QB365 Question Bank Software Study Materials

Properties of Matter 50 Important 1 Marks Questions With Answers (Book Back and Creative)

11th Standard

Physics

<div align="right">Total Marks : 50</div>

**Multiple Choice Question**

<div align="right">50 x 1 = 50</div>

1) Consider two wires X and Y. The radius of wire X is 3 times the radius of Y. If they are stretched by the same load then the stress on Y is

(a) equal to that on X   (b) thrice that on X   **(c) nine times that on X**   (d) Half that on X

2) If a wire is stretched to double of its original length, then the strain in the wire is

(a) 1   (b) 2   (c) 3   (d) 4

3) The load – elongation graph of three wires of the same material are shown in figure. Which of the following wire is the thickest?
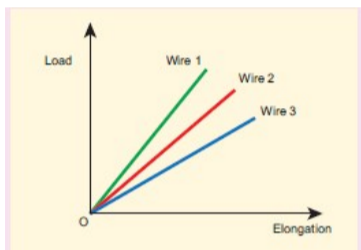
(a) wire 1   (b) wire 2   (c) wire 3   (d) all of them have same thickness

4) For a given material, the rigidity modulus is $\left(\frac{1}{3}\right)^{\text{rd}}$ of Young's modulus. Its Poisson's ratio is

(a) 0   (b) 0.25   (c) 0.3   **(d) 0.5**

5) A small sphere of radius 2cm falls from rest in a viscous liquid. Heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity is proportional to

(a) 2^2 (b) 2^3 (c) 2^4 **(d) 2^5**

6) Two wires are made of the same material and have the same volume. The area of cross sections of the first and the second wires are A and 2A respectively. If the length of the first wire is increased by Δl on applying a force F, how much force is needed to stretch the second wire by the same amount?

(a) 2 F   **(b) 4 F**   (c) 8 F   (d) 16 F

7) With an increase in temperature, the viscosity of liquid and gas, respectively will

(a) increase and increase   (b) increase and decrease   **(c) decrease and increase**   (d) decrease and decrease

8) The young's modulus for a perfect rigid body is

(a) 0   (b) 1   (c) 0.5   **(d) infinity**

9) Which of the following is not a scalar?

(a) viscosity   (b) surface tension   (c) pressure   **(d) stress**

10) If the temperature of the wire is increased, then the Young's modulus will

(a) remain the same   **(b) decrease**   (c) increase rapidly   (d) increase by very a small amount

11) Copper of fixed volume V is drawn into a wire of length l. When this wire is subjected to a constant force F, the extension produced in the wire is Δl. If Y represents the Young's modulus, then which of the following graphs is a straight line?

(a) Δl verses V   (b) Δl verses Y   **(c) Δl verses F**   (d) Δl verses $\frac{1}{l}$

12) A certain number of spherical drops of a liquid of radius R coalesce to form a single drop of radius R and volume V. If T is the surface tension of the liquid, then

(a) energy = 4 V T $\left(\frac{1}{r} - \frac{1}{R}\right)$ is released   (b) energy = 3 V T $\left(\frac{1}{r} + \frac{1}{R}\right)$ is absorbed   **(c) energy = 3 V T $\left(\frac{1}{r} - \frac{1}{R}\right)$ is released**

(d) energy is neither released nor absorbed

13) The following four wires are made of the same material. Which of these will have the largest extension when the same tension is applied?

(a) length = 200 cm, diameter = 0.5 mm   (b) length= 200 cm, diameter = 1 mm   (c) length = 200 cm, diameter = 2 mm

(d) length= 200 cm, diameter = 3 m

14) The wettability of a surface by a liquid depends primarily on

(a) viscosity   (b) surface tension   (c) density   **(d) angle of contact between the surface and the liquid**

15) In a horizontal pipe of non-uniform cross section, water flows with a velocity of 1 ms^{-1} at a point where the diameter of the pipe is 20 cm. The velocity of water (1.5 m s^{-1}) at a point where the diameter of the pipe is (in cm)

(a) 8   **(b) 16**   (c) 24   (d) 32

16) If a spherical ball contract in volume by 1% under a normal uniform pressure of 200 atmosphere, then the compressibility of the material of the ball is _____ (1 atmosphere = 10^5 Nm^{-2})

(a) 20×10^{-10}N^{-1} m^2 **(b) 5×10^{-10} N^{-1} m^2**   (c) 10^{-10}N^{-1} m^2 (d) 2×10^{-10}N^{-1} m^2

17) The work done against surface tension in blowing a soap bubble from a radjus of 5 cm to 15 cm is _____. (surface tension of soap solution is 30×10^{-3} Nm^{-1})

(a) 2.4 πmJ   (b) 4.8 π mJ   (c) 2.4 π J   (d) 4.8 π J

18) An aeroplane gets its upward lift due to phenomenon described by the _____.

(a) archimedes principle   **(b) bernoulli's principle**   (c) buoyancy   (d) pascal law

19) If a liquid does not wet glass, its angle of contact is _____.

(a) zero   **(b) acute**   (c) obtuse   (d) right angle

20) Two capillaries of lengths L & 2L and of radius R & 2R are connected in series the net rate of flow of fluid through them will (rate of the flow through singe capillary, $x = \pi R^4/8\eta L$) be _____.

(a) $\frac{8}{9}\alpha$ (b) $\frac{9}{8}\alpha$ (c) $\frac{5}{7}\alpha$ (d) $\frac{7}{5}\alpha$

21) The SI unit of stress is _____.

(a) N/m^2   (b) N-m^2 (c) J/K   (d) J-K

22) The CGS unit of stress is _____.

(a) N/m^2 (b) J/m^2 **(c) dynl/cm^2**   (d) N/cm^2

23) Which of the following is dynamic viscosity _____.

(a) [M^{1}L^{1}T^{-1}]   (b) [M^{1}L^{-1}T^{-1}]   (c) [M^{1}L^{-2}T^{-2}]   (d) [M^{1}L^{-2}T^{-2}]

24) Substances that elongate considerably and undergo plastic deformation before they break are known as _____.

(a) brittle substances   (b) breakable substances   **(c) ductile substances**   (d) elastic substances

25) The below graph is change in shear stress with respect to velocity gradient in a fluid. What is a type of the fluid?
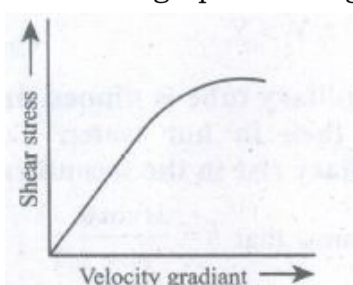
(a) New tonian fluid   **(b) Non-new tonian fluid**   (c) Ideal fluid   (d) Dilatent fluid

26) The force required to stretch a steel wire 1 cm^2 in cross section to double its length is (given Y= 2×0^{11} Nm^{-2})_____.

(a) 10^7N   **(b) 2×10^7N**   (c) 10^{11} N   (d) 2×10^{11} N

27) The modulus of rigidity of a liquid is _____.

(a) zero   (b) 1   (c) infinite   (d) none of these

28) A spherical ball contracts in volume by 0.01% when subjected to a normal uniform pressure of 100 atmospheres. The bulk modulus of the material of the ball in dynes/cm^2 is _____.

(a) 1×10^{12}   (b) 10×10^{12} (c) 100×10^{12} (d) 2×10^{11}

29) Poisson's ratio cannot have the value _____.

(a) 0.1   (b) 0.2   (c) 0.5   **(d) 0.7**

30) In steel, the Young's modulus and the strain at the breaking point are 2×10^{11}Nm^{-2} and 0.15 respectively. The stress at the breaking point for steel is therefore _____.

(a) 2×108 Nm^{-2} **(b) 3×10^{10} Nm^{-2}**   (c) 3×10^{12} Nm^{-2} (d) None of these

31) The pressure at the bottom of a liquid tank does not depend on _____.

(a) acceleration due to gravity   (b) density of the liquid   (c) height of the liquid   **(d) area of the liquid surface**

32) The operating principle of a hydraulic press is _____.

(a) Pascal's Law   (b) Archimedes principle   (c) Newton's law of gravitation   (d) Boyle's law

33) The rate of leak from a hole in a tank is _____.

(a) independent of its height from the bottom   **(b) more if situated near the bottom**   (c) more if situated near its top
(d) more at midway between top and bottom

34) When a fluid passes through the constricted part of a pipe, its _____.

(a) velocity and pressure decrease   (b) velocity and pressure increase   (c) velocity decreases and pressure increases
(d) velocity increases and pressure decreases

35) Bernoulli's theorem is based on the conservation of _____.

(a) mass   (b) momentum   **(c) energy**   (d) all of the above

36) The velocity of a rain drop attains constant value because of _____.

(a) surface tension   (b) upthrust of air   **(c) viscous force exerted by air**   (d) air currents

37) With increase in temperature the viscosity of _____.

(a) a gas decreases and a liquid increases   **(b) a gas increases and a liquid decreases**
(c) both gases and liquids decrease   (d) both gases and liquids increase

38) Viscosity is the property of liquids by virtue of which they _____.

(a) oppose the relative motion of its parts   (b) push neighboring molecules   (c) attract other molecules
(d) become conducting

39) Streamlined flow is more likely for liquids with _____.

(a) high density and low viscosity   **(b) low density and high viscosity**   (c) high density and high viscosity
(d) low density and low viscosity

40) The dimensional formula of coefficient of viscosity is _____.

(a) $M^0 L^{-1} T^{-1}$ (b) $M^0 L^2 T^{-1}$ (c) $ML^2 T^{-1}$ **(d) $ML^{-1} T^{-1}$**

41) A good lubricant should have _____.

(a) high viscosity   (b) low viscosity   (c) moderate viscosity   (d) high density

42) A liquid will not wet the surface of a solid if the angle of contact is _____.

(a) acute   **(b) obtuse**   (c) zero   (d) $\frac{\pi}{2}$

43) The surface tension of soap solution is 25×10^{-3} Nm^{-1}. The excess pressure inside a soap bubble of diameter 1 cm is_____.

(a) 5 Pa   (b) 10 Pa   **(c) 20 Pa**   (d) None of the above

44) The potential energy of a molecule on the surface of a liquid compared to that of a molecules inside the liquid is _____.

(a) smaller   (b) the same   **(c) greater**   (d) zero

45) The rain drops failing from the sky neither hit us hard nor make holes on the ground because they move with

(a) variable acceleration   (b) variable velocity   **(c) constant velocity**   (d) constant acceleration

46) A spring of force constant k is cut into two equal parts. The force constant of each part is

(a) k   **(b) 2k**   (c) 3k   (d) 4k

47) When a wire is twisted, the restoring torque is directly proportional to

(a) stress   (b) strain   **(c) angle of twist**   (d) couple per unit twist

48) Two wires A and B are of same material. Their lengths are in the ratio 1 : 2 and diameters are in the ratio 2 : 1. When stretched by forces F_A and F_B respectively they get equal increase in their lengths. Then the ratio $F_A : F_B$ is

(a) 1:2   (b) 1:1   **(c) 8:1**   (d) 2:1

49) A wooden block is taken to the bottom of a deep, calm lake of water and then released. It rises up with a

(a) constant velocity   **(b) constant acceleration**   (c) decreasing acceleration   (d) decreasing velocity

50) Radius of one arm of hydraulic lift is four times the radius of another arm. The force that must be applied on narrow arm to lift 100 kg is

(a) 26.5 N   **(b) 62.5 N**   (c) 8.3 N   (d) 6.25 N