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St. Peter's College - Colombo 04
புனித பேதுரு கல்லூரி - கொழும்பு 4

E I,II

09 ශ්‍රේණිය - පළමු වාර අගයීම - 2023

தரம் 09 - - 2023

Grade 09 – First Term Examination - 2023

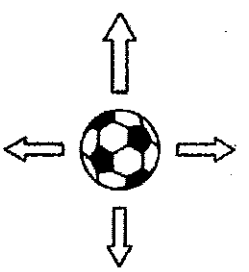
විද්‍යාව	I, II
Science	**I, II**

පැය දෙකයි
Two hour

PART I

Answer all the questions. (20 x 2 = 40 marks)

1. The diagram shows the force acting on a football. What happens to the ball?



a) It doesn't move

b) It moves to the right

c) It moves up

d) It moves to the left

2. Which of these can be physically separated into simpler substances?

A. Sodium Atom

B. Lithium Element

C. Sodium Chloride compound

D. A concrete mortar mix

The correct answer is,

a) A, B and C only
b) A, B and D only,
c) B and C only,
d) D only

3. The mass of an electron relative to a Proton is,

a) 1

b) 0

c) -1

d) 1/1840

4. This is not an application of micro organisms

a) Bio- fertilizer

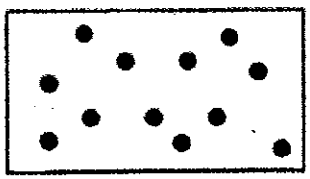
b) Bio- leaching

c) Bio-pesticides

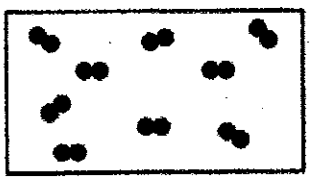
d) Bio- diversity

5. The below diagrams represent the gases Helium, Hydrogen, and Carbon dioxide. They exist as an atom, a molecule and a compound. Find the correct one which shows hydrogen gas.

(a)



(b)



(c)

(d) None of the above

6. Find the correct statement with regard to mixtures and compounds.

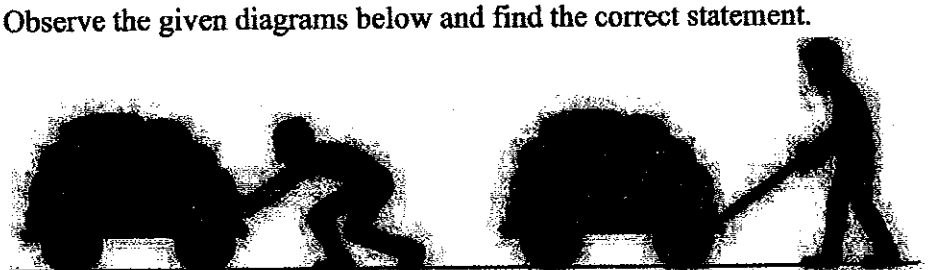
a) Mixtures are chemically combined compounds.

b) Compounds are chemically combined elements.

c) Compounds can be separated by physical methods only.

d) Mixtures can be separated by physical and chemical methods.

7. Observe the given diagrams below and find the correct statement.



(A) (B)

a) The work is easier in B as the point of application of the force applied has changed.

b) The work is easier in A as the point of application is direct contact with the Load.

c) The work is easier in B as the magnitude of the force is increased.

d) The work is easier in A as the magnitude of the forces increased.

8. Force can be graphically represented. Find the correct statement.

a) The direction of forces is denoted by a straight line.

b) The magnitude of the force is denoted by an arrowhead.

c) The point of application of the force is indicated by the midpoint of the straight line

d) The magnitude of the force is denoted by the length of the straight line.

9. The point of a drawing pin has a..... (Large/ Small) area. The pressure exerted under the point of the pin is ..... (High/ Low), which helps it to go into the wall easily.

The correct answers are;

a) Large and Low

b) Large and High

c) Small and Low

d) Small and High

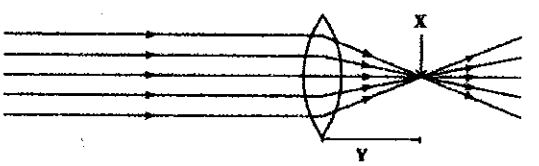
10. Antibiotics are not much harmful to humans they can cause Side Effects if used without medical advice. What is the antibiotic that is used against fungal infections?

a) Penicillin
b) Griseofulvin
c) Amoxicillin
d) Erythromycin

Question 11 and 12 are based on the below diagram.

11. X and Y are

a) Focus and focal length
b) Focal length and focus
c) Parallel rays and focus
d) Converged rays and focal length



12. The transparent object used in the above diagram is,

a) A convex lens
b) A concave lens
c) A convex mirror
d) A concave mirror

13. Find the incorrect statement.

a) SI unit of weight is Newton.
b) SI unit of pressure is Pascal.
c) SI unit of mass is grams.
d) SI unit of force is Newton

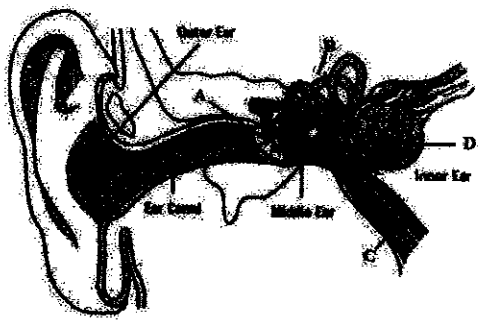
14. This is an instant where the equipment is used to reduce the pressure

a) A well-sharpened knife is used to cut vegetables
b) The bottom of the skates used by skiers is made as a knife-edge
c) Heavily loaded vehicles are made with a large number of wheels.
d) The drawing pin is having a sharp point

15. Force is a vector quantity. Because,

a) It has a magnitude and a direction
b) It has a magnitude and a point of application
c) It has a direction and a point of application
d) None of the above

The following questions 16 and 17 are based on the diagram given below.



16. What is the correct statement about structure "D" in the inner eye?

a) Transmitting auditory sensors to the auditory nerve

b) Controls the pressure on either side of the tympanic membrane

c) Directs the sound to the tympanic membrane

d) None of the above

17. This structure "B" is in the middle ear and its main function is,

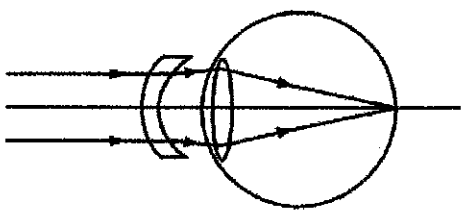
a) Directing sound waves towards auditory canal

b) Transmitting auditory sensors to the auditory nerve

c) Contributing to maintaining the balance of the body

d) Taking auditory sensors to the relevant part of the brain

The below diagram shows the ray diagram of a corrected eye defect. It has used an external lens.



18. Select the incorrect statement.

a) The diagram shows the correcting of the short sight.

b) The defective eye lens cannot focus the rays coming from distant objects on the retina.

c) The defective eye can be focused on rays that are coming from close objects to see them clearly.

d) The defect has been corrected by using a convex meniscus lens.

19. In the above defect,

a) The normal eye lens cannot increase its curvature.

b) The normal eye lens cannot decrease its curvature

c) the normal eye cannot focus on closer objects

d) All The statements are incorrect

20. Find the incorrect statement about the production of Bio-gas

a) A mixture containing organic materials such as straw, cow dung and water is used to produce biogas.

b) *Penicillium* fungus is used to produce biogas

c) Anaerobic bacterium *methanococcus* reacts on the organic surfaces and produce biogas.

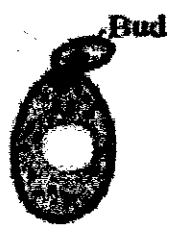
d) Methane is the main component of biogas

PART II

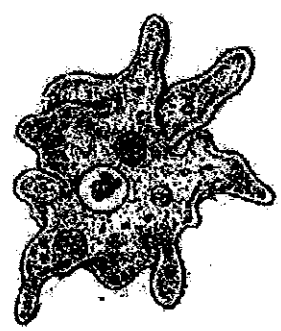
Answer 5 questions including the compulsory question number ONE. (Please use separate papers in answering these questions.)

1. Observe and identify the following organisms and answer the questions. (Q1 = 16M)

A



B



C

i. What are the main 4 groups of living microorganisms? (4 x ½ =2M)

ii. Give one reason why you cannot include organism A in those groups. (1M)

iii. What is the organism that belongs to the group fungi? (1M)

iv. What is the special locomotive structure used by organism C? (1M)

v. Name another two different locomotive structures used in other microorganisms. (2M)

vi. These organisms are widespread in the environment as well as in our bodies. How do they spread so easily? Give two reasons. (2M)

vii. Name one group that categorizes as Eukaryotes and has the ability to produce their own food. (1M)

viii. Mark "Right" or "Wrong". (6M)

a) Nitrogen fixation is done by the Rhizobium bacterium that lives in the nodules of legumes. .....

b) The organic matter in compost is often decomposed by bacteria and fungi.

.....

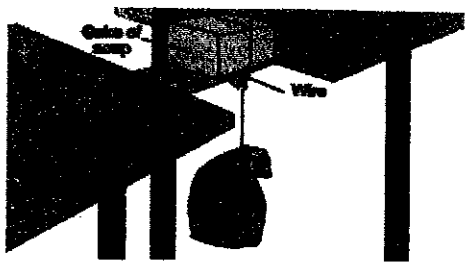
c) Cholera can be cured by a vaccine made from toxins of microbes. .....

d) Uranium and copper are extracted by bio-leaching. .....

e) Enzymes produced by some bacteria help to separate plant fibres by digesting pectate bonded among the fibres. .....

f) Production of biodegradable plastics is an example for bio-remediation. .....

2. The given below is an activity setup done by grade 9 students. The cake of soap is attached to a thin wire with a diameter of 2 millimeters. A sandbag of 2 kg is hung on the thin wire around a cake of soap as shown in the diagram.



i. Write an equation to show solid pressure. (2M)

ii. If the students were trying another thick wire with a diameter of 1.5 mm on the same activity, explain their observations. (2M)

iii. Which wire gets more time to cut through the cake of soap? (1M)

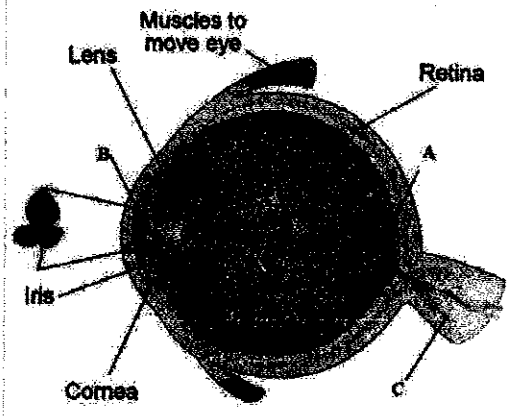
iv. If the weight of the sandbag, hanging on the 1.5 mm thick wire is doubled, what would be the observations? (2M)

v. According to the activity, what are the factors that the pressure is affected by? (2M)

vi. "Lower the surface area on which the force is acting, the pressure becomes high." Give an example to prove this statement. (2M)

(Q2 = 11M)

3. A. The given below is an illustrated diagram of human eye.



i. Name the part denoted by the letter A and write the main function of it. (1M)

ii. Write TWO characteristics of the image formed on the Retina of the human eye. (2 x 1 = 1M)

iii. What is the layer behind the retina that supplies blood to the eye? (1M)

iv. How many muscles are there holding and moving the human eye? (1M)

v. What is the letter that denotes Pupil in the given diagram? (1M)

vi. Name the muscles that help in adjusting the eye lens. (1M)

B. Fill in the blanks with suitable words given below. (10 x 1/2 = 5M)

Understand	Vibration	auditory	tympanic	Cochlea
Incus	middle	brain	recognize	environment

Our (i)..... is full of different Sounds. Sound is a (ii)..... that propagates as a wave. The sound waves are detected by a large membrane in the outer ear called (iii)..... membrane. These vibrations are transformed by three small bones malleus (iv) ..... and stapes known as Ossicles. These are located in the (v)..... ear. These small bones vibrate and once the vibrations cause the fluid inside (vi) ..... to ripple, the (vii)..... nerve carries these electrical signals to the (viii)....., which turns it into a sound that we (ix)..... and (x)..... .

(Q3 = 11M)

4. A. Complete the following table. (10x1/2=5M)

Element	Number of Electrons	Number of Neutrons	Atomic Number	Mass Number
$^{23}_{11}Na$				
$^{24}_{12}Mg$		12		
$^{4}_{2}He$	2			

B. Name the elements present in the given compounds. (12x1/2 = 6 M)

i. CH_4

ii. $AlCl_3$

iii. NaCl

iv. $Ca(OH)_2$

v. KNO_3

(Q4 = 11M)

5. A. Fill in the blanks using the suitable words from the chart. (10x1/2=5M)

A force is simply a ..... or a ..... that makes an object move ..... or slower, stop, change in direction or change ..... or shape. The force can be measured by using a ..... at the school laboratory. Weight is also a force, that can be calculated by multiplying ..... of the object with the gravity on it. SI unit of force is ..... denoted by "N". A force can be represented as an ..... to describe its ..... and strength. The length of the arrow shows the ..... of the force.

Size, Magnitude, Pull, Mass, Newton, Direction, Push, Faster, Spring-balance, Arrow, Colour, Number, Kilograms

B. Explain why the force is considered as a Vector quantity but not as a scalar quantity.(3M)

c. Weight of a cubic box is 150N and it is kept on a horizontal plane surface. Pressure exerted by the box on the surface is 300 Pa. Show your workings and calculate the contact area of the surface of the box? (3M)

(Q5 = 11M)

6. Microbial spoilage is caused by some organisms in the environment. They spoil food by secreting chemical substances that make the food non-edible.

i. Write TWO Physical changes that can be seen in food when spoiled. (2x1/2= 1 M)
ii. Write TWO internal factors that are affecting food spoilage. (2M)
iii. Name the food types that show the following chemical changes. (2M)
    - Rancidity
    - Fermentation
iv. Write TWO external factors that are affecting food spoilage. (2M)
v. What is the group of microorganisms that makes bread mold? (1M)
vi. Right TWO diseases caused by microorganisms to plants. (2M)
vii. Name One viral infections spread through the air. (1M)

(Q6 = 11M)