

# **ISHA VIDHYA RAMANIYAM MATRIC SHOOL**

**VANAVASI.**

## **PHYSICS-ONE MARKS**

### **LESSON-14**

#### **Measuring Instruments**

1. Physics is a quantitative science.
2. Which instrument is used to measure the dimensions of very small objects?  
Screw gauge.
3. Screw gauge is used to measure the dimensions of very small objects up to 0.001 cm (or) 0.01 mm.
4. Grooves are cut on the inner surface of the cylinder of the screw gauge.
5. Pitch scale is graduated in millimeter.
6. The head scale of the screw gauge is divided into 100 divisions.
7. One end of the screw is attached to a sleeve.
8. A stud is attached to the other end of the frame opposite to the tip of the screw.
9. Which arrangement in the screw gauge is used to avoid the under pressure?  
Ratchet arrangement.
10. On which principle the screw gauge works? Screw.
11. The distance moved by the tip of the screw is directly proportional to the number of rotations.
12. The distance between two screw threads is known as pitch of the screw.
13. If the zero of the head scale coincides with the pitch scale axis there is No zero error.
14. If the zero of the head scale lies below the pitch scale axis, the zero error is positive.
15. Write the formula for positive zero error?  $Z.E = +(n * L.C)$
16. Write the formula for positive zero correction?  $Z.C = -(n * L.C)$
17. If the zero of the head scale is above the pitch scale axis, the zero error is negative.
18. Write the formula for negative zero error.  $Z.E = -[100-n] * L.C$

19. Write the formula for negative zero correction?  $Z.C = +[100-n]*L.C$
20. To measure the diameter of a thin wire using screw gauge, the wire is placed between two studs.
21. Write the expansion of PSR. Pitch Scale Reading.
22. Give the abbreviation of H.S.C. Head Scale Coincidence.
23. Write the formula used to measure the dimensions of the body, using screw gauge Formula:  $PSR + (H.S.C * L.C.) = Z.C$
24. Nowadays we are using Digital screw gauge.
25. The zero error of the screw gauge is negative. If the ninety fifth division coincides with the pitch scale axis, the zero correction is

The zero error

$$\begin{aligned} Z.E &= -[100-n]*L.C \\ &= -[100-95]*0.01 = -[5*0.01] \\ &= -0.05 \end{aligned}$$

The zero correction.

$$\begin{aligned} Z.C &= + [100-n]*L.C \\ &= + 0.05 \text{ mm.} \end{aligned}$$

26. Name the methods are used to measure the long distances?

Radio echo method, laser pulse method and parallax method.

27. Name the units are used to measure very long distances? Astronomical unit and light year.
28. One Astronomical unit (AU) =  $1.496 * 10^{11}$  m.
29. Write the formula for one light year? One light year = velocity of light \* one year.
30. one light year is =  $9.467 * 10^{15}$  m.

## **LESSON-15**

### **Laws of Motion and Gravitation**

1. Effort is required to put a stationary object into motion or to stop a moving object.
2. The concept of force is based on Push, Pull or Hit.

3. Force is vector quantity.
4. The SI unit of force is newton or N.
5. Who observed the motion of the objects on an inclined plane? Galileo.
6. When a marble rolls down an inclined plane its velocity increases.
7. When a marble climbs up its velocity decreases.
8. A marble resting on an ideal friction less (or) zero friction plane inclined on both sides.
9. When the marble is released from left side of an inclined plane, it would go up on the opposite side to the same height from which it was released.
10. Newton studied Galileo's ideas on force and motion.
11. Three fundamental laws that govern the motion of object is given by Newton.
12. Newton's first law of motion is also known as the law of inertia.
13. Unbalanced force is required to change the motion of the object.
14. Inertia of body mainly depends on its mass.
15. The impact produced by an object depends on its mass and velocity.
16. Momentum was introduced by Newton.
17. The formula for the momentum is  $P = mv$ .
18. Momentum is a vector quantity.
19. The direction of momentum is same as that of the velocity.
20. The SI unit of momentum is  $\text{Kgms}^{-1}$ .
21. Force = mass\*acceleration.
22. One Newton is =  $\text{Kgms}^{-1}$ .
23. which law is used to measure the force acting on an object as a product of its mass and acceleration ? Newton's second law of motion.

24. To change the state of rest or uniform motion of a body is known as force.
25. who deduced the objects move with a constant speed when no force acts on them? Galileo.
26. What is the another name of zero friction? Ideal frictionless.
27. An opposite experience is encountered when we are standing in a bus which begins to move suddenly.
28. The inability of a body to change its state of rest or uniform motion by itself is called inertia.
29. The rate of change of momentum is also known as force.
30. Which would require a greater force for accelerating a 1 kg of mass at 2 ms<sup>-2</sup> ? Accelerating a 2 kg of mass at 3 ms<sup>-2</sup> would require a great force.
31. If the momentum of the body is changed from 10 kgms<sup>-1</sup> to 20 kgms<sup>-1</sup> in 5 s, then the force acting on the body is 2N.

$$F = \frac{mv - mv}{t}$$
$$= \frac{20 - 10}{5} = \frac{10}{5} = 2N$$

32. Momentum has both direction and magnitude

## **16.ELECTRICITY AND ENERGY**

### **ONE MARKS**

1. The rate of charges are electric current.
2. In circuit using metallic wires, electrons constitute flow of charges.
3. The direction of electric current is taken as opposite to the direction of the flow of electrons.
4. The formula for the electric current  $I = Q/t$  (or) Charge/time.
5. The S.I unit of electric charge is coulomb[c].

6. One coulomb is equivalent to the charge contained in nearly  $6 \times 10^{18}$  electrons.
7. The unit of electric current is ampere[A].
8. Which instrument is used to measure the electric current? Ammeter.
9. The S.I unit of potential difference is volt.
11. Potential difference [V] between 2 points= $W/Q$  (or) work done/charge.
12. one volt=one joule/one coulomb.
13. According to ohm's law  $V=IR$ .
14. The S.I unit of resistance is ohm.
15. Resistance  $R=V/I$ .
16. According to the joules law of heating  $H=I^2RT$ .
17. Power=volt\*current (or)  $V \times I$  (or)  $I^2R$  (or)  $V^2/R$ .
18. Fuse is the application of joules law of heating.
19. Fuse has high resistance and low melting point.
20. Fuse is alloy of 37% lead 63% tin.
21. The colour of live wire is red[positive].
22. Neutral wire is insulating black in colour[negative].
23. The earth wire is green in colour.
24. In domestic circuit, the potential difference between the live wire and neutral wire are 220V.
25. The rate of doing work is power.
26. Power is also the rate of consumption of energy.
27. The S.I unit of electric power is watt[W].
28.  $1 \text{ kwh} = 3.6 \times 10^6 \text{ J}$ .
29. Name the wire is used as a safety measure? Earth wire

30. In domestic electric circuit ,the appliances are connected to parallel to each other.
31. Electric fuse is an important component of all domestic circuits.
32. One watt = one volt ampere.
33. The practical unit of power is kilowatt.
34. Electric energy=power\*time[p\*t].
35. The unit of electric energy=watt hour[Wh].
36. The commercial unit of electric energy kilowatt hour[kWh].
37. Name the acid used in voltaic cell? Dilute sulphuric acid.
38. In the voltaic cell ,copper rod is act as positive pole and zinc rod is act s a negative pole.
- 39.The potential difference in the voltaic cell is 1.08 V.
40. According to the Leclanche cell,  $Zn^{++} + 2NH_4Cl \rightarrow 2NH_3 + ZnCl_2 + 2H^+ + 2E^-$  .
- 41.The emf produced by the Leclanche cell 1.5V.
42. The amount of current produced by the Leclanche cell is 0.25A.
43. The advantage of secondary cell is rechargeable.
44. The chemical reactions that take place in secondary cells are reversible.
45. The most commonly used secondary cell is lead acid accumulator.
46. In the lead acid accumulator dil.H<sub>2</sub>SO<sub>4</sub> acts as the electrolyte.
47. The emf produced in the lead acid accumulator is 2.2 V.
48. In the lead acid accumulator the specific gravity of the electrolyte is 1.28.
49. The lead acid accumulator has low internal resistance and deliver high current.
50. The fossil fuels are non renewable sources of energy.

51. The wind speed should be higher than 15 km per hour to maintain the required speed of the turbine.
52. Solar energy is the example of non-conventional energy.
53. Uranium, Plutonium and Thorium are the example of radioactive elements.
54. The phenomenon of radio activity was discovered by Henry Becquerel.
55. Radium and Polonium was discovered by Marie curie and Pierre Curie.
56. Nuclear fission was discovered by Otto Han and Strass man.
57. The energy released from Uranium fission is 200 MeV.
58. How many neutrons are produced during Uranium fission?3.
59. Einstein's mass energy relation is  $E=mc^2$ .
60. The fusion process takes place only at the high temperature of 10<sup>7</sup> K.
61. The nuclear fusion reactions are known as thermo nuclear reactions.
62. Hydrogen bomb works on the principle of nuclear fission.
63. The unit of radiation is roentgen.
64. Safe limit of receiving the radiation is about 250 milli roentgen per week.
65. Nuclear fission is accompanied by the release of neutrons.
66. A number of wind mills are erected over a large area known as wind energy farm.
67. A black surface absorbs more heat than any other surface under initial conditions.
68. The atomic number of radioactive elements are greater than 82.
69. A difference of electric pressure is called potential difference.
70. 1 volt/1 ampere is equal to 1 ohm.
71. When resistance are connected in series , current is same in all of them.

72. The total current is divided among the resistances which are connected in parallel.
73. The effective resistance of the resistors in series is given as  $R_s=R_1+R_2+R_3$ .
75. The reciprocal of the equivalent resistance of the resistors in parallel is given as  $1/R_P=1/R_1+1/R_2+1/R_3$ .
76. The relationship between V and I is constant at constant temperature.
77. An electric-iron is based on principle of heating effect of current.
78. The safety device is used for electrical appliances is fuse.
79. 1 kilowatt=1000 watts.
80. During the process of electrolysis positive ions reach the cathode.
81. Volta introduced the first electrochemical cell.
82. In cells chemical energy is converted into electrical energy.
83. Copper and Zinc is used to the electrodes of the voltaic cell.
84. In primary cells electric energy is derived by irreversible chemical reaction.
85. The major cause of an environmental pollution is use of fossil fuels.
86. Fossil fuels were formed over millions of years ago.
87. In hydro power plants kinetic energy of flowing water or potential energy of water is converted into electrical energy.
89. In thermal power plants heat energy is converted into electrical energy.
90. Solar cell converts the solar energy directly into electricity.
91. A black surface absorbs more heat than any other surface.
92. A large number of solar cells are combined in an arrangement called solar cell panel.

93. The three different kinds of radiations from radio activity are alpha, beta , gamma.
94. The measure of the departure of a reactor from criticality nuclear reactivity.
95. The power of radiation which causes death is 600 R.
96. A volatile liquid is used in ocean thermal energy conversion plant is liquid ammonia.
99. The power of radiation which produces leukemia is 100 R.
100. An instrument is used to measure the potential difference is voltmeter.
101. Switch or key is a component used to make or break an electric circuit.
102. Electric potential is scalar quantity.
103. Ohm's law gives the relation between the potential difference and current.

**2 MARKS**

1. What is an electric circuit?
2. How do we express electric current?
3. Define one ampere.
4. Example problem 16.
5. Define the electric potential difference.
6. Define one volt.
7. What is circuit diagram?
8. Example problem 16.2.
9. What is Nichrome?
10. State Ohm's law.
11. Example problem 16.3.
12. Example problem 16.4.

13. What is resistance?
14. Define one ohm.
15. Example problem 16.5.
16. Example problem 16.6.
17. What is known as heating effect of electric current?
18. What are the implies obtained from joules law of heating?
19. Example problem 16.7.
20. Write a brief note about fuse.
21. What is short circuiting?
22. Define one watt.
23. Define one watt hour and deduce the value of 1kWh.
24. Example problem 16.8.
25. Example problem 16.9.
26. What is electrolytes?
27. What are electro chemical cells?
28. What are primary cells?
29. Name two examples for primary cells.
30. differentiate between charge and discharge.
31. Write the advantages of a good source of energy.
32. What are the conventional sources of energy?
33. What are the disadvantages of burning fossil fuels?
34. What is wind energy farm?
35. Define radioactivity.
36. What are radioactivity elements?

37. Define nuclear fission.
38. Define nuclear fusion.
39. Example problem 16.10.
40. Write the advantages of nuclear reactivity.
41. Define one roentgen.
42. What are the energies obtained from the sea?
43. What is tidal energy?
44. Write a note on wave energy.
45. What is ocean thermal energy?
46. Give an expression for electric current.
47. Name some devices which works on the principle of heating effect on electric current.
48. Define electric power.
49. What are secondary cells?
50. What are the hazards of nuclear radiations to living organisms?

**5 MARKS**

1. State and verify ohm's law.
2. Prove the flow of current is differ for different components with help of a circuit diagram.
3. Find the total resistance when several resistors are connected in series.
4. Find the total resistance when several resistors are connected in parallel.
5. Explain about voltaic cell.
6. With the schematic diagram explain about domestic electric circuit.
7. Explain about Leclanche cell.
8. Explain about lead acid accumulator.
9. Explain the process of hydro power plants.

10. Explain the process of bio-mass.
11. Explain about solar energy.
12. With suitable examples explain about the nuclear fission and fusion.
13. Write the precautions are to be taken for those who are working in radiation laboratories.
14. What is wind energy? How does a wind mill generate of electricity?

## **17. MAGNETIC EFFECT OF ELECTRIC CURRENT AND LIGHT**

### **ONE MARKS**

1. Magnetic field is vector quantity.
2. Magnetic field is a quantity that has both magnitude and direction.
3. The magnetic field lines are closed curves.
4. Outside the magnet the direction of field lines is from its north pole to south pole.
5. Inside the magnet the direction of field lines is from its south pole to north pole.
6. The directions of the magnetic field depends upon the direction of flow of current.
7. The magnetic field produced by a current carrying straight wire depends inversely on the distance from it.
8. Who suggested that the magnet must also exert an equal and opposite force on the current carrying conductor ? Andre Marie ampere.
9. Which rule is used in electric motor? Fleming's left hand rule.
10. In an electric motor the split ring acts as a commutator.
11. The armature enhances the power of the motor.
12. Who discovered electromagnetic induction? Faraday in 1831.

13. Write the expansion of emf. Electro motive force.
14. The direction of induced current can be found using Fleming's right hand rule.
15. In an electric generator , the induced current are setup by applying Fleming's right hand rule.
16. A uni directional current is produced by a DC Generator.
17. The diameter of reflecting surface of spherical mirror is called its aperture.
18. Convex mirrors are commonly used as rear-view mirrors in vehicles .
19. A set of sign conventions are called new Cartesian sign convention.
20. The new Cartesian sign conventions are applied to obtain the mirror of formula.
21. The relationship between u ,v and f is expressed as  $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$ .
22. Magnification is produced by a spherical mirror gives the relative extent to which the image of an object is magnified with respect to the object size.
23. Magnification =  $\frac{h_1}{h} = -\frac{v}{u}$ .
24. A negative sign in the value of the magnification indicates that that image is real.
25. A positive sign in the value of the magnification indicates that that image is virtual.
26. The magnification produced by a lens is defined as the ratio of height of the image to the height of the object.
27. The velocity of light in vacuum is  $3 \times 10^8 \text{ ms}^{-1}$ .
28. Light seems to travel along straight line paths in a transparent medium.
29. Light propagates with different speed in different media.
30. The refractive index  $\mu = \frac{c}{v} = \frac{\text{speed of light in air}}{\text{speed of light in medium}}$ .

31. Convex lens converges light rays.
32. Concave lens diverge the light rays.
33. Convex lens called converging lens.
34. Concave lens called diverging lens.
35. The central point of a lens is called its optical centre.
36. A ray of light passing through the optical centre of a lens will emerge without deviation.
37. The SI unit of power of lens is diopetre.
38. The power of the convex lens is positive and that of concave lens is negative.
39. Different colours of light bend through the prism in different angles.
40. The red light bends the least while the violet most.
41. The phenomenon of twinkling of stars is atmospheric refraction.
42. Of all our sense organs, the human eye is most significant one.
43. In human eye, the lens system forms an image on a light-sensitive screen called the retina.
44. Light enters the eye through the thin membrane called cornea.
45. In human eye the eye ball is approximately spherical in shape.
46. In human eye the diameter of eye ball is about 2.3 cm.
47. Most of the refraction for the light rays entering the eye occurs at the outer surface of the cornea.
48. Iris is a dark muscular diaphragm that controls the pupil.
49. The pupil regulates and controls the amount of light entering the eye.
50. The retina is delicate membrane having enormous number of light – sensitive cells.

51. The light sensitive cells get activated upon illumination and generate electrical signals.
52. In human eye, the electrical signals are sent to the brain via the optic nerves.
53. In human eye, the defects of vision can be corrected by the use of suitable spherical lenses.
54. Myopia is also known as near-sightedness.
55. The defect myopia can be corrected by using concave lens.
56. Hypermetropia is known as far-sightedness.
57. Hypermetropia can be corrected by convex lens.
58. The least distance of distinct vision for human eye is 25 cm.
59. A person may suffer from both myopia and hypermetropia required bi-focal lenses.
60. Hubble telescope is a space telescope that was carried into orbit by a space shuttle in April 1990.
61. Hubble space telescope is named after the American astronomer Edwin Hubble.
62. The Hubble space telescope is collaboration between NASA and the European space agency.
63. Hubble's observations found that black holes are common to centre of all galaxies.
64. The magnetic field produced a current carrying straight wire depends inversely on the distance from it.
65. An electro motive force is produced in a circuit whenever the magnetic flux linked with the coil changes.
66. The number of lines crossing a given area in magnetic field is magnetic flux.
67. Like poles repel.

68. The magnetic field produced by the given current in the conductor decrease as the distance from it increases.
69. An electric current flowing through a conductor produces a magnetic field.
70. An electrical motor is rotating device that converts electrical energy into mechanical energy.
71. The commutator is a device that reverses the direction of flow of current through a circuit.
72. When a current carrying conductor is placed in a magnetic field, it experiences a force.
73. The current which changes a direction after equal intervals of time is called on alternating current.
74. The angle of incidence is equal to the angel of reflection.
75. The incident ray, the normal at the point of incidence and the reflected ray lie on the same plane.
76. The spherical mirror whose reflecting surface is curved outwards is called convex mirror
77. The spherical mirror whose reflecting surface is curved inwards is called a concave mirror.
78. A ray parallel to principle axis will pass through principal focus, after reflection in the case of concave mirror.

### **2 MARKS**

1. Define magnetic field.
2. Define magnetic field of force.
3. State Fleming's left hand rule.
4. State Fleming's right hand rule.
5. State the laws of reflection of light.
6. What is concave mirror?
7. What is convex mirror?

8. What is principle axis?
9. Define pole of spherical mirror.
10. Define centre of curvature of a spherical mirror.
11. Define radius of curvature.
12. Define principle axis.
13. Define principle focus.
14. Define focal length.
15. What are the properties of magnetic field lines? [P.No.256.]
16. What is armature? [P.No.61]
17. How is power enhanced in commercial motors?
18. What happens to the deflection of the compass needle placed at a given point if the current in the copper wire is changed?
19. What is an electric motor?
20. What is commutator?
21. Define induced emf.
22. Define electromagnetic induction.
23. Define induced current.
24. What is AC generator?
25. What is DC generator?
26. What is advantage of AC over DC?
27. What are the differences between alternating current and direct current?
28. On what factors does the magnetic field produced by a current carrying conductor at a given point depend?
29. What is the application of electromagnetic induction?

30. What makes the things visible?
31. State the laws of reflection of light.
32. What is a convex mirror?
33. What is a concave mirror?
34. Define pole of a spherical mirror.
35. Define centre of curvature of a spherical mirror.
36. Define radius of curvature.
37. Define principal axis.
38. Define principal focus of a convex mirror.
39. Define principal focus of a concave mirror.
40. Define focal length.
41. What is the relationship between the radius of curvature  $R$ , and focal length of a spherical mirror?
42. Write the uses of concave mirror.
43. Write the uses of convex mirror.
44. What are the sign conventions of spherical lenses?
45. What is object distance?
46. What is image distance?
47. What is lens formula?
48. Define magnification and its formula.
49. Define refraction of light.
50. State the laws of refraction.
51. Define the refractive index.
52. What is lens?

53. What is concave lens?
54. What is convex lens?
55. Define centre of curvature of lens.
56. Define principal focus on concave lens.
57. Define principal focus on convex lens.
58. What are the sign conventions for spherical lenses?
59. Define power of lens.
60. Define diopetre.
61. What angle of prism?
62. What is prism?
63. What are the colours of white light?
64. Define spectrum.
65. Define dispersion.
66. What are the defects of vision?
67. Why do objects seen through turbulent stream of hot air flicker?
68. What is Myopia?
69. What is Hypermetropia?
70. What is presbyopia?
71. What are the causes of Myopia?
72. What are the causes of hypermetropia?
73. What are the parts of commercial motors?

**5 MARKS**

1. Explain how the magnetic lines of force are drawn around a magnet.

2. With the help of experiment explain that the direction of magnetic field produced by the electric current depends upon the direction of flow of current.
3. Describe the magnetic field due to a current in a straight conductor.
4. Describe the magnetic field due to a circular coil in a carrying current.
5. Describe the construction and working of an electronic motor with a neat diagram.
6. Explain an experiment to show that a current carrying conductor placed in a magnetic field experiences a force.
7. Describe the construction and working of an electric generator with the help of a neat diagram .
8. What are the rules followed for construction of an image of an object in front of the spherical mirror?
9. How can we locate the image formed by a concave mirror at different position of an object?
10. With the help of the ray diagram to show the nature, position and size of the image formed by the convex mirror.
11. Explain the refractive index of glass prism.
12. Draw the ray diagram to show the nature, position and size of the image formed by a convex lens.
13. Draw the ray diagram to show the nature, position and size of the image formed by a concave lens.
14. Write a note on power of lens.
15. Explain the refraction of light through a prism.
16. Explain the structure of human eye.
17. Explain the defects of human eye and it could be corrected.
18. Write a note on Hubble space telescope?
19. Explain faraday's experiment on electromagnetic induction.

www.Padasalai.Net