MODULE 3:

Quiz/ Short Questions:

Complete the following lines with words/ sentences

1. In abrasive flow machining, the media consists of :_____ , _____ and ____
2. The role of additives is to : _____
3. In AFM, the machine controlled parameters are: _____
4. In AFM, the parameters controlled by the media are: _____
5. In AFM, the extrusion pressure strongly affects final force acting on abrasive grains which in-turn significantly affects the _____
6. The surface roughness achieved in AFM process is generally around _____ times more than the initial surface roughness.
7. The abrasive particles in AFM process cannot be re-used due to: _____
8. Abrasive jet cutting machines are used in : _____
9. In AJM, SOD is the_____; which is the distance between the tip of nozzle and the work surface; the larger the SOD, _____ is the quality and accuracy.
10. The WJM stands for _____; it uses _____ for cleaning and cutting applications.
11. The AWJM uses _____ along with _____ water for cutting.
12. In USM process, the material removal is by the: _____.
13. In USM the slurry acts as a _____ for carrying the _____ and removal of _____.
14. The USM process has about total 4 types of material removal phenomenon involved; namely: _____
15. The EDM stands for _____ and is used for machining of _____only.
16. _____ first discovered the erosive effects of electrical discharges in _____.
17. The dielectric fluid used in EDM is _____ .
18. The principle advantage of EDM is that materials, regardless of their_____; they can be easily machined.
19. The _____ and _____ are inherent features of the EDM process, thereby making the surface quality poor.

20. LASER stands for _____ and can cut _____
21. The principle advantages of LBM is that the beam is _____ which enables the machining of _____
22. The commonly used solid state laser is _____.
23. The _____ is more powerful amongst the other lasers and is primarily used for cutting and profiling.
24. The principle advantage of ECM is _____
25. Some of the hybrid variants of ECM process are _____
26. The abbreviation ECSM stands for _____
27. In micro-machining technology, the chips obtained and machine features are in the size of _____
28. The commonly used electrolytes in ECM and ECDM are: _____
29. ECDM process was first initiated by:_____
30. The principle advanced machining methods used for machining brittle and hard non-conducting materials are _____

Module: 3 Answers to short questions

1. Base material or carrier, abrasive grains and proprietary additives.
2. Modify the base material properties, to get desired flow-ability and rheological characteristics of the media.
3. Extrusion pressure, flow volume, media flow speed and number of cycles.
4. Media viscosity, media rheology, abrasive type, abrasive grain size and its shape and concentration.
5. Surface roughness of the machined part.
6. Ten.
7. Change in its shape and clogging with the media.
8. Cutting sheet materials or removing materials from the surface by generating a focused stream of fluid mixed with the abrasive particles.
9. Stand-off distance, poorer.
10. Water Jet machining, high pressure water.

11. Abrasives, high pressure.
12. Impact of abrasives as the energy source.
13. Media, abrasives, fine chips.
14. Mechanical abrasion, Impact, Erosion and Chemical action.
15. Electric discharge machining, conducting materials.
16. Joseph Priestly, 1970.
17. Hydrocarbon oil (e.g. kerosene) or de-ionized water.
18. Hardness, strength, toughness and microstructure.
19. Re-cast layers and micro-cracks.
20. Light Amplification by the Stimulated Emission of Radiation and very fine features.
21. Monochromatic and coherent, high aspect ratios.
22. Neodymium-doped Yttrium Aluminum Garnet (Nd: YAG)
23. Co_2 laser
24. Hardness is not the limitation.
25. Electro chemical grinding and electro chemical honing
26. Electro chemical spark machining
27. 1-999 micro meters
28. NaOH, $NaNO_3$, KOH, HCl etc..
29. Karafuji and Suda.
30. Laser beam machining, USM and ECDM.