

# MECHANICAL ENGINEERING

## **1. The commonly used gases in tungsten arc welding are**

1. Hydrogen and oxygen
2. Hydrogen and organ
3. Hydrogen and helium
4. Helium and argon

## **2. Linde welding uses**

1. Neutral flame and rightward technique
2. Carburizing flame and rightward technique
3. Neutral flame and leftward technique
4. Oxidizing flame and leftward technique

## **3. Welding of glass is done by**

1. Ultrasonic welding
2. Electron beam welding
3. Laser beam welding
4. Explosive welding

## **4. The cold chisels are made by**

1. Drawing
2. Rolling
3. Forging
4. Piercing

## **5. The process extensively used for making bolts and nuts is**

1. Hot piercing
2. Extrusion
3. Cold peening
4. Cold heading

## **6. Structural sections such as rails, angles, I-beams are made by**

1. Hot rolling
2. Hot drawing
3. Hot piercing
4. Hot extrusion

## **7. The mode of deformation of the metal during spinning is**

1. Bending
2. Stretching
3. Bending and stretching
4. Rolling and stretching

## **8. In die casting, machining allowance is**

1. Small
2. Large
3. Very large
4. Not provided

## **9. The property of sand due to which the sand grains stick together, is called**

1. Collapsibility
2. Permeability
3. Cohesiveness
4. Adhesiveness

## **10. A casting defect which occurs near the ingates as rough lumps on the surface of a casting is known as**

1. Shift
2. Sand wash
3. Swell
4. Scab

## **11. The symbol used for butt resistance weld is**

1.  $\cap$
2. |
3.  $\nabla$
4.  $\square$

**12. In the drawing of bolted joints, the radius of chamber arc for the bolt nominal diameter of D is**

1. D
2. 1.2D
3. 1.5D
4. (1.5D + 3) mm

**13. A material is said to be ductile if the elongation is**

1. less than 5%
2. 5 to 10%
3. 10 to 15%
4. more than 15%

**14. The property of the material which enables it to be twisted, bent or stretched under a high stress before rupture is known as**

1. Hardness
2. Toughness
3. resilience
4. Strength

**15. The shock resistance of steel is increased by adding**

1. Nickel
2. Chromium
3. Nickel and chromium
4. Cobalt and molybdenum

**16. For hardening alloy steels and high speed steels, they are heated to**

1. 500 to 600°C
2. 700 to 900°C
3. 1100 to 1300°C
4. 1300 to 1500°C

**17. The heat treatment process used for castings is**

1. Carburizing
2. Normalizing
3. Annealing
4. Tempering

**18. The percentage of phosphorus in phosphor bronze is**

1. 0.3
2. 2.1
3. 11.1
4. 95.3

**19. In powder metallurgy the range of pressures to which powdered metals in desired proportions are compressed in moulds is**

1. 10 to 50 bar
2. 50 to 300 bar
3. 310 to 650 bar
4. 690 to 13750 bar

**20. The angle between two forces to make their resultant a minimum and a maximum respectively are**

1. 0° and 90°
2. 180° and 90°
3. 90° and 180°
4. 180° and 0°

**21. The Poisson's ratio for cast iron varies from**

1. 0.23 to 0.27
2. 0.25 to 0.33
3. 0.31 to 0.34
4. 0.34 to 0.42

**22. The point of contraflexure occurs in**

1. Simply supported beams
2. Cantilever beams
3. Fixed beams
4. Overhanging beams

**23. A simply supported beam A of length  $l$  breadth  $b$  and depth  $d$  carries a central load  $W$ . Another beam of the same dimensions carries a central load equal to  $2W$ . The deflection of beam B will be..... as that of A.**

1. One fourth
2. Half

3. Double                      4. Four times

**24. The strain energy stored in a spring, when subjected to maximum load, without suffering permanent distortion, is known as**

1. Impact energy      2. Proof stress
3. Proof resilience    4. Modulus of resilience

**25. In a flat belt drive if the slip between the driver and belt is 1%, between the belt and follower is 3% and driver and follower pulley diameters are equal then velocity ratio of the drive will be**

1. 0.96                  2. 0.97                  3. 0.98                  4. 0.99

**26. The transportation technique belongs to one of the following mathematical models in operations research**

1. Allocation model    2. Sequencing model
3. Queuing model      4. Inventory model

**27. The tilting of the front wheels away from the vertical, when viewed from the front of the car is called**

1. Camber      2. Caster      3. Toe-in      4. Toe-out

**28. The starter motor is driven by**

1. Chain drive      2. Gear drive
3. Flat belt drive    4. V-belt drive

**29. The parking brake generally acts on**

1. Front wheels      2. Rear wheels
3. Front and rear wheels    4. Propeller shaft

**30. The gear shift lever requires two separate motions to shift gears, the first moment**

1. Selects the synchronizer
2. Moves the synchronizer
3. Meshes the gears
4. Operates the clutch

**31. The maximum torque multiplication ratio in a torque converter is about**

1. 2.5    2. 4.5    3. 6.5    4. 8.5

**32. Two speed reverse gear arrangement is generally provided in case of**

1. Passenger cars      2. Motorbuses
3. Tractors              4. Trucks

**33. The component that connects the steering rack to the knuckles is**

1. Tie-rod      2. Sector gear
3. Pivot        4. Spline

**34. The operation of cutting of a flat sheet to the desired shape is called**

1. Shearing    2. Piercing
3. Punching    4. Blanking

**35. A hacksaw blade is specified by its**

1. Length      2. Material

3. Width
4. Number of teeth

**36.The accuracy of micrometers, calipers and dial indicators can be checked by**

1. Feeler gauge
2. Slip gauge
3. Ring gauge
4. Plug gauge

**37.A sine bar is specified by**

1. Centre to centre distance between the rollers
2. Total length
3. Diameter of the rollers
4. Its weight

**38.In a carpentry shop, rebating is the process of making**

1. Convex surfaces
2. Circular holes
3. A recess on the edge of work piece
4. A recess in the middle of work piece

**39.Continuous chips with built up edge are formed during machining of**

1. Brittle metals
2. Ductile metals
3. Hard metals
4. Soft metals

**40. Tumbler gears in lathe are used to**

1. Cut gears
2. Drill a hole in work piece
3. Reduce the spindle speed
4. Give desired direction of movement to the lathe carriage

**41.In which of the following machine, the work is usually rotated while the drill is fed into Work**

1. Radial drilling machine
2. Sensitive drilling machine
3. Gang drilling machine
4. Deep hole drilling machine

**42.In lapping operation, the amount of thickness metal removed is**

1. 0.05 to 0.01 mm
2. 0.01 to 0.1 mm
3. 0.05 to 0.1 mm
4. 0.5 to 1 mm

**43.Internal or external threads of different pitch can be produced by**

1. Pantograph milling machine
2. Profiling machine
3. Plano miller
4. Planetary milling machine

**44.Gear finishing operation is called**

1. Shaping
2. Milling
3. Hobbing
4. Burnishing

**45.FMS is possible for products**

- 1.High volume, low variety, continuous flow
- 2.Low volume, low variety, continuous flow
- 3.Low volume, high variety, intermittent flow
- 4.High volume, high variety, intermittent flow

**46.CNC drilling machine is considered to be**

- 1.P.T.P. controlled machine
- 2.Continuous path controlled machine
- 3.Servo controlled machine
- 4.Adaptive controlled machine

**47.Seam welding is best adopted for me thickness ranging from**

1. 0.025 to 3mm
2. 3 to 5mm
3. 5 to 8mm
4. 8 to 10mm

**48.In submerged arc welding, an arc is produced between a**

- 1.Metal electrode and the work
- 2.Bare metal electrode and the work
- 3.carbon electrode and the work
- 4.Two tungsten electrodes and the work

**49.The hydraulic efficiency of an impulse turbine maximum when velocity of wheel is.....of the jet velocity**

1. 1/4
2. 1/2
- 3.3/4
4. Double

**50.The speed ratio in case of Francis turbine varies from**

- 1.0.15 to 0.3
2. 0.4 to 0.5
3. 0.6 to 0.9
4. 1 to 1.5

**51.In a centrifugal pump, the regulating valve provided on the**

1. Casing
2. Delivery pipe
3. Suction pipe
4. Impeller

**52.In a reciprocating pump, air vessels are used**

- 1.Smoothen the flow
- 2.Reduce suction head
- 3.Increase delivery head
- 4.Reduce acceleration head

**53.Which of the following hydraulic unit is used for transmitting increased or decreased torque the driven shaft?**

- 1.Hydraulic ram
- 2.Hydraulic intensifier
- 3.Hydraulic torque converter
- 4.Hydraulic accumulator

**54.The best suited boiler for meeting the fluctuating demand of steam is**

1. Cornish boiler
2. Lancashire boiler
- 3.Babcock and Wilcox boiler
4. Locomotive boiler

**55. The effective stress in wire ropes during normal working is equal to the stress due to**

1. Sum of axial load and stress due to bending
2. Sum of acceleration or retardation of masses and stress due to bending
3. Sum of axial load and stress due to acceleration or retardation
4. Sum of bending and stress due to acceleration or retardation

**56. The centrifugal tension in the belt**

1. Increases the power transmitted
2. Decreases the power transmitted
3. Has no effect on the power transmitted
4. Is equal to maximum tension on the belt

**57. In roller chain the roller diameter is approximately..... of the pitch**

1.  $\frac{5}{8}$
2.  $\frac{6}{8}$
3.  $\frac{7}{8}$
4. same as that

**58. Which one of the following springs is used in mechanical wrist watch?**

1. Spiral spring
2. Torsion spring
3. Bevel spring
4. Helical compression spring

**59. When two non intersecting and non-coplanar shafts are connected by gears, the arrangement is known as**

1. Spur gearing
2. Helical gearing
3. Bevel gearing
4. Spiral gearing

**60. The cam follower extensively used in aircraft engines is**

1. Flat faced follower
2. Knife edge follower
3. Roller follower
4. Spherical faced follower

**61. The ratio of circumferential stress to longitudinal stress in a thin cylinder subjected to an internal pressure is**

1.  $\frac{1}{2}$
2. 1
3. 2
4. 4

**62. The bending moment M and a torque T j applied on a solid circular shaft. If the maxima bending stress equals to maximum shear stress developed, then M is equal to**

1.  $\frac{T}{2}$
2. T
3. 2T
4. 4T

**63. In designing a key, it is assumed that distribution of forces along the length of key**

1. Varies linearly
2. Is uniform through out
3. Varies exponentially, being more at the torque input end
4. Varies exponentially, being less at the torque input

**64..The sleeve or muff coupling is designed as a**

1. Thin cylinder
2. Thick cylinder
3. Hollow shaft
4. Solid shaft

**65.'Charles' law states that all perfect gases change in volume by..... of its original volume 0°C for every 1°C change in temperature, w/ pressure remains constant**

1. 1/27
2. 1/93
3. 1/173
4. 1/273

**66.The isentropic process means**

- 1.Reversible process
- 2.Adiabatic process
- 3.Reversible adiabatic process
- 4.Irreversible adiabatic process

**67.The hyperbolic law is governed by**

1. Gay-Lussac law
2. Avogadro's law
- 3.Boyle's law
4. Chales's law

**68.A thermodynamic cycle consisting of  $t$  constant pressure and two isentropic process is known as**

1. Carrot cycle
2. Joule cycle
- 3.Otto cycle
4. Stirling cycle

**69.Alpha-methyl-naphthalene has a cetane number of**

- 1.0
- 2.50
3. 100
4. 120

**70.The inlet valve of a four stroke cycle into combustion engine remains open for**

- 1.150°
2. 180°
- 3.230°
- 4.280°

## ANSWERS

- |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.4  | 2:2  | 3.3  | 4.3  | 5.4  | 6.1  | 7.3  | 8.4  | 9.3  | 10.2 | 11.2 | 12.3 | 13.4 | 14.2 | 15.3 | 16.3 |
| 17.2 | 18.1 | 19.4 | 20.4 | 21.1 | 22.4 | 23.3 | 24.3 | 25.1 | 26.1 | 27.1 | 28.2 | 29.2 | 30.1 | 31.1 | 32.3 |
| 33.1 | 34.4 | 35.1 | 36.2 | 37.1 | 38.3 | 39.2 | 40.4 | 41.4 | 42.1 | 43.4 | 44.4 | 45.1 | 46.1 | 47.1 | 48.2 |
| 49.2 | 50.3 | 51.2 | 52.4 | 53.3 | 54.4 | 55.1 | 56.2 | 57.1 | 58.2 | 59.4 | 60.3 | 61.3 | 62.1 | 63.2 | 64.3 |
| 65.4 | 66.3 | 67.3 | 68.2 | 69.1 | 70.3 |      |      |      |      |      |      |      |      |      |      |