

**INTERNATIONAL INDIAN SCHOOL , DAMMAM**  
**GENERAL SCIENCE TERM II WORK SHEET 2017-18**  
**CLASS -IX**  
**SUBJECT – PHYSICS**

**GRAVITATION**

1. State the Universal Law of Gravitation. Derive its expression.
2. Distinguish between Force of Gravity and Gravitational Force.
3. If the distance between two objects increased four (4) times, then by how many times will the mass of the objects be changed to maintain the same gravitational force?
4. Distance between two objects are halved. How does the gravitational force between them change ?
5. What do you mean by Acceleration due to gravity?
6. What is mean by Free Fall? A ball is dropped from a roof of the building. It takes 10 seconds to reach the ground. Find the height of the building ( $g=9.8\text{m/s}^2$ ).
7. A ball is dropped from a tower of height 5 m. With what velocity does it strike the ground? ( $g=10\text{m/s}^2$ ).
8. Distinguish between the terms Mass and Weight.
9. Mass of a planet is twice of that of the earth and its radius is four times of the earth. Find the value of  $g$  on its surface.
10. What will be the weight of an object on the earth and moon whose mass is 10 kg. Take ( $g=10\text{m/s}^2$ )
11. State and define the SI unit of Pressure
12. Give reason for the following :
  - (a) Dams have broad foundation
  - (b) It is easier to cut an apple with sharp edge of knife
13. How does the density of fluid affect the magnitude of Buoyancy acting on an object immersed in it.
14. State Archimedes Principle
15. Give two applications of Archimedes Principle
16. Density of a Solid is  $7.5 \text{ g/cm}^3$ . What is its Relative Density?
17. A solid exerts pressure of 20 pa on a surface of  $2 \text{ m}^2$ . Find its weight.
18. Relative density of an object is 1.35. Will it float or sink?
19. An object is suspended with a string which gets stretched. When the object is completely immersed the extension of thread decreases. Explain why it happens.
20. Why are railway tracks laid on large sized concrete sleepers?
21. An object of 40 N weight, when immersed in water loses 10 N weight. Will the object float or sink ? Why?
22. Which will exert more pressure: 100 kg mass on  $10 \text{ m}^2$  or 50 kg mass on  $4 \text{ m}^2$ ?
23. Explain why a truck or a motor bus has much wider tires?
24. Account for the statement: “Camel walks easily on sand but it is difficult for a man to walk on sand though a camel is much heavier than a man”
25. Explain why sheet of paper falls slower than a coin under gravity through air.
26. Why does a nail sink in water but a piece of cork floats on it?

27. A cube of side 5 cm is immersed in water and then in saturated salt solution. In which case will it experience a greater buoyancy force? If each side of the cube is reduced to 4 cm and then immersed in water, what will be the effect on the buoyant force experienced by the cube as compared to the first case?
28. A ship made of iron and steel floats in water, whereas iron nails sink in water. Why?
29. An iron ball weighs 11 kg in air and 8 kg when immersed in water. Find its relative density.
30. State the principle on which the working of a hydrometer is based.

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### WORK AND ENERGY

1. Define the SI unit of work.
2. When is work done by a force zero?
3. List two conditions that need to be satisfied for the work to be done on an object.
4. A body is acted upon by a force. State the conditions when the work done is positive, negative, zero.
5. Moon is experiencing a gravitational force due to earth. How much work done by moon to revolve around the Earth? Explain.
6. Calculate the work done when a force of 15N moves a body by 5m in its direction.
7. Define energy. What is its SI unit?
8. Define (a) Kinetic Energy (b) Potential Energy
9. Derive an expression for kinetic energy of a body of mass  $m$  moving with velocity  $v$ .
10. Derive an expression for potential energy of a body.
11. If the speed of the body is tripled, what is the change in its kinetic energy?
12. A porter lifts a luggage of 20Kg from the ground and puts it on his head 1.7m above the ground. Find the work done by the porter on the luggage.
13. What is gravitational potential energy?
14. Name the type of energy possessed by the following objects. (A) water stored in a dam (B) moving car (C) compressed spring.
15. A body of mass 2Kg is thrown up with a speed of 25m/s. Find its maximum kinetic energy.
16. State the law of conservation of energy. Illustrate the law by giving an example of a freely falling object.
17. The kinetic energy of an object moving with a velocity of 5m/s is 25J. Find the mass of the object.
18. Calculate the amount of work done required to stop a car of 1000Kg moving with a speed of 72Km/hr.
19. Define power and average power.
20. Name and define SI unit of power.
21. Define KWH and express it in joules.
22. What is mechanical energy? Differentiate between energy and power.
23. A lamp consumes 1000J of electrical energy in 10sec. Calculate its power.
24. Establish the relationship between SI unit and commercial unit of energy.

25. Write one situation in which one of the forces acting on the object is doing positive work and the other is doing negative work.
  26. Find the energy in KWh in the month of September by four devices of power 100W each, if each one of them is used for 10 hours daily.
  27. A body of mass 5Kg is thrown vertically upwards with a speed of 10 m/s .What is its kinetic energy when It is thrown? Find its potential energy when it reaches at the highest point? Also find the maximum height attained by the body.( $g=10\text{m/s}^2$ )
  28. A man of mass 62 Kg runs up a staircase of 65 steps in 12 sec. If the height of each step is 20 cm. Find its power.( $g=10 \text{ m/s}^2$ )
  29. If four bulbs of 50 W for 6 hours ,three tube lights of 40W for 8 hours ,a TV of 100W for 6 hours are used. Calculate the electricity bill amount for a month of 30 days. the cost per unit is Rs.2.50.
  30. 16 bulbs of 40 w are used for 6 hours a day along with one 100w bulb for 2 hours. Calculate the unit of energy consumed in one day by all bulb.
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## CHEMISTRY

### ATOMS AND MOLECULES

1. Which are the laws of chemical combination.
2. State the law of conservation of energy.
3. What are the postulates of Dalton's atomic theory?
4. State law of constant proportion. Magnesium and oxygen combine in the ratio of 3:2 to form magnesium oxide. How much oxygen is required to react completely with 10g of Magnesium?
5. Define a)atom b)molecule
6. Give one difference between molecule of an element and molecule of a compound with examples.
7. Define atomicity of an element. What is the atomicity of the following  $\text{Cl}_2, \text{Ar}, \text{P}_4, \text{S}_8, \text{O}_2, \text{N}_2$
8. Write one example of each of the following types of molecules
  - a) Monoatomic molecules
  - b) Diatomic molecules
  - c) Triatomic molecules
  - d) Tetra-atomic molecule
9. What is the difference between a)  $\text{Cl}_2$  and  $2\text{Cl}$  b)  $\text{H}_2\text{O}$  and  $4\text{H}_2\text{O}$  c)  $2\text{H}$  and  $\text{H}_2$
10. Calculate the number of atoms present in the following compounds a)  $(\text{NH}_4)_3\text{PO}_4$  , b) sodium sulphate c)Aluminium carbonate
11. Write symbols for the following elements- Iron, Lead, Chlorine ,Potassium,sodium
12. What is chemical formula ? What are the informations that can be obtained from the chemical formula of a compound ?
13. Define one amu .
14. What are ions ? Give examples
15. What are polyatomic ions? Give Examples
16. Write the chemical formulae of all the compounds that can be formed by the combination of the following.  
 $\text{Mg}^{2+}$  ,  $\text{Al}^{3+}$   $\text{O}^{2-}$  ,  $\text{SO}_4^{2-}$  ,  $\text{Cl}^-$

17. Write the names of the compounds represented by the following formulae:  
 a)  $\text{Na}_2\text{SO}_4$  b)  $\text{Mg}(\text{NO}_3)_2$  c)  $\text{Ca}_3\text{N}_2$  d)  $\text{KHCO}_3$
18. Write the chemical formula of the following compounds  
 a) Magnesium nitride b) Ammonium Phosphate  
 c) Sodium bicarbonate d) Calcium nitrate
19. Give the chemical formulae of the compounds formed from the following sets  
 a) Calcium and fluoride b) sodium and oxygen c) silver and chloride d) aluminium and oxygen.
20. Differentiate an atom and an ion with suitable examples.
21. An element X has valency of 4. Write its formula for (a) chloride (b) oxide (c) carbonate (d) nitrate.
22. The valency of a metal M is 2 and 3. What is the formula of its sulphates?
23.  $\text{NaHCO}_3 + \text{CH}_3\text{COOH} \longrightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$   
 4.2g      10 g      =      12 g      2.2g
- Which law is shown by the above data

### STRUCTURE OF ATOM

1. What is the difference between Na and  $\text{Na}^+$  in terms of number of electrons.
2. Why did Rutherford select a gold foil in the  $\alpha$  particle scattering experiment?
3. State the observations in the  $\alpha$  particle scattering experiment which led Rutherford to make the following conclusions
  - a) Most of the space in atom is empty.
  - b) Whole mass of an atom is concentrated at the centre.
  - c) Centre is positively charged.
4. What are the drawbacks of Rutherford's model of an atom?
5. What are canal rays?
6. Write two postulates of Bohr's model of an atom.
7. Draw a sketch of Bohr's model of an atom with four shells.
8. State the conclusions made by Rutherford from  $\alpha$  particle scattering experiment.
9. If  $\text{Mg}^{2+}$  has 12 protons and 12 neutrons, what is its atomic number and mass number?
10. Give reasons
  - a) Nucleus of an atom is heavy and positively charged.
  - b) An atom is electrically neutral.
11. Explain Bohr and Bury rules for distribution of electrons into different shells.
12. Mention any two points Rutherford put forward to explain the nuclear model of an atom.
13. An atom of an element has two electrons in the outermost M shell, State
  - a) Electronic configuration
  - b) Atomic number
  - c) Number of protons
  - d) Valency of this element.
14. Explain with examples
  - a) Isotopes
  - b) Isobars
  - c) Atomic number
  - d) Mass number

15. Give the uses of isotopes.
  16. Why do isotopes have similar chemical properties?
  17. Draw the schematic atomic structure of .  
Phosphorous    b) Magnesium    c) Neon
  18. Define valency by taking the example of magnesium.
  19. Write the electronic configuration of an element whose mass number is 31 and atomic number is 15 .What is its valency?
  20. The atomic number of Al is 13 and Cl is 17. How many electrons, protons and neutrons are present in  $Al^{3+}$  and  $Cl^-$  ?
  21. Calculate the average atomic mass of chlorine if it exists commonly in two isotopes  $^{35}_{17}Cl$  (75%) and  $^{37}_{17}Cl$  (25%).
  22. The average atomic mass of a sample of an element X is 16.2u. What are the percentage of isotope  $^{16}_8X$  and  $^{18}_8X$  in the sample.
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## BIOLOGY WORKSHEET

### THE FUNDAMENTAL UNIT OF LIFE

#### 1 MARK QUESTIONS

1. State the function of chromosome in a cell.
2. List the constituents of plasma membrane.
3. Name two cell organelles that have their own genetic material.
4. What are the main functions of each of the following cell components?
  - i. Lysosomes
  - ii. Ribosomes
  - iii. Mitochondria
  - iv. Nucleus
  - v. Chloroplast
5. Name the cell organelle which is able to destroy a damaged cell.
6. State two important functions of the nucleus of a cell.
7. Which organelles are called
  - a. Powerhouse of the cell
  - b. Suicidal bags
8. Which cell organelle is responsible for the release of energy as ATP?
9. Why are ribosomes called protein factories?
10. Define diffusion.

#### 2 MARK QUESTIONS

1. Give reason:
  - a. Inner membrane of mitochondria is deeply folded
  - b. Mitochondria are able to make some of their own proteins
2. What are the different types of endoplasmic reticulum? Write functions of each .
3. What will happen to a plant cell if it is kept in sugar solution?

4. Why is plasma membrane called selectively permeable membrane? How do substances like CO<sub>2</sub> and water move in and out of the cell?
5. What are the functions performed by cell wall in plant cells?
6. Why is the cell called functional and structural unit of life ?

### 3 MARK QUESTIONS

1. Distinguish between hypotonic solution, hypertonic solution and isotonic solution.
2. What are the main functional regions of the cell? Explain with the help of a diagram.
3. Describe the structure of nucleus.

### 5 MARK QUESTIONS

1. Draw and label plant cell. Write the main functions of:
  - a) chloroplast
  - b) plasma membrane
  - c) cell wall
2. Draw a diagram of prokaryotic cell and label cell wall, ribosomes, nucleoid, and plasma membrane.
3. State what happens when:
  - a) Dry apricots are kept in pure water for some time and later transferred to sugar solution?
  - b) A red blood cell is kept in concentrated saline solution?
  - c) Plasma membrane of a cell breaks down?
  - d) Golgi apparatus is removed from a cell?
  - e) Lysosomes are absent in a cell?

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## IMPROVEMENT IN FOOD RESOURCES

### I MARK QUESTIONS

1. What are fertilisers?
2. What are the various irrigation systems?
3. What is organic farming ? Why Is it beneficial?
4. What is vermi compost?
5. Give examples for fertilisers.
6. What is the major objective of mixed cropping?
7. Why are legumes desirable in crop rotation?
8. What are the techniques used for improving crop varieties.

### 2 MARK QUESTIONS:

1. What are weeds? Give two examples .Mention any two methods of preventing the growth of weeds.
2. What is the advantage of intercropping ? Explain giving an example.
3. State two disadvantages of fertilisers.

4. Differentiate between micro and macro nutrients. Give examples.
5. What are the harmful effects long term use of pesticides and fertilisers ?

**3 MARK QUESTIONS :**

1. Differentiate between Kharif and rabi crops . Give examples.
2. How do biotic and abiotic factors affect crop production?
3. A farmer is advised to use manure instead of fertilisers in his fields. List any two advantages that the farmer will get if he accepts the advise. How is use of manure particularly useful for clayey and sandy soil?
4. State the three preventive and control measures taken for storage of agricultural produce?
5. Write the criteria for selection of crops for mixed cropping?

**5 MARK QUESTIONS:**

1. What are the pests in agriculture? Suggest preventive measures to control pests. Suggest methods to control diseases in crops.
2. Differentiate between mixed cropping and inter cropping. Give examples. How is crop rotation different from the above? Mention advantages of each of the cropping patterns.
3. Arun an illiterate farmer does not understand the difference between manure and fertilisers . Help him to differentiate between the two in terms of their composition. Justify the use of manure highlighting two of its advantages.

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**WHY DO WE FALL ILL (WORKSHEET 2017- 18)**

**1 MARK QUESTIONS –**

1. What is community health?
2. What is an antibiotic? Give one example.
3. Name the protozoan that causes a) sleeping sickness b) kala azar
4. Name 2 sexually transmitted disease.
5. Name 2 non infectious diseases and infectious diseases each.
6. Name any 2 groups of microorganisms from which antibiotics are made.
7. What is immunization?
8. Against which disease is BCG vaccine employed?
9. What is vaccination?
10. Name the target organ of Plasmodium.
11. Why rabies is called Hydrophobia?
12. Name the target organ of Japanese Encephalitis and AIDS virus respectively.
13. What is Inflammation?
14. Name 2 diseases caused by contamination of water.
15. Give the name of a vaccine that saves the life of babies from 3 diseases.

**2 MARKS QUESTIONS –**

16. State two conditions essential for keeping good health.
17. Define (a) health (b) disease.

18. Health workers are exposed to more sick people than others in the community. Write any four preventive measures they take to avoid sickness.
19. 'Public cleanliness is important for individual health' Why?
20. What is the basis of the principle of immunization? Mention 2 diseases that can be prevented by immunization.
21. What is organ specific manifestation?
22. What is importance of vaccination?
23. Differentiate between healthy and disease free.
24. Why is it difficult to make antiviral drugs than antibacterial drugs?
25. A) Name the organ affected in a patient showing the symptoms of persistent cough and breathlessness.  
B) Name the disease in which the above mentioned organ is affected.
26. Distinguish between communicable and non-communicable disease.
27. What is full form of AIDS. Name the virus that causes it.
28. Why a person suffering from AIDS cannot fight even minor infections?
29. What are vectors? Name 2 diseases spread by them.

### 3 & 5 MARKS QUESTIONS-

30. How are acute diseases different from chronic diseases?
31. Associate the following diseases / infections with their causative agents:

a. Sleeping sickness	b. Chicken pox
c. SARS	d. Acne
e. Kala azar	f. Dengue Fever
g. AIDS	h. Brain Fever
i. Malaria	j. Polio

32. It was diagnosed that the body of a patient has lost his power of fighting any infection. Name the disease the patient was suffering from. Which microbe is responsible for this disease? Write 3 causes for spread of this disease.
33. State the conditions responsible for the spread of malaria and measures to prevent and control it.
34. A person is suffering from chest pain, breathlessness, loss of body weight, persistent cough and produces blood stained sputum.
  - (a) Name the disease and its causative agent.
  - (b) Mention two means of its transmission.
  - (c) Name the vaccine used to prevent this disease.
35. A) How does Cholera spread?  
B) If you are a health professional, what are the 2 important suggestions you would give to help prevent the spread of this disease?



## WORKSHEET-DIVERSITY IN LIVING ORGANISMS

- Q1. Name the five kingdoms
- Q2. Who proposed the five kingdom classification?
- Q3. What is binomial nomenclature?
- Q4. Who is the father of taxonomy?
- Q5. What is meant by classification?
- Q6. What is taxonomy?
- Q7. Give one characteristic of plantae.
- Q8. Which group of plants is called vascular cryptogams?
- Q10. Which animal phylum has the lowest structural organisation?
- Q11. To which phylum do jelly fish belong?
- Q12. Which group of organism has segmented worms?
- Q13. Name two classes of chordates in which clawed digits are present?
- Q14. Why is scientific name of organism unique?
- Q15. Write scientific name and common name of one animal.
- Q16. State any two characteristics of mammalian. Name two egg laying mammals.
- Q17. What is notochord? Mention its function.
- Q18. (a) State two characteristic features of nematode.  
(b) Identify the phylum with the help of the following features:  
i) Spiny-skinned, radial symmetry and have tube feet.  
ii) Triploblastic, worm like, having segmented body.
- Q19. Give two characteristics of kingdom monera, protista, fungi with minimum two examples.
- Q20. Divisions of plant kingdom.
- Q21. Examples for each divisions of plant kingdom.
- Q22. Differentiate between the following:  
(a) Gymnosperm and Angiosperm  
(b) Diploblastic and Triploblastic  
(c) Dicotyledon and Monocotyledon
- Q23. (a) List any two main characteristics of chordates.  
(b) In which class would you place any organism which has-  
(i) Four chambered heart and lay eggs.  
(ii) Skeletons made of both bones and cartilage and are cold blooded.
- Q24. What are the differences between amphibians and reptiles.
- Q25. With the help of a diagram, give the difference between dicotyledons and monocotyledons.
- Q26. Write the main points of the 10 Phylums.
1. PHYLUM PORIFERA-pores present all over the body.
  2. PHYLUM COELENTERATA-have a central coelom.
  3. PHYLUM PLATYHELMINTHES-dorriventally flattened.
  4. PHYLUM NEMATODA-worms causing filariasis.
  5. PHYLUM ANNELIDA-body segmented.
  6. PHYLUM ARTHROPODA-jointed legs.
  7. PHYLUM MOLLUSCA-muscular foot.
  8. PHYLUM ECHINODERMATA-peculiar water driven system.
  9. PROTOCHORDATA-notochord at some stages.
  10. CHORDATA-notochord present at all stages.