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DEPARTMENT OF MECHANICAL ENGINEERING

SECOND YEAR (SY)

SCHEME: I **SEMESTER: IV**

NAME OF SUBJECT: FLUID MECHANICS AND MACHINERY

Subject Code: 22445

UNIT WISE MULTIPLE CHOICE QUESTIONS BANK

Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	**Program Code:- ME**
Scheme:-I	**Semester:- 4**
Course:- Manufacturing Processes	**Course Code:- 22446**

01 – Fundamentals of Machining and Machining Operations	**Marks:-16**

Content of Chapter:-

1.1 Machining Process: Mechanics of Chip formation, Single point cutting Tool & its geometry. Methods of Machining .Types of Chips, Principal elements of Metal Machining.

1.2 Lathe: Classification, specifications of center lathe: Basic parts of center lathe & their functions; Lathe accessories: chucks (three jaw, four jaw & magnetic chuck), mandrels, rests, face plates, centers, and angle plates :Lathe operations like facing, plain turning , taper turning, thread cutting, chamfering: grooving , knurling. Cutting tool nomenclature and tool signature. Cutting parameters-speed, feed , depth of cut and machining time.

1.3 Drill Machine: Classification specifications of radial drilling machine. Basic parts of radial drilling machine. Sensitive drilling and their functions. Drilling machine operations like drilling, reaming, boring, counter sinking, counter boring, spot facing.

1.4 Cutting parameters-speed, feed, depth of cut and machining time.

1. Why metal removal process is costly?

(A) more energy is required (B) some of the material is wasted

(C) both more energy is required and some of the material is wasted

(D) none of the mentioned

Answer: Option C

Explanation: As we require more energy, cost will definitely increase and again some material is also removed(lost) in this process.

2. In which machining process, removed metal is negligible**?**

(A) surface finishing (B) metal removal

(C) both surface finishing and metal removal (D) None of the mentioned

Answer: - A

Explanation : Metal which is removed, is more (can't negligible) in case of metal removal process but in surface finishing metal removal is negligible.

3. Dimension accuracy is not affected in metal removal process?

(A) true (B) false

Answer: - Option B

Explanation : This is false. Accuracy of dimension is not affected in surface finishing process.

4. Which of the following process is not grouped under metal removal process?

(A) boring (B) milling

(C) tumbling (D) rolling

Answer: - Option C

Explanation : Only boring and milling are grouped under metal removal process. Tumbling is the type of surface finishing process.

5. Which of the following is not groped under the surface finishing process?

(A) sawing (B) tapping

(C) buffing (D) polishing

Answer: - Option A

Explanation : Only tapping, buffing and polishing are grouped under surface finishing process. Sawing is the type of metal removal process.

6. Metal removal process gives poor contour on the compound.

(A) true (B) false

Answer: - Option B

Explanation : This is false. Metal removal process gives poor contour on the compound.

7 . In how many groups, metal removal process can be classified?

(A) 2 (B) 3

(D) 4 (D) 5

Answer: - Option B

Explanation : Metal removal process can be classified as conventional machining, abrasive process and nontraditional machining.

8. In which type of metal removal process, grinding is included?

(A) conventional machining (B) abrasive process

(C) nontraditional machining (D) None of the mentioned

Answer: - Option B

Explanation : As per the classification of metal removal process, it is included in abrasive process. When we remove metal with the help of single or multiple abrasive particle, the process is called abrasive process.

9. _____ metal removal process includes milling.

(A) conventional machining (B) abrasive process

(C) Chemical and electro-chemical. (D) none of the mentioned

Answer: - Option A

Explanation : As per the classification of metal removal process, it is included in conventional process. Conventional machines are machines which requires human efforts and that are not fully automated. Metal removal process need some human efforts.

10. In which type of metal removal process, thermal energy is included?

(A) conventional machining (B) abrasive process

(C) nontraditional machining (D) none of the mentioned

Answer: Option C
Explanation : It is included in nontraditional machining. Thermal energy is an energy which is generated from the heat like kinetic energy of molecule, chemical energy of particle and so on.

11. Which of the following is the type of nontraditional machining?
(A) turning (B) drilling
(C) milling (D) none of the mentioned
Answer: - Option D
Explanation : Turning, drilling and milling are the types of nontraditional machining. Drilling means make a hole by using drilling machine and milling machine is a machine tool that removes metal as the work is fed against multipoint cutter. Turning is basic operation generally carried out on lathe machine.

12. In which metal removal process, material is removed by particles?
(A) conventional machining (B) abrasive process
© nontraditional machining (D) none of the mentioned
Answer: - Option B
Explanation : It can be understood from the definition of abrasive process. Like in abrasive water jet operation, material is removed by erosion.

13. In which process, various energy forms other than sharp cutting tool is used to remove materials?
(A) conventional machining (B) abrasive process
© nontraditional machining (D) none of the mentioned

Answer: - Option C
Explanation : It can be understood from the definition of nontraditional machining. Non-traditional machining is an operation which do not use shear as their primary sources of energy.

14. Metal removal process is also termed as primary production process.
(A) true (B) false
Answer: - Option B
Explanation : This is false. Metal removal process is also termed as secondary production process.
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15. Which of the following is not the type of nontraditional machining?
(A) electrochemical process (B) chemical machining
(C) mechanical energy process (D) none of the mentioned
Answer: - Option D
Explanation : Electrochemical process, chemical machining and mechanical energy process are all the types of nontraditional machining. Apart from these, photochemical, chemical milling, ultrasonic machining, laser beam machining etc. are also the type of nontraditional machines.

16 Which of the following is correct about chip thickness ratio 'r'?
(A) r<1 (B) r=1
(C) r>1 (D) None of the mentioned
Answer: - Option A
Explanation : Uncut chip thickness is always less than cut chip thickness and 'r' is the ratio of cut chip thickness to uncut chip thickness.

17 If t_1 denotes the uncut chip thickness and t_2 denotes cut chip thickness ratio then, which of the following equation is correct about chip thickness ratio 'r'?

(A) $r=t_1/t_2$ (B) $r=t_1/t_2$
(C) $r=t_1*t_2$ (D) None of the mentioned

Answer: Option A
Explanation : 'r' is the ratio of cut chip thickness to uncut chip thickness. Here t1 is the uncut chip thickness and t2 is the cut chip thickness.

18. Which of the following is the correct relation for chip thickness ratio 'r'?
Given that: φ=shear angle
α=rake angle

(A) tan φ= cosα/(1-r*sinφ) (B) tan φ= rcosα/(1-r*sinφ)
(C) tan φ= rcosα/(1-sinφ) (D) tan φ= cosα/(r-r*sinφ)

Answer: - Option B
Explanation : Value of chip thickness ratio is given by: tan φ= rcosα/(1-r*sinφ) . 'r' is the chip thickness ratio, which is the ratio of cut chip thickness to uncut chip thickness.

19. Horizontal force exerted by tool on work piece is known as
(A) Cutting force (B) Frictional resistance
(C) Backing up force (D) Shear force

Answer: - Option A
Explanation : Cutting force is the force by which tool cut work piece in horizontal direction. It is responsible for the cutting action during machining.

20. Metal resistance to shear during chip formation is known as
(A) Cutting force (B) Frictional resistance
(C) Backing up force (D) Shear force

Answer: - Option D
Explanation : Metal resistance to shear in chip formation is known as shear plane. It acts on a shear plane. It cause distortion in shape and angle.

21. Force exerted by work piece on chip in normal direction of shear plane is known as
(A) Cutting force (B) Frictional resistance
(C) Backing up force (D) Shear force

Answer: - Option C
Explanation : Backing up force is the force exerted by work piece on chip in normal direction of shear plane. It does not cause any distortion or shape change.

22. Force exerted by tool on chip normal to tool face is known as
(A) Cutting force (B) Frictional resistance
(C) Backing up force (D) Shear force

Answer: - Option B
Explanation : Frictional resistance is the resistance offered between tool and chip interface. It causes generation of heat during welding.

23. Which of the following assumption is not valid for merchant circle diagram?
(A) Continuous Chips (B) Discontinuous chips
(C) Cutting edge remains sharp (D) No built up edge

Answer: - Option B

Explanation : Chips are assumed to be continuous in nature in drawing of merchant circle. In actual practice, thickness may not be uniform.

24. Which of the following assumption is not valid for the merchant circle diagram?

(A) Continuous Chips (B) Sharpness of cutting edge reduces gradually

(C) Cutting edge remains sharp (D) No built up edge

Answer: - Option B

Explanation : Sharpness of cutting edge is assumed to be constant during the cutting process. In actual machining process sharpness of cutting edge decreases as time passes.

25. Which of the following is correct equation for shear force F_S=? φ is the shear angle?

(A) $F_S=F_C\cos\varphi-F_T\sin\varphi$ (B) $F_S=F_C\cos\varphi/F_T\sin\varphi$

(C) $F_S=F_C\cos\varphi*F_T\sin\varphi$ (D) $F_S=F_C$cos&o#966;+$F_T\sin\varphi$

Answer: - Option A

Explanation:$F_S=F_C\cos\varphi-F_T\sin\varphi$ is the correct relation of shear force in terms of horizontal cutting force, Tangential cutting force and shear angle.

26. Angle between the rake face and plane perpendicular to rake face is known as:

(A) Side rake angle (B) Side relief angle

(C) End relief angle (D) Back rake angle

Answer: - Option A

Explanation : Side rake angle is the angle between the rake face and plane perpendicular to rake face.

27. Angle between the rake face flank of tool and perpendicular line drawn from cutting point to base of tool is known as:

(A) Side rake angle (B) Side relief angle

(C) End relief angle (D) Back rake angle

Answer: - Option B

Explanation : Side relief angle is the angle between the flank of tool and perpendicular line drawn from cutting point to base of tool.

28. Angle between side cutting edge and axis of tool is known as:

(A) Side rake angle (B) Side relief angle

(C) Side cutting edge angle (D) Back rake angle

Answer: - Option C

Explanation : Side cutting angle is the angle between side cutting edge and axis of tool.

29. With an increase in lip angle keeping side rake angle constant, strength of tool.

(A) Increases (B) Decreases

(C) Remains constant (D) None of the mentioned

Answer: - Option A
Explanation : Thickness of tool tip increase with an increase in lip angle, hence the strength of tool increase..

30. For large positive back rake angle, tool will be
(A) Weaker (B) Stronger
(C) Smoother (D) Harder
Answer: - Option A
Explanation : With the increase in positive back rake angle, lip angle decreases and tool tip become thin.

31. Which type of lathe is also known as centre lathe?
(A) engine lathe (B) bench lathe
(C) room lathe (D) capstan lathe

Answer: - Option A
Explanation : Engine lathe is also known as the centre lathe. This centre lathe is generally used for the production of cylindrical surfaces.

32 Geared lathe is the type of____
(A) engine lathe (B) centre lathe
© speed lathe (D) special purpose lathe
Answer: - Option A
Explanation : Geared lathe is the type of engine lathe. Engine lathe is a screw cutting type lathe. It has back-geared cone-driven headstock.

33. The rigidness of radial drill machine is_____ column drill machine.

(A) less than (B) same as

(C) more than (D) none of the mentioned
Answer: - Option C
Explanation : Radial drills can make large diameter of holes so its rigidness should be more column drill machine.

34. There is a radial arm on the tubular column in radial drill machine.
(A) true (B) false

Answer: - Option A
Explanation : As per the construction of this machine. On this radial arm, the spindle head is mounted.

35. _____ is the speed at which the metal is removed by the tool from the work piece.

(A) feed (B) cutting speed
(C) depth of cut (D) none of the mentioned

Answer: - Option B

Explanation : It can be easily understood by looking at the definition of the cutting speed. Cutting speed is a peripheral speed of the work.

36. Which of the following represent the unit of cutting speed?

(A) meter*minute (B) meter*meter*minute
(C) meter / minute (C) none of the mentioned

Answer: - Option C

Explanation : In cutting speed's formula, d-diameter expressed in meter and n is rpm – revolution per minute. By putting this units in cutting speed's formula, we can easily obtain its unit as meter/minute.

37. _____ is the distance the tool advances for each revolution of the work

(A) feed (B) depth of cut
(C) metal removal rate (D) none of the mentioned

Answer: - Option A

Explanation : The feed of a cutting tool in a lathe work is the distance the tool advances for each revolution of the work. Increased feed reduces the cutting time.

38. Which of the following is the unit of the feed?

(A) mm / minute (B) mm / revolution
© mm * minute (D) none of the mentioned

Answer: - Option B

Explanation : mm / revolution is the right unit for feed. In British system it is expressed in inches per revolution.

39. The depth of cut is the_____ distance measured from the machined surface to the surface of the work piece, which is uncut.

(A) parallel (B) perpendicular
(C) at 45 degree (D) none of the mentioned

Answer: - Option B

Explanation : It is the perpendicular distance measured from the machined surface to the surface of the work piece, which is uncut. Other factors remaining constant, the depth of cut varies inversely as the cutting speed.

40. For general purposes, ratio of the depth of cut to the feed varies from_____

(A) 10:1 (B) 1:10
(C) 100:1 (D) 1:100

Answer: - Option A

Explanation : The ratio varies from 10:1. The depth of cut varies inversely as the cutting speed.

41. Which of the following operation is performed to ensure the correct location of a hole by making it concentric with the axis of rotation?
(A) parting (B) tapping
(C) boring (D) none of mentioned
Answer: - Option C
Explanation : This is the characteristic of boring. After the hole is made by drilling operation, boring is carried out. It is generally done to enlarge the diameter of the hole.

42. Which of the following operations can be done by same tool?
(A)reaming and tapping (B) drilling and facing
(C) counter boring and spot facing (D) none of the mentioned
Answer: - Option C
Explanation : Counter boring and spot facing can be performed by same tool. Counter boring is an operation which is carried out for providing recess for nuts or bolt heads.

43. Reaming doesn't improve the surface finish.
(A) true (B) false
Answer: - Option B
Explanation : Reaming improves the surface finish. It generally enlarge the holes with great accuracy and give better dimensional accuracy-better surface finish.

44. Which of the following process is performed to provide seating for washer?
(A)counter boring (B) spot facing
(C)tapping (D) none of the mentioned
Answer: - Option B
Explanation : As per the definition of spot facing process. In spot facing operation, some specific part of the work piece is faced. It gives better flat ,smooth surface to that work piece.

45. To produce more accurate holes, which of the following operation should be performed first?
(A) drilling (B) reaming
(C) centering (D) boring
Answer: - Option C
Explanation : As per the characteristic of all these operation, centering should be performed first before drilling, reaming and boring in order to produce more accurate holes. Center drill makes a hole. Now, this hole behave as a center of rotation for mentioned rest 3 operations.

46. To produce more accurate holes, which of the following operation should be performed last?
(A) drilling (B) reaming
(C) centering (D) boring
Answer: - Option B
Explanation : As per the characteristic of all these operation, reaming should be performed last in order to produce more accurate holes. By using all rest 3 method, we make the hole with almost accuracy. But for final finish and extremely high accuracy, reaming is performed at the last.

47. Tapping is a forming process.
(A) true (B) false
Answer: - Option A

Explanation : As per the definition of taping process. The main advantage of taping is that is requires less operating conditions.

48. Which of the following process requires abundant coolant?
(A) drilling (B) tapping
(C) boring (D) none of the mentioned
Answer: - Option B
Explanation : Tapping needs abundant coolant. Cutting fluid is the coolant generally designed for metal working process. Different types of fluids are there like oil, gel, aerosols and so on.

49. Tapping process is carried out on _____ machines.
(A)drilling (B) tapping
(C)both drilling and tapping (D) none of the mentioned
Answer: - Option C
Explanation : Tapping process is carried out on both drilling and tapping machines. Taper is a shape which is produced and it has different diameter at both the ends

50. Which of the following operation is carried out for cutting internal threads?
(A)drilling (B) tapping
(C)both drilling and tapping (D) none of the mentioned

Answer: - Option B
Explanation : Tapping is carried out for cutting internal threads because tapping process generally don't need high operating conditions. They require less operating conditions.

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Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	Program Code:- ME
Scheme:-I	Semester:- 4
Course:- Manufacturing Processes	Course Code:- 22446

02 – Shaping /Slotting Machines.	Marks:-12

Content of Chapter:-

2.1 Shaping Machine: Principle of working, classification, specification of standard shaper. Basic parts of standard shaping machine and their functions. Quick return mechanism

2.2 Slotting Machine: Principle of working, classification , specification .Basic parts of slotting machine and their functions. Milling Cutters- Different types of cutters used in milling , face milling cutter, end milling cutter. Staggered tooth milling Cutter , side & Face milling cutter, form milling cutter, metal slitting saw etc.

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1. Which of the following is used for machining larger jobs?
(A) shaper (B) planer

(C) can't say anything (D) none of the mentioned

Answer: - Option B
Explanation : Planer is used for the purpose of machining too large and heavy jobs. There is a table in planer known as platen on which the work piece is fixed firmly and the operation is performed.

2. Which of the following is used for machining smaller jobs?
(A) shaper (B) planer

(C) can't say anything (D) none of the mentioned

Answer: - Option A
Explanation Shaper is used for the purpose of machining smaller jobs. It is mainly used for producing flat and plan surfaces.

3. Which of the following machine is primarily intended for producing flat surfaces?
(A) shaper (B) drilling

(C) lathe (D) none of the mentioned

Answer: - Option A

Explanation : Shaper is intended for this purpose. It was invented in 1836 by James Nasmyth.

4. Which of the following operation can be performed in shaper?

(A) gear cutting (B) keyways cutting

(C) curvilinear contours (D) none of the mentioned

Answer: - Option D

Explanation : All mentioned operations can be performed in shaper. Although it is used mainly for producing flat surfaces but its a versatile machine and can be used for other purposes too.

5. In shaper, the job is kept_____

(A) stationary (B) rotating

(C) reciprocating (D) none of the mentioned

Answer: - Option A

Explanation : The job is kept stationary in this machine. In shaper, cutting tool moves in order to perform operations.

6. In shaper, the cutting tool is made to reciprocate across the job.

(A) true (B) false

Answer: - Option A

Explanation : This is true. cutting tool moves in order to perform the work. Only forward movement is useful. Work is only done in forward movement.

7. Which stroke is cutting stroke in shaper?

(A) forward (B) return

(C) can't say anything (D) none of the mentioned

Answer: - Option A

Explanation : Forward stroke is cutting stroke in shaper because only in forward stroke work-cutting is done..

8. Which stroke is idle stroke in shaper?

(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : Return stroke is idle stroke in shaper because no useful work is done in this stroke.

9. No useful work is done in forward stroke in shaper.

(A) true (B) false

Answer: - Option B
Explanation : In return stroke, no useful work is done. The return stroke is also known as idle stroke..

10. At the end of one cycle, job is given a feed motion_____ to the direction of tool movement.
(A) parallel (B) perpendicular

(C) anti-parallel (D) none of the mentioned

Answer: - Option B
Explanation : At the end of one cycle, job is given a feed motion perpendicular to the direction of tool movement. Feed is the relative movement of the tool or work.
11. The depth of cut is given by lowering the tool relative to the job.
(A) true (B) false

Answer: - Option A
Explanation : This is true. Depth of cut is the thickness of metal that is removed in one cut.

12. According to the type of design of the table, lathe can be classified as_____
(A)standard shaper (B) universal shape

(C) both standard shaper and universal shaper (D) none of the mentioned

Answer: - Option C
Explanation : According to the type of design of the table, lathe can be classified as both standar shaper and universal shaper. Standard shaper is also known as plain shaper which has only two movements vertical and horizontal to get feed.

13. Push type shaper is type of shaper according to_____
(A) design of the table (B) position and travel of the ram
(C) type of cutting stroke (D) none of the mentioned

Answer: - Option C
Explanation : Push type shaper is type of shaper according to type of cutting stroke. In push type shaper, at the time when the ram is moving away/going away from the column, removal of metal is done.

14. horizontal type shaper is type of shaper according to_____
(A) design of the table (B) position and travel of the ram

(C) type of cutting stroke (D) none of the mentioned

Answer: - Option B
Explanation : horizontal type shaper is type of shaper according to position and travel of the ram. When we talk about horizontal shaper, it is mostly used for producing flat surfaces.

15. Vertical type shaper is type of shaper according to_____

(A) design of the table (B) position and travel of the ram

(C) type of cutting stroke (D) none of the mentioned

Answer: - Option B
Explanation : Vertical type shaper is type of shaper according to position and travel of the ram. In vertical type shaper ram has its motion in vertical direction, that's why it is known as vertical shaper..

16. The shaper is a reciprocating type of machine tool primarily intended for producing flat surfaces.
(A) true (B) false

Answer: - Option A
Explanation : As per the definition of this machine. It is a reciprocating type machine introduced by James Nasmyth in 1836 for producing flat surfaces..

17. Standard shaper is also known as plain shaper.
(A) true (B) false

Answer: - Option A

Explanation : As per the definition of standard shaper. This shaper uses a linear tool path for machining.

18. A shaper is termed as standard when the table has _____ movements.

(A) only one (B) only two
(C) only three (D) none of the mentioned

Answer: - Option B
Explanation : This is the definition of standard shaper. Other types of shaper are horizontal shaper, draw-cut shaper, universal shaper etc.

19. Which type of movements of table can be given to the feed?
(A) horizontal (B) vertical

(C) horizontal or vertical (D) none of the mentioned
Answer: - Option C

Explanation : Both horizontal and vertical table movements can be given to feed. Linear relative motion between a work piece and single point cutting tool is given.

20 The base of the standard shaper is able to_____
(A) resist vibration (B) take up high compressive
(C) both resist vibration and take up high compressive (D) none of the mentioned

Answer: - Option C
Explanation : This is the property of standard shaper's base. As it is made of cast iron and other strong component it has these properties.

21. For what purpose are the quick return mechanisms used?
(A) To convert reciprocating motion into oscillatory motion
(B) To convert oscillatory motion into reciprocating motion
(C) To convert reciprocating motion into rotary motion
(D) To convert rotary motion into reciprocating motion
Answer: - Option D

Explanation : Due to the rotation motion of the disc, the ram moves forward and backwards. During half rotation, the ram moves forward whereas during the other half rotation. The ram quickly returns. Thus it converts rotary motion into reciprocating motion.

22. In a quick return mechanism, the forward reciprocating motion is faster rate than the backward stroke. True or false?

(A) true (B) false

Answer: - Option B

Explanation : In a quick return mechanism, the forward reciprocating motion is slower rate as compared to the backward stroke. That is why it is called a quick return mechanism. Thus, the statement is false..

23. For a crank and slotted lever quick return mechanism, α = 150°. Find the ratio of time of cutting stroke to time of return stroke..

(A) 1.2 (B) 1.3

(C) 1.4 (D) 1.5

Answer: - Option C

Explanation : Ratio of the time of cutting stroke to the time of return stroke for a crank and slotted lever quick return mechanism = (360-α)/α = (360-150)/150 = 1.4.

24. For a Whitworth quick return motion mechanism β = 110°. Find the ratio of time of cutting stroke to time of return stroke.

(A) 0.44 (B) 2.27

(C) 2.37 (D) 0.42

Answer: - Option B

Explanation : Ratio of time of cutting stroke to time of return stroke for a Whitworth quick return motion mechanism = (360-β)/ β = (360-110)/110 = 2.27.

25. For a Whitworth quick return motion mechanism α = 200°. Find the ratio of time of cutting stroke to time of return stroke.

(A) 1.25 (B) 1.35

(C) 1.30 (D) 1.40

Answer: - Option A

Explanation : Ratio of time of cutting stroke to time of return stroke for a Whitworth quick return motion mechanism= α/(360-α) = 200/(360-200) = 1.25.

26. Cutting of material during slotting operation takes place in

(A) Forward stroke (B) Backward stroke

(C) Both forward and backward stroke (D) None of the mentioned

Answer: - Option A

Explanation : Cutting always takes place in forward stroke. Backward stroke is an ideal stroke.

27. Which of the following part of slotting machine supports all of the other parts of machines?

(A) Base (B) Column
(C Ram (D) Table
Answer: - Option A

Explanation : Base act as support for all other parts and hence it is made strong.

28**.** Cutting of material during shaping operation takes place in
(A) Forward stroke (B) Backward stroke
(C) Both forward and backward stroke (D) None of the mentioned
Answer: - Option A
Explanation : Cutting always takes place in forward stroke. Backward stroke is ideal stroke.

29. Which of the following act as housing for an operating mechanism in slotting machine? (A) Base
(B) Column

(C) Cross rail (D) Table

Answer: - Option B
Explanation Column acts as housing for an operating mechanism in slotting machine and hence it is made of hard material.

30. Which of the following part of slotting machine carries table elevating mechanism?
(A) Base (B) Column
(C) Ram (D) Table

Answer: - Option B

Explanation : Column carries table elevating mechanism. Column act housing for an operating mechanism in slotting machine and hence it is made of hard material.

31. **Shaping can be performed more effectively by _____ milling machine.**
(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option B
Explanation : Vertical milling machines are of two types: bed mill and turrent mill and due to its construction features these vertical type milling machines can performed shaping easily.

32**. surfacing can be performed more effectively by _____ milling machine.**
(A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option B
Explanation : Surfacing can be performed more effectively by vertical milling machine. This machine has a spindle. It rotates in vertical direction over the table.

33. **Form cutting can be performed more effectively by _____ milling machine.**
(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option A
Explanation : Form cutting can be performed more effectively by horizontal milling machine. The spindle in the horizontal milling machine is mounted on the horizontal arbor above table.

34. **Slab milling can be performed more effectively by _____ milling machine.**

(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option A
Explanation : Slab milling can be performed more effectively by horizontal milling machine. This slab mill is also used in gang milling.

35. **Drilling can be performed more effectively by _____ milling machine.**

(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option B
Explanation : In vertical milling, the workpiece is held by a horizontal table and this horizontal table rotates about a vertical axis. There are none-rotating tools which can be fed by crossrail and then drilling operation is performed which is more effective in nature.

36. **Dovetailing can be performed more effectively by _____ milling machine.**

(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option B
Explanation : As per the classification of milling operations. Dovetailing means joint something like link together with the help of dovetail.

37. **Straddle milling can be performed more effectively by _____ milling machine.**

(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option A
Explanation : Sometimes we machine two or more vertical parallel surfaces at a single cut, this type of operation is known as straddle milling. Horizontal milling can perform it more nicely.

38. **Angular milling can be performed more effectively by _____ milling machine.**

(A) horizontal (B) vertical

(C) can't say anything (D) none of the mentioned

Answer: - Option C
Explanation : Angular milling is a type of milling that mills flat surfaces which are neither parallel or perpendicular to the axis of milling cutter. It is performed more accurately by both milling machines: horizontal and vertical.

39. **Slab mill cutter is an example of _____ milling cutter..**

(A) arbor type (B) shank type

(C) special type (D) none of the mentioned

Answer: - Option A
Explanation : Slab mill is the milling which is mainly used for the purpose of rapid machining of large and broad surfaces.

40. **End mill cutter is an example of shank type milling cutter..**
(A) true (B) false

Answer: - Option A
Explanation : As per the classification of milling cutters. These cutters are used in applications such as tracer milling, profile milling and plunging

41. **In a plain milling machine, the table can be moved**
(A)Longitudinally (B) Crosswise

(C)Vertically (D) All of these

Answer: - Option D
Explanation : NA

42. **Plain milling cutter is an example of _____ milling cutter.**
(A) arbor type (B) shank type

(C) special type (D) none of the mentioned

Answer: - Option C
Explanation : It is categorized under special type. Flat surfaces can be milled by this cutter. Apart from it it can perform other some simple milling operation.

43. **Side milling cutter is an example of _____ milling cutter.**
(A) arbor type (B) shank type

(C) special type (D) none of the mentioned

Answer: - Option C
Explanation : As per the classification of milling cutters. This cutter can handle deep and long open slots in a more comfortable manner, which increase the productivity.

44. **Slitting saw cutter is an example of _____ milling cutter.**
(A) arbor type (B) shank type

(C) special type (D) none of the mentioned

Answer: - Option C
Explanation : It is type of special purpose because it is not used for removing lots of material. It is used for the purpose of cutting a narrow slit into material.

45. **Carbide and ceramic tips are used in**
(A) slab mill (B) face mill

(C) fly mill (D) none of mentioned

Answer: - Option B
Explanation : Face mill is the cutter which uses multiple disposable carbide and ceramic tips. These are mounted on its cutter body .

46. **Form cutter is an example of arbor type milling cutter..**
(A) true (B) false

Answer: - Option B
Explanation : This is false. As per the classification of milling cutters, form cutter is an example of special type milling cutter.

47. **The various milling process may be classified in _____ categories.**
(A) 1 (B) 2

(C) 3 (D) none of the mentioned
Answer: - Option B

Explanation : Various milling process may be classified in 2 categories: peripheral milling and face milling

48. **The thickness of the chip in up milling is _____ at the beginning of the cut.**
(A) minimum (B) maximum

(C) zero (D) none of the mentioned

Answer: - Option A
Explanation : As per the working of the up milling, at the begining the the thickness of chip is minimum as cutting force vary from zero to maximum in up milling. So intially thickness of chip is minimum.

49. **The thickness of the chip in up milling is _____ in when the cut terminates.**
(A) minimum (B) maximum

(C) zero (D) none of the mentioned

Answer: - Option B
Explanation : The cutting force vary from zero to maximum in up milling. At the end due to maximum force chip thickness is high.

50.**The cutting force is directed _____ and this tends to lift the work from the fixture in up milling.**
(A) upward (B) downward

(C) can't say anything (D) none of the mentioned

Answer: - Option A
Explanation : This is the disadvantage of this process. The extra clamping forces may be required to fix the job on the table.

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Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	**Program Code:- ME**
Scheme:-I	**Semester:- 4**
Course:- Manufacturing Processes	**Course Code:- 22446**

03 – Casting Processes and Plastic Moulding Gear Manufacturing	**Marks:-18**

Content of Chapter:-

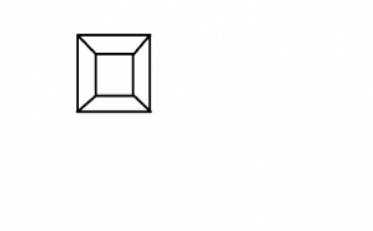
3.1 Pattern making: Basic steps in making pattern . Types , materials and allowances.
3.2 Color coding of patterns.
3.3 Moulding : Types of moulding sands, properties of sand , moulding methods , cores and core prints. Elements of gating system . Bench and floor moulding methods.
3.4 Casting : Safety practices/ precautions in foundary shop , Furnace construction and working of cupola furnace , electric arc furnace. Centrifugal casting:-Method and applications. Castings defects-causes and remedies.
3.5 Plastic Types of plastics: Plastic processes like Calendering and vacuum forming.
3.6 Plastic Moulding methods:- Compression moulding, Injection moulding, Blow moulding and extrusion . Applications of plastic moulding methods.

1. Which of the following factor is not considered while selecting a kind of pattern?
(A) Quantity of casting (B) Types of moulding method
(C) Shape of the casting (D) Nature of moulding process
Answer: - Option D

Explanation : Nature of moulding process is a factor used selecting pattern materials, whereas the quantity of casting, types of moulding method and shape of the casting are used for selecting a type of pattern.

2. Which type of pattern should be used for making stuffing box of the steam engine?
(A) One piece pattern (B) Split Pattern
(C) Sweep pattern (D) Gated pattern
Answer: - Option A
Explanation : One piece pattern operations for moulding are used for manufacturing a small number of casting only. Hence, a stuffing box can be casted with this type of pattern.

3. The following figure represents which type of pattern?



(A) One piece pattern (B) Split Pattern
(C) Sweep pattern (D) Gated pattern

Answer: - Option A
Explanation : The given figure here is depicting a one piece pattern. Here, as we see, there are no loose pieces available or any joints that bring it together. As there are no components or loose pieces attached to it, it is a one piece pattern.

4. **For spur gear manufacturing, angle between the hob's spindle axis and the work piece's spindle axis should be equal to____**

(A) (helix angle of the hob)/2 (B) 2*(helix angle of the hob)

(C) (helix angle of the hob) (D) (helix angle of the hob)2

Answer: - Option C
Explanation : As hob has helical threads, it has to be oriented making some angle with the
Work piece as per the requirement and then it is fed into the work piece. For spur gears, that angle should be equal to the helix angle of the hob.

5. The following figure represents which pattern?

(A) Follow board pattern (B) Gated pattern
(C) Match plate pattern (D) Segmental pattern

Answer: - Option D
Explanation : The following figure we see there is a pivot. This pivot rotates in two directions namely, clockwise and anti-clockwise directions. A pattern with such an apparatus is called as Segmental pattern.

6. In a three piece pattern moulding arrangement, what keeps the alignment between the two parts of the pattern?
(A) Cope (B) Drag
(C) Dowel pins (D) Cheek

Answer: - Option C
Explanation : Cope and drag are the portions of upper and lower part of the split and cheek form the middle one. Dowel pins are used for the alignment work in the pattern.

7. Piston rings are produced using which pattern?
(A) Sweep pattern (B) Gated pattern
(C) Match plate pattern (D) Loose piece pattern

Answer: - Option C
Explanation : Match plate pattern are usually used for manufacturing small castings on a big scale. Hence, piston rings of the engine are made using this pattern.

8. Which of the following pattern operation is cheapest?
(A) Sweep pattern (B) Gated pattern
(C) Match plate pattern (D) Skeleton pattern

Answer: - Option B
Explanation : Skeleton pattern uses the least amount of material for the operations on pattern and therefore, it does not need a lot of investment on its materials, making it inexpensive.

9. Which pattern operation is used for manufacturing wheel rims?
(A) Follow board pattern (B) Segmental pattern
(C) Sweep pattern (D) Gated pattern

Answer: - Option B
Explanation : In segmental pattern, it does not revolve continuously to make the mould, but completes one part of the mould and then goes to make the next portion. Hence, such type of pattern is used for making wheel rims and big gears.

10.The skeleton pattern is filled with sand.
(A) true (B) false

Answer: - Option B
Explanation : In skeleton pattern, the skeleton is made up of wood and then sand is added to the pattern. After putting the sand, then the pattern is rammed.

11. While imparting colours to the patterns, which colour scheme is followed?
(A) Indian (B)American
(C) Australian (D) Britain

Answer: - Option B
Explanation : Colours are imparted to the patterns for recognising different parts and has many other advantages. During impartation certain colours and shades to the pattern, it is the American colour scheme that is followed.

12. Which of the following reason is not valid for pattern colouring?
(A) Identification of main body (B) Visualising the to be machined surface

(C) Indication of the type of metal (D) Locating parting surface

Answer: - Option D
Explanation : Locating pattern surface is one of the steps of pattern construction, whereas the identification of the main body, visualising the, to be machined surface and indication of the type of metal are the reasons as to why a pattern is imparted colour.

13. Green colour is used for machined cast surface.
(A) true (B) false

Answer: - Option B
Explanation : Green colour is not given to any of the casting surfaces. Cast surfaces which are yet to be machined are imparted with red colour. Green colour, as a matter of fact, is not provided to any pattern.

14. Which colour is given to the cast surfaces which are to be left not-machined?
(A) Red (B) Blue
(C) Black (D) Yellow

Answer: - Option C
Explanation : Provision of colour scheme makes it easy for one to detect the part and the operation to be performed on it. According to the American pattern colour scheme, black colour is to be given for cast surface left to be not-machined.

15 . Which colour is given to core prints seats?
(A) Red (B) Blue
(C) Black (D) Yellow
Answer: - Option C
Explanation : Provision of colour scheme makes it easy for one to detect the part and the operation to be performed on it. According to the American pattern colour scheme, yellow colour is to be given for core print seats.

16 . Pattern cannot be constructed out of which of the following materials?
(A) Wood (B) Wax
(C) Oil (D) Metal
Answer: - Option C
Explanation : Oil is used as fuels for melting metals in various furnaces. It cannot be used for constructing a pattern, while all other materials are used for making patterns.

17 . Which of the following is not a criteria for selecting pattern materials?
(A) Method of moulding (B). Establishment of parting line
(C). Chances of repeat orders (D). Complexity of the casting

Answer: - Option B
Explanation : While selecting a pattern, pattern establishing a part line is counted under functions of the pattern, and not under the criteria for selecting it. Whereas all the other remaining are factors used for choosing the right pattern materials.

18 Which among the following wood is most widely used for making patterns?
(A) White Pine (B). Mahogany
(C.) Teak (D). Maple
Answer: - Option A

Explanation : White Pine is used most widely for making patterns because, white pine wood is soft and it is also observed that, it is comparatively easy to work on this wood. Also, this wood is comparatively cheap.

19.Steel is an alloy of which two elements?

(A) Iron and Brass
(B). Brass and aluminium
(C.) Iron and carbon
(D). Carbon and aluminium

Answer: - Option C
Explanation Steel is an alloy of carbon and iron. Carbon is present in the alloy up to 2% by weight and it takes up interstitial sites of the microstructure of iron. There are three types of alloys classified in this, high alloy steel, low alloy steel and medium alloy steel.

20. In Solid casting method, the resin mixture is kept for how much time for hardening and curing?

(A) 1-2 hours
(B) 2-3 hours
(C) 3-4 hours
(D) 4-5 hours

Answer: - Option B
Explanation : A mould of Plaster of Paris is made, into which the resin mixture is poured, in solid casting. This mixture takes up 2-3 hours to harden and get cured.

21. In working at the foundry, the risk of getting injuries is inversely proportional to the frequency of exposure to the worker.

(A) True
(B) False

Answer: - Option B
Explanation : Health effects or injuries can occur if a worker is exposed to the hazard which is basically a potential for a process to do harm. The risk of getting injuries generally increases with the duration and frequency of exposure to the worker in the foundry. So, proper equipment with care should be used for working in a foundry.

22. To control dust in the foundry during casting processes, it is dumped or mixed with water to reuse it for the preparation of mould.

(A) True
(B) False

Answer: - Option A
Explanation : The dust mainly arises from the sand particles. The efficiency of dust control, the chemical and the physical state of the sand which basically indicates whether the sand particles screened or unscreened, dry or wet, the used sand is either dumped or remixed with the water and binder to use it for preparation of mould.

23. What will happen if continuously fine sands are removed from the molding mixture?

(A) Brittleness (B) Poor finish

(C) Less elasticity (D) More ductility

Answer: - Option B
Explanation : For controlling the sand, if the fine sand which is added in the molding sand is removed continuously, it may cause the casting to be formed with a poorer finish than desired.

24. _____ is a defect caused by loose dowels.

(A) Mould Shift (B) Scab

(C) Drop (D) Blow holes

Answer: - Option A
Explanation : Mould shift produces a casting which does not match at the parting line. There is mismatching of the top and bottom parts of the casting at the mould joint due to worn out, loose, bent or ill-fitting of the clamping pins.

25. Variation in wall thickness occurs due to _____ core boxes.

(A) Rigid (B) Flexible

(C) Surface finished (D) Worn out

Answer: - Option D
Explanation : Worn out core boxes give oversize core dimensions. Worn out core prints allowing a core to float or move. Inadequate core print areas permit lifting of the core due to the buoyancy of molten metal. Hence the variation in wall thickness occurs.

26. _____ usually occurs at the parting line and results in excess of metal.

(A) Fins (B) Fash

(C) Strain (D) All of the mentioned

Answer: - Option D
Explanation : The fins, fash and strain all occur due to the same reason. They occur at the parting line. Straining or movement of the mould makes a casting appreciably thicker than the pattern. Hence, at the parting line excess metal is accumulated which is to be grounded off.

27. Which of the following forces provides continuous pressure on the metal in centrifugal casting?
(A) Spring force (B) Centrifugal force

(C) Gravitational force (D) Frictional force

Answer: - Option B
Explanation : In centrifugal casting, mould is rotated rapidly about its central axis as the metal is poured into it. Because of the centrifugal force, continuous pressure is applied to the metal as it solidifies. The slag and the other inclusions being lighter gets separated from the metal and segregates toward the centre.

28. Which of the following methods of casting is best suited for casting of hollow pipes and tubes?

(A) Investment casting (B) Permanent mould casting

(C) Die casting (D) Centrifugal casting

Answer: - Option D
Explanation Specifically, true centrifugal casting is generally used for the making of hollow pipes and tubes, which are axi-symmetric with a concentric hole. Molten metal is accumulated at the inward surface of the mould by the rotation of the mould and then the solidification of a melt is taking place.

29. Which of the following is the maximum temperature limit of the electric arc furnaces?

(A) 1200 ºC (B) 1400 ºC

(C) 1600 ºC (D) 1800 ºC

Answer: - Option D
Explanation: The electric arc furnaces can be defined as the furnaces in which charged materials are heated by the application of an electric arc. In general, these furnaces exist in all the sizes, from the smallest to the largest one having capacity of nearly about 400 tons. The electric arc furnaces can achieve temperatures up to 1800 ºC.

30. In electric arc furnaces, the handling and maintaining of electrodes are done by manual means.

(A) True (B) False

Answer: - Option B
Explanation : In electric arc furnaces, almost all the processes are performed with automation. For example, a positioning system is used that automatically raised and lowered the electrodes in the furnaces. A regulating system is also used which basically maintains uniformity in electric current and power input during the melting of the charge materials.

31. In blow molding, to inflate soft plastic, which medium is used?

(A) Air (B) Water

(C) Oil (D) Alcohol

Answer: - Option A
Explanation : Blow molding process is typically used for the blowing process of hollow plastics. While blow molding, the plastic has to be inflated, in order to do so, air has to be blown inside with a high amount of pressure.

32. Which of the following plastics is not used in blow molding?

(A) Terephthalate (B) Polypropylene

(C) Polythene (D) PVC

Answer: - Option A
Explanation : For blowing processes, there are certain plastics only which are properly suited for the operation, while any other material might fail. Hence, for operating through blow molding process, polypropylene, polythene and PVC are used.

33. What is the minimum thickness required by the plastic for vacuum forming?

(A) 0.125 mm (B) 0.25 mm

(C) 0.375 mm (D) 0.5 mm

Answer: - Option A
Explanation : Vacuum forming is one of the classifications of thermoforming processes. Around its circumference, a clamp is attached or we need to know the minimum thickness. The minimum thickness that can be allowed for this operation is 0.125 mm.

34. What is the maximum thickness that can be allowed for a plastics sheet in a vacuum forming process?

(A) 3 mm (B) 3.1 mm

(C) 3.2 mm (D) 3.3 mm

Answer: - Option C
Explanation : Vacuum forming process is one of the important processes that are employed in thermoforming processes. The maximum thickness of the plastic sheet has to be noted, as a clamp is to be fitted around the plastic sheet. The maximum allowable thickness of this plastic sheet is 3.2mm.

35. The polymerization of two or more chemically similar monomers forming a long molecular chain is termed as _____

(A) addition polymerization (B) copolymerization

(C) condensation polymerization (D) step-growth polymerization

Answer: - Option A
Explanation : Addition polymerization (also called as chain-growth polymerization) involves addition of two or more 'similar' monomers to form a long chain molecule. In, addition polymerization, empirical formula is the same as that of monomer. Polyolefins are formed through addition polymerization.

36. The polymerization of two or more chemically different monomers forming a long molecular chain is termed as _____

(A) addition polymerization (B) copolymerization

(C) condensation polymerization (D) chain-growth polymerization

Answer: - Option C

Explanation : Condensation polymerization (also called as step-growth polymerization) involves condensation (losing small molecules as by-products, usually such as water, methanol and ammonia) of different monomers to form a cross linked polymer. In, condensation polymerization, empirical formula is different as that of monomer. Polymers like polyamides, polyacetals and proteins are formed through condensation polymerization.

37. Which of the following is a primary bond network of thermosetting plastics?

(A) 1-Dimensional (B) 3-Dimensional

(C) 2-Dimensional (D) 0-Dimensional

Answer: - Option B
Explanation : Thermosetting plastics have a three-dimensional network of '1-degree' primary bond.

38. Thermosetting plastics become softer upon heating.

(A) True (B) False

Answer: - Option B
Explanation : Thermosetting plastics have 2-dimensioanl primary bond structure (strong covalent cross links), thus making them stronger upon heating.

39. Thermoplastics have _____

(A) 1-Degree bond (B) 2-Degree bond

(C) 3-Degree bond (D) 0-Degree bond

Answer: - Option B
Explanation : A thermoplastic is a polymer which gets softened when heated. They have a one-dimensional network of '2-degree' secondary bond. A well-known example of this kind are PET (polyethylene terephthalate), PVC (polyvinyl chloride), and PP (polypropylene) etc.

40. Which of the following additive is used as an initiator in polymerization reaction?

(A) Benzoyl peroxide (B) Mica

(C) Glass powder (D) Hydrogen peroxide

Answer: - Option D
Explanation : Addition polymerization involves three steps for form an addition polymer, known as initiation, propagation and termination. In the initiation step, an initiator like hydrogen peroxide, easily split to form two species with a free electron attached to each.

41. The liquid metal that runs through the channels without friction in the mould obeys which of the following theorem?

(A) Bernoulli's theorem (B) Clausius theorem

(C) Helmholtz's theorem (D) Carnot's theorem

Answer: - Option A
Explanation : As the metal enters the pouring basin, it has the highest potential energy with no kinetic or pressure energies. But as the metal moves through the gating system, potential energy converts into kinetic energy. Thus it obeys the Bernoulli's theorem.

42. Which of the following flows is responsible for too less pouring time of molten metal in the mould?

(A) Laminar flow (B) Viscous flow

(C) Turbulent flow (D) Irrotational flow

Answer: - Option C
Explanation : Too less pouring time is caused by turbulent flow of nature of the molten metal. The mixing and collisions of molecules make the change in momentum and molecules get accelerated and hence high velocity, that cause the less pouring time of molten metal in the mould.

43. Which of the following materials require a longer pouring time?

(A) Non-ferrous material (B) Grey cast iron

(C) Ferrous alloys (D) Brass

Answer: - Option A
Explanation : For nonferrous material, a longer pouring time would be beneficial since they lose heat slowly and also tend to form dross if a metal is poured too quickly, this dross makes the quality of the material poor and further defects induced in the material.

44. Which of the following is the purpose of runner extension?

(A) To make smooth surface finish B) To make the casting of specific size and shape

(C) To remove slag and dross from the metal (D) To make fast cooling of molten metal

Answer: - Option C
Explanation : The metal which moves first into the gating system is likely to contain slag and dross which should not be allowed to get into the mould cavity. This could be achieved by extending the runner beyond the in-gate so the clean metal can be expected to go into the mould after completely filling the runner extension.

45. What is the ratio of width to the depth of in-gates in general?

(A) 1:2 (B) 1:1

(C) 4:1 (D) 2:7

Answer: - Option C
Explanation : In-gates are generally made wider compared to the depth, up to a ratio of 4. This facilitates in the severing of gating from the casting after solidification. And it reduces the actual connection between the in-gate and the castings so that the removal of the gating is simplified.
46. Why large or complex castings require multiple in-gates?

(A) To make smooth surface finish of the casting (B) To make uniform flow

(C) To have high strength of the casting (D) To have good toughness of the casting

Answer: - Option B
Explanation : Large or complex castings require multiple in-gates to completely fill all the sections of the castings effectively. Runner area is also reduced after each in-gate, such that restriction on the metal flow would be provided to make more uniformity in the metal flow.
47. Which of the following considerations distinguish die casting from the permanent mould casting?

(A) Moulding material (B) Way of pouring molten metal

(C) Coating on mould (D)Sizeofcastings

Answer: - Option B

Explanation : Die casting is almost the same as permanent mould casting, in that both the processes use reusable metallic dies. Die casting involves the preparation of components by injecting molten metal at high pressure into a metallic die; this way of pouring of molten metal distinguishes die casting from the permanent mould casting.

48. It is easy to produce any complex shapes and narrow sections in the die casting.

(A) True (B) False

Answer: - Option A
Explanation : In die casting, as the metal is forced in under pressure compared to the permanent mould casting, it is also known as pressure die casting. Because of involvement of high pressure in die casting, any type of complex shapes, narrow sections and fine surface details can easily be produced.
49. Due to the presence of ejector die, there is no need of lubricant for the removal of casting from the dies.

(A) True (B) False

Answer: - Option B
Explanation : For the easy removal of casting from the dies, lubricant is required. The lubricant is sprayed on the die cavity manually or by the auto lubrication system so that the casting will not stick to the die. Ejector die only moves out itself for the extraction of the castings, but the lubricant is essential for the easy removal of the castings.
50. A single piece or unitary part of the metallic die is used for making castings in die casting.

(A) True (B) False

Answer: - Option B
Explanation Die casting mainly has two parts. One part is the stationary half or cover die, which is fixed to the die casting machine. The second part is the moving part or ejector die that is moved out for the extraction of the casting. The casting cycle basically starts when the two parts of the die are apart.:

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Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	**Program Code:- ME**
Scheme:-I	**Semester:- 4**
Course:- Manufacturing Processes	**Course Code:- 22446**

04 – Forming Processes	**Marks:-16**

Content of Chapter:-

4.1 Drop forging: Introduction of forging , Upset forging , press forging , open die and closed die forging operations.

4.2 Rolling: Principle of rolling , hot and cold rolling . Types and applications of rolling mill.

4.3 Extrusion : Direct and Indirect extrusion . Advantages and Disadvantges , applications of extrusion processes.

1. In which of the following forging operation no special die is used?

(A) Drop forging (B) Smith forging

(C) Coining (D) Press forging

Answer: - Option B

Explanation : Smith forging is also called flat die and open die forging. It includes the broad field of forging work produced between flat faced dies and possibly supplemented by stock tooling. The final shape of the forging depends on the skill of the smith for size and shape. Smith forging produces work pieces of lesser accuracy as compared to impression or closed die forging. Tooling is simple, inexpensive and allows the production on large variety of shapes.

2. In which of the following forging operation repeated hammering and closed die is used?

(A) Drop forging (B) Smith forging

(C) Coining (D) Press forging

Answer: - Option A

Explanation : Hammer forging is also called as drop forging where a hammer hits the work piece repeatedly to deform it. There are different types of hammers like gravity drop, counter blow and powder hammers.

3. In which of the following forging operation instead of repeated hammering gradual force is applied?

(A) Drop forging (B) Smith forging

(C) Coining (D) Press forging

Answer: - Option D

Explanation : Press forging is variation of drop-hammer forging. Unlike drop-hammer forging, press forges work slowly by applying continuous pressure or force. The amount of time the dies are in contact with the workpiece is measured in seconds (As compared to milliseconds of drop-hammer forges). The press forging operation can be done either cold or hot. The main advantage of press forging, as compared to drop-hammer forging, is its ability to deform the complete workpiece.

4. Coining and forming are two special kinds of which forging operation?
(A) Upset (B) Press

(C) Hubbing (D) Swaging

Answer: - Option B

Explanation : Coining is a severe metal squeezing operation in which the flow of metal occurs at the top layers of the material and not throughout the values The operation is carried out in closed dies mainly for the purpose of producing fine details such as needed in minting coins, and metal or jewellery making. The blank is kept in the die cavity and pressure as high as five to six times the strength of material is applied. Depending upon the details required to be coined on the part, ore than one coining operation may be used.

5. Which of the following forging operation is used for parts having uniform cross section?
(A) Upset (B) Press

(C) Hubbing (D) Swaging

Answer: - Option A

Explanation : In upset forging, a bar of uniform cross section usually round, is held between grooved dies, pressure is applied on the end in the direction of the axis of the bar by using a heading tool which spreads the end by metal displacement.

6. In which of the following technique shaping of a cross section of tubes or rods is done by means of repeated impacts or blows?
(A) Upset (B) Press

(C) Hubbing (D) Swaging

Answer: - Option D

Explanation : Swaging is a mechanical deformation technique of reducing or shaping the cross section of rods or tubes by means of repeated impacts or blows.

7.. Heading is a kind of which forging operation?
(A) Piercing (B) Embossing

(C) Upsetting (D) Coining

Answer: - Option C

Explanation : A heading tool or ram is positioned perpendicular to the cross sectioned end face of a rod or bar gripped in a die. On application of pressure, the length of the rod is reduced, and the diameter is

increased (upset). This manufacturing process used extensively in the production of fasteners, to form bolt heads, screw heads etc.

8. In heading to avoid buckling the length to diameter ratio should be?
(A) 1:3 (B) 2:3

(C) 3:1 (D) 2:1

Answer: - Option C

Explanation : Buckling is characterized by a sudden sideways failure of a structural member subjected to high compressive stress, where the compressive stress at the point of failure is less than the ultimate compressive stress that the material is capable of withstanding. In upset forging, the aspect ratio (length to diameter ratio) should be 3:1.

9. Which operation is used in making raised figures on sheets with its corresponding relief on the other side?
(A) Roll forging (B) Embossing

(C) Coining (D) Heading

Answer: - Option B

Explanation : Embossing is an operation in which sheet metal is drawn to shallow depths with male and female matching dies. The operation is carried out mostly for the purpose of stiffening flat panels. The operation is also sometimes used for making decoration items like number plates or name plates, jewellery, etc. Embossing operation with two dies, letters, numbers and designs on sheet-metal parts can be produced by the is operation.

10. Which of the following operation is used to make ball bearing?
(A) Skew rolling (B) Roll forging

(C) Press forging (D) Upsetting

Answer: - Option A

Explanation A special type, skew rolling is used to manufacture milling steel ball, bearing ball blanks.:

11. Shaping of metal by squeezing them in between two or more dies in order to obtain desire shape is done by?
(A) Forming (B) Forging

(C) Welding (D) Grinding

Answer: - Option B

Explanation : Forging is the term applied to a family of processes where deformation is induced by localized compressive forces. The forging material may be drawn out to increase its length and decrease its cross section upset to decrease the length and increase the cross section squeezed in closed impression dies to produce multidirectional flow.

12. Forging is carried out at which temperature?
(A) Below recrystallization temperature (B) Above recrystallization temperature

(C) Below or above recrystallization temperature (D) Above melting point

Answer: - Option C

Explanation Forging is the process of forming. It is of two types, hot and cold forging. Hot forging is done by heating a metal to about 60-65% of its melting temperature, thus above recrystallization temperature. Cold forging is generally used with soft metals, usually done at room temperature, thus below recrystallization temperature.:

13 .Which of the following is a type of forging?.
(A) Open die (B) Closed die

(C) Impression dies (D) Hold dies

Answer: - Option D

Explanation : There are basically three methods (or processes) to make a forged part, i. Impression die forging, ii. Closed die fording, iii. Open die forging. Some people call impression die forging too as closed die forging, and it is acceptable to call the same sometimes. Impression die forging pounds or presses metal between two dies (called tooling) that contain a pre-cut profile of the desired part. In closed die forging the work piece is deformed between two die halves which carry the impression of the desired final shape. The open die forging is carried out between two flat dies or simple shapes.

14. In which of the following forging metal is kept in the lower die?
(A) Open die (B) Closed die

(C) Impression dies (D) Hold dies

Answer: - Option A

Explanation : When shaping a solid piece of metal by closed die forging, the die is initially open. The work piece is placed in the lower die half, and the top die is then brought down to engage with the work piece The application of pressure between the slowly closing die halves causes the solid to flow plastically within the constrains of the die, being displaced to fill the outer sections of the die cavity.

15. In which of the forging process metal is kept in between a pair of dies and a gutter is provided in the lower die?
(A) Open die (B) Closed die

(C) Impression dies (D) Hold dies

Answer: - Option B

Explanation : In closed die forging process metal is kept in between a pair of dies and a gutter is provided in the lower die. In impression die forging process metal is kept in between a pair of dies and no gutter is provided in the lower die.

16. In which of the forging process metal is kept in between a pair of dies and no gutter is provided in the lower die?

(A) Open die (B) Closed die

(C) Impression dies (D) Hold dies

Answer: - Option C

Explanation : Sometimes, the closed die forging is also termed as impression die forging. In this impression are made in a pair of dies. These impressions are transferred to the work piece during deformation. A small gap between the dies called flash gutter is provided, so that, the excess metal can flow into the gutter and form a flash.

17. The extra metal which settles down in the gutter is known as?

(A) Flash (B) Slag

(C) Flux (D) Barrelling

View Answer

Answer: - Option A

Explanation In impression die forging, the die surfaces contain a shape that is given to the work piece during compression, thus restricting the metal flow significantly. There is some extra deformed material outside the die impression which is called as flash. This will be trimmed off later.:

18. In which of the following forging process no flash is formed?

(A) Open die (B) Closed die

(C) Impression dies (D) Hold dies

Answer: - Option B

Explanation : In flashless forging, the work piece is fully restricted within the die and no flash is produced. The amount of initial work piece used must be controlled accurately so that it matches the volume of the die cavity.

19. In which of the following forging process poor material utilization occurs?

(A) Open die (B) Closed die

(C) Impression dies (D) Hold dies

Answer: - Option A

Explanation : In the case of open die forging, lower material utilization, machining of the final shape is necessary, slow production rate, low lead times, commonly used for one-offs and high usage of skilled labour.

20. In rolling operation, the roll rotates 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) Very higher than the speed of incoming metal

Answer: - Option C

Explanation : The rolls rotate with a surface velocity exceeding the speed of the incoming metal, friction along the contact interface acts to propel the metal forward. The metal is squeezed and elongated and usually changed in cross section.

21. A round billet made of 70-30 brass is extruded at a temperature of 675°C. The billet diameter is 125 mm, and the diameter of the extrusion is 50 mm. Calculate the extrusion force required.
(A) 4 MN (B) 5 MN

(C) 5.6 MN (D) none of the mentioned

Answer: - Option C

Explanation : The extrusion force is calculated using Eq. $F = A_0 k \ln(A_0/A_f)$ in which the extrusion constant, k, is obtained. For 70-30 brass, k = 250 MPa at the given extrusion temperature. Thus, $F = (3.14(125)^2)/4 \times (250) \ln [(3.14(125)^2)/(3.14(50)^2)] = 4 = 5.6$ MN.

22. In which type of extrusion, a billet is placed in a chamber?
(A) forward (B) indirect

(C) hydrostatic (D) impact

Answer: - Option A

Explanation : In forward extrusion, a billet is placed in a chamber and forced through a die opening by a hydraulically driven ram. The die opening may be round, or it may have various shapes, depending on the desired profile.

23. In which type of extrusion, the die moves toward the unextruded billet?

(A) forward (B) indirect

(C) hydrostatic (D) impact

Answer: - Option B

Explanation : In indirect extrusion, (also called reverse, inverted, or backward extrusion), the die moves toward the unextruded billet. Indirect extrusion has the advantage of having no billet-container friction, since there is no relative motion.

24. In which type of extrusion, the billet is smaller in diameter than the chamber?
(A) forward (B) indirect

(C) hydrostatic (D) impact

Answer: - Option C

Explanation : In hydrostatic extrusion, the billet is smaller in diameter than the chamber (which is filled with a fluid), and the pressure is transmitted to the fluid by a ram.

25. Which of the following is not a type of rolling mill?
(A) Two-high rolling mill (B) Cluster rolling mill

(C) Separation rolling mill (D) Tandem rolling mill

Answer: - Option C

Explanation : Among two-high rolling mill, cluster rolling mill, separation rolling mill and tandem rolling mill. Separation rolling mill is not a type of rolling mills.

26.. In two high rolling mill, what is the direction of rolling of the two rollers?
(A) Clockwise-anticlockwise (B) Clockwise-clockwise

(C) Anticlockwise-Anticlockwise (D) Stationery-clockwise

Answer: - Option A

Explanation : In two high rolling mill, the direction of both the rollers is opposite to one another. Hence, one clockwise while other anti-clockwise.

27. In two high rolling mill, if the direction of the rollers is reversed, what is it called?
(A) Two high backward mill (B) Two high beneath mill

(C) Two high reversing mill (D) Two high anti mill

Answer: - Option C

Explanation In two high rolling mill, if the direction of the roller is reversed, then that system is called as, two high reversing mill.

: 28. In three high rolling mill, what is the direction of rolling of the three rollers?
(A) Clockwise-clockwise- clockwise (B) Clockwise-anticlockwise- anticlockwise

(C) Clockwise-anticlockwise- clockwise (D) Anticlockwise-anticlockwise-anti clockwise

Answer: - Option C

Explanation : In three high rolling mill, the direction of the rollers in the top and bottom are the same, and the direction of the roller in the middle is opposite to the two.

29. How many rollers are used in four high rolling mill?
(A) 3 (B) 4

(C) 8 (D) 14

Answer: - Option B

Explanation : In four high rolling mill, there are four rolls employed for roliing. The direction of two rollers is the same and the remaining two rollers roll in opposite directions.

30. The desired shape and cross section of the billet is achieved in one pass.
(A) True (B) False

Answer: - Option B

Explanation : The shape and the cross section shape of the billet, which is desired is not obtained in one single pass. One may have to use multiple pass to achieve desired cross section shape.

31. Which of the following property does not improve in the hot rolling process, of a cast?
(A) Ductility (B) Shock resistance

(C) Toughness (D) Boiling point

Answer: - Option D

Explanation : When a rolled stack is made, there is an improvement seen in the physical properties of the material, it does not affect the boiling point of the material.

32. In which process the cross section of the metal is reduced by forcing it to flow through a die under high pressure?
(A) Forging (B) Forming

(C) Extrusion (D) Welding

Answer: - Option C

Explanation : Extrusion is a process that uses a die in order to get a material with a constant cross-sectional cut. The die is what the material is pushed through in order to get the desired shape. Each product has a specific die that will create that shape and characteristic. Extrusion is used with materials such as plastic, aluminum, and dough. These products are either too brittle or too soft to be formed using bending or hammering, so in order to form the desired shapes extrusion is necessary.

33. Which of the following is true about the extrusion process?
(A) Structure is homogeneous

(B) No time is lost in changing the shape

(C) Service life of extrusion tool is too high

(D) Its leading end is in good shape as compared to rolling

Answer: - Option B

Explanation : No time is lost in changing the shape as the dies may be readily removed in the process of extrusion.

34. In which extrusion process the direction of flow of metal is in same direction as that of ram?
(A) Direct (B) Indirect

(C) Impact (D) Hydrostatic

Answer: - Option A

Explanation : Direction extrusion is a process in which the metal billet, placed in a container is forced by a ram to pass through a die. In this type, the direction of flow of metals is, in same as that of movement of ram. The punch closely fits the die cavity to prevent the backward flow of the material.

35. In direct extrusion process at higher temperature which of the following is used to avoid friction?
(A) Oil (B) Lubricants

(C) Molten glasses (D) Wax

Answer: - Option C

Explanation : For steels, stainless steel, and high temperature materials, glass is a good excellent lubrication. The reasons for this are as follows. i. Glass contains its viscosity at elevated temperatures, ii. Has good wetting characteristics, and 3. Glass acts as a thermal barrier between the billet, the container and the die, thus minimizing cooling.

36. Which of the following is not used because of the problem of handling extruded metal coming out through moving ram?
(A) Direct (B) Indirect

(C) Impact (D) Hydrostatic

Answer: - Option B

Explanation : Indirect extrusion method is not used because of the problem of handling extruded metal coming out through moving ram

37. Which of the following is not a cold extrusion process?
(A) Cold extrusion forging (B) Impact extrusion

(C) Hydrostatic extrusion (D) Cold rolling

Answer: - Option C

Explanation : Cold extrusion is done at room temperature or near room temeprature. The processes, impact extrusion, hydrostatic extrusion and cold extrusion forging are the types of cold forging. The

advantages of this over hot extrusion are the lack of oxidation, higher strength due to cold working, closer tolerances, and good surface finish.

38.In which of the following process frictional loss is eliminated at the billet container interface?.
(A) Direct (B) Indirect

(C) Impact (D) Hydrostatic

Answer: - Option D

Explanation : In hydrostatic extrusion process frictional loss is eliminated at the billet container interface. This elimination increases the quality of the product.

39. In which of the following process fluid medium is used to apply the load on the billet?
(A) Direct (B) Indirect

(C) Impact (D) Hydrostatic

Answer: - Option D

Explanation : In hydrostatic extrusion process fluid medium is used to apply the load on the billet. As hydro stands for fluid and static for rest.

40. Extrusion is similar to?
(A) Rolling (B) Forming

(C) Welding (D) Casting

Answer: - Option A

Explanation : Extrusion is similar rolling in producing constant cross-sectional shape.

41. In the indirect extrusion process, the ram and extruded product both travel in the same direction.
(A) True (B) False

Answer: - Option B

Explanation : In the case of indirect extrusion, the ram and extruded product both travel in opposite directions. In the die there is hole, so there is a limitation in allowable stress on the workpiece.

42. The production of the toothpaste tube is made by which of the following process?
(A) Forging (B) Tube extrusion

(C) Impact extrusion (D) Sheet metal forming

Answer: - Option C

Explanation : The toothpaste tube is manufactured by impact extrusion method. It is an indirect extrusion method. For thinner polymer-based sample, extrusion serves optimum load and shape property.

43. The force required for in direct extrusion is _____ direct extrusion process.
(A) greater than (B) lesser than

(C) same as (D) depends upon the material

Answer: - Option B

Explanation : The force required for indirect extrusion is lesser than direct extrusion because there is a relative movement between the workpiece and chamber in direct extrusion while in indirect extrusion there is no relative movement, so the force required to overcome the friction is saved.

44. If the initial temperature of the billet is high, the extrusion pressure will be _____ as compared to billet having a lower temperature.
(A) higher (B) lower

(C) same (D) cannot predict

Answer: - Option B

Explanation : If the initial billet temperature is high, the required stress to cause the plastic deformation will be lower. This is because of lower stress for dislocation movement. That is why billet is heated before practicing extrusion.

45. For an extruded material like a rod, the outer surface of the product will be _____ while the inner surface will be _____ and surfaces appearance is also _____
(A) hard, soft, smooth (B) soft, hard, smooth

(C) hard, soft, rough (D) soft, hard, rough

Answer: - Option A

Explanation : In the extrusion process, the extruded product such as the rod will have a hard outer surface because of thermal quenching, while the inner surface remains relatively soft. The appearance of the surface is better than rolling in this case.

46. Which of the following material is not used in extrusion?
(A) Wax (B) Granules

(C) Powder (D) Pellets

Answer: - Option A

Explanation : Extrusion is a process of forcing plastic which is at a very high temperature, through the dies, and gets opened at a required shape. The raw materials used for extrusion with polymers contain granules, powder and thermoplastic pellets.

47. How are extruded materials cooled?
(A) Water (B) Contact with chilled surface

(C) Air (D) Oil

Answer: - Option A

Explanation : On completion of extrusion, the material is very hot and has to be cooled down. There are various agents which are used cooling these materials down, such as, air or water or its direct contact with a very cold surface.

48. Film extrusion process, best involves film having a thickness below what length?
(A)0.2 mm (B) 0.3 mm

(C) 0.4 mm (D) 0.5 mm

Answer: - Option D

Explanation : Extrusion of films is one of the most important processes in extrusion. For the films having a thickness below 0.5 mm, these films are best suited for extrusion and can be further applied for making various bags.

49. Calendering is mostly suited for making PVC.
(A) True (B) False

Answer: - Option A

Explanation : Calendering process is considered to be one of the most important sheet forming process. Calendering has many products like phenyl, cellulose or vinyl floor tiles. It is most suited for making PVCs.

50. Tubes having U shape cannot be manufactured by polymer extrusion process
(A) True (B) False

Answer: - Option B

Explanation : Polymer extrusion has a variety of applications such as candy canes, chewing gums, window frames, solid rods, pipes or tubes having U or J sections.

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Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	**Program Code:- ME**
Scheme:-I	**Semester:- 4**
Course:- Manufacturing Processes	**Course Code:- 22446**

05 – Joining Processes	**Marks:-8**
Content of Chapter:- 5.1 Welding Processes: Gas welding , carbon arc welding, shielded metal arc welding, TIG welding, MIG welding,plasma arc welding. Resistance welding types -spot, seam and projection . Electron beam welding, laser beam welding, welding defects.. 5.2 Introduction to soldering and brazing. Process , fillers, heating methods and applications..	

1. Which kind of resistance is experienced in upset butt welding?

(A) Electric resistance (B) Magnetic resistance

(C) Thermal resistance (D) Air resistance

Answer: - Option A

Explanation : In the making of an upset butt welding, there are jaws made of copper, into which the part to be welded is put, and hence a solid contact is made. At this point of contact, while the current flows, it gets transformed into heat because of electric resistance.

2. Which of the following can be easily be welded from flash butt welding process?

(A) Tin (B) Lead

(C) Cast irons (D) Carbon steel

Answer: - Option D

Explanation : In flash butt welding process, the welding of materials like steels and other iron alloys are easy to weld, except for cast iron. The welding of materials like tin, lead, zinc and antimony cannot be welded using flash butt method.

3. Electrodes used in spot welding are made up of which material?

(A) Only Copper (B) Copper and tungsten

(C) Copper and chromium (D) Copper and aluminium

Answer: - Option D

Explanation : The electrodes that are employed in the spot welding are required to possess a high amount of electrical and thermal conductivity. Hence, they are primarily made up of copper or copper and tungsten or copper and chromium.

4. How are the metals to be welded connected to each other in spot welding?
(A) Electric contact (B) Magnetic field

(C) Mechanical pressure (D) Direct contact

Answer: - Option C

Explanation : In spot welding process, the metal or the alloy parts which are to be welded, are heated in their in their zones. To bring these parts in contact with one another, mechanical pressure is applied, causing them to connect.

5. Which of the following method is not used in applying pressure in spot welding process?
(A) Hand lever (B) Foot lever

(C) Air pressure (D) Hydraulic cylinder

Answer: - Option A

Explanation : None.

6. Up to what thickness, can steel be welded using spot welding process?
(A)10 mm (B) 11 mm

(C) 12 mm (D) 13 mm

Answer: - Option C

Explanation : In spot welding process, to bring the heated parts in contact with one another, mechanical pressure is applied. This pressure can be of three types, by using foot lever, by providing air pressure or by using a hydraulic cylinder. The use of these methods allows steel or other metal parts to be welded up to a thickness of 12 mm.

7. What is the maximum power supply needed for the working of spot welding process?
(A) 135 kVA (B) 140 kVA

(C) 145 kVA (D) 150 kVA

Answer: - Option D

Explanation : Spot welding can be used for all types of ductile metals. It can also be employed for structures of sheet metals, and can be applied for making of boxes and cans. For its applications, the maximum power that can be needed for this process is 150 kVA.

8. What is the minimum power supply needed for the working of spot welding process?
(A) 10 kVA (B) 14 Kva

(C) 6 kVA (D) 22 kVA

Answer: - Option A

Explanation : None.

9. Upset butt welding is majorly used in the making of automobile parts.
(A) True (B) False

Answer: - Option B

Explanation: Upset butt welding is mainly used for the manufacture of welding bars, rods, wires or tubing. For the manufacture of automobile parts, such as axles, wheels or frames, flash butt welding is extensively used.:

10. In flash butt welding, the forced out metal is called flash.
(A) True (B) False

Answer: - Option A

Explanation : In flash butt welding process, there is a light contact between the edges. A high voltage is supplied when the flashing action takes place. In this process, the metal that is forced out, is called as flash.

11. Why is carbon used in carbon arc welding?
(A) Generation of more heat at electrode tip (B) Generation of less heat at electrode tip (C) Provides coating (D) Fixed polarity is maintained

Answer: - Option B

Explanation : Carbon is used in carbon arc welding, at the negative terminal of the cathode. The reason for employing carbon at the negative terminal is that, a lesser amount of heat is generated at the electron tip than at the workpiece.

12. What is the temperature at the negative terminal in carbon arc welding?
(A) 3000°C (B) 3100°C

(C) 3200°C (D) 3300°C

Answer: - Option C

Explanation : None.

13. The process of carbon arc welding is not used for which of the following material?
(A) Copper (B) Bronze

(C) Aluminium (D) Iron

Answer: - Option D

Explanation : The process of carbon arc melting is widely used for copper and copper alloys, hence bronze and brass are treated by this method. Aluminium can also be treated likewise, but not iron metal.

14. Which gas is used as a protection in carbon arc welding?

(A) Carbon dioxide (B) Carbon monoxide

(C) Carbon tetra fluoride (D) Methane

Answer: - Option B

Explanation : In carbon arc welding, there has to be a protection to be provided to the molten weld. This protection is provided in the form of an envelope by using a long arc giving carbon monoxide gas.

15. What is the temperature at the positive terminal in carbon arc welding?

(A)3800°C (B) 3900°C

(C)4000°C (D) 4100°C

Answer: - Option B

Explanation : Carbon is used in carbon arc welding, at the negative terminal of the cathode and the metal which is being worked upon functions as the positive terminal. The temperature of the electrode at the positive terminal is 3900°C.

16. What is the temperature of the negative electrode in metal arc welding?
(A)2200°C (B) 2300°C

(C)2400°C (D) 2500°C

Answer: - Option A

Explanation :

17. In electron beam machine, just after the cathode, there is/are _____
(A) deflector coils (B) a magnetic lens

(C) bias grid (D) port for vacuum gauge

Answer: - Option C

Explanation : Just after the cathode, there is an annular bias grid. A high negative bias is applied to this grid so that the electrons generated by this cathode do not diverge and approach the next element, the annular anode, in the form of a beam.

18. Electron is accelerated by _____
(A)cathode cartridge (B) electromagnetic coils

(C) aperture (D) annular anode

Answer: - Option D

Explanation : The annular anode now attracts the electron beam and gradually gets accelerated. As they leave the anode section, the electrons may achieve a velocity as high as half the velocity of light.

19. After the anode, the electron beam passes through _____
(A) cathode cartridge (B) deflector coils

(C) bias grid (D) a series of lenses

Answer: - Option A

Explanation : After the anode, the electron beam passes through a series of magnetic lenses and apertures. The magnetic lenses shape the beam and try to reduce the divergence.

20. In the electron beam gun, apertures _____
(A) allow only convergent electrons to pass (B) absorb convergent electrons

(C) allow divergent electrons to pass (D) accelerate the electron beam

Answer: - Option A

Explanation : The magnetic lenses shape the beam and try to reduce the divergence. Apertures on the other hand allow only the convergent electrons to pass and capture the divergent low energy electrons from the fringes. This way, the aperture and the magnetic lenses improve the quality of the electron beam.

21. Laser beam welding is a _____ joining process.
(A)fission (B) fusion

(C) coherent (D) plastic

Answer: - Option B

Explanation : Laser is an acronym for light amplification by stimulated emission of radiation. Laser Beam Welding (LBW) is a fusion joining process that produces coalescence of materials with the heat obtained from a concentrated beam of coherent, monochromatic light impinging on the joint to be welded.

22. Which of the following is used to direct laser beam?
(A) glass apertures (B) perforated glass sheets

(C) flat optical elements (D) electro-magnetic coils

Answer: - Option C

Explanation : In the LBM process, the laser beam is directed by flat optical elements, such as mirrors and then focused to a small spot (for high power density) at the workpiece using either reflective focusing elements or lenses.

23. Which of the following is a commercially used laser?
(A) Nd-GAG laser (B) 1.06 μm wavelength CO_2 laser

(C) 2 μm wavelength CO_2 laser (D) Nd- YAS laser

Answer: - Option B

Explanation : The Lasers which are predominantly being used for industrial material processing and welding tasks are the Nd-YAG laser and 1.06 μm wavelength CO_2 laser, with the active elements most

commonly employed in these two varieties of lasers being the neodymium (Nd) ion and the CO_2 molecules respectively.

24.. The lasing material or crystal is excited by _____
(A) neon lamps (B) krypton lamps

(C) tungsten wire laps (D) CFLs

Answer: - Option B

Explanation : Both ends of the cylinder are made flat and parallel to very close tolerances, then polished to a good optical finish and silvered to make a reflective surface. The crystal is excited by means of an intense krypton or xenon lamps.

25. Which of the following laser is the most efficient?
(A) CO_2 lasers (B) Nd-YAG lasers

(C) Ruby lasers (D) Dye lasers

Answer: - Option A

Explanation : The electric discharge style CO_2 gas lasers are the most efficient type currently available for high power laser beam material processing. Dye lasers use complex organic dyes like rhodamine 6G.

26. The liquid temperature of the filler metal used in brazing is _____
(A) 150^oC (B) 427^oC

(C) 723^oC (D) 1000^oC

Answer: - Option B

Explanation : Brazing is defined as the joining of two metal pieces by using a filler metal. The liquid temperature of the filler metal is above 427^oC and below the solidus of the base metal.

27. Copper and aluminum can be joined by brazing when _____ alloy is used.
(A) Copper-zinc (B) Aluminum-silicon

(C) Copper-tellurium (D) Aluminum-zinc

Answer: - Option B

Explanation : Most metals and alloys such as carbon steels, cast iron, stainless and alloy steels, brass, and others can be brazed. Aluminum and copper can also be joined if an aluminum-silicon alloy is used as the brazing filler metal.

28. Which of the following filler metals is used in the electrical industry?
(A) BAG-1 (B) BAG-3

(C) BAG-5 (D) BAG-6

Answer: - Option C

Explanation : Silver brazing filler alloys are used for joining most ferrous and non-ferrous metals except aluminum and magnesium. BAG-5 filler metal is composed of 44-46% Ag, 29-31% Cu, 23-27% Zn, and 0.15% of other elements. It is mostly used in the electrical industry.

29. Nickel filler metals are heat resistant up to _____ in short time service.
(A) 610^{o}C (B) 982^{o}C

(C) 1204^{o}C (D) 1666^{o}C

Answer: - Option C

Explanation : Nickel filler metals are used for their corrosion and heat resistance properties up to 982^{o}C for continuous service and 1204^{o}C for short time service. These are used primarily on AISI 300 and 400 series stainless steels and nickel and cobalt base alloys.

30. Tin-zinc solders are used for joining _____
(A) Aluminum (B) Zinc

(C) Copper (D) Glass

Answer: - Option A

Explanation : Tin-zinc solders contain a varying composition of tin and zinc, each with a solidus temperature of 199. These solders are used for joining aluminum. Aluminum can also be joined using zinc-aluminum solders.

31. What is the solidus temperature of tin-lead solders?
(A) 183 (B) 297

(C) 444 (D) 604

Answer: - Option A

Explanation : Tin-lead solders constitute the largest portion of all solders in use. They possess good corrosion resistance to most media and can be used to join most metals. Except for the 5/95% Sn/Pb solders, all solders of this type have a solidus temperature of 183.

32. Addition of _____ increases the mechanical properties of a tin-lead solder.
(A) Bismuth (B) Tellurium

(C) Antimony (D) Molybdenum

Answer: - Option C

Explanation : Addition of antimony up to 60% of the tin content increases the mechanical properties of the solder. However, this results in a slight impairment of the soldering characteristics. Of the various solders of this type, the composition of Pb is the highest, whereas that of antimony is lowest.

33. Aluminum can be joined to another aluminum with the use of _____ solder.
(A) Lead-silver (B) Indium-tin

(C) Cadmium-silver (D) Fusible alloy

Answer: - Option C

Explanation : Cadmium-silver solders are used for joining aluminum to itself or to other metals. It is composed of 95% cadmium and 5% silver. Due to high cadmium content, improper use of this solder may lead to health hazards.

34. Which of the following parameters control the quality of weld?
(A) composition of electrode (B) size of electrode

(C) size of metal plate (D) composition of metal plate

Answer: - Option B

Explanation : The parameters control the quality of weld are size of electrode and the current that produces sufficient heat to melt the base metal and minimizes electrode splatter.

35. Why is electrode coated with a flux in shielded metal arc welding?
(A) for shiny appearance of electrode (B) to make welding faster

(C) to increase the melting of electrode (D) to protect the electrode

Answer: - Option D

Explanation : The electrode is coated with a flux in shielded metal arc welding. Heat from electric current causes the combustion and decomposition of electrode. This creates a gaseous shield to protect the electrode, metal and molten pool from atmospheric contamination due to oxidation.

36. Which of the following can be non-low hydrogen process?
(A) Shielded metal arc welding (B) Submerged arc welding

(C) Gas-shielded metal arc welding (D) Flux core arc welding

Answer: - Option A

Explanation : Shielded metal arc welding can be a low hydrogen process or non-low hydrogen process, while submerged arc welding, gas-shielded metal arc welding, flux core arc welding are low hydrogen process.

37. Why hydrogen not used excessively for welding?
(A) increases welding rate (B) decreases welding rate

(C) destroys the metal plate (D) affects the weld

Answer: - Option D

Explanation : Hydrogen causes weld to crack. Hence most of the welding processes are low hydrogen welding process.

38. Which of the following is true about shielded metal arc welding?
(A) equipment cost is high

(B) cannot weld different types of metals

(C) cannot be used for metal sheets under 1.5mm thickness
(D) entire electrode can be used

Answer: - Option C

Explanation : The following are some advantages of shielded metal arc welding : (i)low equipment cost, (ii)welds many different metals, (iii)welds can be performed in any position, (iv)process less affected by wind, (v)can be performed under most weather conditions. SomeThe disadvantages are : (i)not suitable for metal sheets under 1.5mm thickness,(ii) entire electrode cannot be used, about 25-50mm electrode is wasted.

39. Which of the following is not correct about submerged arc welding?
(A) high deposition rate (B) short set-up time

(C) high quality welds (D) slag removal needed

Answer: - Option B

Explanation : The following are some advantages of submerged arc welding: (i) high deposition rate, (ii)high quality welds with good ductility, high impact strength, good corrosion resistance, (iii)good for welding long joints(in excess of 1m), (iv)no eye protection required. Some disadvantages are : (i) long set-up time, (ii)slag removal needed, (iii)used for flat or horizontal fillets only.

40. Which of the following welding process is preferred for field application?
(A) Shielded metal arc welding (B) Submerged arc welding

(C) Gas-shielded metal arc welding (D) Flux core arc welding

Answer: - Option A

Explanation : Submerged arc welding, gas-shielded metal arc welding, flux core arc welding, electro slag welding can be used when welding is done in fabrication shop. For field applications, shielded metal arc welding is preferred.

41. Which of the following is not correct about electro slag welding?
(A) high deposition rates (B) welds flat or vertical joints only (C) multiple electrodes may not be used (D) Flux core arc welding

Answer: - Option A

Explanation : Flux core arc welding, gas-shielded metal arc welding, electro slag welding have high deposition rates.

42. Which of the following defects occur due to flux employed and electrode coating?
(A) Inclusion of slag (B) Inadequate penetration

(C) Incomplete fusion (D) Porosity

Answer: - Option A

Explanation : Slag inclusions are one of the main weld defects. If we don't properly clean the slag from a bead, we run the risk of it becoming part of the weld when we run the next bead. A good welder will generally burn it out on the next pass, but if not, there will be a chunk of slag in the bead which leaves a weak spot. Slag inclusions.

43. Which of the following defects occur when the deposited metal is not focused on the root of weld?
(A) Inclusion of slag (B) Inadequate penetration

(C) Incomplete fusion (D) Porosity

Answer: - Option C

Explanation : Incomplete fusion defects occur when weld metal layer fails to fuse together. It causes discontinuity in weld zone.

44. Which of the following defects occur due to the entrapment of gas bubbles by the freezing dendrites during the cooling of molten pad?
(A) Inclusion of slag (B) Inadequate penetration

(C) Incomplete fusion (D) Porosity

Answer: - Option D

Explanation : Referred to as worm holes, these are gas pockets trapped in the weld. A couple of reasons would be from not enough shielding gas in MIG, or moisture in the flux.

45. Which of the following defects occur due to filler material having a different rate of contraction compared to parent metal?
(A) Undercut (B) Spatter

(C) Cracking in weld metal (D) Cold cracking

Answer: - Option

Explanation : Weld cracking occurs close to the time of fabrication. Most forms of cracking result from the shrinkage strains that occur as the weld metal cools. It can be of hot cracks types.

46. Which of the following defects occur due to melting or burning away of base metal?
(A) Undercut (B) Spatter

(C) Cracking in weld metal (D) Cold cracking

Answer: - Option A

Explanation : Undercut is the cardinal sin of welding grasshopper! Cutting into the steel with the force of the arc leaves a cut out groove in the weld. If this is not filled back in with filler metal, it leaves a weld defect which is a weak point that can cause the joint to fail. This can cause property damage, injury and even loss of life.

47. Which one of the following is the simplest type of resistance welding used in making lap welds?

(A) Resistance spot (B) Resistance seam
(C) Projection (D) Upset

Answer: - Option A

Explanation : The simplest form of the process is spot welding for lap welds, where the pressure is provided by clamping two or more overlapping sheets between two electrodes. Up to a thickness of 12.7 mm we can go for it.

48. The time required for electrodes to align and clamp the work piece together under them is known as?
(A) Hold time (B) Off time

(C) Squeeze time (D) Weld time

Answer: - Option C

Explanation : Squeeze time is the time interval between the initial application of the electrode force on the work and first application of current. Squeeze time is necessary to delay the weld current until the electrode force has attained the desired level.

49. Time of current flow through the work piece till they are heated to require temperature is known as?
(A) Hold time (B) Off time

(C) Squeeze time (D) Weld time

Answer: - Option A

Explanation : Weld time is the time during which welding current is applied to the metal sheets. The weld time is measured and adjusted in cycles in cycles of line voltage as are all timing functions.

50. In which of the following operation embossing is required before welding?
(A) Resistance spot (B) Resistance seam

(C) Projection (D) Upset

Answer: - Option C

Explanation : In projection, welding embossing is required before welding. It is non-productive time used in preparation of welding

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