2nd Term Worksheet [2018 – 19]

Subject – Physics

Class – VIII

Name : **Sec. :**

Chapter – 4
[Energy]

Check Point:

[A] Answer the following questions: [53]

1. In physics, when is work said to be done?

Ans. _____

2. Write the equation to calculate the work done and state its unit.

Ans. _____

3. On what factors does the work depend?

Ans. _____

4. A force of 20 N causes a displacement of 4 m in a body. Calculate the work done by this force.

Ans. _____

5. A work of 4800J is done on a load of mass 40 kg to lift to certain height. Calculate the height through which the load is lifted.

Ans. _____

6. A boy having a mass of 50 kg runs up the mountain. The total work done by a boy is 700J. Calculate the force exerted by him to complete the work.

Ans. _____

[B] Answer the following questions: [55]

1. What is energy? State its unit.

Ans. _____

2. Which are the different forms of energy?

Ans. _____

3. Define kinetic energy, potential energy and gravitational potential energy.

Ans. _____

4. Write the equation of kinetic energy. On what factors does this energy depend?

Ans.

5. Name the three types of potential energies.

Ans.

6. Write the equation of gravitational potential energy. On what factors does it depend?

Ans.

[C] Solve the following numerical: **[56]**

1. A bike with a mass of 1500kg is travelling at 15 metres per second. What is kinetic energy of the bike?

Ans.

2. A bullet form a soldier's handgun travels at 300 metres per second and has a mass of 0.03 kg. What is the kinetic energy of the bullet?

Ans.

3. Find the gravitational potential energy of an object that has a mass of 12.0 kg and is 4.8 m above the ground.

Ans.

4. A mango on a tree has a gravitational potential energy of 180J and a mass of 0.36. How high from the ground is the mango placed on the tree?

Ans.

5. A soft ball is on a table 2.4 m above the ground. What is the mass of the soft ball if it has a P.E of 568 J.

Ans. _____

6. A container with a mass of 14.5 kg sits on the floor. How high would you need to lift it for it to have a P.E. of 435 J?

Ans. _____

7. A 1 kg chocopie was hit on a wall. The kinetic energy of the pie is 32 J. What was the speed of the pie?

Ans. _____

8. What is the mass of a football that has a kinetic energy of 100 J and is traveling at 5 m/s?

Ans. _____

[D] Answer the following questions: [58]

1. What is the law of conservation of energy?

Ans.

2. Explain the energy transformation in the following:

(a) LED (b) Ceiling fan (c) Dry cell

Ans.

3. Differentiate between energy and power.

Ans.

Keywords: **[59]**

Joule: _____

_____

Energy: _____

Kinetic energy: _____

_____

Potential energy: _____

_____

Gravitational potential energy: _____

_____

Power: _____

_____

Exercise: **[60-62]**

[A] Multiple Choice Questions: [60]

(i) Work is a _____ quantity.

(a) scalar (b) vector

(c) both (a) and (b) (d) None of these

(ii) Energy is transformed every _____ of a day.

(a) second (b) minute

(c) hour (d) none

(iii) A gravitational potential energy is dependent on _____.

(a) mass of an object (b) height at which object is raised

(c) both (a) and (b) (d) none

(iv) The amount of translational energy that an object possesses depends on _____ variables.

(a) one (b) two

(c) three (d) four

(v) Energy is stored in an object due to _____ forces of the Earth acting on the object.

(a) gravitational (b) fictional

(c) magnetic (d) none of these

(vi) The various forms of kinetic energy are _____.

(a) vibrational (b) rotational

(c) translational (d) all of these

(vii) In case of kinetic energy, motion can be _____.

(a) vertical (b) horizontal

(c) zig - zag (d) both (a) and (b)

(viii) The energy associated with motion is known as_____.

(a) potential energy (b) sound energy

(c) kinetic energy (d) nuclear energy

(ix) The _____ is a form of power.

(a) electric (b) thermal

(b) light (d) sound

(x) Energy is measured in

(a) kilo – watt hours (b) calories

(c) newton metres (d) none of these

[B] Fill in the blanks: [61]

1. _____ is to be done when a force acts on an object and the object is displace form its position.
2. The ability do work is known as _____.
3. An object can do _____ equivalent to the energy is possesses.
4. The ground is considered to be a position of _____ height.
5. The rate at which the work is done or energy is transmitted is called _____.
6. The energy associated with position of a non-moving object is called _____.
7. Light energy is transformed into _____ energy during the process of photosynthesis in the plants.
8. _____ does not transform from one form to another.
9. If the height is doubled then the gravitational potential energy is _____.
10. Kinetic energy is _____ quantity.

[C] Write T for true and F for false statements: [23]

1. If the mass of the object is doubled, its kinetic energy increases by four times. _____
2. Energy does not occur in various forms. _____
3. Kinetic energy is inversely proportional to the square of velocity of that object. _____
4. We require energy to cook food. _____
5. Work is only done when the object moves. _____
6. An object can work more than the energy is possesses. _____
7. Energy transformation occurs in many activities that we do in our day-to-day life. _____
8. We can store power. _____
9. Kinetic energy has magnitude and direction. _____
10. Lighter object will have greater gravitational potential energy. _____

[D] Match the items in column I with the correct choices in column II: [23]

	Column I		**Column II**
1.	Kinetic energy	a.	Electrical energy is transformed into sound energy
2.	Types of potential energy	b.	Analogous
3.	Standard unit of energy	c.	Watt
4.	Energy and work	d.	$1/2 \times m \times v^2$
5.	Standard unit of power	e.	Gravitational potential energy. Elastic potential energy and Electric potential energy.
6.	Gravitational potential energy	f.	Energy is always conserved in the universe and changes from one from to another.
7.	Work	g.	Done constantly
8.	Law of conservation of energy	h.	Joule
9.	Listening music on i-pod	i.	Force - Displacement
10.	Energy transformation	j.	mass × g × height

[E] Answer the following questions: [62]

1. What is work according to physics and state its unit?

Ans-

2. Write note on kinetic energy.

Ans-

3. Write note of gravitational potential energy.

Ans-

4. Explain energy transformation with examples.

Ans-

5. Define energy and power. State the difference between them.

Ans-

[F] Solve the following numerical problems: [62]

1. Calculate kinetic energy of a body of a mass 4 kg moving with a velocity of 0.2 m/s. If the velocity in doubled what will be the new kinetic energy.

Ans-

2. If the acceleration due to gravity is 10 m/s^2. Find out the potential energy of a body whose mass in 4 kg and kept at a height of 3 m.

Ans-

3. How much work is done by force of 40 N in moving an object through a distance of 2 m in the directions of a force?

Ans-

4. What is the kinetic energy of a 4 kg volleyball that travels a distance of 40 meters in 2 seconds?

Ans-

Chapter – 5
[Light]

Check Point:

[A] Answer the following questions: [28]

1. Name any three transparent substances.

Ans. _____

2. How does the light travel from air to glass?

Ans. _____

3. Give any two examples of refraction of light, which you observe in everyday life.

Ans. _____

4. Name the colours in the order they appear in the spectrum of sunlight.

Ans. _____

5. Who discovered that light consists of seven colours?

Ans. _____

6. Why a straight rod appears bent in water?

Ans. _____

7. Why a coin appears raised in water?

Ans. _____

8. Explain Newtons colours disc. Which colour will be seen when Newtons colour disc is rotated with high speed.

Ans. _____

9. What do you mean by refraction of light?

Ans. _____

10. Does the refraction of light take place in same medium or different medium?

Ans. _____

11. Draw a diagram to show the is dispersion of white light through a prism?

[B] Answer the following questions: [77]

1. How many types of curved mirror are there? What are they?

Ans.

2. What are the different key concepts necessary to know in order to study image formation? Explain them in short.

Ans.

3. Difference between concave and convex mirror.

Ans.

4. State the uses of concave and convex mirror.

Ans.

[C] Answer the following questions: [80]

1. How image will be formed under the following situation?

(a) The object is located beyond C.

(b) The object is located at C.

(c) The object is located between C and F.

(d) The object is located at F.

(e) The object is located in front of F.

Keywords: **[81]**

Refraction: _____

Concave mirror: _____

Convex mirror: _____

Principal axis: _____

Pole: _____

Centre of Curvature: _____

Radius of Curvature: _____

Focus and Focal point: _____

Focal length: _____

Real image: _____

Virtual image: _____

Dispersion of light: _____

Spectrum: _____

_____

Exercise: **[82-84]**

[A] Multiple Choice Questions: [82-83]

(i) The image will be upright and magnified

(a) The object is located at F

(b) The object is located in front of F

(c) The object is located between C and F

(d) The object is located at C.

(ii) The image obtained is inverted, equal in size and located at the point of centre of curvature.

(a) The object is located at F

(b) The object is located in front of F

(c) The object is located between C and F

(d) The object is located at C.

(iii) The image obtained is inverted, bigger in size and located beyond the centre of curvature.

(a) The object is located at F

(b) The object is located in front of F

(c) The object is located between C and F

(d) The object is located at C.

(iv) The image obtained is inverted, smaller in size and in between centre of curvature and the focal point.

(a) The object is located at F

(b) The object is located in front of F

(c) The object is located between C and F

(d) The object is located at C.

(v) Convex mirror is used in _____.

(a) headlight of vehicle (b) mirror of vehicle

(c) solar-powered gadgets (d) Shaving mirror

(vi) The point at which the principal axis touches the surface of the mirror

(a) principal axis (b) pole

(c) focal length (d) focal point

(vii) _____ is the body part that rally sees the object.

(a) Eyes (b) brain

(c) Heart (d) nerves

(viii) Convex mirrors form only _____ images.

(a) real (b) virtual

(c) both(a) and (b) (d) None

(ix) _____ performed the experiments to show that white light consists of seven colours, which can be recombined to form white light.

(a) Sir Isaac Newton (b) Thomas Edison

(b) Martin Luther king (d) Calileo

(x) White light consist of _____ colours.

(a) six (b) seven

(c) eight (d) nine

[B] Fill in the blanks: [83]

1. When white light splits into a band of seven colours on a screen it is called a _____.
2. The image which can be obtained on a screen is called a _____ image.
3. The image which cannot be obtained on a screen is called a _____ image.
4. The splitting of white light into its seven constituent colours is called _____.
5. Light that falls on an object bounces off in all directions. This is called _____.
6. _____ is the phenomenon which happens when a ray of light passes form one transparent medium to another.
7. _____ is the result of dispersion of light by the drops of water which acts like prism.
8. _____ diagram is helpful to know the size, location, orientation and the type of image that is formed by the concave mirror.
9. _____ mirror can be used to see a much larger area than the area area covered by a plane mirror.
10. A _____ image formed by a concave mirror can be captured on a screen.

[C] State whether the following statements are True or False: [84]

1. Refraction cannot take place in same media if the densities of different layers vary. _____
2. We can see an image not only on a plane surface but also on a curved surface. _____
3. The outer surface of the spoon is known as the concave surface. _____
4. The point on the principal axis which is equidistant from all points on the reflecting surface of the mirror is called radius of curvature. _____
5. If an image is not real. It is possible to project the image by a convex mirror. _____
6. Virtual image can be captured on a screen. _____
7. The object is located between C and F, when object is located at the focal point. _____
8. Irrespective to where the object is kept, the image will always be located behind the convex mirror, virtual and upright, and smaller in size. _____
9. Ray diagram requires determining where the image of the upper and lower end of the object is placed and then tracing the whole image. _____
10. Doctors use convex mirror reflectors to produce a parallel beam of light for examining body parts such as eyes, ears, nose and throat. _____

[D] Match the items in column I with the correct choices in column II: [84]

Column I		**Column II**
1. Convex mirror	a.	Recombination prism
2. Concave mirror	b.	no image will be formed
3. Invisible energy	c.	Cinema screen
4. Spherical	d.	Our image in a plane mirror

5.	Prism P_1	e.	Principal axis
6.	Prism P_2	f.	Mirror with outer curved surface
7.	The object is located at F	g.	Dispersing light
8.	Real image	h.	Convex and concave mirror
9.	Virtual image	i.	Light
10.	The normal to the centre of the mirror	j.	Mirror with inner curved surface

[E] Answer the following questions: [84]

1. Explain refraction of light.

Ans-

2. Write a note on spherical mirror.

Ans-

3. What are the rules of drawing ray diagram of spherical mirror?

Ans-

4. What is spectrum and dispersion of light?

Ans-

5. How real image is different from virtual image?

Ans-

6. Explain recomposition of white light.

Ans-

Chapter – 6
[Heat Transfer]

Check Point:

[A] Answer the following questions: [87]

1. Explain the differences between boiling and evaporation.

Ans.

2. Define:

(a) Temperature (b) Heat transfer

Ans.

3. How does heat transfer take place?

Ans. _____

[B] Answer the following questions: [88]

1. What is thermal expansion?

Ans. _____

2. Explain linear expansion.

Ans. _____

3. What is coefficient of linear expansion?

Ans. _____

[C] Answer the following questions: [89]

1. What is volume expansion?

Ans. _____

2. What is co efficient of volume expansion?

Ans. _____

[D] Answer the following questions: [90]

1. What is superficial expansion?

Ans. _____

2. Write an equation to find the new area of an object after expansion.

Ans. _____

3. Differentiate between the expansion of solids, liquids and gases.

Ans. _____

Keywords: **[92]**

Thermal expansion: _____

Linear expansion: _____

Volume expansion: _____

_____

Superficial expansion: _____

_____

Exercise: **[93-95]**

[A] Multiple Choice Questions: [93-94]

(i) Vapourisation is of _____ types.

(a) one (b) two

(c) three (d) four

(ii) Volume expansion depends on _____.

(a) Original volume of the object (b) temperature change

(c) material of the object (d) all of these

(iii) The _____ energy of molecules in a substance increases when a substance is heated.

(a) kinetic (b) potential

(c) Thermal (d) sound

(iv) In _____ the molecules are far apart and weakly attracted to each other.

(a) solid (b) liquid

(c) gas (d) plasma

(v) When a _____ substance is heated, its atoms vibrate about their fixed positions.

(a) solid (b) liquid

(c) gas (d) all of the above

(vi) Volume is counted for _____ dimensions.

(a) one (b) two

(c) three (d) four

(vii) Linear expansion coefficient is defined as the fractional change in _____ per degree of temperature change.

(a) length (b) breadth

(c) height (d) none

(viii) In _____ the bonds between molecules are not so strong and they are mobile

(a) solid (b) liquid

(c) gas (d) plasma

(ix) External source of _____ energy is required for boiling

(a) thermal (b) heat

(c) sound (d) electrical

(x) Volume expansion coefficient is useful for expansion of _____.

(a) solid (b) liquid

(c) gas (d) both (b) and (c)

[B] Fill in the blanks: [94]

1. _____ expansion means expansion in the area of laminar surface due to heating.
2. When temperature of a substance increases through heat transfer, the volume or length of a material also increases. It is called _____.
3. In _____, a substance changes from liquid state to vapour when the temperature at a given pressure.

4. Boiling point is affected with the variation in _____ pressure.
5. When the degree of expansion is divided by the change in temperature we get coefficient of _____ expansion of particular material.
6. _____ is defined as the fractional change in length per degree of temperature change.
7. When we increase the temperature of a _____, its volume expands.
8. Every _____ has its own average coefficient of expansion.
9. The volume changes in a way proportional to the change in _____.
10. The change in the length of an object is related to the temperature change by a constant called _____

[C] State whether the following statements are True or False: [94]

1. The atoms in the substance do not expand but their volume increases. _____
2. When we heat any state of matter, it does not expand. _____
3. The ratio of decrease in area with respect to its original area for every increase in degree of temperature. _____
4. The coefficient of superficial expansion (β) is twice the coefficient of linear expansion. _____
5. The brass rod expands more than the steel rod. _____
6. The increase in the length of an object is proportional to the original length × increase in the temperature. _____
7. Linear expansion coefficient is useful for expansion of gas. _____
8. Evaporation occurs when the partial pressure of vapour is lesser than that of equilibrium vapour pressure. _____
9. Liquid on heating expands, and it rises up in its level. _____
10. Pure water can be used as a coolant in the car radiator. _____

[D] Match the items in column I with the correct choices in column II: [94]

	Column I		**Column II**
1.	Coefficient of volume expansion	a.	Fitted on wooden wheel
2.	Linear expansion coefficient	b.	Used in thermostat
3.	Poor conductor of heat	c.	γ
4.	Good conductor of heat	d.	Measure the temperature of a substance
5.	Gas	e.	α
6.	Iron rim	f.	$V_0 \times t \times \beta$
7.	Bimetallic strip	g.	original surface area (a_1) + increase in area
8.	Thermometer	h.	copper
9.	New surface area	i.	Volume increases more than other state of matter
10.	Volume expansion	j.	glass

[E] Answer the following questions: [95]

1. Define boiling and evaporation. State the difference between them.

Ans- _____

_____

_____

_____

_____

2. Explain thermal expansion.

Ans-

3. Write a short note on:

(a) Linear expansion:

(b) Thermal expansion:

(c) Superficial expansion:

4. Compare expansion in solid, liquid and gas.

Ans-

5. Give few example of thermal expansion and explain them.

Ans-