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Code: 5G522

IV B.Tech. I Semester Supplementary Examinations April 2019

Fundamentals Of Manufacturing Processes

(Mechanical Engineering)

Max. Marks: 75

Time: 3 Hours

*Choose the correct Answer.***Question Numbers from 1 to 25 carries 1 MARK each**

1. Process in which the plastic flow of the metal takes place during the manufacturing is
 - a) Forging
 - b) Machining
 - c) Casting
 - d) Welding
2. Casting process which generally results in the maximum surface roughness is
 - a) Investment casting
 - b) Die casting
 - c) Sand casting
 - d) Permanent mould casting
3. Centering is performed by
 - a) Drilling
 - b) Milling
 - c) Shaping
 - d) Boring
4. In general, the grain refinement of the metals
 - a) Decreases ductility
 - b) Increases yield strength
 - c) Decreases elongation
 - d) Increases melting temperature
5. The solidification temperature range becomes zero for
 - a) Hypoeutectic alloys
 - b) Hyper eutectic alloys
 - c) Eutectic alloys
 - d) All of above
6. The internal cavities in the casting are prepared using
 - a) Mould
 - b) Riser
 - c) Core
 - d) Chills
7. The solid state shrinkage is taken care of by
 - a) Riser
 - b) Feeding molten metal from ladle
 - c) Shrinkage allowance to the pattern
 - d) All of above
8. Poor collapsibility of the moulding sand can lead to the development of
 - a) Inclusions
 - b) Pores
 - c) Hot tears
 - d) All of above
9. Addition of the moisture in the moulding sand
 - a) Increases the strength
 - b) First increases the strength and then decreases
 - c) Decreases the strength
 - d) First decreases the strength and then increases
10. The riser in gating system helps to promote
 - a) Turbulence
 - b) Directional solidification
 - c) Heterogeneous solidification
 - d) Minimise air aspiration
11. During the tumbling process for cleaning of the casting, the fine projections of the metal are removed by
 - a) Metal cutting
 - b) Metal melting
 - c) Rubbing and abrasion
 - d) Chemical reaction

12. The casting process which uses the wax pattern is
 - a) Investment casting process
 - b) Hot pressure die casting process
 - c) Cold pressure die casting process
 - d) Shell mould casting process
13. The engineering components like wrenches are made by
 - a) Casting
 - b) Welding
 - c) Forging
 - d) Rolling
14. The manufacturing process which allows maximum reduction ratio in a single pass is
 - a) Forging
 - b) Rolling
 - c) Extrusion
 - d) Wire drawing
15. The process in which significant increase in length and reduction in thickness of the sheet metal is realised
 - a) Punching
 - b) Shaving
 - c) Spinning
 - d) Ironing
16. Coining increases the strength of the metal due to
 - a) Elastic deformation
 - b) Strain hardening
 - c) Precipitation hardening
 - d) All of above
17. The combination die is one in which
 - a) Shearing and cutting operations combined
 - b) Shearing and forming operations combined
 - c) Notching and blanking operations combined
 - d) Notching and punching
18. The metal removal process which uses abrasives as a cutting tool
 - a) Honing
 - b) Broaching
 - c) Necking
 - d) Tapping
19. Co-WC tools are preferred for metal cutting of
 - a) Carbon steel
 - b) Alloy steel
 - c) High speed steel
 - d) Aluminium alloys
20. The process which is used to correct the shape of the grinding wheel is
 - a) Dressing
 - b) Truing
 - c) Loading
 - d) Glazing
21. The welding process which offers the minimum power density is
 - a) Gas Metal Arc welding
 - b) Plasma arc welding
 - c) Laser welding
 - d) Gas welding
22. Thermal damage to the workpiece will be minimum in case of
 - a) Shielded metal arc welding process
 - b) Gas metal arc welding process
 - c) Plasma arc welding process
 - d) Laser welding process
23. The joining process in which the joint is produced without fusion of the base metals is
 - a) Laser welding
 - b) Arc welding
 - c) Gas welding
 - d) Brazing
24. The method in which the surface composition is not changed, only the surface layer is deformed in very controlled way to improve the wear resistance is
 - a) Burnishing
 - b) Laser hardening
 - c) Carburizing
 - d) All of above
25. The casting process for a given component which will result in the finest grain size is
 - a) Sand model casting
 - b) Shell mould casting
 - c) Investment casting
 - d) Metal mould casting

Question Numbers from 26 to 50 carries 2 MARKS

26. The manufacturing processes for which mechanical properties of the metal play an important role is
a) Casting b) Fusion welding c) Deformation based processes like rolling d) All
27. The dimensional accuracy and the residual stress formation tendency in casting is affected by
a) Melting temperature b) Solidification temperature range
c) Density d) Thermal expansion of coefficient
28. An increase in fixed cost of the equipment for a given unit price of the product (assuming there is no change in variable constant), the volume of the production for break-even point will
a) Increase b) Decrease c) Remain unaffected d) All of above
29. Sand mould casting process is typically characterized by
a) High tolerance b) Low surface finish
c) High surface finish d) High tolerance and high surface roughness
30. The taperness to the vertical surfaces of the pattern are given due to the consideration of
a) Shrinkage allowance b) Machining allowance c) Draft allowance d) Shake allowance
31. To avoid the fusion of the mould wall, the sand material should have high
a) Hot strength b) Permeability c) Collapsibility d) Refractoriness
32. For sound casting, the freezing ratio for a given gating system (casting & riser) should be
a) 0.6 b) 0.8 c) 1.0 d) 1.2
33. The step used to control the wall thickness of the mould in investment casting process is
a) Addition of the sand particle b) Addition of the resins
c) Stuccoing d) Application of layer of the molten metal
34. The manufacturing process in which cutting of sheet metal is realised
a) Nibbling b) Ironing c) Embossing d) All of above
35. The diameter of a hole in sheet metal produced by the punching process is reduced due to
a) Cold welding b) Plastic deformation c) Spring back effect d) All of above
36. High positive rake angle and high clearance angle reduces the
a) Metal removal rate b) Surface finish
c) Flow of chips d) Ability of the tool to take up the high cutting load
37. Cutting of a given material, four different cutting conditions were used. The cutting speed and the feed rate were kept constant at 50 m per minute and 0.2 mm per revolution, respectively. The depth of cut during machining was increased in step of 0.5, 1.0, 1.5 and 2.0 mm. Specific power consumption will be minimum for depth of cut of
a) 0.5 b) 1.0 c) 1.5 d) 2.0
38. The letter Z in designation of the grinding wheel shows
a) Bond strength between the abrasive and bonding material (grade)
b) Type of the bonding material
c) Type of the abrasive particle d) Structure of the grinding wheels

39. The feed rate in the centreless external cylindrical grinding depends on
- The diameter of the grinding wheel
 - The speed of the grinding wheel
 - Speed of the regulating wheel
 - All of above
40. Weld bonding is a combination of
- Spot welding and laser welding
 - Spot welding and the arc welding
 - Diffusion bonding and the spot welding
 - Adhesive bonding and spot welding
41. High thermal conductivity base metal as compared to the low thermal conductivity base metal under identical conditions of welding will result in
- Narrow heat affected zone
 - Same heat affected zone width
 - Wider heat affected zone
 - All of above
42. The chemical property of the base metal affecting the weldability of metal is
- Thermal expansion coefficient
 - Melting point
 - Ultimate strength of the metal
 - Affinity of the base metal in molten state with environmental gases at elevated temperature
43. The carbon content in a hypereutectoid Steel will be
- 0.01
 - 0.1
 - 1.0
 - all of above
44. The heat treatment which is used for improving the machinability of high carbon steel is
- Annealing
 - Normalising
 - Spheroidizing
 - Quenching
45. In hot dipping, for the development of the zinc coating on the surface of the steel, interfacial bond is created through
- Mechanical interlocking
 - Adhesive bonding
 - Metallurgical bonding due to the formation of the intermetallic compounds
 - All
46. The heating temperature for austenitization during the hardening treatment will be minimum for a plain carbon steel having
- 0.2% C
 - 0.4% C
 - 0.6% C
 - 0.8% C
47. The manufacturing process which is primarily used for improving the properties of the bulk material is
- Rolling
 - Machining
 - Casting
 - Heat treatment
48. The manufacturing process in which metal pressed against an opening to cause the plastic deformation to make rods/bars is
- Forging
 - Rolling
 - Extrusion
 - Drawing
49. The classification of press based on the "action" parameter indicates
- Number of the dies
 - Number of the rams
 - Number of frames
 - Number of crankshaft
50. The progressive die is one in which
- Shearing and cutting operations combined
 - Shearing and forming operations combined
 - Notching and blanking operations combined
 - Different operations are performed at different stations in sequence