1. Piezometer is used to measure–
   (a) Pressure in pipe, charmel etc.
   (b) Atmospheric pressure
   (c) Very low pressure
   (d) Difference of pressure between two points

2. When a wire is stretched to double in length, the
   longitudinal strain produced in it is–
   (a) 0.5  (b) 1.0  (c) 1.5  (d) 2.0

3. For maximum power transmitted by belt the maximum
   permissible tension in the belt is–
   (a) Equal to centrifugal tension
   (b) Two times the centrifugal tension
   (c) Three times the centrifugal tension
   (d) Four times the centrifugal tension

4. In a diesel engine, the fuel is ignite by
   (a) By spark
   (b) Injected fuel
   (c) Heat resulting from compressing air that is supplied
      for combustion
   (d) Ignitor

5. Universal Joint is example of–
   (a) Lower pair  (b) Higher pair
   (c) Rolling pair  (d) Sliding pair

6. An idler pulley is used–
   (a) For frequent stop page of motion
   (b) To maintain requisite tension in the belt
   (c) To change the direction of motion of the belt
   (d) To rotate only during non-load periods.

7. In order to facilite the with drawl of pattern–
   (a) Pattern is made smooth
   (b) water is applied on pattern surface
   (c) Allowance are made on pattern
   (d) Draft is provided on pattern
8. The height ‘h’ and angular speed ‘\( \omega \)’ for the watt governor and porter governor are related by the identity.

(a) \( h \alpha \omega \)  
(b) \( h \alpha \frac{1}{\omega} \)  
(c) \( h \alpha \omega^2 \)  
(d) \( h \alpha \frac{1}{\omega^2} \)

9. Impulse turbine is used for

(a) Low head  
(b) High head  
(c) Medium head  
(d) High flow

10. Shrinkage allowance is made by

(a) Adding to external and internal dimensions  
(b) Subtracting from external and internal dimensions  
(c) Subtracting from external dimensions and adding to internal dimensions  
(d) Adding to external dimensions and subtracting from internal dimensions

11. The term N.T.P. stands for:

(a) Nominal temperature and pressure  
(b) Natural temperature and pressure  
(c) Normal temperature and pressure  
(d) Normal thermodynamic pressure

12. Crank, connecting rod, cylinder, and piston of a steam engine constitute:

(a) One link  
(b) Two links  
(c) Three links  
(d) Four links

13. Heat and work are:

(a) Point functions  
(b) System properties  
(c) Path functions  
(d) Intensive properties

14. Venturimeter is used to measure flow of fluids in pipes when pipe is:

(a) Horizontal  
(b) Vertical, flow downwards  
(c) Vertical, flow upwards  
(d) In any position

15. The elastic constants \( E, G \) and \( K \) are related by the expression:

(a) \( E = \frac{KG}{K + G} \)  
(b) \( E = \frac{KG}{K + 2G} \)  
(c) \( E = \frac{3KG}{K + 2G} \)  
(d) \( E = \frac{9KG}{3K + G} \)  

16. \( E \) और \( K \) के बीच किस तरह से संबंधित हैं?

(a) \( E = \frac{KG}{K + G} \)  
(b) \( E = \frac{KG}{K + 2G} \)  
(c) \( E = \frac{3KG}{K + 2G} \)  
(d) \( E = \frac{9KG}{3K + G} \)
16. Cochran boiler is a
(a) Horizontal fire-tube boiler
(b) Horizontal water-tube boiler
(c) Vertical water-tube boiler
(d) Vertical fire-tube boiler

17. The following type of chip is produced when machining ductile material:
(a) Continuous chip
(b) Discontinuous chip
(c) Continuous chip with built-up-edges
(d) No chips are produced

18. Projection welding is:
(a) Multi-spot welding process
(b) Continuous spot welding process
(c) Used to form mesh
(d) Used to make cantilevers

19. Continuous chips are formed when machining
(a) Ductile material
(b) Brittle material
(c) Heat treated material
(d) None of the above

20. Second law of thermodynamics defines:
(a) Entropy
(b) Enthalpy
(c) Heat
(d) Work

21. The shear force at certain section of a beam is stated to be zero. The bending moment at that section will be:
(a) Minimum
(b) Maximum
(c) Either minimum or maximum
(d) Zero

22. A simple mechanism has,
(a) 1 link
(b) 2 links
(c) 3 links
(d) 4 links

23. Which of the following is not a casting defect?
(a) Hot tear
(b) Blow hole
(c) Scab
(d) Decarburisation

24. Cope in foundry practice refers to:
(a) Bottom half of moulding box
(b) Top half of moulding box
(c) Middle portion of the moulding box
(d) Coating on the mould face

25. A cylindrical rod length ‘L’ and diameter ‘d’ is rigidity fixed at its upper end and hangs vertically. The elongation produced in the rod to its self-weight ‘W’ is:
26. The phenomenon of weld decay occurs in:
   (a) Cast Iron    (b) Brass
   (c) Bronze       (d) Stainless steel

27. True stress represents the ratio of:
   (a) Average load and average area
   (b) Average load and maximum area
   (c) Maximum load and maximum area
   (d) Instantaneous load and Instantaneous area

28. Compression ratio of I.C. engines is:
   (a) The ratio volumes of air in cylinder before
       compression stroke and after compression stroke
   (b) Volume displaced by piston per stroke and
       clearance volume in cylinder
   (c) Ratio of pressure after compression and before
       compression
   (d) Swept volume/cylinder volume

29. The polar section modulus of a solid circular shaft
    of diameter’d’ about an axis through its center of
    gravity is:
    (a) \( \frac{\pi d^3}{8} \)
    (b) \( \frac{\pi d^3}{16} \)
    (c) \( \frac{\pi d^3}{32} \)
    (d) \( \frac{\pi d^3}{64} \)

30. Modulus of rigidity is the ratio of :
    (a) Axial stress to lateral strain
    (b)Linear stress to longitudinal strain
    (c) Shear stress to shear strain
    (d) Hydrostatic stress to volumetric strain

31. Which of the following is an irreversible cycle?
    (a) Carnot       (b) Stirling
    (c) Ericsson     (d) None of the above

32. In automobiles the power is transmitted from gear
    box to differential through
    (a) Bevel gear    (b) Universal
    (c) Hook’s joint  (d) Knuckle joint
33. The property of a fluid which enables it to resist tensile stress is known as:
   (a) Compressibility  (b) Surface tension  
   (c) Cohesion  (d) Adhesion

34. For a slider crank mechanism, velocity and acceleration of the piston at inner dead center will be:
   (a) 0 and 0  (b) 0 and $\omega r$
   (c) 0 and $< \omega r$  (d) 0 and $> \omega r$
   where $\omega$ is angular velocity of the crank and 'r' its radius.

35. The equation of continuity holds good when the flow
   (a) Is steady  (b) Is one dimensional  
   (c) Velocity is uniform at all the cross sections  (d) All of the above

36. An ideal flow of any fluid must fulfill the following:
   (a) Newton’s law of motion  (b) Newton’s law of Viscosity  
   (c) Pascal’s law  (d) Continuity equation

37. Work done in a free expansion process is:
   (a) Positive  (b) Negative  
   (c) Zero  (d) Maximum

38. Resilience a material is considered when it is subjected to:
   (a) Frequent heat treatment  (b) Fatigue  
   (c) Creep  (d) Shock loading

39. Surfaces to be machined are marked on the pattern by the following colour:
   (a) Black  (b) Yellow  
   (c) Red  (d) Blue

40. Inversion of a mechanism is:
   (a) Changing of a higher pair to lower pair  
   (b) Obtained by fixing different links in a kinematic chain  
   (c) Turning it upside down  (d) Obtained by reversing the input and output motion

41. Mixture of ice and water form a:
   (a) Closed system  (b) Open system  
   (c) Isolated system  (d) Heterogeneous system
42. The surface of gear tooth below pitch surface is called  
(a) Bottom tooth  (b) Face  
(c) Flank  (d) Dedendum portion

43. Size of shaper is specified by:  
(a) Length of stroke  (b) Size of table  
(c) Maximum size of tool  (d) Ratio of forward to return stroke

44. The strain energy stored in a body due to direct stress ‘f’ is:  
(a) \( \frac{f}{2E} \times \text{volume} \)  (b) \( \frac{f^2}{E} \times \text{volume} \)  
(c) \( \frac{f^2}{2E} \times \text{volume} \)  (d) \( \frac{2f}{E} \times \text{volume} \)

45. The efficiency of Carnot cycle is maximum for:  
(a) Gas engine  (b) Reversible engine  
(c) Petrol engine  (d) Steam engine

46. If equal and opposite forces applied to a body tends to elongate it, the stress so produced is called:  
(a) Internal resistance  (b) Tensile stress  
(c) Transverse stress  (d) Compressive stress

47. The work done in the expansion of a gas from volume \( V_1 \) to \( V_2 \) under constant pressure \( P \) is equal to:  
(a) Zero  (b) \( P(V_2 - V_1) \)  
(c) \( P(V_2 + V_1) \)  (d) \( P(V_2/V_1) \)

48. An open system is one in which:  
(a) Mass does not cross boundaries of the system, through energy may do so  
(b) Neither mass nor energy crosses the boundaries of the system  
(c) Both energy and mass cross the boundaries of the system  
(d) Mass crosses the boundary but not the energy

49. The first law of thermodynamics is the law of:  
(a) Conservation of mass  (b) Conservation of energy  
(c) Conservation of momentum  (d) Conservation of heat

50. Kinematic viscosity is equal to:  
(a) Dynamic viscosity/ density  (b) Dynamic viscosity x density  
(c) Density/ dynamic viscosity  (d) \( 1/ \text{dynamic viscosity} \times \text{density} \)
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |