

28. Consider the following statements:

The tool life is increased by

1. built up edge formation
2. increasing cutting velocity
3. increasing back rake angle up to certain value

Which of these statements are correct?

- a. 1 and 3 b. 1 and 2 c. 2 and 3 d. 1, 2 and 3

29. Consider the following mechanisms:

1. Geneva gearing
2. Rack and pinion
3. Ratchet and pawl

Which of these mechanisms are used to index the work table on a transfer machine?

- a. 1 and 2 b. 2 and 3 c. 1 and 3 d. 1, 2 and 3

30. Consider the following statements in respect of a grinding wheel of specifications, 51-A-36-L-7-R-23, using the standard alphanumeric codification:

1. Abrasive used in the wheel is aluminium oxide medium
2. The grain size of abrasive is medium
3. The wheel grade is medium hard
4. It has an open structure
5. It has resinoid as bonding agent

Which of these statements are correct?

- a. 1, 2 and 3 b. 1, 3 and 4 c. 2, 3 and 5 d. 1, 4 and 5

31. Which of the following are produced by slush casting?

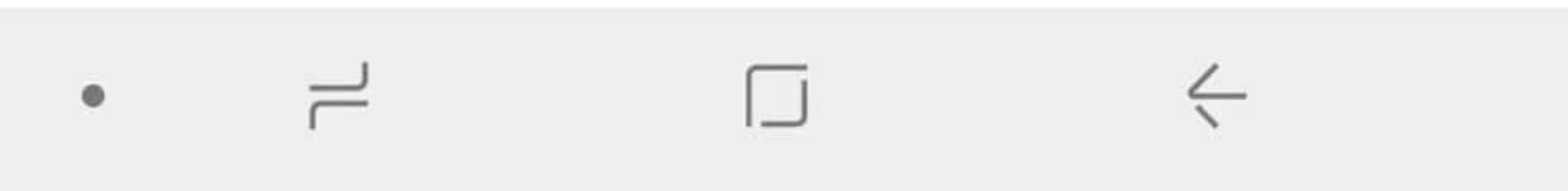
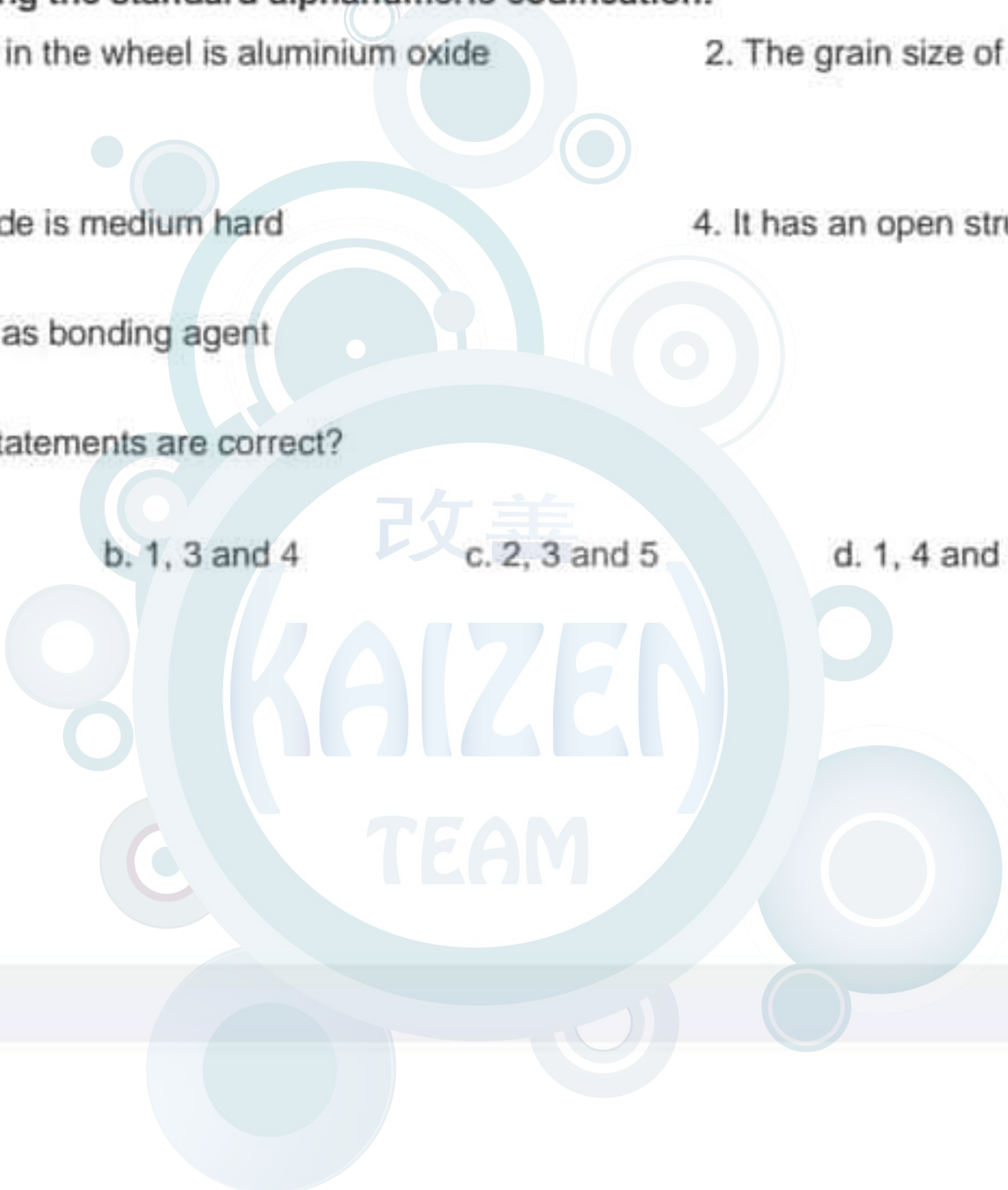
- a. Hollow castings with thick walls b. Hollow castings with thin walls
- c. Thin castings d. Thick castings

32. Which one of the following welding processes consists of smaller Heat Affected Zone (HAZ)?

- a. Arc welding b. Electron beam welding
- c. MIG welding d. Thermit welding

33. Gear shaping is a process of manufacturing gears. Which one of the following principles is employed by it?

- a. Form cutting with gear b. Generating tooth form with a reciprocating cutter.
- c. Generating tooth form by a rotating cutter



38. Which one of the following is not an electric resistance method of welding?

- a. Electro slag welding
- b. Percussion welding
- c. Seam Welding
- d. Flash welding

39. In one setting of rolls in a 3-high rolling mill, one gets

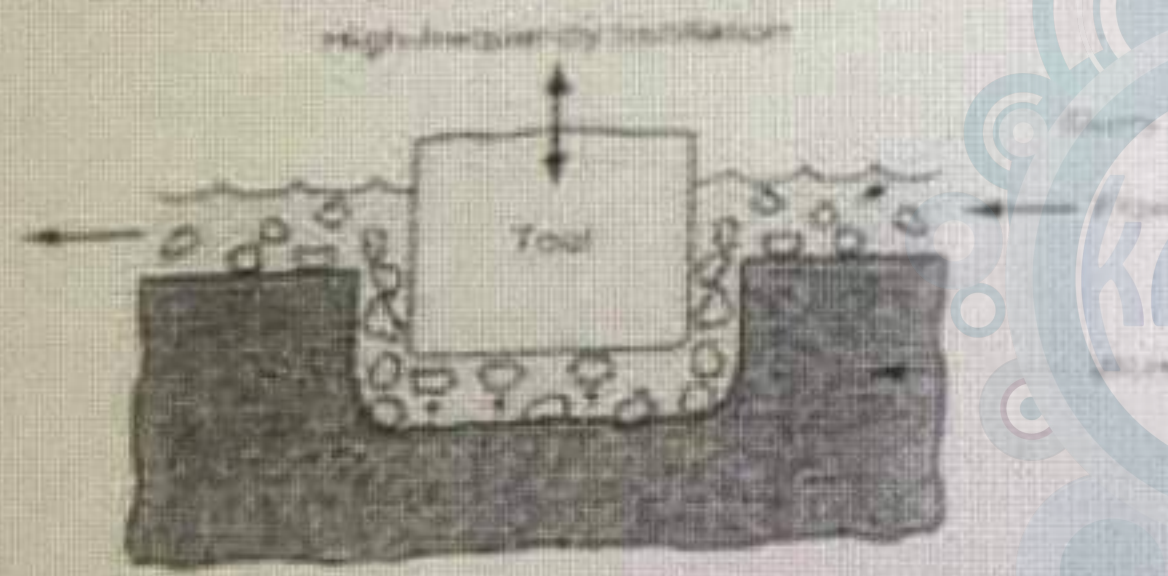
- a. one reduction in thickness
- b. two reductions in thickness
- c. three reductions in thickness
- d. two or three reductions in thickness depending upon the setting

40. At room temperature, which one of the following is the correct sequence of increasing hardness of the tool materials?

- a. Cast alloy-HSS-Ceramic-Carbide
- b. HSS-Cast alloy-Ceramic-Carbide
- c. HSS-Cast alloy-Carbide-Ceramic
- d. Cast alloy-HSS-Carbide-Ceramic



47. The nozzle part of the water jet machining is made of
a) tungsten carbide or sapphire b) aluminum c) steel d) copper
48. which of the following is not true for the abrasive jet machining
a) Low capital cost b) low vibration c) high metal removal rate d) no heat
49. which of the following material cannot be cut with water jet cutting
a) metals b) glass c) composites d) plastics
50. the following figure refers to manufacturing process



a) EDM

b) PLASMA arc

a) 89.9 b) 99.8 c) 109.9 d) 59.9

36. Semicontinuous chips with large zones of low shear strain and small zones of high shear strain are called

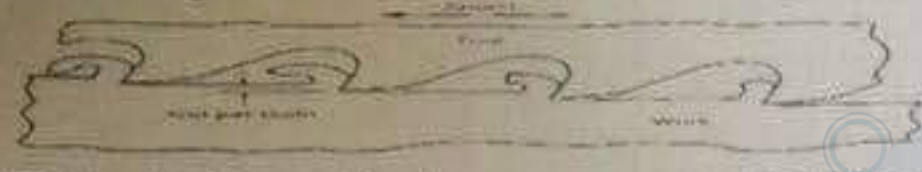
- a) continuous chips b) serrated chips c) curl chips d) discontinuous chips

37. the following figure refers to manufacturing process



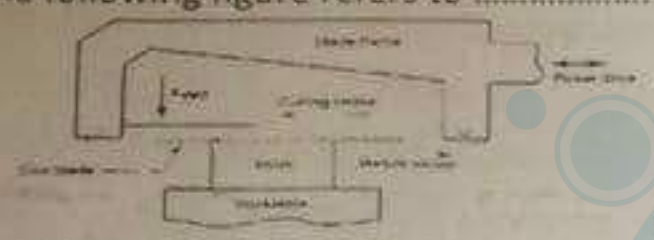
38. the following refers to manufacturing process

a) end Milling b) nose milling c) face milling d) Grinding



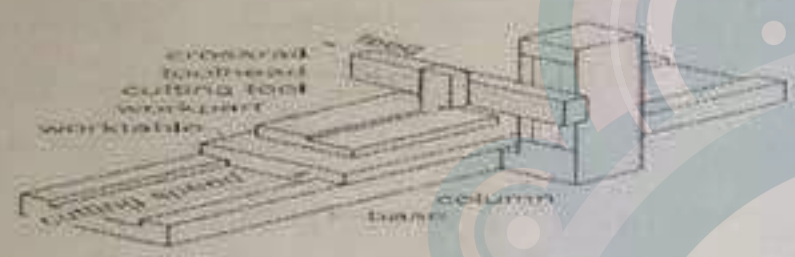
39. the following figure refers to manufacturing process

a) broaching b) sawing c) reaming d) none of them



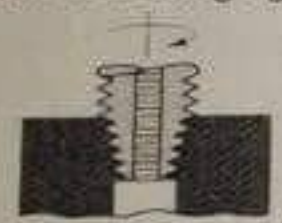
40. the following figure refers to manufacturing process

a) blade sawing b) Milling c) reaming d) hacksawing



41. the following figure refers to manufacturing process

a) Planning b) turning c) milling d) shaping



42. Tools made up of carbides are extremely hard having Rockwell hardness varying from

a) 0-13 HRC b) 90-93 HRC c) 10-23 HRC d) 590-993 HRC

43. The most common drill material is

a) High speed steel b) Ceramic tipped c) Diamond d) carbide

44. Which of the following materials has the highest machienability index.

a) Steels b) Copper c) Magnesium d) Aluminum

45. A cutting fluid should have

a) High conductivity b) low toxicity c) high thermal capacity d) all of them

46. in abrasive jet machining the grit size is of an order of

a) 15 micrometer b) 15 millimeter c) 15 centimeter d) 15 meter

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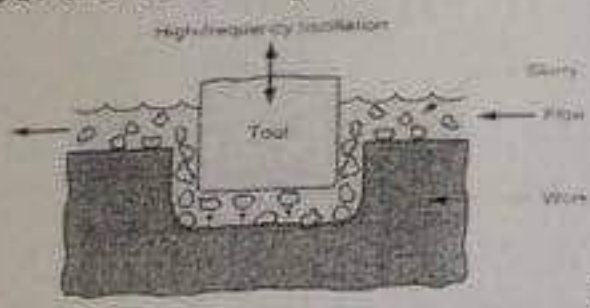
48. which of the following is not true for the abrasive jet machining

a) Low capital cost b) low vibration c) high metal removal rate d) no heat is generated in work piece.

49. which of the following material cannot be cut with water jet cutting

a) metals b) glass c) composites d) plastics

50. the following figure refers to manufacturing process



a) EDM b) PLASMA arc c) ultrasonic d) abrasive jet

In Ultrasonic machining, the tool moves

- a. moves in transverse direction
- b. moves in longitudinal direction
- c. vibrates in transverse direction
- d. vibrates in longitudinal direction

(Ans:d)

In which of the following processes, the shape of tool is not same as that of cavity produced?

- a. Ultrasonic Machining
- b. Electrical discharge Machining
- c. Electrochemical Machining
- d. Plasma arc machining

(Ans:d)

In which of the following processes, a nozzle is used?

- i. Plasma arc machining
 - ii. Ultrasonic Machining
 - iii. iii. Abrasive jet machining
- a. i & ii
 - b. ii & iii
 - c. i & iii
 - d. i, ii & iii

(Ans:c)

In which of the following gases is not used in Abrasive jet machining?

- a. Air
- b. Nitrogen
- c. Carbon di-oxide
- d. Argon

(Ans:d)

1. In an orthogonal cutting, the depth of cut is halved and feed rate is double. If the chip thickness ratio is unaffected with the changed cutting conditions, the actual chip thickness will be

- a. Doubled
- b. Halved
- c. Unchanged
- d. None of the above

2. Cast iron during machining process produces

- a. Continuous chips
- b. Discontinuous chips
- c. Continuous chips with built up edge
- d. None of the above

8. The powder metallurgy technique for the product of precision component is characterized mainly by reduction in

- a. Material cost
- b. Machining cost
- c. Equipment cost
- d. None of the above

9. Magnetic arc blow is

- a. A recent welding technique
- b. Used to weld hard materials
- c. Phenomenon on occurrence of splatter because magnetic field is created in d.c. arc welding.
- d. None of the above

10. In rolling operation the roll rotate with surface velocity

- a. Exceeding the speed of incoming metal
- b. Lower than the speed of incoming metal
- c. Equal to speed of the incoming metal
- d. None of the above

11. Process of extrusion is like

- a. A viscous lubricant pouring the mouth of container
- b. A tooth paste coming out of its tube
- c. Hard particles thrown out of a nozzle under air pressure
- d. None of the above

12. Material good for extrusion is

- a. Stainless steel
- b. Brass
- c. Low carbon annealed steel
- d. None of the above

13. The method most widely used for production of metal powder for use in powder metallurgy is

- a. Liquid metal spray
- b. crushing using impact
- c. Electrolytic deposition
- d. None of the above

14. In braze welding the filler material is

- a. Distributed by capillary action
- b. Melted and deposited at the point where the weld is to be made
- c. Both a and b
- d. None of the above

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- c. Both a and b
- d. None of the above

15. Amount of current necessary in resistance welding is of the order of

- a. 1-2 kVA/cm²
- b. 2.5-4 kVA/cm²
- c. 4.5-6.2 kVA/cm²
- d. None of the above

16. In the relation for cutting tool life $VT^n=C$, the numerical value of n for high speed steel tools vary in the range of

- a. 0.1 to 0.15
- b. 0.20 to 0.25
- c. 0.25 to .40
- d. None of the above

17. In a turning operation the tool life of the carbide tool was found to be 20 minute and 100 minute at cutting speeds of 120 m/min respectively. What will be the tool life of the tool under the same condition but at a cutting speed of 100 m/min?

- a. 31 minutes
- b. 41 minutes
- c. 36 minutes
- d. None of the above

18. Product layout is known as

- a. Analytical layout
- b. Synthetic layout
- c. Static production layout
- d. None of the above

19. In which of the layout, similar operations are performed at the same place always

- a. Process layout
- b. Product layout
- c. Combination layout
- d. Fixed position layout

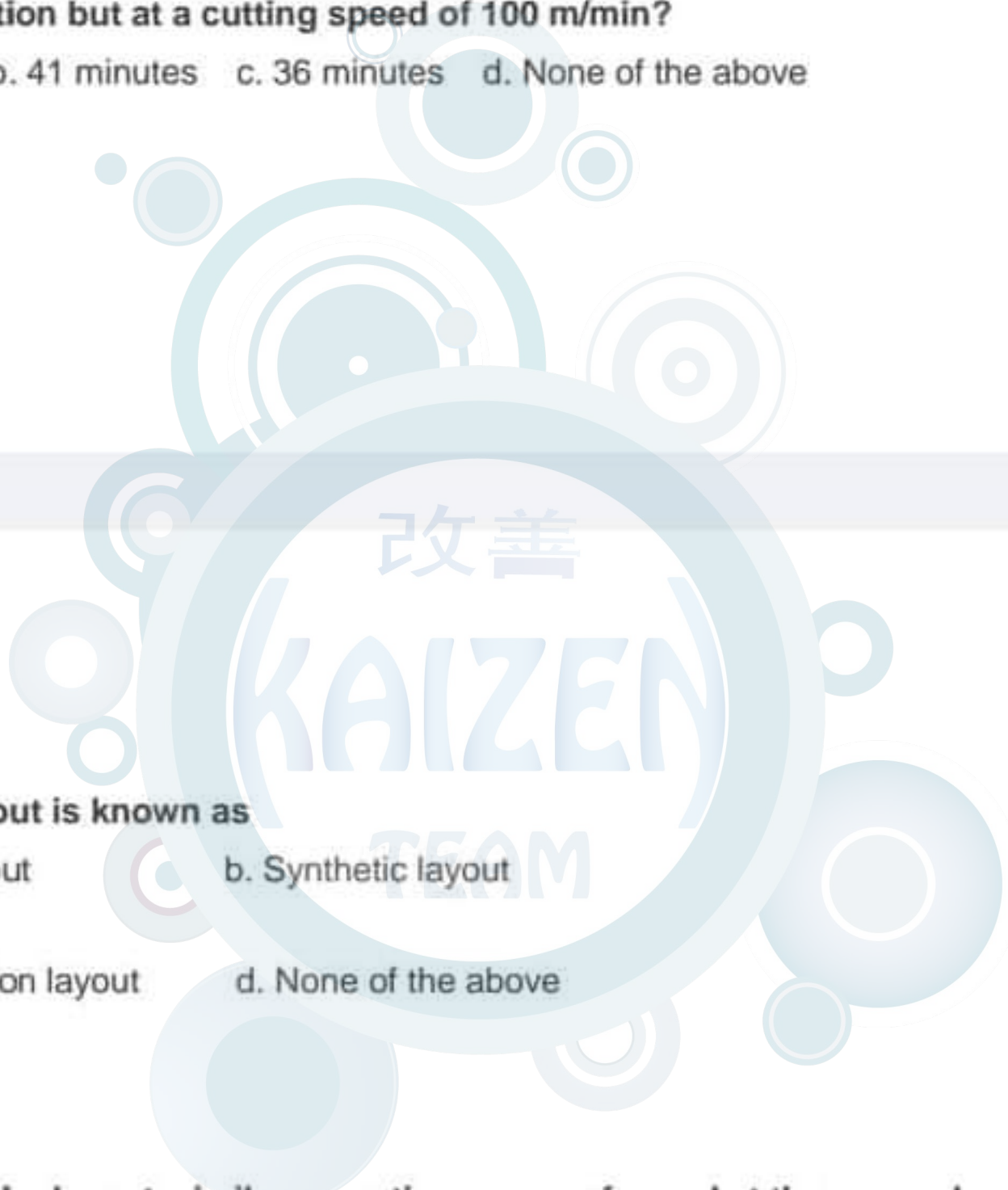
20. Which of the following types of flames has a supply of excess of acetylene as compared to oxygen?

- a. Oxidizing flame
- b. Neutral flame
- c. Carburizing flame
- d. None of the above

21. Directional solidification can be achieved by providing

- a. chills and chaplets
- b. chaplets and padding
- c. chills and padding
- d. chills, chaplets and padding

22. Rolling very thin strips of mild steel requires



a) counter sink tool b) reamer tool c) gun drill tool d) counter bore tool

16. drill tool material used for high production and CNC machines

a) HSS b) Carbide tipped drills c) low carbon steel d) all of them

17. A peripheral milling operation is performed on the top surface of a rectangular workpart which is 400 mm long by 60 mm wide. The milling cutter, which is 80 mm in diameter and has five teeth, overhangs the width of the part on both sides. Cutting speed = 70 m/min, chip load = 0.25 mm/tooth, and depth of cut = 5.0 mm. the feed rate is

a) 483 mm/min b) 843 mm/min c) 348 mm/min d) 438 mm/min

18. Built up edge can be reduced by

a) increase depth of cut b) decrease the rake angle c) Both a and b d) use effective cutting fluid

19. As the lead angle increases the undeformed chip thickness

a) increases b) don't affected c) decreases d) none of them

20. In _____, the axis of cutter rotation is parallel to the workpiece surface.

a) slab milling b) ball milling c) end milling d) face milling

21. In _____ milling process, Max chip thickness is at the end of the cut

a) ball milling b) down milling c) end milling d) up milling

22. one of the following is not true for the upmilling process

a) cutting process is smooth b) tooth engagement is a function of workpiece surface characteristics, and contamination or so the surface affect tool life c) tendency for the tool to chatter d) none of them

23. Because of the resulting high impact forces when the teeth engage the workpiece, this operation must have a rigid setup, and backlash must be eliminated in the table feed mechanism in _____ milling process

a) up milling b) end milling c) down milling d) ball milling

24. _____ milling process can produce a variety of surfaces at any depth, such as curved, stepped, and pocketed.

a) end milling b) down milling c) up milling d) referral milling

25. in milling process the problem of burr formation may be related to

a) incorrect entry and exit angles b) dull cutting edges c) feed and depth of cut too high d) all of them

26. the component that supports the table and can move in the transverse direction is usually called

a) saddle b) overarm c) compound wrest d) knee

27. one of the following is not true for the material removal processes compared to forming

a) waste of material b) time consuming process c) bad dimensional accuracy d) straight edges and surfaces

28. Which of these statements are correct? built up edge may be reduced by:

1. decreasing depth of the cut 2. Increasing cutting velocity 3. increasing back rake angle

a) 1, 2 and 3 b) 1 and 2 c) 1 and 3 d) 2 and 3

*A turning operation is made with a rake angle of 10° , a feed of 0.010 in/rev and a depth of cut = 0.100 in. The shear strength of material is known to be 50,000 lb/in², and the chip thickness ratio is measured after the cut to be 0.40. Answer questions 29, 30, 31, and 32.

29. The shear angle is

a) 29.2° b) 22.9° c) 92.2° d) 9.22°

30. The shear force is

a) 812 lb b) 182 lb c) 821 lb d) 128 lb

31. the cutting force is

a) 632 lb b) 326 lb c) 623 lb d) 236 lb

32. the thrust force is

a) 922 lb b) 129 lb c) 229 lb d) 22 lb

*Tool life tests in turning yield the following data: (1) when cutting speed is 100 m/min, tool life is 10 min; (2) when cutting speed is 75 m/min, tool life is 30 min. Answer questions 33, 34, and 35 using Taylor equation

33. the value of the exponent n is

a) 0.1268 b) 0.2618 c) 0.6218 d) 0.8216

34. the value of the constant C is

a) 287.15 b) 182.75 c) 157.82 d) 578.12