

FOCUS A365

Another Manyamfranchise.Com Evaluation Test

GATITU SECONDARY SCHOOL

FORM 1 PHYSICS

END OF TERM 2 – 2016

1. Name three physical quantities and their SI units. (6mks)
2. Name the instruments you would use to measure each of the following:
 - (a) The length of a football field. (1mk)
 - (b) The height of a 20 litre jerrican (1mk)
 - (c) The circumference of your waist. (1mk)
3. A cylinder has a diameter of 4.2cm. How many times would a thread of 132cm be wound around the cylinder ? (3mks)
4. A page of a book measures 14.5cm x 21.4 cm. What is its area in square millimetres ? (3mks)

5. Define density and state its SI units. (2mks)

6. The water level in a burette is 30cm^3 . If 55 drops of water fall from the burette and the average volume of one drop is 0.12cm^3 , what is the final water level in the burette? (3mks)

7. A cube of iron of side 4cm has a mass of 512g. Find:

(a) The volume of the cube in m^3 (3mks)

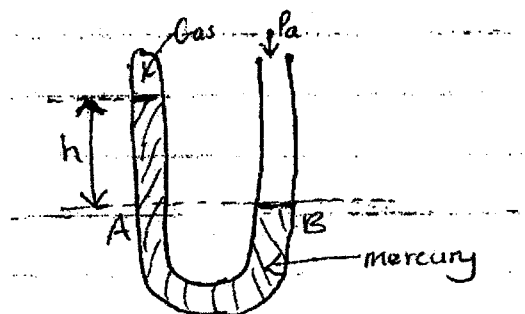
(b) The density of iron in kgm^{-3} (3mks)

8. What is pressure? State its SI unit. (2mks)

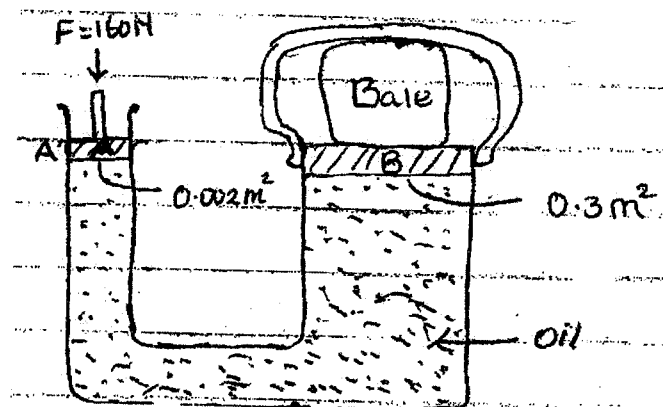
9. Explain the action of drinking straw. (3mks)

10. Using the crashing can experiment, explain using a diagram the existence of atmospheric pressure (5mks)

11. The diagram below shows a mercury manometer. Some dry gas is present in the closed space in limb A, while limb B is open. If atmospheric pressure $P_a = 103\ 000\ \text{pa}$, $h = 30\text{mm}$ and density of mercury is $13\ 600\text{kgm}^{-3}$. Determine pressure P_g of the gas. (Take $g = 10\text{Nkg}^{-1}$) (4mks)



12. The figure below shows a simple hydraulic press used to compress a bale. The cross-section areas of A and B are 0.002m^2 and 0.30m^2 respectively:



- (a) Pressure exerted on the oil by the force applied at A. (3mks)
- (b) Pressure exerted on B by the oil. (2mks)
- (c) Force produced on B compressing the bale. (3mks)

13. A sea diver is 35m below the surface of sea water. If the density of the sea water is 1.03gcm^{-3} and g is 10N/kg . Determine the total pressure on him.
(Atmospheric pressure = $103\,000\text{Nm}^{-2}$) (3mks)

14. A brick 20cm long, 10cm wide and 5cm thick has a mass of 500g. Determine the:
(a) Greatest pressure that can be exerted by the brick on a flat surface. (3mks)

(b) Least pressure that can be exerted by the brick on a flat surface. (Take $g = 10\text{N/kg}$) (3mks)

15. Define matter and give the three states of matter. (4mks)

16. Explain why the density of a gas is much less than that of a solid or liquid. (2mks)

17. Explain the following:

(a) It is possible to compress gases but not solids and liquids. (2mks)

(b) A perfume sprayed at one corner of a room spreads quickly to the entire room. (2mks).

18. A smoke cell contains a mixture of trapped air and smoke. The cell is brightly lit and viewed through a microscope. Small bright specks are seen dancing in a random manner.

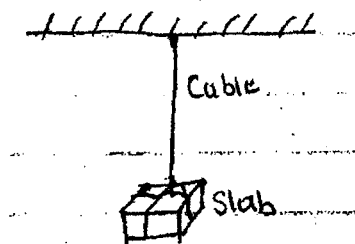
(a) What are these small bright specks ? (1mk)

(b) Why do they move in a manner described above ? (2mks)

19. Using pollen grains placed in water, explain how their motion supports the idea that matter is not continuous. (2mks)

20. Define force and give its SI units. (2mks)

21. A concrete slab of mass 90kg is held by a steel cable of a crane as shown in the fig below.



(a) Draw and name the forces acting on the slab. (2mks)

(b) Determine the tension in the cable. (3mks)

22. When water is poured on a dry glass slab it spreads uniformly but it forms spherical droplets on a waxed glass slab. Explain. (4mks)

23. A man has a mass of 70kg. Determine

(a) His weight on earth, where the gravitational field strength is 10N/kg . (3mks)

(b) His weight on the moon, where the gravitational field strength is 1.7N/kg . (3mks)

24. A mass of 7.5kg has weight of 30N on a certain planet. Calculate the acceleration due to gravity on this planet. (3mks)

25. A spring stretches by 6cm when supporting a load of 15N.

(a) How much would it stretch when supporting a load of 5kg? (3mks)

(b) What load would make the spring extend by 25mm ? (3mks)

26. Describe a method that can be used to open a tight lid of a bottle without damaging it. (2mks).

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GATITU SECONDARY SCHOOL - FORM 1
2HRS 30MINS TOTAL MARKS 100

NAME.....ADMSCH.....

INSTRUCTIONS:

ATTEMPT ALL THE QUESTIONS IN THE SPACES PROVIDED

1. a) What is meant by the term biology? (1mk)

b) State the name given to the study of;

(i)The cell (1mk)

(ii)Micro-organisms. (1mk)

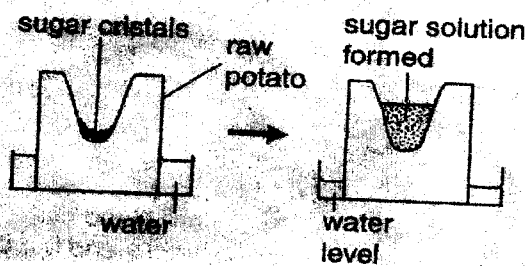
2. State one use of each of the following apparatus in the study of living organisms

a)Pooter (1mk)

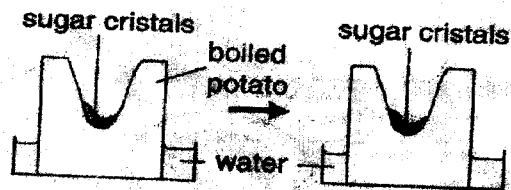
b)Pitfall (1mk)

3.)A motor vehicle is able to move and break down fuel to carbon(IV)oxide and water,yet it is not classified as living thing. List two other characteristics of living things not shown by a motor vehicle. (2mks)

4a) Some students set up an experiment as shown in the diagram below;



SET UP A



SET UP B.

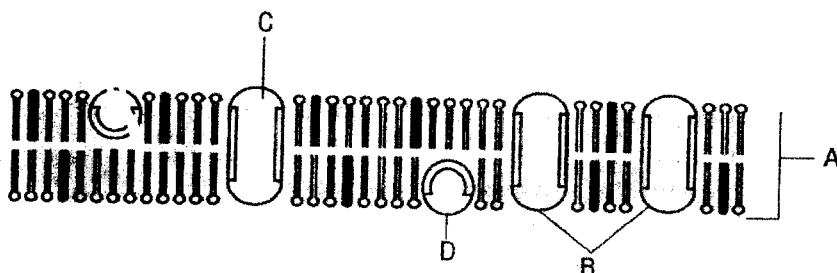
(a) Name the process the students were investigating

(1mk)

(b) Account for the results obtained

(3mks)

(c) The diagram below depicts a structure that is very vital to a living organism;



(i) Identify the structure

(1mk)

(ii) Name the part labeled A, B, C and D

(4mks)

A.....

B.....

C.....

D.....

(d) Explain how the following factors affect the functioning of the structure (3mks)

(i) Temperature

(ii) PH

(iii) Electric current

5a) What type of membrane is the visking tubing? (1mk)

(c) Give the differences between the visking tubing and real cell membrane. (1mk)

6. Define the term species (1mk)

(b) Explain why a leopard and a lion cannot breed yet they belong to the same genus. (1mk)

7. Distinguish between

(a) common names and scientific names of living organisms (2mks)

(b) Taxonomy and taxon (2mks)

8.(a) Which organelle would be abundant in (2mks)

(i) Skeletal muscle cell

(ii) Palisade cell

(b) State at least four activities of the cell that are controlled by the nucleus (4mks)

9.(a) A drawing of 6cm in length, was made of a bottle whose actual length was 2cm. Calculate the magnification of drawing. (2mks)

(b) Explain why only the fine adjustment knob should be used when focusing a specimen using the high power objective lens of the light microscope (2mks)

10.a) State one function of each of the following cell organelles.

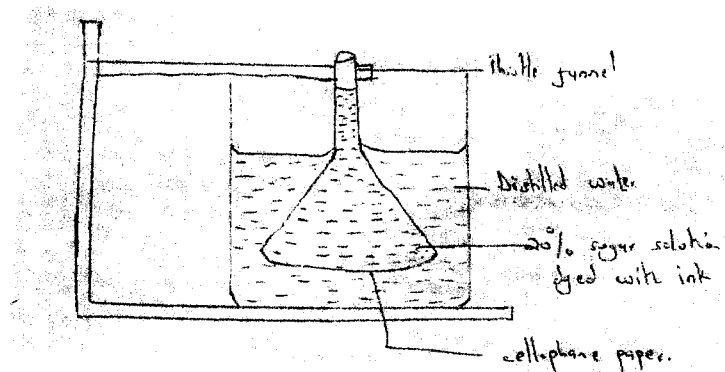
(a) Golgi apparatus

(1mk)

(b) Lysosomes

(1mk)

11. The diagram below is a set-up for an experiment to demonstrate a certain physiological process.



(a) What nature of a solution is represented by 20% sugar solution? (1mk)

(b) Explain observations on the set-up after one hour. (2mks)

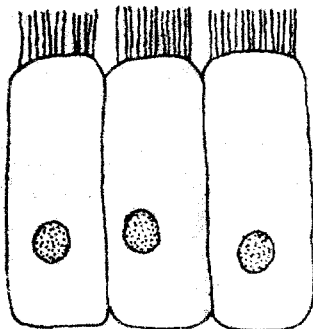
12. What is meant by each of the following terms ?

(i) crenated cell (1mk)

(ii) Flaccid cell (1mk)

13. When examining an unidentified rabbit organ under an electron microscope, you find that most cells are rich in rough endoplasmic reticulum and the golgi bodies. What does this tell you about the organ? (1mk)

14.) The diagram below shows a type of epithelial tissue:



(a) What is the name of the hair-like process? (1mk)

(b) What is the function of the hair-like process? (1mk)

15.(a)How is the cell membrane adapted to its functions (3mks)

16.a)What is the significance of diffusion to plant pollination (1mk)

b) Is diffusion an energy –driven process? Explain. (2mks)

c)A student at Kwale secondary observed that when sodium chloride was poured onto grass, the grass dried up. Explain this observation in relation to osmosis. (3mks)

17. How do plant cell walls differ from cell membranes? (3mk)

18.A scientific space craft brought a material to earth from outer space. Explain how we would establish if the materials are:

(i)Living or non-living (3mks)

19.) Complete the following table showing branches of biology;

(4mks)

| Branch of Biology | Name of the scientist | Nature of study |
|-------------------|-----------------------|-----------------|
| Zoology | | |
| | | Study of plants |
| Ecology | Taxonomist | |
| | | |

20.) The scientific name of Lantana camara refers to a green herbaceous plant. Other related include: Lantana rifoliata and Vitex rifoliata

a) From the list, identify the plant belonging to the same genus.

(2mks)

b) From the name Lantana camara, which name represents

(2mks)

i) Genus name-----

ii) Specific name-----

21a) Name two laboratory chemicals used to stain plant cells in micro-biology.

(2mks)

(b) Explain the importance of the following procedure when preparing temporary slides for observation under a light microscope.

(i) Cutting very thin sectors

(1mk)

(ii) Cutting the specimen with sharp razor

(1mk)

22.) In an analysis of plants growing in pond water, a student noticed that K^+ ions were always higher in the cell sap than in the pond water yet the plant was still able to absorb water.

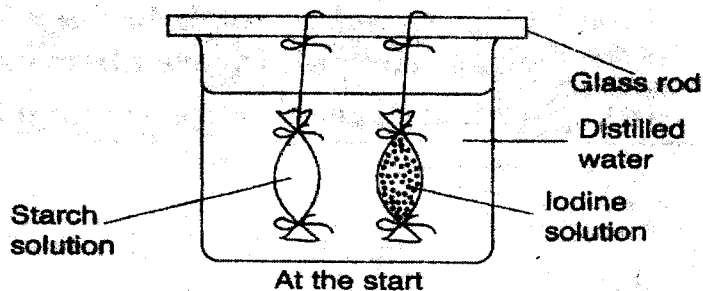
a) Suggest a physiological process that made this possible

(1mk)

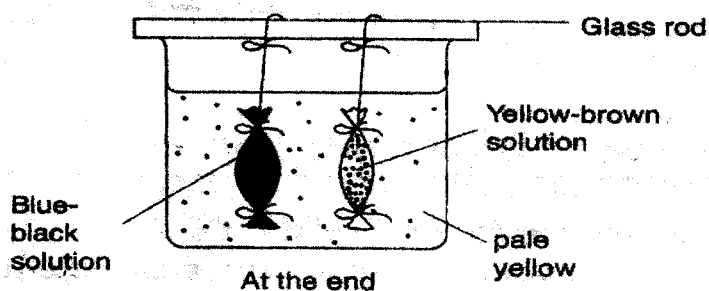
b) Name the factors that would affect the movement of K^+ in a cell

(2mks)

23.) A student noticed that starch solution react with iodine solution to form a blue-black precipitate. He then proceeded to set up an experiment with starch solution in visking tubing. He immersed both visking tubes in a beaker of distilled water taking care that the two visking tubes did not touch as shown below.



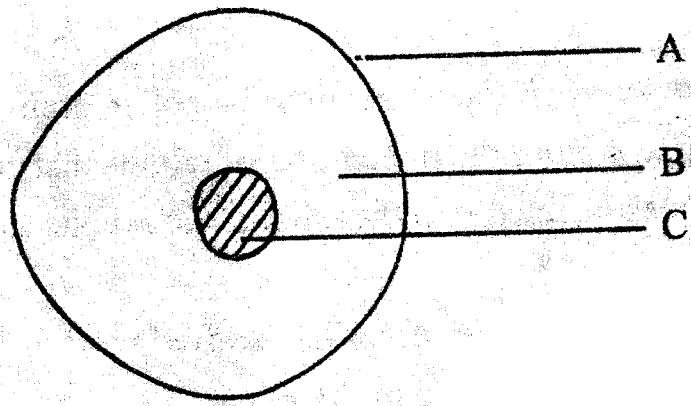
After 12 hours, the student made the following observations



- A) Starch solution had turned blue-black
 - B) The visking tube with iodine solution remained yellow/brown
 - C) Water in the beaker had turned pale yellow
- (i) Explain why the solution in the beaker had turned brown (1mk)
- (ii) When a little starch is added to the water in the beaker, blue-black solution was formed. Explain the observation (1mk)
- (iii) Why did the solution in the beaker not changed in colour to blue-black (1mk)

- (iv) Explain the results obtained in the visking tube that obtained the starch solution (2mks)
- 24.) Differentiate between protoplast and protoplasm (2mks)
- 25a) What do you understand by the term resolution of a microscope (1mk)
- (b) Differentiate between light microscope and electron microscope (4mks)
- 26.) Differentiate between osmosis and diffusion (3mks)
- 27a) Distinguish between haemolysis and plasmolysis (2mks)
- (b) Name the type of movement that occur within a plant cell (1mk)

28.)The diagram below shows a cell as observed under a microscope



(a)Identify the cell (1mk)

(b)Name the parts labeled A and B (2mks)

29.)Give the functions of the following parts of a microscope. (4mks)

| Structure | Function |
|----------------------|----------|
| Eye piece | |
| Revolving nose piece | |
| Condenser | |
| Stage | |