated is _____, instead of originating from external sources.
23. The recent applications of microwaves include _____.
24. The most promising future technologies in advanced manufacturing include _____ and _____.

Answers

1. Good finish, low heat affected zones and high quality welds
2. Submerged, flux
3. Slag, some alloying elements
4. Metal deposition rates, welding speeds and process efficiency.
5. Higher deposition rates, higher yield strength and higher hardness
6. Electric current, renewable and environment friendly resource
7. $H = K I^2 RT$
8. Upset, Spot, Projection and Seam welding.
9. Heavier plates of base metal (cladding), large areas.
10. Metals must have high impact resistance and ductility.
11. Solid state welding, compressive forces
12. Friction heating at the interface under pressure.
13. Columbium, tungsten and ceramics.
14. Heat affected zones are reduced and work piece distortions are minimized.
15. Two pieces are in intimate contact under pressure.
16. Application of large amounts of energy in a very short time interval
17. Additive approach; liquid, powder, or sheet materials
18. Selective Laser Sintering, cavities.
19. Green, rapid
20. $P = 2\pi f \epsilon'' E^2$
21. Decreases as a function of the distance from the surface of the material
22. Internally within the material and transmits outwards
23. Sintering, joining, cladding and drilling of materials.
24. Rapid Manufacturing and Microwave processing.