DISTRICT PUBLIC SCHOOL & COLLEGE, KASUR

NOTES/HOME TASK/WORK SHEET FOR

CLASS: 8th

SUBJECT: G. SCIENCE

1st TERM SYLLABUS: UNIT (1-3-4-7)

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Introduction to scientific measurements

Answers to Exercises in Unit 1

1. Name the instruments you would use to measure.

(a) the diameter of a piece of wire

Ans. screw gauge

(b) the internal and external diameter of a tube of about 5 cm bore.

Ans. vernier callipers

(c) The thickness of a page of a book.

Ans. Screw gauge.

2 What do the following stand for mm, T, mg, cm

Ans.

mm	. millimetre,
t	tonne,
mg	milligram,
cm	centimeter

3. Which is greater

(a) 1600g or 1.5 kg?

Ans. 1600g

(b) 1450 mm or 1.3 m

Ans. 1450 mm

4. Which of these is

i) the number of mg in 1 g?

Ans. 1000

ii) the number of cm in 1 km?

Ans. 1000 x 100 = 100,000

iii) the number of mm in 1 cm?

Ans. 10

iv) The number of cm in 1 m?

Ans. 100

v) The number of mm in 1 km?

Ans. 1000 x 1000 = 1000,000

5. Write down the value of

i)	1 m in mm	Ans.	1m = 1000 mm
ii)	1.5 m in mm	Ans.	1.5 m = 1500 mm
iii)	1.534 m in mm	Ans.	1.534 m = 1534 mm
iv)	1652mm in m	Ans.	1652 mm = 1.652 m

6. What is the volume of a metal block 3cm long, 2 cm wide, and 4 cm hight?

Ans. Volume = L x w x h

= 3 x 2 x 4 = 24 cm^3

What would be the volume of a block twice as long, twice as wide, and twice as high?

Ans. Volume = 6 x 4 x 8 = 192 cubic centimeters.

UNIT # 3
Cells, heredity, and evolution

Answers to Exercises in Unit 3

1. (a What is DNA? What is the function of DNA?

Ans. Chromosomes and genes are made up of a complex chemical substance called DNA (deoxyribonucleic acid). The DNA molecule is like a twisted ladder called a double helix. DNA controls the development of the characteristics that an organism inherits from its parents. When cells divide, the DNA first duplicates itself. One copy is passed from one generation to the next. This is the reason why we inherit characteristics from our parents.

(b) Which kind of cell division.

(i) halves the chromosome number?

Ans. meiosis

(ii) produces cells to make the body grow?

Ans. mitosis

(c) How is a zygote produced?

Ans. At fertilization a male sex cell or sperm joins up with a female sex cell or egg to make a fertilized egg called a zygote.

(d) Write down six characteristics that you have acquired.

Ans. |Swim, roller skate, cycle, drive a car, read, write

(e) Write down six characteristics that you have inherited.

Ans. eye colour, hair colour, height, shape of nose, intelligence, shape of chin

(f) What is a mutation? What causes mutation?

Ans. Sometimes, when cells divide, the structure of a chromosome or a gene may change. These changes are called mutations. When gametes are formed in the sex organs there is a chance that changes in the structure or number of chromosomes may take place. This will seriously affect the development of an organism. Down's syndrome and haemophilia are two diseases that are caused by mutations. Mutations can occur naturally. They can also be caused by X-rays, other forms of radiation, and by some chemicals.

(g) What does evolution mean? What theory did Darwin suggest about the evolution of new species?

Ans. Evolution means change and improvement from simple beginnings.
A theory about how evolution took place was first put forward a hundred years ago, by Charles Darwin. Darwin suggested that:• there is variation within a population of living things; • there is a struggle for survival within populations; • some individuals are better adapted to their surroundings. They are more likely to grow and reproduce. Others will die out. This is sometimes referred to as survival of the fittest; • so, he concluded that: *'particular organisms have been naturally selected from their population, because they are better adapted than others.'*

2. (a) differentiate between the genes and chromosomes.

Ans. The nucleus of a cell contains long thread-like structures called chromosomes. These are only visible when a cell is about to divide into two. Chromosomes contain a complex chemical called deoxyribonucleic acid or DNA, which controls the development of the characteristics that an organism inherits from its parents. DNA contains the 'instructions' for making the characteristics of an organism, such as skin colour, hair colour, eye colour, etc. Chromosomes carry bits of information called genes, which are also made up of DNA. Genes instruct our bodies to make proteins which determine the shape of the body and how it behaves.

(b) differentiate between the mitosis and meiosis.

Ans. Mitosis is a kind of cell division in which the number of chromosomes in the newly formed (daughter) cells remains the same as that in the original (parent) cell. Cells

having the normal set of chromosomes are said to have the diploid number of chromosomes. All the cells in animals and plants, except the sex cells, are diploid. Meiosis is a kind of cell division which occurs only within the reproductive organs. Meiosis is concerned with the production of sex cell or gametes. Four daughter cells, with half the number of chromosomes as the parent cell, are produced by meiosis.

(c) differentiate between the continuous and discontinuous variations.

Ans. All human beings have similar features, but they are not exactly alike. Differences in hair colour, height, weight, and skin colour are examples of differences that we call variations. The students in a class can be arranged in a line from the shortest to the tallest. Their height shows continuous variation. It varies from short to tall with many small differences in between. Characteristics that are distinct, such as blood group, show discontinuous variation. You can belong to only one group: A, B, AB, or O. People can roll their tongues or they cannot. There is no in-between state. Colour blindness is another example of discontinuous variation.

(d) differentiate between the inherited and acquired characteristics.

Ans. The characteristics we are born with are called inherited characteristics. Learning how to swim or having a scar on your chin are acquired characteristics.

(e) differentiate between the dominant and recessive genes.

Ans. The genes in a pair may be identical or they may be different. The child has black hair because the gene for black hair is dominant. It dominates the gene for blonde hair and produces the final hair colour. Genes which are suppressed or dominated by other genes are called recessive genes.

Unit # 4
biotechnology

Answers to Exercises in Unit 4

1. (a) What are microbes? Explain your answer with examples.

Ans. Microbes are tiny living things that can only be seen with the help of a microscope. Yeast, bacteria, and fungi are microbes. Bacteria were used to make yoghurt from milk and mould fungi were used to make cheese.

(b) What does biotechnology mean? What are the oldest example of biotechnology?

Ans. Biotechnology is a method of using microbes to produce useful products. For centuries people have been making cheese, yoghurt, bread, and vinegar, using microbes such as bacteria and yeast.

(c) How could biotechnology help solve the world's food shortage problems

Ans. Large areas of the Earth are not suitable for growing food crops. This may be due to high temperatures, poor rainfall, or insect pests. If genes can be found to improve the ability of food plants to survive in these conditions, food shortages might come to an end.

(d) What is genetic engineering?

Ans. Genetic engineering involves removing genes from one type of cell and transferring them to another, completely different cell.

(e) Why have genetic engineering techniques been developed?

Ans. Scientists can make microbes and other organisms produce useful things by changing their genes.

(f) Why are microbes used in genetic engineering?

Ans. Animal and plant products used in agriculture, medicine, and industry are often in short supply, or are very expensive. The genes controlling the production of these materials in animals and plants can be inserted into

microbe cells. These genes then instruct the microbial cells to produce the required materials, which they do in much greater quantities than the original animal or plant cells, because microbes reproduce and grow at a rapid rate.

(g) Why do you suppose enzymes are called 'chemical scissors'

Ans. Enzymes used in genetic engineering are called chemical scissors because they use chemicals to remove the gene from the chromosome. They do not cut the chromosome physically.

(h) Why are plasmids? Why are plasmids used in genetic engineering?

Ans. The microbial cell in which a gene is inserted is called a plasmid. It is a small circle of DNA which can move from one cell to another and make copies of itself.

2. What useful role do microbes play in the following industries?

(a) Health.

Ans. The production of useful medicines such as vaccines and antibiotics is the job of the biotechnologist. A very powerful medicine called penicillin was discovered in 1928. Penicillin is produced by a fungus. It is an antibiotic which means it can kill germs inside the human body. Bacteria have been used to produce human growth hormones for children who do not grow properly, human insulin for diabetics, and vaccines and vitamins.

(b) Mining.

Ans. Some types of bacteria live in the soil heaps around coal and mineral mines. These bacteria feed on the traces of minerals in the rock and oxidize them to produce energy. Sulphuric acid and iron (II) sulphate are produced as by-products. Surrounding rocks are attacked by these chemicals and many kinds of metals are leached out.

(c) petroleum

Many of our industries depend on oil, coal, and gas. Only about one-third of the oil in the ground is brought to the surface. The rest is clinging to rock particles deep below the ground. Biotechnology has provided a way to extract this remaining oil. Bacteria are pumped down an oil well and are fed with nutrients while they are deep underground. The bacteria grow and increase in numbers. They produce chemicals that wash oil from surrounding rock particles. They also produce a gas which builds up enough pressure to force the oil to the surface.

Unit # 7
Acids, alkalis, and salts

Answers to Exercises in Unit 7

1. (a) Write the names of three weak and three strong acids.

Ans. Weak acids: citric acid, lactic acid, acetic acid. Strong acids: hydrochloric acid, nitric acid, sulphuric acid

(b) Name three physical properties of acids which distinguish them from alkalis.

Ans. Acids have a sour taste. Acids turn blue litmus paper red. Acids turn pH paper red.

(c) List the physical properties of alkalis.

Ans. Alkalis have a bitter taste. Alkalis turn red litmus paper blue. Alkalis are soapy to touch.

(d) How are alkalis useful in our daily lives?

Ans. Alkalis are used to make soap. They are used to clean greasy ovens. Ammonia is an alkali which is used as household bleach.

2 Classify the substances as either acidic or alkaline.

Ans.

Lemon juice	Acidic
Soap powder	Alkaline
Aspirin	Acidic
Baking powder	Alkaline
Vinegar	Acidic

3 Complete the reactions.

(a) zinc chloride + hydrogen
(b) calcium chloride + water + carbon dioxide
(c) zinc chloride + water
(d) calcium chloride + water + ammonia
(e) sodium nitrate + water
(f) zinc sulphate + hydrogen
(g) copper sulphate + water (h) sodium chloride + water

4. State whether the following properties belong to acids, or alkalis, or both.

Ana.

(a) acids	(b) alkalis	(c) both	(d) alkalis
(e) both	(f) both	(g) acids	(h) both
(i) both	(j) acids		

CHAPTER # 1 MCQ

INTRODUCTION TO SCIENTIFIC MEASURMENTS

1. The SI unit for length is the

Meter pound mile kilogram

2. _____ is the amount of space something takes up.

Volumeweight Mass balance

3. Mass can be measured by using a

Calllipers balance meniscus cylinder

4. The volume of liquids is measured in

Tons kilograms newton'sliter's

5. The volume of a substance is measured in

Newton'sliter's cubic metersmeter's

6. A _____ is used for measuring given volumes

Burette pipette balance vernier caliper's

7. The curved surface of a liquid is called the

Meniscus MKS gauge crescent

8. The mass of a body is the quantity of

Water weight blood matter

9. Weight ismeasured in

Newton's meters ounces grams

10. The two main _____ sciences are chemistry and physical

Earth solid amazing physical

11. Meter rule is used for measuring

Length volume weight Mass

12. The number of jaws in vernier caliper is:

Two three four five

13. Measuring flaks is used to measure given

Volume weight length Mass

14. The general conference of weight and measurements held in

1960 1965 1962 1961

15. The unit of Mass is:

Liter kilogram newton ounces

16. Physics is concerned with matter in relation to:

Force weight Energy Matter

17 .One meters is equal to micrometers

1, 000, 00 2, 00,000 1.5,00,000 1,000,000

18. The number of Scales on vernier caliper is

Three Two Four NON OF THES

19. One liter is equal to

10,000ml 1, 00.000ml 1000ml 100ml

20. One tonne is equal to kilograms

100kg 1000kg 10 kg 10000kg

CHAPTER # 3

Cells, Heredity and evolution

1. Chromosomes are made of_____

MKS DNA CBM LED

2. Differences in characteristics within a species are called _____

Features heredity identity variations

3. _____ is the study of inherited characteristics.

Mutation Evolution Heredity meiosis

4. Genes are located all along the _____ .

Nerve cells brain chromatids chromosomes

5. Meiosis is concerned with the production of _____

Gametes zygotes genes chromosomes

6. Each chromosome replicates itself to form two _____

DNA chromatids zygotes cells

7. Down's syndrome is caused as a result of _____

Mutationsfertilization variation evolution

8. Genes which are dominated by other genes are called_____ genes.

Suppressive recessive oppressive dominant

9. Each chromosome makes an exact copy of itself by a process called_____

Replication variation mitosis division

10. Learning how to swim is an _____ characteristic.

Inherited obvious acquired evolving

11. DNAcontrols the development of the body:
Size Characteristics Construction

12. The student in class arranged in a time from the shortest to the tallest called:
Discontinuous variation Continuous variation Mean variation None of these

13. Evolution means from simple beginnings:
Changeimprovement Change and improvement Not changed

14. Mutations can occur by:
Naturally Accidently Process Hemophilia

15. Color blindness is an example of:
Discontinuous variation continuous variation Mean variation None of these

16. Gregor Mendel a scientist:
Garman Austrian British Arabian

17. Gregor Mendel carried our simple experiments on garden peas at:
1865 1865 1765 1795

18. The study of inherited characteristics is called:
Variation Haploid Heredity Dominant

19. Haploid number of chromosomes become four haploid gametes sometimes Called:
Production division Reduction division Mean variation None of these

2O. the first thing appeared on earth about million year's age:
3600 3500 3400 3700

CHAPTER# 4
Biotechnology

1. Fermentation takes place with the help of _____
Germs bacteria amoeba yeast

2. Microbes are so tiny they can only be seen with the help of a _____
Microscope magnifying mirror rays

3. Fungi such as _____ have been eaten for centuries.
Mosses cactus mushroom algae

4. Gasohol is an alternative to _____
LPG CNG ethanol petrol

5. Biotechnology means using _____ to make useful things.
Living cells food particles green leaves living organisms

6. It is _____ to grow microbes in large quantities.
Important difficult easy wonderful

7. _____ growing inside oil wells help to force oil large quantities.
Fungus Mushrooms Creatures Bacteria

8. Scientists can make organisms produce useful things by changing their genes by a process called _____
Evolution genetic engineering chemical engineering mutation

9. _____ is produced by sewage and farm animal waste.
Sui gas CNG Oxygen Biogas

10. Vaccines and antibiotics are produced by _____

Engineers doctors biotechnologists machines

11. Vinegar is made from:
Sugar milk grapes apple

12. Biotechnology helps in making:
Food medicine new materials all

13. Fermentation is brought about by:
Microbe fungi bacteria germs

14. Genetic engineering is involved in removing and transformation of:
Ceil gene chromosome DNA

15. Chemical Scissors are used to remove gene from chromosome by special:
Chemical microbe enzyme bacteria

16. Large area of Earth are not suitable for with:
Food crops Cash crops plants herbs

17. Fusarium contains protein and fat with:
40% 20% 30% 45% 45% 13% 20% 6o%

18. Large closed tanks used in Biogas are called:
Waste bins dry bins digesters treatment tanks

19. The oil brought about to the sur face from the ground is about:
One third two third half quarter

20. Penciline is produced by:
Fungus algae plasmids bacteria

CHAPTER# 7
Acids, Base and Salts

1. Acids have a _____ taste.
Sour bitter saltish sweet

2. Acids turn blue litmus paper_____
Orange red white pink

3. _____ is used to preserve food.
Chilly Acid Alkali Salt

4. The acid found in our stomach is _____ acid.
Nitric sulphuric hydrochloric citric

5. Fizzy drinks contain_____ acid.
Nitric citric ascorbic carbonic

6. Alkalis have a _____ taste.
Sour bitter saltish sweet

7. Tea, baking soda, and toothpaste are
Alkalis acids chemicals salts

8. Many _____ are made from plant extracts.
Acids alkalis salts indicators

9. _____ are found in the form of crystals.
Alkalis Acids Salts

10. Alkalis are useful in everyday life because they neutralize.

Salts chemicals acids alkalis

11. The acids we use in our food are.

Weak strong neutral base

12. Acids that produce more hydrogen ion (H+) in water are:

Weak strong hard neutral

13. Metals react with dilute acid to produce hydrogen gas and a:

Salt chemical sugar bubble

14. Acid reacts with alkaline to produce a salt and water, this reaction is called:

Formation neutralization fermentation precipitation

15. House hold cleaning products contain.

Ammonia sodium hydroxide calcium hydroxide all given

16. Tooth paste is slightly;

Acidic alkaline reagent salty

17. Some salts occur in nature in definite form or shape called:

Crystal cube pentagon hexagon

18. When salts are dissolved in water they can conduct:

Electricity heat water light

19. The chemicals that changes color in acid or base is called:

Methane ammonia indicator phenolphthalein

20. Special kind of paper coated with a chemical substance:

Litmus pH paper cabbage paper pH meter