Kinetic theory of gases

1. At absolute zero temperature, pressure of a gas will be

- Zero
- $P_0 * 273$
- One atmospheric pressure
- $P_0 * 76$

2. To what temperature should the hydrogen at 327°C be cooled at constant pressure, so that the root mean square velocity of its molecules become half of its previous value. [MP PET/PMT 1988]

- 123°C
- 100°C
- 123°C
- 0°C

3. For a gas, the r.m.s. speed at 800 K is. [MP PMT 1990]

- Four times the value at 200 K
- Twice the value at 200 K
- Half the value at 200 K
- Same as at 200 K

4. The temperature of an ideal gas at atmospheric pressure is 300K and volume 1m3. If temperature and volume become double, then pressure will be. [RPMT 2004]

- 10^5 N/m²
- $0.5 * 10^5$ N/m²
- $2 * 10^5$ N/m²
- $4 * 10^5$ N/m²

5. Saturated vapour is compressed to half its volume without any change in temperature, then the pressure will be. [UPSEAT 2001]

- Doubled
- The same
- Halved
- Zero

6. Two gases of equal mass are in thermal equilibrium. If P_a,P_b and V_a , V_b and are their respective pressures and volumes, then which relation is true. [AIIMS 1982]

- $P_a \neq P_b$, $V_a \neq V_b$
- P_a / V_a , P_b / V_b
- $P_a = P_b$, $V_a \neq V_b$
- $P_a V_a$, $P_b V_b$

7. Which of the following statement is true. [IIT 1981]

- Absolute zero degree temperature is not zero energy temperature
- The root mean square speed of the molecules of different ideal gases, maintained at the same temperature are the same
- Two different gases at the same temperature pressure have equal root mean square velocities
- Given sample of 1 cc of hydrogen and 1 cc of oxygen both at NTP; oxygen sample has a large number of molecules

8. S.I. unit of universal gas constant is. [MNR 1988; MP PM]

- cal/°C
- J/molK
- J/mol
- J/kg

9. Every gas (real gas) behaves as an ideal gas. [CPMT 1997;MP PE]

- At high temperature and low pressure
- At normal temperature and pressure
- At low temperature and high pressure
- None of the above

10. When air is filled in the balloon, the pressure and volume both increases while temperature does not change. Here Boyle's law is not obeyed because

- Mass of air is negligible
- Air is not perfect gas
- Mass of air does not remain constant
- Pressure inside the balloon is less than that of the atmospheric pressure

11. Kinetic theory of gases provide a base for. [AIEEE 2002]

- Charle’s law
- Charle’s law and Boyle’s law
- Boyle’s law
- None of these

12. A perfect gas at 27°C is heated at constant pressure so as to triple its volume. The temperature of the gas will be. [MP PET 1991]

- 81°C
- 627°C
- 900°C
- 450°C

13. The temperature of a gas at pressure P and volume V is 27°C. Keeping its volume constant if its temperature is raised to 927°C, then its pressure will be. [MP PMT 1985]

- 2 P
- 4 P
- 3 P
- 6 P

14. The volume of a gas at 20°C is 200 ml. If the temperature is reduced to 20°C at constant pressure, its volume will be. [MP PET 1986]

- 172.6 ml
- 192.7 ml
- 17.26 ml
- 19.27 ml

15. At constant volume, temperature is increased. Then. [CBSE PMT 1993;]

- Collision on walls will be less
- Collisions will be in straight lines
- Number of collisions per unit time will increase
- Collisions will not change

16. The specific heats at constant pressure is greater than that of the same gas at constant volume because. [DCE 1995; MNR 1]

- At constant pressure work is done in expanding the gas
- The molecular attraction increases more at constant pressure
- At constant volume work is done in expanding the gas
- The molecular vibration increases more at constant pressure

17. A gas is collected over the water at 25°C. The total pressure of moist gas was 735 mm of

mercury. If the aqueous vapour pressure at 25°C is 23.8 mm. Then the pressure of dry gas is. [UPSEAT 1999]

- 760 mm
- 710.8 mm
- 758.8 mm
- 711.2 mm

18. At what temperature r.m.s. speed of air molecules doubles of that at N.T.P. is. [J & K CET 2002]

- 819°C
- 909°C
- 719°C
- None of these

19. A monoatomic gas molecule has. [KCET 1998; DCE]

- Three degrees of freedom
- Five degrees of freedom
- Four degrees of freedom
- Six degrees of freedom

20. 125 ml of gas A at 0.60 atmosphere and 150 ml of gas B at 0.80 atmosphere pressure at same temperature is filled in a vessel of 1 litre volume. What will be the total pressure of mixture at the same temperature. [UPSEAT 1999]

- 0.140 atmosphere
- 0.195 atmosphere
- 0.120 atmosphere
- 0.212 atmosphere

21. The specific heat of an ideal gas is. [RPMT 1999; CPMT]

- Proportional to T
- Proportional to T^3
- Proportional to T^2
- Independent of T

22. A cylinder rolls without slipping down an inclined plane, the number of degrees of freedom it has, is

- 2
- 5
- 3
- 1

23. The respective speeds of five molecules are 2, 1.5, 1.6, 1.6 and 1.2 km/sec. The most probable speed in km/sec will be

- 2
- 1.6
- 1.58
- 1.31

24. Molecules of a gas behave like. [J & K CET 2000]

- Inelastic rigid sphere
- Perfectly elastic rigid sphere
- Perfectly elastic nonrigid sphere
- Inelastic nonrigid sphere

25. The r.m.s. velocity will be greater for

- Hydrogen
- Equal for both
- Oxygen
- Nothing is definite

26. A diatomic molecule has how many degrees of freedom. [Pb. PET 2000]

- 3
- 5
- 4
- 6

27. The root mean square speed of the molecules of a gas is. [Haryana CEE 199]

- Independent of its pressure but directly proportional to its Kelvin temperature
- Independent of its pressure but directly proportional to the square root of its Kelvin temperature
- Directly proportional to the square roots of both its pressure and its Kelvin temperature
- Directly proportional to both its pressure and its Kelvin temperature

28. Air is pumped into an automobile tube upto a pressure of 200 kPa in the morning when the air temperature is 22°C. During the day, temperature rises to 42°C and the tube expands by 2%. The pressure of the air in the tube at this temperature, will be approximately. [UPSEAT 2002]

- 212 kPa
- 206 kPa

- 209 kPa
- 200 kPa

29. The degrees of freedom of a triatomic gas is. [CBSE PMT 1999]

- 2
- 6
- 4
- 8

30. Volume of gas become four times if. [RPET 2001]

- Temperature become four times at constant pressure
- Temperature becomes two times at constant pressure
- Temperature become one fourth at constant pressure
- Temperature becomes half at constant pressure

31. If the pressure in a closed vessel is reduced by drawing out some gas, the mean free path of the molecules. [CPMT 1973]

- Is decreased
- Remains unchanged
- Is increased
- Increases or decreases according to the nature of the gas

32. A sample of gas is at 0°C. To what temperature it must be raised in order to double the r.m.s. speed of the molecule. [MP PET 1991, 92]

- 270°C
- 1090°C
- 819°C
- 100°C

33. The vapour of a substance behaves as a gas. [CPMT 1987]

- Below critical temperature
- At 100°C
- Above critical temperature
- At 1000°C

34. For Boyle's law to hold the gas should be. [CPMT 1978]

- Perfect and of constant mass and temperature
- Perfect and at constant temperature but variable mass

- Real and of constant mass and temperature
- Real and at constant temperature but variable mass

35. Molar specific heat at constant volume is Cv for a monoatomic gas is. [CPMT 1990; JIPM]

- 3/2 R
- 3R
- 5/2 R
- 2R

36. To double the volume of a given mass of an ideal gas at 27°C keeping the pressure constant, one must raise the temperature in degree centigrade to. [IIT 1975; MP PM]

- 54°
- 327°
- 270°
- 600°

37. Boyle's law holds for an ideal gas during. [AFMC 1994; KCET]

- Isobaric changes
- Isochoric changes
- Isothermal changes
- Isotonic changes

38. At constant pressure, the ratio of increase in volume of an ideal gas per degree raise in kelvin temperature to it's original volume is (T = absolute temperature of the gas). [EAMCET 2004]

- T^2
- $1 / T$
- T
- $1 / T^2$

39. Cooking gas containers are kept in a lorry moving with uniform speed. The temperature of the gas molecules inside will. [AIEEE 2002]

- Increase
- Remain same
- Decrease
- Decrease for some, while increase for others

40. The specific heat of a gas. [MP PET 1996; CP]

- Has only two values C_p and C_v
- Can have any value between 0 and ∞
- Has a unique value at a given temperature
- Depends upon the mass of the gas

41. In Boyle's law what remains constant. [CPMT 2005]

- PV
- V / T
- TV
- P / T

42. The gas which obeys Boyle's law for maximum range of temperature is

- CO_2
- H_2
- O_3
- He

Magnetic Effect of Current

1. A long copper tube of inner radius R carries a current i. The magnetic field B inside the tube is . [MP PMT 1995]

- $\mu_0 i / 2\pi R$
- $\mu_0 i / 2R$
- $\mu_0 i / 4\pi R$
- Zero

2. The direction of magnetic lines of forces close to a straight conductor carrying current will be . [RPMT 2002; RPET]

- Along the length of the conductor
- Circular in a plane perpendicular to the conductor
- Radially outward
- Helical

3. A long solenoid carrying a current produces a magnetic field B along its axis. If the current is doubled and the number of turns per cm is halved, the new value of the magnetic field is . [CBSE PMT 2003]

- B
- 4 B
- 2 B
- B/2

4. An electron enters a magnetic field whose direction is perpendicular to the velocity of the electron. Then . [MP PMT 1996; CB]

- The speed of the electron will increase
- The speed of the electron will remain the same
- The speed of the electron will decrease
- The velocity of the electron will remain the same

5. In the figure shown there are two semicircles of radii and in which a current i is flowing. The magnetic induction at the centre O will be

- $(\mu_0 i / r) (r_1 + r_2)$
- $(\mu_0 i / 4) ((r_1 + r_2)/r_1 * r_2)$
- $(\mu_0 i / 4) (r_1 \ r_2)$
- $(\mu_0 i / 4) ((r_1 \ r_2)/r_1 * r_2)$

6. If two streams of protons move parallel to each other in the same direction, then they . [MP PET 1999; AI]

- Do not exert any force on each other
- Attract each other
- Repel each other
- Get rotated to be perpendicular to each other

7. Two free parallel wires carrying currents in opposite direction . [AFMC 2002; CPMT]

- Attract each other
- Neither attract nor repel
- Repel each other
- Get rotated to be perpendicular to each other

8. A charged particle moves in a uniform magnetic field. The velocity of the particle at some instant makes an acute angle with the magnetic field. The path of the particle will be . [MP PMT 1999]

- A straight line
- A helix with uniform pitch
- A circle
- A helix with nonuniform pitch

9. The strength of the magnetic field at a point r near a long straight current carrying wire is B. The field at a distance r/2 will be . [MP PMT 1990]

- B/2
- 2B

- B/4
- 4B

10. In the above question, the magnetic induction at O due to the whole length of the conductor is . [MP PMT/PET 1998]

- $\mu_0 i / r$
- $\mu_0 i / 4r$
- $\mu_0 i / 2r$
- Zero

11. In a current carrying long solenoid, the field produced does not depend upon. [MP PET 1999]

- Number of turns per unit length
- Radius of the solenoid
- Current flowing
- All of the above three

12. If the direction of the initial velocity of the charged particle is neither along nor perpendicular to that of the magnetic field, then the orbit will be . [MP PET 1993]

- A straight line
- A circle
- An ellipse
- A helix

13. The magnetic field B with in the solenoid having n turns per metre length and carrying a current of i ampere is given by. [MP PET 1993]

- $\mu_0 ni/e$
- $4\pi\mu_0 ni$
- $\mu_0 ni$
- ni

14. An electron is moving on a circular path of radius r with speed v in a transverse magnetic field B. e/m for it will be . [MP PMT 2003]

- v / Br
- Bvr
- B / vr
- vr / B

15. A uniform electric field and a uniform magnetic field are produced, pointed in the same

direction. An electron is projected with its velocity pointing in the same direction . [CBSE PMT 1993;]

- The electron will turn to its right
- The electron will turn to its left
- The electron velocity will increase in magnitude
- The electron velocity will decrease in magnitude

16. If a copper rod carries a direct current, the magnetic field associated with the current will be . [CPMT 1984]

- Only inside the rod
- Only outside the rod
- Both inside and outside the rod
- Neither inside nor outside the rod

17. A straight wire of diameter 0.5 mm carrying a current of 1 A is replaced by another wire of 1 mm diameter carrying the same current. The strength of magnetic field far away is . [CBSE PMT 1997,]

- Twice the earlier value
- Half of the earlier value
- Quarter of its earlier value
- Unchanged

18. A current carrying rectangular coil is placed in a uniform magnetic field. In which orientation, the coil will not tend to rotate. [MP PMT 1995]

- The magnetic field is parallel to the plane of the coil
- The magnetic field is perpendicular to the plane of the coil
- The magnetic field is at 45^0 with the plane of the coil
- Always in any orientation

19. Two parallel wires are carrying electric currents of equal magnitude and in the same direction. They exert . [CPMT 1990; MP P]

- An attractive force on each other
- A repulsive force on each other
- No force on each other
- A rotational torque on each other

20. The magnetic induction at any point due to a long straight wire carrying a current is . [MP PMT/PET 1998]

- Proportional to the distance from the wire
- Inversely proportional to the square of the distance from the wire
- Inversely proportional to the distance from wire
- Does not depend on distance

21. A current I flows along the length of an infinitely long, straight and thinwalled pipe. Then. [IITJEE 1993]

- The magnetic field at all points inside the pipe is the same but not zero
- The magnetic field is zero only on the axis of the pipe
- The magnetic field at any point inside the pipe is zero
- The magnetic field is different at different points inside the pipe

22. A vertical wire kept in ZX plane carries a current from Q to P (see figure). The magnetic field due to current will have the direction at the origin O along

- OX
- OY
- OX^1
- OY^1

23. A vertical straight conductor carries a current vertically upwards. A point P lies to the east of it at a small distance and another point Q lies to the west at the same distance. The magnetic field at P is. [MNR 1986; DPMT]

- Greater than at Q
- Less than at Q
- Same as at Q
- Greater or less than at Q depending upon the strength of the current

24. An electron is travelling horizontally towards east. A magnetic field in vertically downward direction exerts a force on the electron along. [EAMCET 1984]

- East
- North
- West
- South

25. A circular coil ‘A’ has a radius R and the current flowing through it is I. Another circular coil ‘B’ has a radius 2R and if 2I is the current flowing through it, then the magnetic fields at the

centre of the circular coil are in the ratio of (i.e. BA to BB) . [CBSE PMT1993; A]

- 4 : 1
- 3 : 1
- 2 : 1
- 1 : 1

26. The radius of curvature of the path of the charged particle in a uniform magnetic field is directly proportional to . [MNR 1995; UPSEA]

- The charge on the particle
- The energy of the particle
- The momentum of the particle
- The intensity of the field

27. Two concentric circular coils of ten turns each are situated in the same plane. Their radii are 20 and 40 cm and they carry respectively 0.2 and 0.3 ampere current in opposite direction. The magnetic field in weber / m^2 at the centre is . [MP PMT 1994]

- $(35/4)\ \mu_0$
- $(7/80)\mu_0$
- $\mu_0/80$
- $(5/4)\mu_0$

28. A strong magnetic field is applied on a stationary electron, then . [BIT 1989; CPMT]

- The electron moves in the direction of the field
- The electron remains stationary
- The electron moves in an opposite direction
- The electron starts spinning

29. One Tesla is equal to. [AFMC 1998]

- 10^7 Gauss
- 10^4 Gauss
- 10^4 Gauss
- 10^5 Gauss

30. A conducting circular loop of radius r carries a constant current i. It is placed in a uniform magnetic field B, such that B is perpendicular to the plane of the loop. The magnetic force acting on the loop is . [IIT 1983; MP PM]

- irB
- Zero
- 2πriB
- πriB

31. If the strength of the magnetic field produced 10cm away from a infinitely long straight conductor is 105 Weber / m^2 , the value of the current flowing in the conductor will be . [MP PET 1996]

- 5 ampere
- 500 ampere
- 10 ampere
- 1000 ampere

32. If a long hollow copper pipe carries a direct current, the magnetic field associated with the current will be . [CBSE PMT 1999;]

- Only inside the pipe
- Neither inside nor outside the pipe
- Only outside the pipe
- Both inside and outside the pipe

33. A charge + Q is moving upwards vertically. It enters a magnetic field directed to the north. The force on the charge will be towards. [MP PMT 1995; AM]

- North
- East
- South
- West

34. One metre length of wire carries a constant current. The wire is bent to form a circular loop. The magnetic field at the centre of this loop is B. The same is now bent to form a circular loop of smaller radius to have four turns in the loop. The magnetic field at the centre of this new loop is

- 4 B
- B / 2
- 16 B
- B / 4

35. In the figure, shown the magnetic induction at the centre of there arc due to the current in portion AB will be

- $\mu_0 i / r$
- $\mu_0 i / 4r$
- $\mu_0 i / 2r$
- Zero

36. A positively charged particle moving due east enters a region of uniform magnetic field directed vertically upwards. The particle will. [CBSE PMT 1997]

- Get deflected vertically upwards
- Move in a circular orbit with its speed

unchanged

- Move in a circular orbit with its speed increased
- Continue to move due east

37. If a proton is projected in a direction perpendicular to a uniform magnetic field with velocity v and an electron is projected along the lines of force, what will happen to proton and electron . [DPMT 1979]

- The electron will travel along a circle with constant speed and the proton will move along a straight line
- There will not be any effect on the motion of electron and proton
- Proton will move in a circle with constant speed and there will be no effect on the motion of electron
- The electron and proton both will follow the path of a parabola

38. The current in the windings on a toroid is 2.0A. There are 400 turns and the mean circumferential length is 40cm. If the inside magnetic field is 1.0T, the relative permeability is near to . [AMU (Med.) 2002]

- 100
- 300
- 200
- 400

39. The magnetic field at a distance r from a long wire carrying current i is 0.4 Tesla. The magnetic field at a distance 2r is . [CBSE PMT 1992;]

- 0.2 Tesla
- 0.1 Tesla
- 0.8 Tesla
- 1.6 Tesla

40. A current carrying long solenoid is placed on the ground with its axis vertical. A proton is falling along the axis of the solenoid with a velocity v. When the proton enters into the solenoid, it will

- Be deflected from its path
- Be decelerated along the same path
- Be accelerated along the same path
- Move along the same path with no change in velocity

41. A length L of wire carries a steady current I. It is bent first to form a circular plane coil of

one turn. The same length is now bent more sharply to give a double loop of smaller radius. The magnetic field at the centre caused by the same current is . [NCERT 1980; AII]

- A quarter of its first value
- Four times of its first value
- Unaltered
- A half of its first value

42. A current carrying loop is placed in a uniform magnetic field. The torque acting on it does not depend upon . [CPMT 1985; Ker]

- Shape of the loop
- Value of the current
- Area of the loop
- Magnetic field

43. Field at the centre of a circular coil of radius r, through which a current I flows is. [MP PMT 1993]

- Directly proportional to r
- Directly proportional to I
- Inversely proportional to I
- Directly proportional to I^2

44. Which of the following statement is true . [Manipal MEE 199]

- The presence of a large magnetic flux through a coil maintains a current in the coil if the circuit is continuous
- A charged particle enters a region of uniform magnetic field at an angle of to the magnetic lines of force; the path of the particle is a circle
- A coil of a metal wire kept stationary in a nonuniform magnetic field has an e.m.f. induced in it
- There is no change in the energy of a charged particle moving in a magnetic field although a magnetic force is acting on it

45. A charged particle enters a magnetic field H with its initial velocity making an angle of with H. The path of the particle will be . [MP PET 1999; AI]

- A straight line
- An ellipse
- A circle
- A helix

46. A proton is moving along Zaxis in a magnetic field. The magnetic field is along Xaxis. The proton will experience a force along

- Xaxis
- Zaxis
- Yaxis
- Negative Zaxis

47. A particle moving in a magnetic field increases its velocity, then its radius of the circle. [BHU 1998]

- Decreases
- Remains the same
- Increases
- Becomes half

48. A circular coil of radius R carries an electric current. The magnetic field due to the coil at a point on the axis of the coil located at a distance r from the centre of the coil, such that r >> R, varies as . [EAMCET 1987; AI]

- $1 / r$
- $1 / r^2$
- $1 / r^{3/2}$
- $1 / r^3$

49. Field inside a solenoid is. [MP PMT 1993]

- Directly proportional to its length
- Inversely proportional to total number of turns
- Directly proportional to current
- Inversely proportional to current

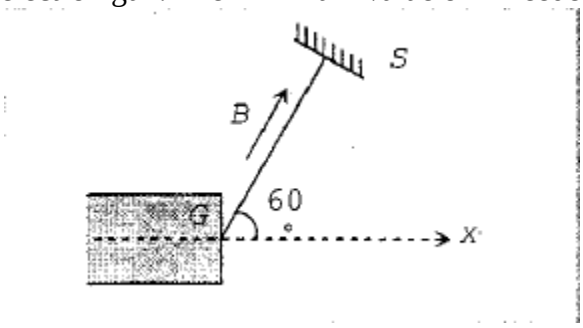
50. An electron enters a region where magnetic (B) and electric (E) fields are mutually perpendicular to one another, then . [CBSE PMT1993]

- It will always move in the direction of B
- It always possess circular motion
- It will always move in the direction of E
- It can go undeflected also

Magnetism

1. An e gun G emits electrons of energy 2 KeV travelling in the positive xdirection. The e are

required to hit the spots S. Where GS = 0.1 m, and the line GS makes an angle 60° with the axis, as shown in the figure. A uniform magnetic field parallel to GS exists in the region outside the electron gun. The minimum value of B needed to make the electrons hit S. .

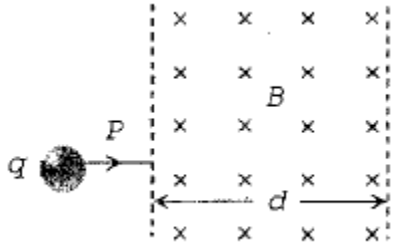


- 4.73×10^3 T
- 7.43×10^3 T
- 3.74×10^3 T
- 6.37×10^3 T

2. A 2MeV proton is moving perpendicular to a uniform magnetic field of 2.5 Tesla. The force on the proton is

- 2.5×10^{10}N
- 2.5×10^{11}N
- 7.6×10^{11}N
- 7.8×10^{12}N

3. A particle with charge q, moving with a momentum p, enters a uniform magnetic field normally. The magnetic field has magnitude B and is confined to a region of width d, where d < p/Bq, The particle is deflected by an angle θ in crossing the field .



- $\sin\theta = Bqd/p$
- $\sin\theta = Bp/qd$
- $\sin\theta = p/Bqd$
- $\sin\theta = pd/Bq$

4. The current sensitivity of a moving coil galvanometer can be increased by

- Increasing the magnetic field of the permanent magnet
- Increasing the number of turns in the coil
- Increasing the area of the deflecting coil
- All of these

5. the coil of a moving coil galvanometer is wound over a metal frame in order to (1075)

- Reduce hysteresis
- Increase the moment of inertia
- Provide electromagnetic damping
- Increase the sensitivity

6. lhe magnetic moment of a circular coil carrying current is

- Directly proportional to the length of the wire in the coil
- Directly proportional to the square of the length of the wire in the coil
- Inversely proportional to the length of the wire in the coil
- Inversely proportional to the square of the length of the wire in the coil

7. The relation between voltage sensitivity (σy) and current sensitivity {σi) of a moving coil galvanometer is

- $\sigma_i / G = \sigma_y$
- $G / \sigma_y = \sigma_i$
- $\sigma_y / G = \sigma_i$
- $G / \sigma_i = \sigma_y$

8. A cyclotron in which the flux density is 1.57 T is employed to accelerate protons. How rapidly should the electric field between the dees be reversed

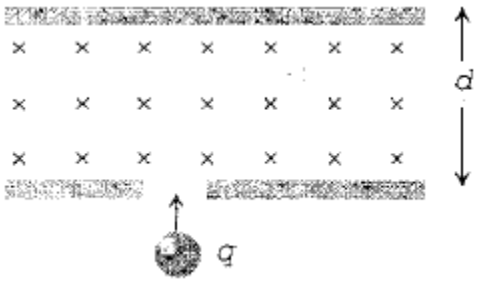
- 4.8×10^8 cycles/sec
- 4.8×10^6 cycles/sec
- 2.5×10^7 cycles/sec
- 8.4×10^8 cycles/sec

9. Two particles X and Y having equal charges, after being accelerated through the same potential differenc, enter a region of uniform magnetic field and describes cilrcular path of radius R_1 and R_2 respectively. The ratio of mass of X to that of Y is. [liT 1988; CBSE]

- $(R_1/R_2)_{1/2}$
- $(R_1/R_2)^2$
- (R_2/R_1)
- (R_1/R_2)

10. A proton and an electron beth •Nith the same velocity v enter into a region of magnetic field directed perpendicular to the velocity of the particles. They will now move in circular orbits such that

- Their time periods will be same
- The time period for electron will be higrJer
- The time period for proton will be higher
- Their orbital radii will be same



11. Magnetic dipole moment of a rectangular loop is

- Inversely proportional to current in loop
- Parallel to plane of loop and proportional to area of loop
- Inversely proportional to area of loop
- Perpendicular to plane of loop and proportional to area of loop

12. A charged particle enters a magnetic fk:l;.; at right angles to the magnetic field. The field exists for a length equal to 1.5 times the radius of the circular path of the particle. The particle will be deviated from its path by

- 90^0
- 30^0
- $\sin^1(2/3)$
- 180^0

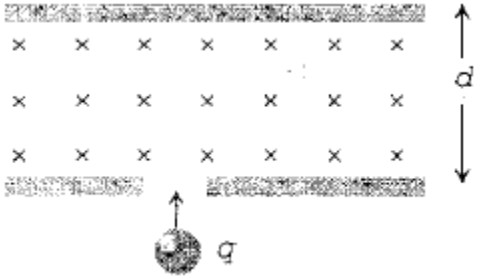
13. An ion of specific charge 5 x 10^7 C/kg enters in transverse magnetic field of intensity 4 x 10^2 Testa with velocity of 2x10^5 m /sec. Radius of its circular path will be

- 5 cm
- 10 cm
- 15 cm
- 30 cm

14. A beam of protons enters a uniform magnetic field of 0.3 Tesla with a velocity of 4 x 10^5 m/sec at an angle of 60° to the field. The radius of the helical path taken by the beam is

- 6 mm
- 18 mm
- 12 mm
- 24 mm

15. As shown in the figure, a uniform magnetic field B is applied between two identical plates. There is a hole in one plate. If a particle of charge q, mass m and energy E enters this magnetic field through this hole, then the particle will not collide with the upper plate provide .



- B > (2mE / qd)
- B < (2mE / qd)
- B > (√2mE / qd)
- B < (√2mE / qd)

16. A proton, a deuteron and an α particle enter a uniform magnetic field normally and the radii of their circular paths are same. The ratio of their kinetic energies is

- 2 : 1 : 1
- 2 : 2: 1
- 1 : 1 : 2
- 2 : 1 : 2

17. A small cylindericai soft iron piece is kept in a galvanometer so that

- A radial uniform magnetic field is produced
- There is a steady deflection of the coil
- A uniform magnetic field is produced
- All of the above

Motion in two Dimension

1. A particle is moving in a horizontal circle with constant speed. It has constant . [MP PMT 1987; AF]

- Velocity
- Kinetic energy

- Acceleration
- Displacement

2. A body of mass m moves in a circular path with uniform angular velocity. The motion of the body has constant . [MP PET 2003]

- Acceleration
- Momentum
- Velocity
- Kinetic energy

3. The second's hand of a watch has length 6 cm. Speed of end point and magnitude of difference of velocities at two perpendicular positions will be . [RPET 1997]

- 6.28 and 0 mm/s
- 8.88 and 6.28 mm/s
- 8.88 and 4.44 mm/s
- 6.28 and 8.88 mm/s

4. A car moving on a horizontal road may be thrown out of the road in taking a turn. [NCERT 1983]

- By the gravitational force
- Due to rolling frictional force between tyre and road
- Due to lack of sufficient centripetal force
- Due to the reaction of the ground

5. A particle is moving on a circular path with constant speed, then its acceleration will be . [RPET 2003]

- Zero
- Internal radial acceleration
- External radial acceleration
- Constant acceleration

6. An aircraft executes a horizontal loop with a speed of 150 m/s with its, wings banked at an angle of 120^0 . The radius of the loop is . [Pb. PET 2001]

- 10.6 km
- 7.4 km
- 9.6 km
- 5.8 km

7. If a particle moves in a circle describing equal angles in equal times, its velocity vector . [CPMT 1972, 74;]

- Remains constant
- Changes in direction
- Changes in magnitude
- Changes both in magnitude and direction

8. A tachometer is a device to measure . [DPMT 1999]

- Gravitational pull
- Surface tension
- Speed of rotation
- Tension in a spring

9. An unbanked curve has a radius of 60m . The maximum speed at which a car can make a turn if the coefficient of static friction is 0.75, is . [JIPMER 1999]

- 2.1 m/s
- 21 m/s
- 14 m/s
- 7 m/s

10. The angular velocity of a particle rotating in a circular orbit 100 times per minute is. [SCRA 1998; DPMT]

- 1.66 rad/s
- 10.47 deg/s
- 10.47 rad/s
- 60 deg/s

11. A body of mass 100 g is rotating in a circular path of radius r with constant velocity. The work done in one complete revolution is . [AFMC 1998]

- 100 rJ
- (100/ r)J
- (r/100)J
- Zero

12. A mass of 100 gm is tied to one end of a string 2 m long. The body is revolving in a horizontal circle making a maximum of 200 revolutions per min. The other end of the string is fixed at the centre of the circle of revolution. The maximum tension that the string can bear is

(approximately). [MP PET 1993]

- 8.76 N
- 89.42 N
- 8.94 N
- 87.64 N

13. A circular road of radius 1000 m has banking angle 45 degree . The maximum safe speed of a car having mass 2000 kg will be, if the coefficient of friction between tyre and road is 0.5 . [RPET 1997]

- 172 m/s
- 99 m/s
- 124 m/s
- 86 m/s

14. A body is moving in a circular path with a constant speed. It has . [CPMT 1972]

- A constant velocity
- An acceleration of constant magnitude
- A constant acceleration
- An acceleration which varies with time

15. The force required to keep a body in uniform circular motion is . [EAMCET 1982; AF]

- Centripetal force
- Resistance
- Centrifugal force
- None of the above

16. A particle moves with constant angular velocity in a circle. During the motion its

- Energy is conserved
- Energy and momentum both are conserved
- Momentum is conserved
- None of the above is conserved

17. A body of mass 5 kg is moving in a circle of radius 1m with an angular velocity of 2 radian/sec. The centripetal force is . [AIIMS 1998]

- 10 N
- 30 N
- 20 N
- 40 N

18. A wheel completes 2000 revolutions to cover the 9.5 km. distance. then the diameter of the wheel is . [RPMT 1999]

- 1.5 m
- 7.5 cm
- 1.5 cm
- 7.5 m

19. If the body is moving in a circle of radius r with a constant speed v, its angular velocity is . [CPMT 1975; RPET]

- v^2/r
- v/r
- vr
- r/v

20. A ball of mass 0.25 kg attached to the end of a string of length 1.96 m is moving in a horizontal circle. The string will break if the tension is more than 25 N. What is the maximum speed with which the ball can be moved . [CBSE PMT 1998]

- 14 m/s
- 3.92 m/s
- 3 m/s
- 5 m/s

21. A particle revolves round a circular path. The acceleration of the particle is . [MNR 1986; UPSEA]

- Along the circumference of the circle
- Along the radius
- Along the tangent
- Zero

22. A motorcycle is going on an overbridge of radius R. The driver maintains a constant speed. As the motorcycle is ascending on the overbridge, the normal force on it . [MP PET 1997]

- Increases
- Remains the same
- Decreases
- Fluctuates

23. When a particle moves in a uniform circular motion. It has

- Radial velocity and radial acceleration
- Tangential velocity and tangential acceleration

- Tangential velocity and radial acceleration
- Radial velocity and tangential acceleration

24. A particle p is moving in a circle of radius d with a uniform speed v. C is the centre of the circle and AB is a diameter. When passing through B the angular velocity of p about A and C are in the ratio . [NCERT 1982]

- 1 : 1
- 2 : 1
- 1 : 2
- 4 : 1

25. A cyclist taking turn bends inwards while a car passenger taking same turn is thrown outwards. The reason is . [NCERT 1972; CPM]

- Car is heavier than cycle
- Difference in the speed of the two
- Car has four wheels while cycle has only two
- Cyclist has to counteract the centrifugal force while in the case of car only the passenger is thrown by this force

26. Two racing cars of masses m1 and m2 are moving in circles of radii r1 and r2 respectively. Their speeds are such that each makes a complete circle in the same duration of time t. The ratio of the angular speed of the first to the second car is . [CBSE PMT 1999;]

- $m_1:m_2$
- 1 : 1
- $r_1:r_2$
- $m_1 r_1:m_2 r_2$

27. A cyclist turns around a curve at 15 miles/hour. If he turns at double the speed, the tendency to overturn is . [CPMT 1974; AFMC]

- Doubled
- Halved
- Quadrupled
- Unchanged

28. Find the maximum velocity for skidding for a car moved on a circular track of radius 100 m. The coefficient of friction between the road and tyre is 0.2 . [CPMT 1996; Pb.]

- 0.14 m/s
- 1.4 km/s
- 140 m/s
- 14 m/s

29. A car is moving on a circular path and takes a turn. If R1 and R2 be the reactions on the inner and outer wheels respectively, then . [MH CET (Med.) 2]

- $R^1 = R^2$
- $R^1 > R^2$
- $R^1 < R^2$
- $R^1 >= R^2$

30. A mass of 2 kg is whirled in a horizontal circle by means of a string at an initial speed of 5 revolutions per minute. Keeping the radius constant the tension in the string is doubled. The new speed is nearly . [MP PMT/PET 1998]

- 14 rpm
- 2.25 rpm
- 10 rpm
- 7 rpm

31. A motor cyclist going round in a circular track at constant speed has . [NCERT 1975]

- Constant linear velocity
- Constant angular velocity
- Constant acceleration
- Constant force

32. The ratio of angular speeds of minute hand and hour hand of a watch is . [MH CET 2002]

- 1 : 12
- 12 : 1
- 6 : 1
- 1 : 6

33. A cylindrical vessel partially filled with water is rotated about its vertical central axis. It's surface will . [RPET 2000]

- Rise equally
- Rise from the middle
- Rise from the sides
- Lowered equally

34. The magnitude of the centripetal force acting on a body of mass executing uniform motion in a circle of radius r with speed v is . [AFMC 1998; MP P]

- mvr
- v/rm

- mv^2/r
- v/r^2m

35. When a body moves with a constant speed along a circle . [CBSE PMT 1994;]

- No work is done on it
- No force acts on the body
- No acceleration is produced in the body
- Its velocity remains constant

Newtons Laws Of Motion

1. If force on a rocket having exhaust velocity of 300 m/sec is 210 N, then rate of combustion of the fuel is . [CBSE PMT 1999;]

- 0.7 kg/s
- 0.07 kg/s
- 1.4 kg/s
- 10.7 kg/s

2. A person sitting in an open car moving at constant velocity throws a ball vertically up into air. The ball falls . [EAMCET (Med.) 1]

- Outside the car
- In the car to the side of the person
- In the car ahead of the person
- Exactly in the hand which threw it up

3. A block of mass 5kg is moving horizontally at a speed of 1.5 m/s. A perpendicular force of 5N acts on it for 4 sec. What will be the distance of the block from the point where the force started acting. [Pb. PMT 2002]

- 10 m
- 6 m
- 8 m
- 2 m

4. The average resisting force that must act on a 5 kg mass to reduce its speed from 65 cm/s to 15 cm/s in 0.2s is . [RPET 2000]

- 12.5 N
- 50 N

- 25 N
- 100 N

5. Newton's second law gives the measure of . [CPMT 1982]

- Acceleration
- Momentum
- Force
- Angular momentum

6. Swimming is possible on account of . [AFMC 1998, 2003]

- First law of motion
- Third law of motion
- Second law of motion
- Newton's law of gravitation

7. A lift is moving down with acceleration a. A man in the lift drops a ball inside the lift. The acceleration of the ball as observed by the man in the lift and a man standing stationary on the ground are respectively. [AIEEE 2002]

- g,g
- ga, g
- ga, ga
- a,g

8. An object will continue moving uniformly until . [CPMT 1975]

- The resultant force acting on it begins to decrease
- The resultant force is at right angle to its rotation
- The resultant force on it is zero
- The resultant force on it is increased continuously

9. A lift of mass 1000 kg is moving with an acceleration of 1 m/s2 in upward direction. Tension developed in the string, which is connected to the lift, is. [CBSE PMT 2002]

- 9,800 N
- 10,800 N
- 10,000 N
- 11,000 N

10. In which of the following cases forces may not be required to keep the. [AIIMS 1983]

- Particle going in a circle
- The momentum of the particle constant
- Particle going along a straight line
- Acceleration of the particle constant

11. In the above problem, if the lift moves up with a constant velocity of 2 m/sec, the reading on the balance will be . [NCERT 1977]

- 2 kg
- Zero
- 4 kg
- 1 kg

12. A force of 10 Newton acts on a body of mass 20kg for 10 seconds. Change in its momentum is. [MP PET 2002]

- 5 kg m/s
- 200 kg m/s
- 100kg m/s
- 1000kg m/s

13. A force of 5 N acts on a body of weight 9.8 N. What is the acceleration produced in m/sec2. [NCERT 1990]

- 49.00
- 1.46
- 5.00
- 0.51

14. A light spring balance hangs from the hook of the other light spring balance and a block of mass M kg hangs from the former one. Then the true statement about the scale reading is . [AIEEE 2003]

- Both the scales read M/2 kg each
- The scale of the lower one reads M kg and of the upper one zero
- Both the scales read M kg each
- The reading of the two scales can be anything but the sum of the reading will be M kg

15. A rocket of mass 1000 kg exhausts gases at a rate of 4 kg/sec with a velocity 3000 m/s. The thrust developed on the rocket is. [Orissa JEE 2005]

- 12000 N
- 800 N

- 120 N
- 200 N

16. If a person with a spring balance and a body hanging from it goes up and up in an aeroplane, then the reading of the weight of the body as indicated by the spring balance will . [AIIMS 1998; JIP]

- Go on increasing
- First increase and then decrease
- Go on decreasing
- Remain the same

17. Newton's first law of motion describes the following . [MP PMT 1996]

- Energy
- Inertia
- Work
- Moment of inertia

18. When a bus suddenly takes a turn, the passengers are thrown outwards because of . [AFMC 1999; CPMT]

- Inertia of motion
- Speed of motion
- Acceleration of motion
- Both (b) and (c)

19. Newton's third law of motion leads to the law of conservation of. [Manipal MEE 199]

- Angular momentum
- Mass
- Energy
- Momentum

20. A man of weight 75 kg is standing in an elevator which is moving with an acceleration of 5 m/s in upward direction the apparent weight of the man will be (g=10) . [Pb. PMT 2004]

- 1425 N
- 1250 N
- 1375 N
- 1125 N

21. Rocket engines lift a rocket from the earth surface because hot gas with high velocity. [AIIMS 1998; JIP]

- Push against the earth
- React against the rocket and push it up

- Push against the air
- Heat up the air which lifts the rocket

22. A parachutist of weight ‘w’ strikes the ground with his legs fixed and comes to rest with an upward acceleration of magnitude 3 g. Force exerted on him by ground during landing is. [EAMCET 1988]

- w
- 3w
- 2w
- 4w

23. A cork is submerged in water by a spring attached to the bottom of a pail. When the pail is kept in a elevator moving with an acceleration downwards, the spring length . [EAMCET (Engg.)]

- Increases
- Remains unchanged
- Decreases
- Data insufficient

24. A second's pendulum is mounted in a rocket. Its period of oscillation decreases when the rocket. [CBSE PMT 1994]

- Comes down with uniform acceleration
- Moves up with a uniform velocity
- Moves round the earth in a geostationary orbit
- Moves up with uniform acceleration

25. A spring balance is attached to the ceiling of a lift. A man hangs his bag on the spring and the spring reads 49 N, when the lift is stationary. If the lift moves downward with an acceleration of 5m/s2 the reading of the spring balance will be . [AIEEE 2003]

- 49 N
- 74 N
- 24 N
- 15 N

26. A body, whose momentum is constant, must have constant . [AIIMS 2000]

- Force
- Acceleration
- Velocity
- All of these

27. An automobile travelling with a speed of 60km/h can brake to stop within a distance of 20 m. If the car is going twice as fast, i.e. 120 km/h, the stopping distance will be . [AIEEE 2004]

- 20 m
- 60 m
- 40 m
- 80 m

28. Gravels are dropped on a conveyor belt at the rate of 0.5 kg/sec. The extra force required in newtons to keep the belt moving at 2 m/sec is. [EAMCET 1988]

- 1
- 4
- 2
- 0.5

29. A force of 100 dynes acts on mass of 5 gm for 10 sec. The velocity produced is. [MNR 1987]

- 2 cm/sec
- 200 cm/sec
- 20 cm/sec
- 2000 cm/sec

30. A body of mass 1.0kg is falling with an acceleration of 10 m/sec2 . Its apparent weight will be (g = 10) . [MP PET 2002]

- 1.0 kgwt
- 0.5 kgwt
- 2.0 kgwt
- Zero

31. A rope of length 5m is kept on frictionless surface and a force of 5N is applied to one of its end. Find tension in the rope at 1m from this end. [RPET 2000]

- 1 N
- 4 N
- 3 N
- 5 N

32. A mass of 1 kg is suspended by a string A. Another string C is connected to its lower end (see figure). If a sudden jerk is given to C, then

- The portion AB of the string will break
- None of the strings will break
- The portion BC of the string will break
- The mass will start rotating

33. In doubling the mass and acceleration of the mass, the force acting on the mass with respect to the previous value

- Decreases to half
- Increases two times
- Remains unchanged
- Increases four times

34. A cricket ball of mass 250 g collides with a bat with velocity 10 m/s and returns with the same velocity within 0.01 second. The force acted on bat is. [CPMT 1997]

- 25 N
- 250 N
- 50 N
- 500 N

35. A cold soft drink is kept on the balance. When the cap is open, then the weight. [AFMC 1996]

- Increases
- First increases then decreases
- Decreases
- Remains same

36. A body of mass 2 kg moving on a horizontal surface with an initial velocity of 4 m/sec comes to rest after 2 sec. If one wants to keep this body moving on the same surface with a velocity of 4 m/sec, the force required is. [NCERT 1977]

- 8 N
- Zero
- 4 N
- 2 N

37. A 30 gm bullet initially travelling at 120 m/s penetrates 12 cm into a wooden block. The average resistance exerted by the wooden block is. [AFMC 1999; CPMT]

- 2850N
- 2000N
- 2200 N
- 1800 N

38. In the above Question, if the string C is stretched slowly, then

- The portion AB of the string will break
- None of the strings will break

- The portion BC of the string will break
- None of the above

39. A wagon weighing 1000 kg is moving with a velocity 50km/h on smooth horizontal rails. A mass of 250 kg is dropped into it. The velocity with which it moves now is . [MP PMT 1994]

- 2.5 km/hour
- 40 km/hour
- 20 km/hour
- 50 km/hour

40. A particle is moving with a constant speed along a straight line path. A force is not required to. [AFMC 2001]

- Increase its speed
- Change the direction
- Decrease the momentum
- Keep it moving with uniform velocity

41. A man is at rest in the middle of a pond on perfectly smooth ice. He can get himself to the shore by making use of Newton's. [CPMT 1981]

- First law
- Third law
- Second law
- All the laws

42. A jet engine works on the principle of . [CPMT 1973; MP P]

- Conservation of mass
- Conservation of linear momentum
- Conservation of energy
- Conservation of angular momentum

43. A student attempts to pull himself up by tugging on his hair. He will not succeed. [KCET 2005]

- As the force exerted is small
- Newton's law of inertia is not applicable to living beings.
- The frictional force while gripping, is small.
- As the force applied is internal to the system.

44. A man weighing 80 kg is standing in a trolley weighing 320 kg. The trolley is resting on frictionless horizontal rails. If the man starts walking on the trolley with a speed of 1 m / s, then after 4 sec his displacement relative to the ground will be. [CPMT 1988, 89,]

- 5 m
- 3.2 m
- 4.8 m
- 3.0 m

45. A man is standing on a weighing machine placed in a lift. When stationary his weight is recorded as 40 kg. If the lift is accelerated upwards with an acceleration of 2m/s2, then the weight recorded in the machine will be . [MP PMT 1994]

- 32 kg
- 42 kg
- 40 kg
- 48 kg

46. A diwali rocket is ejecting 0.05 kg of gases per second at a velocity of 400 m/sec. The accelerating force on the rocket is. [NCERT 1979; DPM]

- 20 dynes
- 22 dynes
- 20 N
- 1000 N

47. A man is standing at the centre of frictionless pond of ice. How can he get himself to the shore . [J&K CET 2005]

- By throwing his shirt in vertically upward direction
- He will wait for the ice to melt in pond
- By spitting horizontally
- Unable to get at the shore

48. A bird weighs 2 kg and is inside a closed cage of 1 kg. If it starts flying, then what is the weight of the bird and cage assembly. [AFMC 1997]

- 1.5 kg
- 3 kg
- 2.5 kg
- 4 kg

49. If a bullet of mass 5 gm moving with velocity 100 m /sec, penetrates the wooden block upto 6 cm. Then the average force imposed by the bullet on the block is . [MP PMT 2003]

- *8300 N*
- *830 N*
- *417 N*
- *Zero*

50. A body of mass 2 kg is hung on a spring balance mounted vertically in a lift. If the lift descends with an acceleration equal to the acceleration due to gravity ‘g’, the reading on the spring balance will be . [NCERT 1977]

- 2 kg
- (2*g)kg
- (4*g)kg
- Zero

Units Dimensions and measurements

1. Planck's constant has the dimensions (unit) of . [CPMT 1983, 84,]

- Energy
- Work
- Linear momentum
- Angular momentum

2. Electron volt is a unit of . [MP PMT 1993]

- Charge
- Momentum
- Potential difference
- Energy

3. Wavelength of ray of light is 0.00006 m. It is equal to . [CPMT 1977]

- 6 micron
- 600 micron
- 60 micron
- 0.6 micron

4. Which of the following system of units is not based on units of mass, length and time alone . [Kerala PMT 2004]

- SI
- FPS
- MKS
- CGS

5. Which of the following pairs is wrong. [AFMC 2003]

- Pressure-Baromter
- Temperature-Thermometer
- Relative density-Pyrometer
- Earthquake-Seismograph

6. Light year is a unit of . [MP PMT 1989; CP]

- Time
- Distance
- Mass
- Energy

7. The physical quantity that has no dimensions . [EAMCET (Engg.)]

- Angular Velocity
- Angular momentum
- Linear momentum
- Strain

8. A cube has numerically equal volume and surface area. The volume of such a cube is . [CPMT 1971,

74]

- 216 units
- 2000 units
- 1000 units
- 3000 units

9. The quantities A and B are related by the relation, m = A/B , where m is the linear density and A is the force. The dimensions of B are of

- Pressure
- Latent heat
- Work
- None of the above

10. Which of the following group have different dimension . [IIT JEE 2005]

- Potential difference, EMF, voltage
- Heat, energy, work-done
- Pressure, stress, young's modulus
- Dipole moment, electric flux, electric field

11. In which of the following systems of unit, is the unit of magnetic flux . [DPMT 2005]

- CGS
- SI
- MKS
- None of these

12. Which of the two have same dimensions . [AIEEE 2002]

- Force and strain
- Angular velocity and frequency

- Force and stress
- Energy and strain

13. The unit of percentage error is

- Same as that of physical quantity
- Percentage error is unit less
- Different from that of physical quantity
- Errors have got their own units which are different from that of physical quantity measured

14. Universal time is based on . [SCRA 1989]

- Rotation of the earth on its axis
- Vibrations of cesium atom
- Earth's orbital motion around the earth
- Oscillations of quartz crystal

15. Dimensions of frequency are . [CPMT 1988]

- $M^0L^{-1}T^0$
- $M^0L^0T^0$
- $M^0L^0T^{-1}$
- M^0T^{-2}

16. The correct value of 0o C on the Kelvin scale is . [UPSEAT 2000]

- 273.15K
- 273K
- 272.85K
- 273.2K

17. The unit of reactance is . [MP PET 2003]

- Ohm
- Mho
- Volt
- Newton

18. Length cannot be measured by . [AIIMS 2002]

- Fermi
- Micron
- Debye
- Light year

19. Of the following quantities, which one has dimensions different from the remaining three . [AIIMS 1987; CBS]

- Energy per unit volume
- Product of voltage and charge per unit volume
- Force per unit area
- Angular momentum per unit mass

20. Out of following four dimensional quantities, which one quantity is to be called a dimensional constant . [KCET 2005]

- Acceleration due to gravity
- Weight of a standard kilogram mass
- Surface tension of water
- The velocity of light in vacuum

21. Faraday is the unit of. [AFMC 2003]

- Charge
- Mass

- emf
- Energy

22. The pair having the same dimensions is . [MP PET 1994; CP]

- Angular momentum, work
- Potential energy, linear momentum
- Work, torque
- Kinetic energy, velocity

23. What is the number of significant figures in 0.310×103

- 2
- 4
- 3
- 6

24. Which is different from others by units . [Orissa JEE 2002]

- Phase difference
- Loudness of sound
- Mechanical equivalent
- Poisson's ratio

25. The magnitude of any physical quantity

- Depends on the method of measurement
- Is more in SI system than in CGS system
- Does not depend on the method of measurement
- Directly proportional to the fundamental units of mass, length and time

26. Which of the following quantities is dimensionless . [MP PET 2002]

- Gravitational constant
- Power of a convex lens
- Planck's constant
- None

27. The percentage errors in the measurement of mass and speed are 2% and 3% respectively. How much will be the maximum error in the estimation of the kinetic energy obtained by measuring mass and speed

- 11%
- 5%
- 8%
- 1%

28. The dimensions of pressure is equal to . [AIEEE 2002]

- Force per unit volume
- Force
- Energy per unit volume
- Energy

29. Dimensions of CR are those of . [EAMCET (Engg.)]

- Frequency
- Time period
- Energy
- Current

30. Pressure gradient has the same dimension as that of . [AFMC 2004]

- Velocity gradient
- Energy gradient
- Potential gradient
- None of these

31. The period of oscillation of a simple pendulum in the experiment is recorded as 2.63 s, 2.56 s, 2.42 s, 2.71 s and 2.80 s respectively. The average absolute error is

- 0.1 s
- 0.01 s
- 0.11 s
- 1.0 s

32. Number of base SI units is . [MP PET 2003]

- 4
- 3
- 7
- 5

33. Henry/ohm can be expressed in . [CPMT 1987]

- Second
- Mho
- Coulomb
- Metre

34. Temperature can be expressed as a derived quantity in terms of any of the following . [MP PET 1993; UP]

- Length and mass
- Length, mass and time
- Mass and time
- None of these

35. Which of the following is not equal to watt . [SCRA 1991; CPMT]

- Joule/second
- $(\text{Ampere})^2 * \text{ohm}$

- Ampere * volt
- Ampere/volt

36. Joule-second is the unit of . [CPMT 1990; CBSE]

- Work
- Pressure
- Momentum
- Angular momentum

37. The expression ML^2T^{-2} represents. [JIPMER 1993, 97]

- Pressure
- Momentum
- Kinetic energy
- Power

38. Out of the following pair, which one does not have identical dimensions . [AIEEE 2005]

- Moment of inertia and moment of force
- Angular momentum and Planck's constant
- Work and torque
- Impulse and momentum

39. Select the pair whose dimensions are same

- Pressure and stress
- Pressure and force
- Stress and strain
- Power and force

40. The unit of reduction factor of tangent galvanometer is . [CPMT 1987; AFMC]

- Ampere
- Radian
- Gauss
- None of these

41. Density of wood is 0.5 gm/cc in the CGS system of units. The corresponding value in MKS units is . [CPMT 1983; NCER]

- 500
- 0.5
- 5
- 5000

42. Identify the pair whose dimensions are equal. [AIEEE 2002]

- Torque and work
- Force and stress
- Stress and energy
- Force and work

43. If the unit of length and force be increased four times, then the unit of energy is. [Kerala PMT 2005]

- Increased 4 times
- Increased 16 times
- Increased 8 times
- Decreased 16 times

44. Dimensions of time in power are . [EAMCET 1982]

- T^{-1}
- T^{-3}
- T^{-2}
- T

Wave and sound

1. It is possible to distinguish between the transverse and longitudinal waves by studying the property of . [CPMT 1976; EAMC]

- Interference
- Reflection
- Diffraction
- Polarisation

2. Sound waves have the following frequencies that are audible to human beings. [CPMT 1975]

- 5 c/s
- 5000 c/s
- 27000 c/s
- 50,000 c/s

3. The number of waves contained in unit length of the medium is called. [AIIMS 1998]

- Elastic wave
- Wave pulse
- Wave number
- Electromagnetic wave

4. If the phase difference between the two wave is 2p during superposition, then the resultant amplitude is . [DPMT 2001]

- Maximum
- Maximum or minimum
- Minimum
- None of the above

5. Which of the following is the longitudinal wave . [AFMC 1997]

- Sound waves
- Water waves
- Waves on plucked string
- Light waves

6. The distance between two consecutive crests in a wave train produced in a string is 5 cm. If 2 complete waves pass through any point per second, the velocity of the wave is . [CPMT 1990]

- 10 cm/sec
- 5 cm/sec
- 2.5 cm/sec
- 15 cm/sec

7. A man stands in front of a hillock and fires a gun. He hears an echo after 1.5 sec. The distance of the hillock from the man is (velocity of sound in air is 330 m/s) . [EAMCET (Eng.) 1]

- 220 m
- 268.5 m
- 247.5 m
- 292.5 m

8. A tuning fork makes 256 vibrations per second in air. When the velocity of sound is 330 m/s, then wavelength of the tone emitted is. [MH CET 1999; CB]

- 0.56 m
- 1.11 m
- 0.89 m
- 1.29 m

9. The frequency of a rod is 200 Hz. If the velocity of sound in air is 340 m/s , the wavelength of the sound produced is . [EAMCET (Med.) 1]

- 1.7 cm
- 1.7 m

- 6.8 cm
- 6.8 m

10. What will be the wave velocity, if the radar gives 54 waves per min and wavelength of the given wave is 10 m . [RPET 2000]

- 4 m/sec
- 9 m/sec
- 6 m/sec
- 5 m/sec

11. A wave is reflected from a rigid support. The change in phase on reflection will be . [MP PMT 1990; RP]

- $\pi/4$
- π
- $\pi/2$
- 2π

12. A man stands in front of a hillock and fires a gun. He hears an echo after 1.5 sec. The distance of the hillock from the man is (velocity of sound in air is 330 m/s) . [EAMCET (Eng.) 1]

- 220 m
- 268.5 m
- 247.5 m
- 292.5 m

13. The minimum audible wavelength at room temperature is about. [AFMC 1996]

- 0.2 A
- 5 cm to 2 metre
- 5 A
- 20 mm

14. The type of waves that can be propagated through solid is . [CPMT 2000]

- Transverse
- Both (a) and (b)
- Longitudinal
- None of these

15. A hospital uses an ultrasonic scanner to locate tumours in a tissue. The operating frequency of the scanner is 4.2 MHz. The speed of sound in a tissue is 1.7 km/s. The wavelength of sound in the tissue is close to . [CBSE PMT 1995]

- $4 * 10^{-4}$ m
- $4 * 10^{-3}$ m
- $8 * 10^{-3}$ m
- $8 * 10^{-4}$ m

16. The frequency of a rod is 200 Hz. If the velocity of sound in air is 340 m/s , the wavelength of the sound produced is . [EAMCET (Med.) 1]

- 1.7 cm
- 1.7 m
- 6.8 cm
- 6.8 m

17. The phase difference between two points separated by 1m in a wave of frequency 120 Hz is . The wave velocity is . [KCET 1999]

- 180 m/s
- 480 m/s
- 240 m/s
- 720 m/s

18. The superposition takes place between two waves of frequency f and amplitude a. The total intensity is directly proportional to. [MP PMT 1986]

- a
- $2a^2$
- 2a
- $4a^2$

19. A medium can carry a longitudinal wave because it has the property of . [KCET 1994]

- Mass
- Compressibility
- Density
- Elasticity

20. It is possible to distinguish between the transverse and longitudinal waves by studying the property of . [CPMT 1976; EAMC]

- Interference
- Reflection
- Diffraction
- Polarisation

21. The waves in which the particles of the medium vibrate in a direction perpendicular to the direction of wave motion is known as . [EAMCT 1981; AII]

- Transverse wave
- Propagated waves
- Longitudinal waves
- None of these

22. A wave of frequency 500 Hz has velocity 360 m/sec. The distance between two nearest points 60° out of phase, is . [JIPMER 1997; R]

- 0.6 cm
- 60 cm
- 12 cm
- 120 cm

23. A man sets his watch by a whistle that is 2 km away. How much will his watch be in error. (speed of sound in air 330 m/sec). [MP PET 1991]

- 3 seconds fast
- 6 seconds fast
- 3 seconds slow
- 6 seconds slow

24. The frequency of a sound wave is n and its velocity is v. If the frequency is increased to 4n the velocity of the wave will be . [MP PET 2000]

- v
- 4v
- 2v
- v/4

25. The frequency of a tunning fork is 384 per second and velocity of sound in air is 352 m/s. How far the sound has traversed while fork completes 36 vibration . [KCET 2001]

- 3 m
- 23 m
- 13 m
- 33 m

26. If the phase difference between the two wave is 2p during superposition, then the resultant amplitude is . [DPMT 2001]

- Maximum
- Maximum or minimum
- Minimum
- None of the above

27. There is a destructive interference between the two waves of wavelength l coming from two different paths at a point. To get maximum sound or constructive interference at that point, the path of one wave is to be increased by . [MP PET 1985]

- $\lambda/4$
- $3\lambda/4$

- $\lambda/2$
- λ

28. The number of waves contained in unit length of the medium is called. [AIIMS 1998]

- Elastic wave
- Wave pulse
- Wave number
- Electromagnetic wave

29. Water waves are. [EAMCET 1979; AI]

- Longitudinal
- Both longitudinal and transverse
- Transverse
- Neither longitudinal nor transverse

30. Speed of sound at constant temperature depends on . [RPET 2000; AIIM]

- Pressure
- Above both
- Density of gas
- None of the above

31. Which of the following is the longitudinal wave . [AFMC 1997]

- Sound waves
- Water waves
- Waves on plucked string
- Light waves

32. A travelling wave passes a point of observation. At this point, the time interval between successive crests is 0.2 seconds and. [MP PMT 1990]

- The wavelength is 5 m
- The velocity of propagation is 5 m/s
- The frequency is 5 Hz
- The wavelength is 0.2 m

33. What will be the wave velocity, if the radar gives 54 waves per min and wavelength of the given wave is 10 m . [RPET 2000]

- 4 m/sec
- 9 m/sec
- 6 m/sec
- 5 m/sec

34. The ratio of the speed of sound in nitrogen gas to that in helium gas, at 300 K is. [IIT 1999]

- $\sqrt{(2/7)}$
- $\sqrt{(3/5)}$
- $\sqrt{(1/7)}$
- $\sqrt{(6/5)}$

35. Sound waves have the following frequencies that are audible to human beings. [CPMT 1975]

- 5 c/s
- 5000 c/s
- 27000 c/s
- 50,000 c/s

Wave Optics

1. In the Young's double slit experiment, for which colour the fringe width is least. [UPSEAT 2001, MP]

- Red
- Blue
- Green
- Yellow

2. By corpuscular theory of light, the phenomenon which can be explained is

- Refraction
- Diffraction
- Interference
- Polarisation

3. Two coherent sources of light can be obtained by. [MH CET 2001]

- Two different lamps
- Two different lamps of same power and having the same colour
- Two different lamps but of the same power
- None of the above

4. In which of the following is the interference due to the division of wave front. [UPSEAT 2005]

- Young's double slit experiment
- Lloyd's mirror experiment
- Fresnel's biprism experiment
- Demonstration colours of thin film

5. According to corpuscular theory of light, the different colours of light are due to

- Different electromagnetic waves
- Different size of the corpuscles
- Different force of attraction among the corpuscles
- None of the above

6. In Young’s double slit experiment, the wavelength of the light used is doubled and distance between two slits is half of initial distance, the resultant fringe width becomes. [AIEEE 2002]

- 2 times
- 4 times
- 3 times
- 1/2 times

7. A double slit experiment is performed with light of wavelength 500 nm. A thin film of thickness 2 mm and refractive index 1.5 is introduced in the path of the upper beam. The location of the central maximum will. [AIIMS 2003]

- Remain unshifted
- Shift upward by nearly two fringes
- Shift downward by nearly two fringes
- Shift downward by 10 fringes

8. A star producing light of wavelength 6000 Å moves away from the earth with a speed of 5 km/sec. Due to Doppler effect the shift in wavelength will be ($c = 3 * 10^8$ m / sec). [MP PMT 1990]

- 0.1 Å
- 0.2 Å
- 0.05 Å
- 1 Å

9. Wavefront of a wave has direction with wave motion. [RPMT 1997]

- Parallel
- Opposite
- Perpendicular
- At an angle of θ

10. The ratio of intensities of two waves are given by 4 : 1. The ratio of the amplitudes of the two waves is. [CBSE PMT 1993]

- 2 : 1
- 4 : 1
- 1 : 2
- 1 : 4

11. In young's double slit experiment with a source of light of wavelength 6320Å, the first maxima will occur when. [Roorkee 1999]

- Path difference is 9480 Å
- Path difference is 6320 Å
- Phase difference is 2p radian
- Phase difference is p radian

12. If a source of light is moving away from a stationary observer, then the frequency of light wave appears to change because of. [AFMC 1995]

- Doppler's effect
- Diffraction
- Interference
- None of these

13. In a Young's double slit experiment, 12 fringes are observed to be formed in a certain segment of the screen when light of wavelength 600 nm is used. If the wavelength of light is changed to 400 nm, number of fringes observed in the same segment of the screen is given by. [IIT-JEE (Screen]

- 12
- 24
- 18
- 30

14. The phenomenon of interference is shown by. [MP PMT 1997; AI]

- Longitudinal mechanical waves only
- Electromagnetic waves only
- Transverse mechanical waves only
- All the above types of waves

15. In the interference pattern, energy is

- Created at the position of maxima
- Conserved but is redistributed

- Destroyed at the position of minima
- None of the above

16. If the shift of wavelength of light emitted by a star is towards violet, then this shows that star is. [RPET 1996; RPMT]

- Stationary
- Moving away from earth
- Moving towards earth
- Information is incomplete

17. A star emits light of 5500 Å wavelength. Its appears blue to an observer on the earth, it means. [DPMT 2002]

- Star is going away from the earth
- Star is coming towards earth
- Star is stationary
- None of the above

18. What is the effect on Fresnel's biprism experiment when the use of white light is made. [RPMT 1998]

- Fringe are affected
- Central fringe is white and all are coloured
- Diffraction pattern is spread more
- None of these

19. The fringe width in Young's double slit experiment increases when. [MP PMT 2000]

- Wavelength increases
- Distance between the source and screen decreases
- Distance between the slits increases
- The width of the slits increases

20. Wavefront means. [RPMT 1997, 98]

- All particles in it have same phase
- Few particles are in same phase, rest are in opposite

phase

- All particles have opposite phase of vibrations
- None of these

21. In Young's double slit experiment, if L is the distance between the slits and the screen upon which interference pattern is observed, x is the average distance between the adjacent fringes and d being the slit separation. The wavelength of light is given by. [MP PET 1993]

- xd / L
- Ld / x
- xL / d
- 1 / Ldx

22. Two coherent monochromatic light beams of intensities I and 4I are superposed. The maximum and minimum possible intensities in the resulting beam are. [IIT-JEE 1988;AI]

- 5I and I
- 9I and I
- 5I and 3I
- 9I and 3I

23. Wave nature of light is verified by. [RPET 2001]

- Interference
- Reflection
- Photoelectric effect
- Refraction

24. Two beams of light having intensities I and 4I interfere to produce a fringe pattern on a screen. The phase difference between the beams is $\pi/2$ at point A and p at point B. Then the difference between the resultant intensities at A and B is. [IIT JEE (Screen]

- 2I
- 5I

- 4I
- 7I

25. Young's experiment establishes that. [CPMT 1972; MP P]

- Light consists of waves
- Light consists of neither particles nor waves
- Light consists of particles
- Light consists of both particles and waves

26. To demonstrate the phenomenon of interference, we require two sources which emit radiation. [AIEEE 2003]

- Of the same frequency and having a define phase relationship
- Of the same frequency
- Of nearly the same frequency
- Of different wavelengths

27. A star emitting light of wavelength 5896 Å is moving away from the earth with a speed of 3600 km / sec. The wavelength of light observed on earth will ($c = 3 * 10^8$ m / sec is the speed of light). [MP PET 1995, 20]

- Decrease by 5825.25 Å
- Decrease by 70.75 Å
- Increase by 5966.75 Å
- Increase by 70.75 Å

28. Wavelength of light of frequency 100Hz. [CBSE PMT 1999]

- $2 * 10^6$ m
- $4 * 10^6$ m
- $3 * 10^6$ m
- $5 * 10^6$ m

29. In Young's double slit experiment, if one of the slit is closed fully, then in the interference pattern

- A bright slit will be observed, no interference pattern will exist
- The bright fringes will become fainter
- The bright fringes will become more bright
- None of the above

30. Assuming that universe is expanding, if the spectrum of light coming from a star which is going away from earth is tested, then in the wavelength of light

- There will be no change
- The spectrum will seems to shift to ultraviolet side
- The spectrum will move to infrared region
- None of the above

31. Doppler's effect in sound in addition to relative velocity between source and observer, also depends while source and observer or both are moving. Doppler effect in light depend only on the relative velocity of source and observer. The reason of this is. [MP PET/PMT 1988]

- Einstein mass - energy relation
- Photoelectric effect
- Einstein theory of relativity
- None of these

32. Two light sources are said to be coherent if they are obtained from. [MP PET 1996]

- Two independent point sources emitting light of the same wavelength
- A wide source
- A single point source
- Two ordinary bulbs emitting light of different wavelengths

33. In a double slit experiment, instead of taking slits of equal widths, one slit is made twice as wide as the other. Then in the interference pattern. [IIT-JEE (Screen]

- The intensities of both the maxima and the
- The intensity of maxima decreases and that of

minima increase

the minima increases

The intensity of maxima increases and the minima has zero intensity

The intensity of maxima decreases and the minima has zero intensity

34. Select the right option in the following. [KCET 2005]

Christian Huygens a contemporary of Newton established the wave theory of light by assuming that light waves were transverse

Thomas Young experimentally proved the wave behaviour of light and Huygens assumption

Maxwell provided the compelling theoretical evidence that light is transverse wave

All the statements give above, correctly answers the question “what is light”

35. Laser beams are used to measure long distance because. [DCE 2001]

They are monochromatic

They are coherent

They are highly polarised

They have high degree of parallelism

36. In Young’s experiment, monochromatic light is used to illuminate the two slits A and B. Interference fringes are observed on a screen placed in front of the slits. Now if a thin glass plate is placed normally in the path of the beam coming from the slit. [UPSEAT 1993, 20]

The fringes will disappear

The fringe width will increase

The fringe width will increase

There will be no change in the fringe width but the pattern shifts

37. The idea of the quantum nature of light has emerged in an attempt to explain. [CPMT 1990]

Interference

Radiation spectrum of a black body

Diffraction

Polarisation

38. If a star is moving towards the earth, then the lines are shifted towards. [AIIMS 1997]

- Red
- Blue
- Infrared
- Green

Work Energy power and collision

1. A particle is acted upon by a force of constant magnitude which is always perpendicular to the velocity of the particle, the motion of the particle takes place in a plane. It follows that . [AIEEE 2004]

- Its velocity is constant
- Its kinetic energy is constant
- Its acceleration is constant
- It moves in a straight line

2. The same retarding force is applied to stop a train. The train stops after 80 m. If the speed is doubled, then the distance will be. [CPMT 1984]

- The same
- Halved
- Doubled
- Four times

3. If force and displacement of particle in direction of force are doubled. Work would be. [AFMC 2002]

- Double
- Half
- 4 times
- 1/4 times

4. If a body of mass 200 g falls from a height 200 m and its total P.E. is converted into K.E. at the point of contact of the body with earth surface, then what is the decrease in P.E. of the body at the contact (g=10). [AFMC 1997]

- 200 J
- 600 J
- 400 J
- 900 J

5. A body moves a distance of 10 m along a straight line under the action of a force of 5 N. If the work done is 25 joules, the angle which the force makes with the direction of motion of the body is . [CBSE PMT 1999;R]

- 0°
- 60°
- 30°
- 90°

6. A particle moves in a straight line with retardation proportional to its displacement. Its loss of kinetic energy for any displacement x is proportional to . [AIEEE 2004]

- x^2
- x
- e^x
- $\log_e x$

7. A spring with spring constant k when stretched through 1 cm, the potential energy is U. If it is stretched by 4 cm. The potential energy will be . [Orissa PMT 2004]

- 4U
- 16 U
- 8U
- 2U

8. The work done against gravity in taking 10 kg mass at 1m height in 1sec will be . [RPMT 2000]

- 49 J
- 196 J
- 98 J
- None of these

9. Work done in raising a box depends on

- How fast it is raised
- The height by which it is raised
- The strength of the man
- None of the above

10. A body of mass 10 kg is dropped to the ground from a height of 10 metres. The work done by the gravitational force is (g = 9.8) . [SCRA 1994]

- - 490 Joules
- - 980 Joules
- + 490 Joules
- + 980 Joules

11. In an explosion a body breaks up into two pieces of unequal masses. In this . [MP PET 2002]

- Both parts will have numerically equal momentum
- Heavier part will have more momentum
- Lighter part will have more momentum
- Both parts will have equal kinetic energy

12. A spring of force constant 10 N/m has an initial stretch 0.20 m. In changing the stretch to 0.25 m, the increase in potential energy is about. [CPMT 1977]

- 0.1 joule
- 0.3 joule
- 0.2 joule
- 0.5 joule

13. If the K.E. of a particle is doubled, then its momentum will . [CPMT 2003: Kera]

- Remain unchanged
- Be quadrupled
- Be doubled
- Increase $\sqrt{2}$ times

14. When work is done on a body by an external force, its

- Only kinetic energy increases
- Both kinetic and potential energies may increase
- Only potential energy increases
- Sum of kinetic and potential energies remains constant

15. The decrease in the potential energy of a ball of mass 20 kg which falls from a height of 50 cm is. [AIIMS 1997]

- 968 J
- 1980 J
- 98 J
- None of these

16. Which one of the following is not a conservative force . [Kerala PMT 2005]

- Gravitational force
- Magnetic force between two magnetic dipoles
- Electrostatic force between two charges
- Frictional force

17. When a spring is stretched by 2 cm, it stores 100 J of energy. If it is stretched further by 2 cm, the stored energy will be increased by . [Orissa JEE 2002]

- 100 J
- 300 J
- 200 J
- 400 J

18. It is easier to draw up a wooden block along an inclined plane than to haul it vertically, principally because . [CPMT 1977; JIPM]

- The friction is reduced
- Only a part of the weight has to be overcome
- The mass becomes smaller
- ‘g’ becomes smaller

19. Two bodies of masses m and 2m have same momentum. Their respective kinetic energies E1 and E2 are in the ratio . [MP PET 1997; KC]

- 1 : 2
- 1 : √2
- 2 : 1
- 1 : 4

20. A ball of mass m moves with speed v and strikes a wall having infinite mass and it returns with same speed then the work done by the ball on the wall is . [BCECE 2004]

- Zero
- m/v.J
- mvJ
- v/m J

21. A cylinder of mass 10kg is sliding on a plane with an initial velocity of 10m/s. If coefficient of friction between surface and cylinder is 0.5, then before stopping it will describe . [Pb. PMT 2001]

- 12.5 m
- 7.5 m
- 5 m
- 10 m

22. A body of mass 10kg at rest is acted upon simultaneously by two forces 4 N and 3N at right angles to each other. The kinetic energy of the body at the end of 10 sec is . [Kerala (Engg.)]

- 100 J
- 50 J
- 300 J
- 125 J

23. Which of the following is a scalar quantity. [AFMC 1998]

- Displacement
- Acceleration
- Electric field
- Work

24. A man pushes a wall and fails to displace it. He does . [CPMT 1992]

- Negative work
- No work at all
- Positive but not maximum work
- Maximum work

25. The kinetic energy acquired by a body of mass m is travelling some distance s, starting from rest under the actions of a constant force, is directly proportional to . [Pb. PET 2000]

- m^o
- m^2
- m
- $\sqrt{m}$

26. The work done in pulling up a block of wood weighing 2 kN for a length of 10m on a smooth plane inclined at an angle of 15° with the horizontal is . [AFMC 1999; Pb P]

- 4.36 kJ
- 8.91 kJ
- 5.17 kJ
- 9.82 kJ

27. A uniform chain of length 2m is kept on a table such that a length of 60cm hangs freely from the edge of the table. The total mass of the chain is 4kg. What is the work done in pulling the entire chain on the table . [AIEEE 2004]

- 7.2 J
- 120 J
- 3.6 J
- 1200 J

28. Two masses of 1kg and 16kg are moving with equal K.E. The ratio of magnitude of the linear momentum is . [AIEEE 2002]

- 1 : 2
- 1 : √2
- 1 : 4
- √2 : 1

29. A body of mass 5 kg is placed at the origin, and can move only on the x-axis. A force of 10 N is acting on it in a direction making an angle of with the x-axis and displaces it along the x-axis by 4 metres. The work done by the force is . [MP PET 2003]

- 2.5 J
- 40 J
- 7.25 J
- 20 J

30. The potential energy of a body is given by, U = A - Bx2 (Where x is the displacement). The magnitude of force acting on the particle is. [BHU 2002]

- Constant
- Proportional to x^2
- Proportional to x
- Inversely proportional to x

31. You lift a heavy book from the floor of the room and keep it in the book-shelf having a height 2 m. In this process you take 5 seconds. The work done by you will depend upon . [MP PET 1993]

- Mass of the book and time taken
- Height of the book-shelf and time taken
- Weight of the book and height of the book-shelf
- Mass of the book, height of the book-shelf and time taken

32. If the momentum of a body is increased n times, its kinetic energy increases

- n times
- $\sqrt{n}$ times
- 2n times
- n^2 times

33. A body of mass m kg is lifted by a man to a height of one metre in 30 sec. Another man lifts the same mass to the same height in 60 sec. The work done by them are in the ratio. [MP PMT 1993]

- 1 : 2
- 2 : 1
- 1 : 1
- 4 : 1

34. A man starts walking from a point on the surface of earth (assumed smooth) and reaches diagonally opposite point. What is the work done by him . [DCE 2004]

- Zero
- Negative
- Positive
- Nothing can be said

35. A spring when stretched by 2 mm its potential energy becomes 4 J. If it is stretched by 10 mm, its potential energy is equal to. [BCECE 2003]

- 4 J
- 415 J
- 54 J
- None

36. A spring of spring constant 5 ´ 103 N/m is stretched initially by 5cm from the unstretched position. Then the work required to stretch it further by another is . [AIEEE 2003]

- 6.25 N-m
- 18.75 N-m
- 12.50 N-m
- 25.00 N-m

37. A 50kg man with 20kg load on his head climbs up 20 steps of 0.25m height each. The work done in climbing is . [JIPMER 2002]

- 5 J
- 100 J
- 350 J
- 3430 J

38. If the unit of force and length each be increased by four times, then the unit of energy is increased by . [CPMT 1987]

- 16 times
- 2 times
- 8 times
- 4 times

39. The energy which an e- acquires when accelerated through a potential difference of 1 volt is called . [UPSEAT 2000]

- 1 Joule
- 1 Erg
- 1 Electron volt
- 1 Watt.

40. A ball is released from the top of a tower. The ratio of work done by force of gravity in first, second and third second of the motion of the ball is . [Kerala PET 2005]

- 1 : 2 : 3
- 1 : 3 : 5
- 1 : 4 : 9
- 1 : 5 : 3

41. If the stone is thrown up vertically and return to ground, its potential energy is maximum. [EAMCET 1979]

- During the upward journey
- During the return journey
- At the maximum height
- At the bottom

42. A body at rest may have

- Energy
- Speed
- Momentum
- Velocity

43. In which case does the potential energy decrease . [MP PET 1996]

- On compressing a spring
- On moving a body against gravitational force
- On stretching a spring
- On the rising of an air bubble in water