DEPARTMENT OF PHYSICS
QUESTION PAPER -2

1. Unit of impulse is
   A) newton
   B) Kg-m
   C) Kg-m/s
   D) Joule
2. Which one of the following does not have the same dimensions?
   A) Work and energy
   B) Angle and strain
   C) Relative density and refractive index
   D) Planck constant and energy
3. A 150 m long train is moving with a uniform velocity of 45km/h. The time taken by the train to cross a bridge of length 580 metre is
   A) 56s
   B) 68s
   C) 80s
   D) 92s
4. Water drops fall at regular intervals from tap which is 5m above the ground. The third drop is leaving the tap at the instant the first drop touches the ground. How far above the ground is the second drop at that instant?
   A) 2.50 m
   B) 3.75 m
   C) 4.00 m
   D) 1.25 m
5. A gun is aimed at a target in a line of its barrel. The target is released and allowed to fall under gravity, at the same instant the gun is fired. The bullet will
   A) Pass above the target
   B) Pass below the target
   C) Hit the target
   D) Certainly miss the target
6. A particle covers 50 m distance when projected with an initial speed. On the same surface it will cover a distance, when projected with double the initial speed is
   A) 100 m
   B) 150 m
   C) 200 m
   D) 250 m
7. New ton's first law of motion describes the following
   A) Energy
   B) Work
   C) **Inertia**
   D) Moment of inertia

8. 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
   A) Go on increasing
   B) Go on decreasing
   C) First increasing and Then decreasing
   D) Remain the same
9. A girl presses her physics text book against a rough vertical wall with her hand. The direction of the frictional force on the book exerted by the wall is
   A) downwards
   B) upwards
   C) Out from the wall
   D) Into the wall
10. A 2 kg stone at end of a string 1 m long is whirled in a vertical circle at a constant speed. The speed of the stone is 4 m/s. The tension in the string will be 52 N, when the stone is
   A) At the top of the circle
   B) At the bottom of the circle
   C) Halfway down
   D) None of the above
11. The work done by a body against friction always results in
   A) Loss of kinetic energy
   B) Loss of potential energy
   C) Gain of kinetic energy
   D) Gain of potential energy
12. The slope of kinetic energy displacement curve of a particle in motion is
   A) Equal to the acceleration of the particle
   B) Inversely proportional to the acceleration
   C) Directly proportional to the acceleration
   D) None of above
13. When a mass is rotating in a plane about a fixed point its angular momentum is directed along
   A) The radius
   B) The tangent the orbit
   C) The line at angle of 45^0 to the plane of rotation
   D) The axis of rotation
14. Moment of inertia of a uniform circular disc about a diameter is I. Its moment of inertia about an axis perpendicular to its plane and passing through a point on its rim will be
   A) 5I
   B) 6I
   C) 3I
   D) 4I
15. If the distance between two masses is doubled, the gravitational attraction between them
   A) Is doubled
   B) Becomes four times
   C) Is reduced to half
   D) Is reduced to a Quarter
16. If radius of the earth contracts by 2% and its mass remains the same, then weight of a body at the earth surface

A) Will decrease
B) Will increase
C) Will remain the same
D) None of these

17. A wire is loaded by 6 kg at its one end, the increase in length is 12 mm. If the radius of the wire is doubled and all other magnitudes are unchanged, then increase in length will be
A) 6 mm
B) 3mm
C) 24mm
D) 48mm

18. If the potential energy of a spring is V on stretching it by 2cm, then its potential energy When it is stretched by 10 cm will be
A) V/25
B) 5V
C) V/5
D) **25V**

19. A beaker containing a liquid is kept inside a big closed jar. If the air inside the jar continuously pumped out. The pressure in the liquid near the bottom of the liquid will
A) Increase
B) Decrease
C) Remain constant
D) First decrease and then Increase

20. A hollow sphere of volume V is floating on water surface with half immersed in it. What should be the minimum volume of water poured inside the sphere so that the sphere now sinks into the water
A) V/2
B) V/3
C) V/4
D) V

21. Two metal strips that constitute a thermostat must necessarily differ in their
A) mass
B) length
C) Resistivity
D) Coefficient of linear expansion

22. If mass energy equivalence is taken into account, when water is cooled to form ice, the mass of water should
A) Increase
B) Remain unchanged
C) decrease
D) First increase then decrease

23. At what temperature is the rms velocity of hydrogen molecule equal to that of an oxygen molecule at 47°C?
A) 10K
B) 20k
C) 30k
D) 40k

24. The molar specific heat at constant pressure of an ideal gas is (7/2) R. The ratio of specific heat at constant pressure to that at constant volume is

A) 7/5
B) 8/7
C) 5/7
D) 9/7

25. A perfect gas contained in a cylinder is kept in vacuum. If the cylinder suddenly bursts, then the temperature of the gas

A) Remains constant
B) Becomes zero
C) Increase
D) Decrease

26. When heat is given to a gas in an isothermal change the result will be

A) External work done
B) Rise in temperature
C) Increase in internal energy
D) External work done and also rise in temperature.

27. A pendulum suspended from the ceiling of a train has a period T. When The train is at rest. When the train is accelerating with a uniform acceleration a, the period of oscillation will

A) Increase
B) Decrease
C) Remain unaffected
D) Become infinite

28. A body executes S.H.M. with amplitude A . The displacement of the body when the potential energy is one – third of its kinetic energy is

A) A/3
B) A/2
C) $A/\sqrt{2}$
D) $A/\sqrt{3}$

29. Velocity of sound waves in air is 330 m/s. For a particular sound in air , a path difference of 40 cm is equivalent to a phase difference of 1.6p. The frequency of this wave is

A) 165Hz
B) 150Hz
C) 660Hz
D) 330Hz

30. Two open organ pipes of length 25 cm and 25.5 cm produce 10 beat/s. The velocity of sound will be

A) 255 m/s
B) 250 m/s
C) 350 m/s
D) None of these

31. There are two metallic spheres of same radii but one is solid and the other is hollow, then

A) Solid sphere can be given more charge
B) Hollow sphere can be more charge
C) They can be charged equally(maximum)
D) None of the above

32. A given charge is situated at a certain distance from an electric dipole in the end-on position experiences a force F, if the distance of the charge is doubled, the force acting on the charge will be

A) 2F
B) F/2
C) F/4
D) **F/8**

33. When a slab of a dielectric material is introduced between the parallel plates of a capacitor which remains connected to a battery, then charge on plates relative to earlier charge

A) is less
B) is same
C) **Is more**
D) May be less or more depending on the nature of the material introduced

34. Two condensers of capacities 1μF and 2μF are connected in series and the system is charged to 120V. Then the P. D. On 1μF capacitor(in volts) will be

A) 40
B) 60
C) 80
D) 120

35. The length of the resistance wire is increased by 10%. What is the corresponding change in the resistance of wire?

A) 10%
B) 25%
C) 21%
D) 9%

36. A cell of constant e.m.f first connected to a resistance R1 and then connected to a resistance R2. If power delivered in both cases is same then the internal resistance of the cell is

A) √R1R2
B) √R1/R2
C) (R1-R2)/ 2
D) (R1+R2) / 2

37. A straight wire of a diameter 0.5mm carrying a current of 1 amps is replaced by another wire of 1mm diameter carrying the same current. The strength of magnetic field far away is

A) Twice the earlier value
B) Half of the earlier value
C) Quarter of the earlier value
D) Unchanged

38. A charged particle is projected in a plane perpendicular to a uniform magnetic field. The area bounded by the path described by the particle is proportional to

A) The velocity
B) The momentum
C) **The kinetic energy**
D) None of these

39. Two identical thin bar magnets each of length l and pole strength m are placed at right angle to each other with north pole of one touching south pole of the other. Magnetic moment of the system is

A) ml
B) 2ml
C) √2ml
D) ½ ml

40. The period of oscillation of a magnet in vibration magnetometer is 2sec. The period of oscillation of a magnet whose magnetic moment is four times that of the first magnet is

A) **1sec**
B) 4sec
C) 8sec
D) 0.5 sec

41. In electromagnetic induction, the induced charge in a coil is independent of

A) Change in the flux
B) **Time**
C) Resistance in the circuit
D) None of the above

42. Two identical induction coils each of inductance L joined in series are placed very close to each other such that the winding direction of one is exactly opposite to that of the other, what is the net inductance?

A) L^2
B) 2L
C) L / 2
D) **Zero**

43. In an AC Circuit peak value of voltage is 423V. Its effective voltage is

A) 400V
B) 323V
C) **300V**
D) 340V

44. A 10 ohm resistance, 5mH coil and 10μF capacitor is joined in series. When a suitable frequency alternating current source is joined to this combination, the circuit resonates. If the resistance is halved, the resonance frequency

A) Is halved
B) Is doubled
C) Remains unchanged
D) Is quadrupled

45. A thin convex lens of focal length 10cm is placed in contact with a concave lens of same material and of same focal length. The focal length of combination will be

A) Zero
B) Infinity
C) 10 cm
D) 20 cm

46. A Plano convex lens is made of glass of refractive index 1.5. The radius of curvature of its convex surface is R. Its focal length is

A) R / 2
B) R
C) 2R
D) 1.5R

47. Angular width of central maxima in the Fraunhofer diffraction pattern of a slit is measured. The slit is illuminated by light of wavelength 6000 Å. When the slit is illuminated by light of another wavelength, the angular width decreases by 30%. The wavelength of this light will be

A) 6000Å
B) 4200 Å
C) 3000 Å
D) 1800 Å

48. In case of linearly polarised light, the magnitude of the electric field vector:

A) Does not change with time
B) Varies periodically with time
C) Increases and decreases linearly with time
D) Is parallel to the direction of propagation

49. The ozone layer absorbs

A) Infrared radiations
B) Ultraviolet radiations
C) x-rays
D) γ- rays

50. Radio waves and visible lights in vacuum have

A) Same velocity but different wave length
B) Continuous emission spectrum
C) Band absorption spectrum
D) Line emission spectrum

51. The ratio of specific charge of an α particle to that of a proton is

A) 2:1
B) 1:1
C) 1:2
D) 1:3

52. The approximate wavelength of a photon of energy 2.48 eV is

A) 500Å
B) 5000Å
C) 2000Å
D) 1000Å

53. Radius of first Bohr orbit is r. what is the radius of 2nd Bohr orbit?

A) 8r
B) 2r
C) 4r
D) $2\sqrt{2}r$

54. The angular speed of the electron in the nth orbit of Bohr's hydrogen atom is

A) Inversely proportional to n
B) Inversely proportional to $\sqrt{n}$
C) Inversely proportional to n^2
D) Inversely proportional to n^3

55. The mass number of He is 4 and that for sulphur is 32. The radius of sulphur nucleus is larger than that of helium, by times

A) √8
B) 4
C) **2**
D) 8

56. After two hours, one – sixteenth of the starting amount of a certain radioactive isotopes remained undecade. The half – life of the isotopes is

A) 15 minute
B) **30 minute**
C) 45 minute
D) 1 hour

57. The valence of the impurity atom that is to be added to germanium crystal so as to make it a N – type semiconductor, is

A) 6
B) **5**
C) 4
D) 3

58. In a good conductor the energy gap between the conduction band and the valence band is

A) Infinite
B) Wide
C) Narrow
D) **Zero**

59. The characteristic. impedance of a coaxial cable is of the order of

A) 50 Ω
B) 200 Ω
C) **270 Ω**
D) None of these

60. The waves used in telecommunication are

A) IR
B) UV
C) **Microwave**
D) Cosmic rays

ANSWER KEYS - PHYSICS MOCK TEST 2

1	C	2	D	3	C	4	B	5	C	6	C	7	C	8	C	9	B	10	B
11	A	12	C	13	D	14	B	15	D	16	B	17	B	18	D	19	B	20	A
21	D	22	B	23	B	24	A	25	A	26	A	27	B	28	B	29	C	30	A
31	C	32	D	33	C	34	C	35	C	36	A	37	D	38	C	39	C	40	A
41	B	42	B	43	C	44	C	45	B	46	C	47	B	48	B	49	B	50	A
51	C	52	B	53	C	54	B	55	C	56	B	57	B	58	D	59	C	60	C