

## Physics Mock Test 1

- Volt/metre is the unit of
  - Potential
  - Work
  - Force
  - Electric intensity**
- Percentage errors in the measurement of mass and speed are 2% and 3% respectively. The error in the estimation of kinetic energy obtained by measuring mass and speed will be
  - 8%**
  - 2%
  - 12%
  - 10%
- The correct statement from the following is
  - A body having zero velocity will not necessarily have zero acceleration.**
  - A body having zero velocity will necessarily have zero acceleration.
  - A body having uniform speed can have only uniform acceleration.
  - A body having non-uniform velocity will have zero acceleration.
- A man walks on a straight road from his home to a market 2.5km away with a speed of 5 km/h. Finding the market closed, he instantly turns and walks back home with a speed of 7.5 km/h. The average speed of the man over the interval of time 0 to 10 min. Is equal to
  - 5 km/h
  - 25/4km/h
  - 30/4 km/h
  - 45/8 km/h**
- A ball is thrown upwards and it returns to ground describing a parabolic path. Which of the following remains constant?
  - Kinetic energy of the ball
  - Speed of the ball
  - Horizontal component of velocity**
  - Vertical component of velocity
- The greatest height to which a man can throw a stone is h. The greatest distance to which he can throw it will be
  - h/2
  - h
  - 2h**
  - 3h
- A body of mass 2 kg is hang 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
  - 2 kg
  - (4 x g) kg
  - (2 x g) kg
  - 0**

8. A bird weighs 2 kg is inside a closed cage of 1 kg. If it starts plying, then what is the weight of the bird and cage assembly?
- A) 1.5 kg
  - B) 2.5 kg
  - C) **3 kg**
  - D) 4kg
9. A block of mass 2 kg rests on a plane inclined at an angle of  $30^0$  with the horizontal. The coefficient of friction between the block and the surface is 0.7. what will be the frictional force acting on the block
- A) 10.3 N
  - B) 23.8 N
  - C) **11.9 N**
  - D) 6.3 N
10. A mass  $m$  is revolving in a vertical circle at the end of a string of length 20 cm. By how much does the tension of the string at the lowest point exceed the tension at the topmost point?
- A) 2 mg
  - B) 4 mg
  - C) **6 mg**
  - D) 8 mg
11. A cord is used to lower vertically a block of mass  $M$  by a distance  $d$  with constant downward acceleration  $g/4$ . Work done by the cord on the block is
- A)  $Mg d/4$
  - B)  $3Mg d/4$
  - C)  **$-3Mg d/4$**
  - D)  $Mg d$
12. A ball of mass  $M$  falls from a height  $h$  on a floor which the coefficient of restitution is  $e$ . The height attained by the ball after two rebound is
- A)  $eh^2$
  - B)  $e^2h$
  - C)  **$e^4h$**
  - D)  $h/e^4$
13. The moment of inertia of a body depends upon
- A) Mass of the body
  - B) Axis of rotation of the body
  - C) Shape and size of the body
  - D) **All of the above**
14. Total angular momentum of a rotating body remains constant, if the net torque acting on a body is
- A) **0**
  - B) Maximum
  - C) Minimum
  - D) Unity

15. Which of the following statements is correct regarding the universal gravitational constant  $G$ ?
- A)  $G$  has same value in all systems of units
  - B) **The value of  $G$  is same everywhere in the universe**
  - C) The value of  $G$  was first experimentally determined by Johannes Kepler
  - D)  $G$  is a vector quantity
16. A body weighs 250 N on the surface of the earth. How much will it weigh half way down to the centre of the earth?
- A) **125 N**
  - B) 150 N
  - C) 175 N
  - D) 250 N
17. The extension of a wire by the application of load is 3mm. The extension in a wire of the same material and length but half the radius by the same load is
- A) **12mm**
  - B) 0.75mm
  - C) 15mm
  - D) 6mm
18. A wire extends 1 mm when a force is applied. Double the force is applied to another wire of same material and length but of the radius of cross section the elongation of the wire in mm will be
- A) **8**
  - B) 4
  - C) 2
  - D) 1
19. The maximum force, in addition to the weight require to pull a wire of 5 cm long from the surface of water at temperature  $20^{\circ}\text{C}$ , is 728 dynes. The surface tension of water is
- A) 7.28 N/cm
  - B) 7.28 dyne/cm
  - C) **72.8 dyne/cm**
  - D)  $7.28 \times 10^2$  dyne/cm
20. If the radius of a soap bubble is 4 times that of another, then the ratio of there pressure will be
- A) **1:4**
  - B) 4:1
  - C) 16:1
  - D) 1:16
21. Latent heat of ice is 80 cal/g. a man melts 60g of ice by chewing in 1min. His power is
- A) 4800 W
  - B) **336W**
  - C) 1.33 W
  - D) 0.75 W

22. The amount of heat required to change 1g( $0^{\circ}$  C) of ice into water of  $100^{\circ}$  C, is
- A) 716 cal
  - B) 500 cal
  - C) **180 cal**
  - D) 100 cal
23. The heat capacity per mole of water is (R is the universal gas constant)
- A) **9R**
  - B) 10R
  - C) 6R
  - D) 5R
24. The internal energy of 1g of helium at 100 K and 1atmospheric pressure is
- A) 100 j
  - B) 1200 j
  - C) **300 j**
  - D) 500 j
25. When an ideal monatomic gas is heated at constant pressure, fraction of heat energy supplied which increases the internal energy of gas, is
- A)  $\frac{2}{5}$
  - B)  **$\frac{3}{5}$**
  - C)  $\frac{3}{7}$
  - D)  $\frac{3}{4}$
26. An ideal refrigerator as a freezer at a temperature of  $-13^{\circ}$ C, the coefficient of performance of engine is 5 the temperature of the air(to which heat is rejected) will be
- A)  $25^{\circ}$ C
  - B)  **$39^{\circ}$ C**
  - C)  $43^{\circ}$ C
  - D)  $48^{\circ}$ C
27. A spring with 10 coils as spring constant K. it is exactly cut into two halves, then each of these new springs will have a spring constant
- A)  $\frac{k}{2}$
  - B)  **$\frac{3k}{2}$**
  - C) 2k
  - D) 3k
28. A particle performing simple harmonic motion along the x-axis with the amplitude 4 cm and a time period 1.2s. the minimum time taken by the piratical to move from  $X = 2$  cm to  $X = +4$ cm and back again is given by
- A) 0.6s
  - B) **0.4s**
  - C) 0.3s
  - D) 0.2s

29. The frequency of tuning fork is 384s and velocity of sound in air is 352m/s . how for the sound as traversed while fork complete 36 vibration ?
- A) 3m
  - B) 13m
  - C) 23m
  - D) **33m**
30. The fundamental frequency of a string stretched with weight of 4kg is 256Hz . the weight required to produce its octave is
- A) 4kg wt
  - B) 8kg wt
  - C) 12kg wt
  - D) **16kg wt**
31. Five balls numbered 1 to 5 are suspended using separate threads Pairs (1, 2), (2,4) and (4,1) show electrostatic attraction, while pair (2,3) and (4,5) show repulsion. Therefore ball 1 must be
- A) Positively charged
  - B) Negatively charged
  - C) **Neutral**
  - D) Made of metal
32. The electric field due to an electric dipole at a distance r from its centre in axial position is E. If the dipole is rotated through an angle of  $90^\circ$  about its perpendicular axis, the electric field at the same point will be
- A) E
  - B) E/4
  - C) **E/2**
  - D) 2E
33. If a charged spherical conductor of radius 10 cm has potential V at a point distance 5 cm from its centre, then the potential at a point distance 15 cm from the centre will be
- A) 1/3V
  - B) **2/3V**
  - C) 3/2V
  - D) 3V
34. The diameter of each plate of an air capacitor is 4 cm. To make the capacity of this plate capacitor equal to that of 20 cm diameter sphere, the distance between the plates will be
- A)  $4 \times 10^{-3}$  m
  - B)  **$1 \times 10^{-3}$  m**
  - C) 1 cm
  - D)  $1 \times 10^{-3}$  cm
35. An increasing the temperature of a conductor, its resistance increases because
- A) **Relaxation time decreases**
  - B) Mass of the electron increases
  - C) Electron density decreases
  - D) None of the above

36. Two wires A and B of same material same mass have radius  $2r$  and  $r$ . If resistance of wire A is  $34\Omega$ , then resistance of B will be
- A)  **$544\Omega$**
  - B)  $2725\Omega$
  - C)  $68\Omega$
  - D)  $17\Omega$
37. Magnetic field at two points on the axis of a circular coil at a distance of  $0.05\text{m}$  and  $0.2\text{m}$  from the centre are in the ration  $8:1$ . The radius of the coil is
- A)  $1\text{m}$
  - B)  **$0.1\text{m}$**
  - C)  $0.15\text{m}$
  - D)  $0.2\text{m}$
38. When a certain length of wire is turned into one circular loop, the magnetic induction at the centre of coil due to some current flowing is  $B_1$  if the same wire is turned into three loops to make a circular coil, the magnetic induction of the centre of this coil for the same current will be
- A)  $B_1$
  - B)  **$9B_1$**
  - C)  $3B_1$
  - D)  $27B_1$
39. The magnetic potential at a point on the axis line of a bar magnet of dipole moment  $M$  is  $V$ . What is the magnetic potential due to a bar magnet of dipole moment  $M/4$  at the same point?
- A)  $4V$
  - B)  $2V$
  - C)  $V/2$
  - D)  **$V/4$**
40. Substance in which magnetic moment of a single atom is not zero is known as
- A) Diamagnetism
  - B) Ferromagnetism
  - C) **Paramagnetism**
  - D) Ferrimagnetisms
41. A rod of length  $20\text{ cm}$  is rotating with angular speed of  $100\text{rps}$  in a magnet field of strength  $0.5\text{T}$  about its one end. what is the potential difference between two ends of the rod
- A)  $2.28\text{V}$
  - B)  $4.28\text{V}$
  - C)  **$6.28\text{V}$**
  - D)  $2.5\text{V}$
42. The equivalent inductance of two inductances is  $2.4\text{ Henry}$  when connected in parallel and  $10\text{ henry}$  when connected in series. The difference between the two inductances is
- A)  **$2\text{ Henry}$**
  - B)  $3\text{ Henry}$
  - C)  $4\text{ Henry}$
  - D)  $5\text{ Henry}$

43. Alternating current cannot be measured by dc ammeter because
- A) ac cannot passed through dc ammeter
  - B) **Average value of complete cycle is zero**
  - C) ac is virtual
  - D) ac changes its direction
44. There is a  $5\Omega$  resistance in an ac circuit. Inductance of  $0.1\text{H}$  is connected with it in series. If equation of ac e.m.f. is  $5 \sin 50t$ , then the phase difference between current and e.m.f. is
- A)  $5/2$
  - B)  $5/6$
  - C)  **$5/4$**
  - D) 0
45. A point object is placed at a distance of  $30\text{cm}$  from a convex mirror of focal length  $30\text{cm}$ . The image will form at
- A) infinity
  - B) Focus
  - C) Pole
  - D)  **$15\text{cm}$  behind the mirror**
46. An object is placed at distance of  $40\text{cm}$  in front of a concave mirror of focal length  $20\text{cm}$ . The nature of image is
- A) **Real, inverted and of same size**
  - B) Virtual and erect and of same size
  - C) Real and erect and of same size
  - D) Virtual and inverted and of same size
47. Angular width( $\beta$ ) of central maximum of a diffraction pattern on a single slit does not depending upon
- A) **Distance between slit and screen**
  - B) Wavelength of light used
  - C) continuous emission spectrum Width of the slit
  - D) Frequency of light used
48. In a YDS set up, the fringe pattern is seen on a screen placed at a distance  $D$ . The slits are the separated by a distance  $d$  and are illuminated by light of wavelength  $\lambda$ . The distance from the central point to the nearest point where the intensity falls to of the maximum is
- A)  $\lambda D/3d$
  - B)  $\lambda D/2d$
  - C)  $\lambda D/d$
  - D)  **$\lambda D/4d$**
49. Wave which cannot travel in vacuum is
- A) X-ray
  - B) **Infrasonic**
  - C) Ultraviolet
  - D) Radio wave

50. One requires 11 electron Volt of energy to dissociate a carbon monoxide molecule into carbon and oxygen atoms. The minimum frequency of the appropriate electromagnetic radiation to achieve the dissociation lies in
- A) Visible region
  - B) Infrared region
  - C) **Ultraviolet region**
  - D) Micro wave region
51. As the intensity of incident light increases
- A) **Photoelectric current increases**
  - B) Photoelectric current decreases
  - C) Kinetic energy of emitted photo electrons increases
  - D) Kinetic energy of emitted photo electrons decreases
52. The energy that should be added to an electron to reduce its de- Broglie wavelength from 1nm to 0.5nm is
- A) 4 times the initial energy
  - B) Equal to the initial energy
  - C) Twice the initial energy
  - D) **Thrice the initial energy**
53. With the increase in principal quantum number, the energy difference between the two successive energy levels
- A) Increases
  - B) **Decreases**
  - C) Remains constant
  - D) Some time increases some time decreases
54. If the wavelength of a first line of the Balmer series of hydrogen is  $6561\text{\AA}$ , the wavelength of the second line of the series should be
- A)  $1312\text{\AA}$
  - B)  $3280\text{\AA}$
  - C)  **$4860\text{\AA}$**
  - D)  $2187\text{\AA}$
55. Outside a nucleus
- A) Neutron is stable
  - B) Proton and neutron both are stable
  - C) **Neutron is unstable**
  - D) Neither neutron nor Proton is stable
56. A chain reaction is continuous due to
- A) Large mass defect
  - B) Large energy
  - C) **Production of more neutron in fission**
  - D) None of these

57. Zener diode is fabricated by
- A) **Heavily doping p and n sides of the junction**
  - B) Heavily doping the p side and lightly doping the n side of the junction
  - C) Heavily doping the n side and lightly doping the p side of the junction
  - D) Lightly doping p and n sides of the junction
58. In the middle of the depletion layer of a reverse biased PN junction, the
- A) Potential energy is zero
  - B) Electric field is zero
  - C) Potential energy is maximum
  - D) **Electric field is maximum**
59. The process of superimposing signal frequency(i,e audio waves) on the carrier wave is known as
- A) Transmission
  - B) Reception
  - C) **Modulation**
  - D) Detection
60. Broadcasting antennas are generally
- A) Omni directional type
  - B) **Vertical type**
  - C) Horizontal type
  - D) None of the above