Grade : 10 | **YEAR END TEST - 2019** | **34 E I**

Science - I | **Time : 1 Hours**

Note:
- Answer all question.
- In each of the questions 1 - 40, pick one of the alternative (i), (ii), (iii), (iv) which you consider as correct or most appropriate.
- Mark a cross (x) on the number corresponding to your choice in the answer sheet provided.

01. What is the unit of Momentum,
1. $kgms^{-1}$ 2. Nms^{-1} 3. gms^{-1} 4. Nm

02. Chemical formula of hematite, Which used to extraction of Iron is,
1. Fe_2O_3 2. Fe_3O_2 3. FeO 4. Fe_3O_4

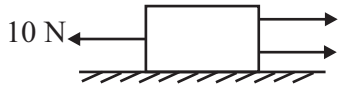
03. What are the sexually transmitted diseases which are transmitted by virus and bacteria respectively,
1. Herpes, Syphilis
2. AIDS, Syphilis
3. Gonorrhoea, AIDS
4. Syphilis, Gonorrhoea

04. The mass of an object is 5kg. Find the work done in lifting it upwards by 4m.
1. 20 J 2. 200 J 3. 5 J 4. 2000 J

05. Not an excretory material of organisms is,
1. Carbondioxide 2. Urea 3. Sodium Chloride 4. Saliva

06. Which has same mole of oxygen atoms equal to the CH_3COOH compound.
1. Al_2O_3 2. NaOH 3. $Ca(OH)_2$ 4. MgO

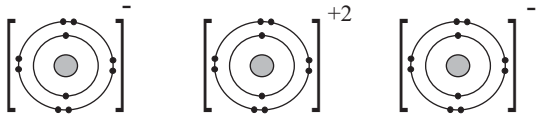
07. Find the magnitude of resultant force of following situation,



1. 110 N 2. 75 N
3. 25 N 4. 90 N

08. What is the <u>incorrect</u> statement about 'virus',
1. All viruses multiplication within a living cell
2. Virus do not shows biological activities
3. Virus shows both living and nonliving features
4. Virus contain DNA and RNA in its protein capsule

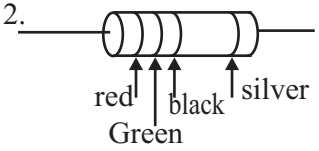
09. Following diagram shows bond structure of an ionic compound,



What is the correct ionic compound. which is suitable for the above structure?
1. MgF_2 2. MgO 3. K_2O 4. CaF_2

10. The correct value of avogadro constant is,
1. 6.022×10^{23} amu
2. 6.022×10^{23}
3. $6.022 \times 10^{23}\ mol^{-1}$
4. $6.022 \times 10^{23}\ kg^{-1}$

11. <u>Hibiscus</u> is an incomplete scientific name with hand writing for the shoe plant. Find the correct second epithet, of that scientific name
1. ROSASUNENSIS 2. <u>Rosasinensis</u> 3. <u>rosasinensis</u> 4. *rosasinensis*

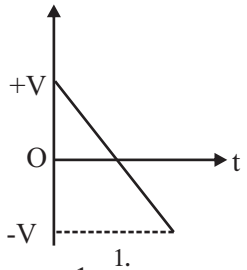
12. 

(Red = 2, Green = 5, Black = 0, Silver =+10%
Find the true range of values that above resistor could have,
1. 225 Ω - 275Ω 2. 225 Ω - 27.5Ω
3. 250 Ω - 225Ω 4. 235 Ω - 275Ω

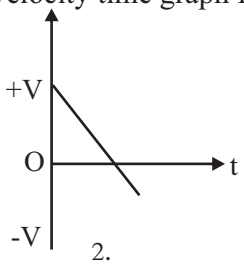
\+ −

13. What is the incorrect statement about bonds,
    1. Electrons are involve to form bonds
    2. Atoms of an element form bonds to stabilized
    3. Ionic bonds are more stronger then the covalent bonds
    4. HCl is a compound with ionic bonds and O_2 is molecule with covalent bond

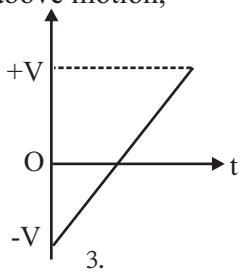
14. An object projected up word vertically, when it is return it has remain on a roof top after travel few distance. Find the correct velocity time graph for the above motion,



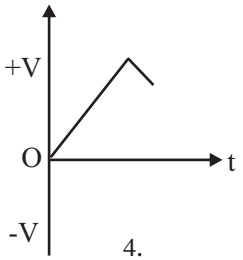
1.



2.



3.



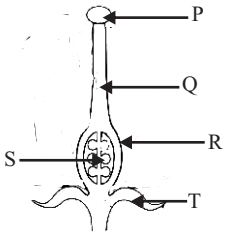
4.

15. A - $\frac{1}{12}$ th the mass of $^{16}_{8}O$ isotope
    B - $\frac{1}{12}$ th the mass of $^{12}_{6}C$ isotope
    C - $\frac{1}{12}$ th the mass of $^{1}_{1}H$ isotope
    The correct statement about the atomic mass unit is,
    1. Only A 2. Only B 3. Only C 4. A and B

16. At in which of following instance you can not observe any reaction,
    1. Mg + HCl 2. Zn + HCl 3. Fe + HCl 4. Ag + HCl

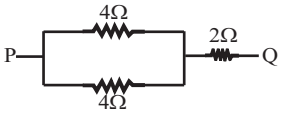
17. Find the kinetic energy of an animal with a mass 10 kg at an instance that it running with a velocity of 5 ms^{-1},
    1. 5 J 2. 10 J 3. 25 J 4. 125 J

18. Following diagram shows some parts of a flower. Which parts become to seeds and pericarp after the fertilization.
    1. R and T 2. R and S 3.S and R 4. P and R

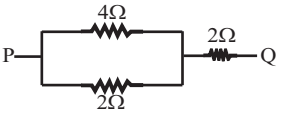


19. Which one is the special function of the lipids only,
    1. Source of energy and act as enzymes.
    2. Make structural components and protect internal body organs.
    3. For conservation of water and maintain the body temperature.
    4. Synthesize some hormones and act as antibodies.

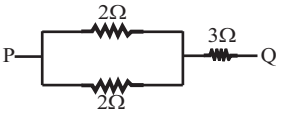
20. x - Molar mass have unit but relative atomic mass do not have unit
    y - Relationship between mass, amount of substances and molar mass denoted by m = nM
    z - Value of molar mass is different from relative atomic mass,
    The correct statements are,
    1. x and y only 2. z and x only 3. y and z only 4. All x,y,z

21. 

(x)



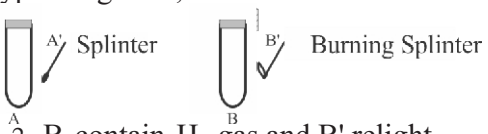
(y)



(z)

Which circuits have same amount of equivalent resistance between P and Q,
1. x and y 2. y and z 3. x and z 4. x,y and z

22. Following test tubes are filled with two different types of gasses,



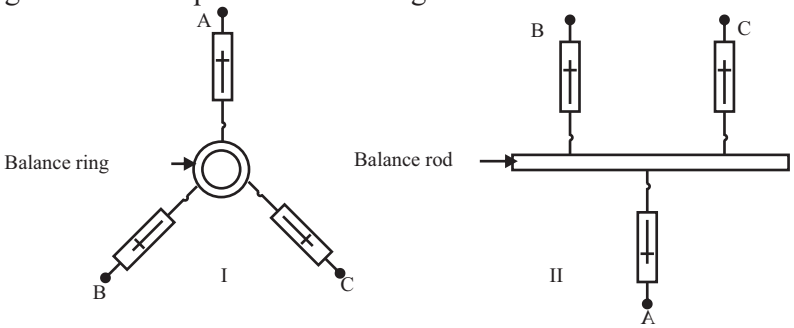
Which statement is correct,

1. A contain O_2 gas and splint relight
2. B contain H_2 gas and B' relight
3. A contain CO_2 gas and A' relight
4. B contain O_2 B' not relight

23. Turtle and crocodile respectively belong to the class,

1. Reptilia, Amphibia
2. Amphibia, Reptilia
3. Reptilia, Reptilia
4. Amphibia, Amphibia

24. Following diagrams shows equilibrium of a ring and a rod under three forces.



What is the common condition must be satisfied in above both incident,

1. A is equal to the sum of B and C forces
2. The three forces must be coplanar
3. The lines of action of the three forces must meet at a common point
4. The three lines of action of the three forces are parallel to each

25. The combination of a gene pair for a particular character is known as,

1. Phenotype
2. Gene expression
3. Homozygote
4. Heterozygote

26. Electronic configuration of an atom of an element E at one instance is shown below, E - 2, 8, 8

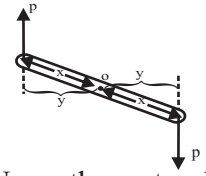
A - E may be a ion
B - E may be a inactive gas
C - E may be a negative ion

What are the correct statement about E?

1. A and B only
2. A and C only
3. B and C only
4. A, B, C All

27. An object falls gradually from rest. What is the correct answer with ratio of displacement in 1^{st}, 2^{nd} and 3^{rd} seconds, ($g = 10\ ms^{-2}$)

1. 1 : 2 : 3
2. 1 : 3 : 5
3. 1 : 1 : 1
4. 1 : 3 : 9

28. 

Following diagram shows couple of forces. When applying P force it rotate around the point O. What is the moment of the couple of force?

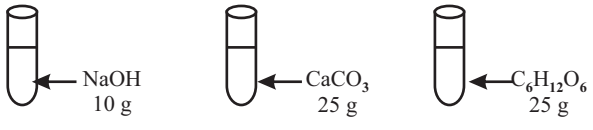
1. pxy
2. 2py
3. 2xp
4. 2xyp

29. Name the parts which produce sperm and sperms are temporally stored in male reproductive system respectively,

1. Vas deferens, Epididymis
2. Seminiferous tubules, Seminal vesicles
3. Seminiferous tubules, Epididymis
4. Vas deferens, prostrate gland

30. Which test tubes contain same number of molecules.
(H = 1, C = 12, O = 16, Na = 23, Ca = 40)

1. b and c
2. a and c
3. a and b
4. Each test tube contain different number of molecules



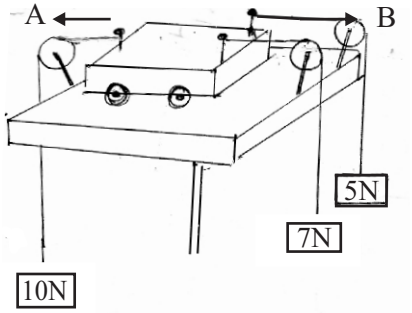
31. Given below are features of three animals, found in the field trip,

P - Possess a thin mucous skin with glands
Q - Eyes are with out eye lids
R - The body is moistened by mucous and possess shells.

Who are the animals with above features respectivly,

1. Tortoise, , Thilapia, Crain
2. Frog, Thilapia, Snail
3. Snail, Crain, Frog
4. Thilapia,Turtle, Tortoise

32. Which statement is correct about following diagram,



1. The trolley is in rest.
2. The trolley is accelerate towards to the B direction with 2N force.
3. The trolley move towards to the B direction in uniform velocity with 2N force.
4. The trolley move towards to the B direction with 12N force.

33. Two uses of two different gasses are given below.
    - Production of margarine
    - Production of dry ice

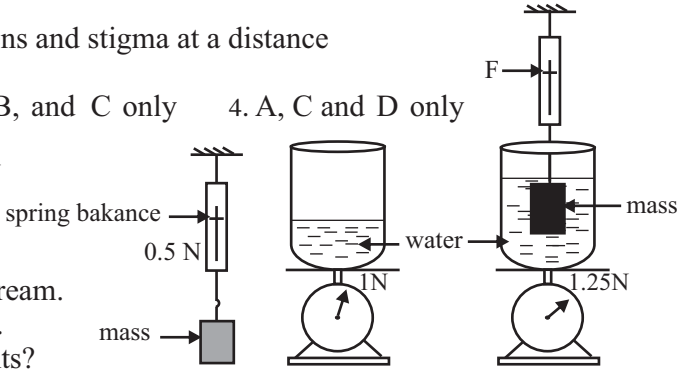
    Find above gasses respectively,
    1. CO_2, H_2 2. CO_2, O_2 3. H_2, CO_2 4. H_2, O_2

34. Some adaptations of flowers to avoid self-pollination are given below,

Flower	Adaptation
A - Corn	Having unisexual flowers
B - Tridax	Having extrose stamens
C - Passion fruit	Self sterility
D - Orchid	Positioning of stamens and stigma at a distance

    Correct answer is,
    1. A, B, C and D 2. A, B and D only 3. A, B, and C only 4. A, C and D only

35. The reading of F is,
    1. 0.50 N 2. 1.75 N 3.0.25 N 4.1.50 N



36. Read the following statements giving below
    A - Use as a supplementary for protein.
    B - To extract alginic acid used to make ice- cream.
    C - Used to fermentation of bread and alcohol.
    What are the uses of fungi from above statements?
    1. A and B only 2. A and C only 3. B and C only 4. All A, B and C

37. When a fish swim under the water with 0.5m below the surface. Atmospheric pressure is 76 Hgcm
    Find the pressure exerted on the fish,
    (g = 10 ms^{-2}, Density of water = 1000 kgm^{-3}, Density of Mercurry = 13600 kgm^{-3})
    1. 103410 Pa 2. 103860 Pa 3. 108360 Pa 4. 104360 Pa

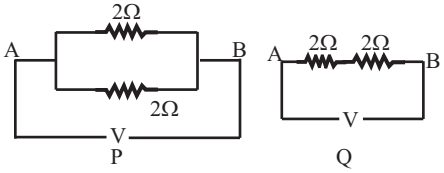
38. Some uses of elements are given below,
    A - Used to produce matches and crackers. B - Used to make pencils.
    C - Used to produce vulcanizing rubber.
    The use of amorphous carbon is,
    1. only A 2.only B 3. only C 4. B, C only

39. When cross pollinated between plants with red flowers and white flowers in same species. Obtain new F_1 generation and allow self pollination to take place with in F_1 generation. Following phenotype can be seen in F_2 generation,

    Red : white
    3 : 1

    The parental plants may be,
    1. Red and white homozygous plant 2. Heterozygous Red plant and homozygous white plant
    3. Homozygous Red plant and heterozygous white plant 4. Red and white heterozygous plant

40. P and Q are two combinations of resistors. When suppling same amount of voltage between A and B Which is correct about the current flow, compare to system Q,
    1. Four times of current flow of P
    2. Two times of current flow of P
    3. one fourth of times of current flow of P
    4. Equal to the current flow of P



මධ්‍යම පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மத்திய மாகாண கல்வித் திணைக்களம்
Department of Education Central Province

Grade : 10 | **YEAR END TEST - 2019** | **34 E II**

Science - I | **Time : 2 Hours**

Note:
- This Paper consists of 2 parts, A and B.
- Part A contains structured essay questions. Answer them on the given space.

Part A

01. A. Following picture shows near by aquatic environment.

i. Name a vertebrate animal and its phylum shown in above picture.
Animal ..... Phylum ..... (m. 01)

ii. Write 2 prokaryote and Eukaryote group can be seen in above environment. Give example for each.

	Group of organism	Example
Prokaryote		
Eukaryote		

(m. 02)

iii. Write 02 standards of binominal nomenclature. (m. 01)

1 .....

2 .....

B.i. a) Draw a labeled diagram to identify whether the pond water is ionic solution. (m. 02)

b) How do you get the conclusion from observation of above activity, (m. 01)

.....

ii. In day time aquatic plants do photosynthesis. The equation of the photosynthesis is given below.

$$6CO_2 + X_2O \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6O_2$$

a. What is the value of 'x' in above equation. .....(m. 01)

b. Write the above reaction is belongs to which type of reaction.

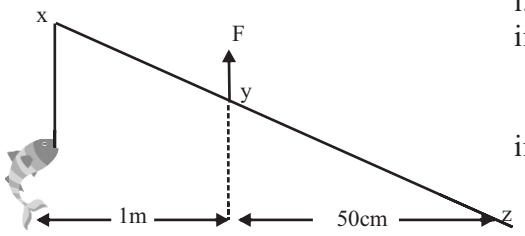
..... (m. 01)

c. What is the observation helps to prove this reaction is occurring in aquatic plant in the pond.

.....

..... (m. 01)

C. What is the observation helps to prove this reaction is occurring aquatic plant in the pond,
Fishing rod is act as a turning effect of a force. Following picture illustrate xz fishing rod with 1kg fish hanging on x edge. To lifted the fish up words force is applying on y. ($g = 10\ m\ s^{-2}$)



i. What is the weight of the fish? ..... (m. 01)

ii. Calulete then least force which needs to appy on y, to lifted the fish ..... (m. 03)

.....

iii. When increase the distance between x and y, what happen to the applying force on y, is it increase? decrease? or not change? ..... (m. 01)

2. A. All organisms can be classified as natural classifications and artificial classification.

i. Write one significance of classification of organisms. (m. 01)

.....

ii. Write one feature of natural classification and one weakness in artificial classification separately.

.....

.....

iii. In the plant classification flowering plants divided in to two groups as monocotyledons and dicotyledons. Answer following questions by using given picture.

A

B

a. Name the group belongs to the plant A .....(m. 01)

b. Name 2 parts and its morphological features to prove your above answer. (m. 02)

Parts of a plant	Morphological feature
1.	.....
2.	.....

c. Name one different between plant A and B, (m. 01)

.....

B. Flowers pollinated by using different agents of pollination.

i. Name the suitable agents of pollination to following plants.

corn

Thumbergia

Vallisneria

x. ..... y ..... z .....

ii. Write one adaptation to pollination of flower y, (m. 01)

.....

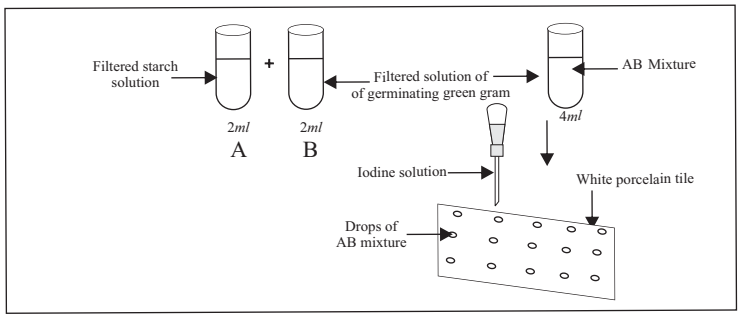
C. Carbohydrates, Proteins, Lipids and nucleic acids are considered as main types of bio molecules in living body,

i. What is the type of bio molecule of Enzyme ..... (m. 01)

ii. What is 'Enzyme'

..... (m. 01)

iii. Following diagram shows some steps of an activity which done for examine the action of enzymes.



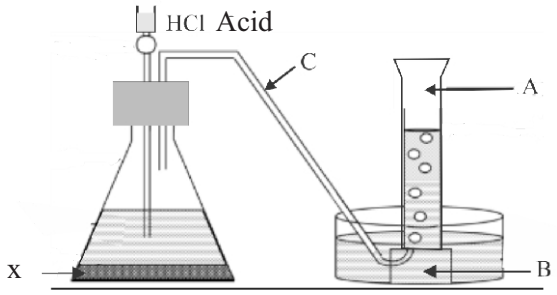
a. Name another solution instead of solution B, (m 01)

.....

b. Get a drop from the AB mixture and place it on a white porcelain tile. Add a drop of Iodine on to the drop of mixture continue this procedure for about 20 minutes in 2 minutes intervals. Fill in the blanks of following table by using your observations,

Instance	Colour	Reason for above observation
1. Drop of mixture 1st 2 minutes	.....	.....
2. Drop of mixture after 20 minutes	.....	.....

03. A.Following diagram shows set of apparatus that can be used to collect hydrogen gas in the laboratory,



i. Name parts A and B (m. 01)

A ..... B.....

ii. What can you use as X, to preparation of hydrogen gas, (m. 01)

.....

iii. Write balance chemical equation for above reaction (use your answer given in question (ii) as X)

..... (m. 01)

iv. What you use as X to prepare CO_2 gas instead of H_2 gas, in above setup,

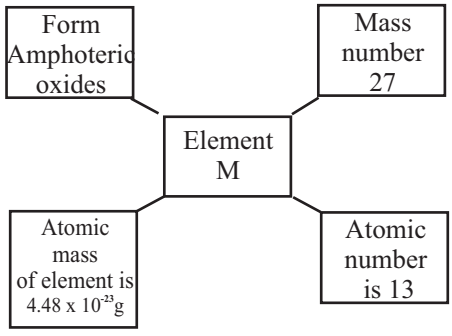
.....

v. Write one different physical property between H_2 and CO_2

.....

.....

B.Give the answers by using following chart.



(atomic mass $^{12}_{6}C$ is 1.99×10^{-23}g / value of the avogadro contents is 6.022×10^{23})

i) Calculate the relative atomic mass of above Element M .....(m. 02)

ii) Write standard way of written the symbols of above element. .....(m. 01)

iii) a. Find the the number of moles in 2.7 g of M

.....

b. Find the number of molecules in 2.7 g of M,

.....

v) Element M form amphoteric oxides what is the reason for that?

.....

C. Give the answers by using following compounds or molecules.

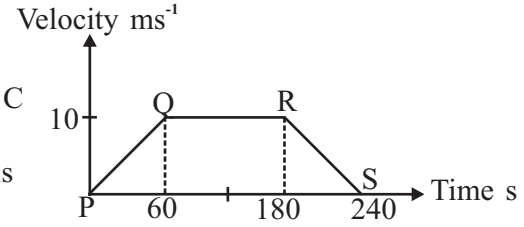
P - NH_3, R - Na, S - $NaHCO_3$, E - HCl

i. Write one use of R (m. 01)

.....

ii. Draw Lewis structure of P iii. Write one observation when adding E in to S

4. A. A train started from station A and its passed signal pole B, When it reached to the signal pole C, started to apply break and the train stopped at D station. The velocity time graph for the motion of the train is given below.



i. Find the maximum velocity of the train (m. 01)

.....

ii. Find the displacement between signal poles B and C

.....(m.02)

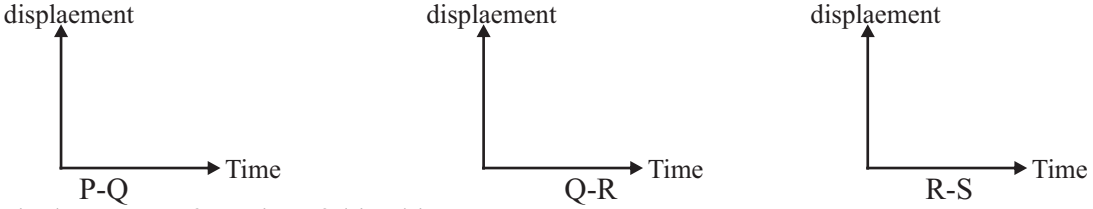
iii. What is the type of the motion of the train after it is passed signal pole C (m. 01)

.....

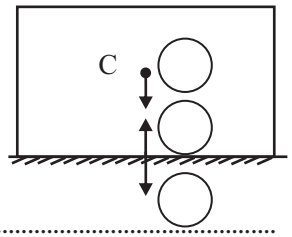
iv. Find the acceleration of the train during first 60 seconds. (m. 02)

.....

v. Draw displacement time graph for above motion of the train. (correct values are not nececesary) (m. 03)



B. C is the center of gravity of this object.



i. 'P' is the action exerted by the weight 'W', 'R' is the reaction exerted by the surface, Write P, W and R in suitable circle drawn in above diagram. (m. 03)

ii. Mass of the object is 800g. Find the force of the reaction exerted by the surface. ($g = 10\ m\ s^{-2}$)

.....

iii. Write the law you used to find the answer in question (ii)

.....

iv. 10N force applied on one side of the object. But object is in rest.

a. By what name is the frictional force exerted on the object known, When above incident?

.....

b. Find the frictional force when above incident?

.....

Part - B

- **Answers to 3 selected questions**

05. A. To study about the transmission of inherited characteristics, Mendel used single pair of contrasting character of garden pea plant at a time.

i. What is the name for above cross type (m. 01)

ii. Mendal said that the features of an organism is determined by a special particular factors. The identified particular factor is name as genes later, What is meant by genes?

iii. Mendel's experiments are very good example for the application of scientific method. Give a reason for that

B. Red - green colour blindness is the most common sex linked inherited human disease.

i. For a parents got their two sons with red - green colour blindness. What is the phenotype of the mother.

ii. Draw a gene chart to show above result. (Recessive gene for colour blindness is 'c' and Dominant gene of the recessive gene for colour blindness is 'C')

iii. How to prevent from the inherited diseases.

C. Reproductions of plants occurs mainly in two ways. They are sexual reproduction and asexual reproduction.

i. Given below some example for asexual reproduction of plants,

- Tissue culture
- Ground layering
- Grafting

a. Write a different between sexual and asexual reproduction

b. Find the asexual reproduction method which occurs artificially as like as naturally.

c. What is the main function of tissue culture

ii. Some characteristics of living organisms are given below.

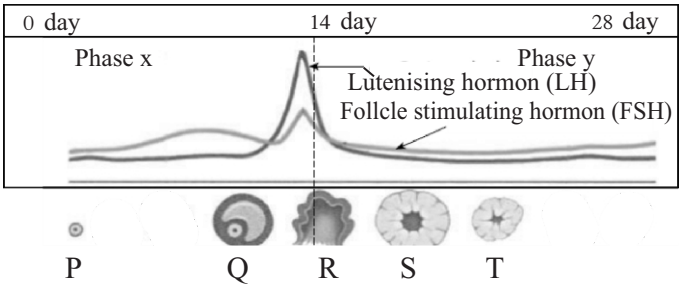
• movement	• Nutrition	• Respiration
• Excretion	• Growth and development	• Irritability and co-ordination
• cellular organization		

Select the suitable characteristics for following incident,

(a) Leaves of Mimosa fold when touched.
(b) Plant bended towards to the sun light.
(c) Ameoba is a unicellular organism. But man is multicellular organism.
(d) Lot of plants are photoautotrophic Animals are heterotrophic.

D. Menstrual cycle is very important part of the human reproduction. Answer the questions by using following diagram.

2



i. The whole process of menstrual cycle takes place associated with two location, find the location occures in phase x .

ii. Name P, Q, R, S, T

iii. What is the name for the incident, which occours in 14th day

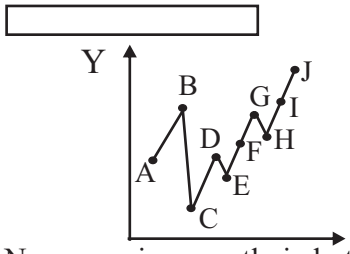
06. A. Add calcium carbonate ($CaCO_3$) chips and power of equal mass in to two beakers separately. Add equal volumes of HCl acid in to above both beakers. Measure the time taken to finished the reactions, and amount of the $CaCO_3$ used up. observation given below.

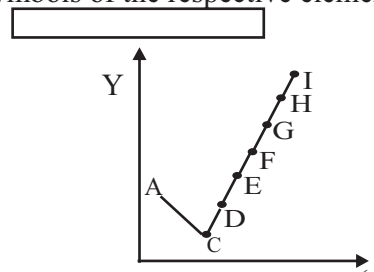
.

Time (min)		2	4	6	8	10	12	14
$CaCO_3$ (g)	Chips	2.9	3.9	4.4	4.6	4.8	4.8	4.8
	Powder	4.0	4.6	4.8	4.8	4.8	4.8	4.8

i. What is the initial mass of the $CaCO_3$. (m. 01)
ii. Indicate above readings of both reactions separately in one graph with same axis (m. 02)
iii. Give one reason for differ the reaction rate of above two reactions. (m. 01)

B. Following two graph shows electro negativity and first ionization energy of 1st ten elements in the periodic table. (The symbols given are not true symbols of the respective element)





i. Name y axis correctly in both graphs. (m. 02)
ii. What is the factor that help you to identify the correct axis in question (i)(m. 01)
iii. a. Name the element and its group with maximum ionisation energy. (m. 01)
b. Name the element and its group with the highest electronegativity. (m. 01)

C. Following table shows some consecutive elements in the periodic table and its valencies. (Symboles given are not true symbols)

Element	M	N	P	Q	R
Valency	2	1	0	1	2

i. Define the word valency of an element. (m. 01)
ii. Find the groups of P, Q, R (m. 03)
iii. What is the formula of the compound formed by the combination of N and R. (m. 01)
iv. What is the type of bond in above compound you mention in (iii) (m. 01)
v. Write two cheracteristics of above type of bond. (m. 02)

D. i. What is the type of the bond contain among the water molecules.
ii. Draw a diagram to show above type of bonds

7. A. Following diagrams shows some equipments which are used to do the activity about electricity,

a

b

c

d

i. Name equipments b and c

ii. You have provided connecting wires, four dry cells, a switch. Draw circuit diagram to measure current flow and voltage through the bulb.

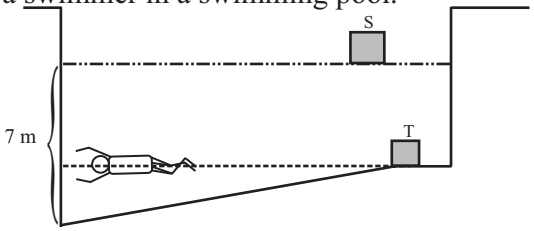
iii. With out change of the number of dry cells, How to change the current flow through the bulb by using equipment given above.

iv. By changing the current through the bulb and obtain readings for the potential difference and the current and the current and tabulate the results in the table given below.

I/ Current **(A)**	**V/** Potential difference **(v)**
0.2	1.5
0.4	3.0
0.6	4.5
0.8	6.0

a. Plotted a graph with the voltage difference in the y axis and the current in x axis.
b. Find the resistence of the bulb using graph.
c. What is the law represented by above activity.

B. Following picture shows a swimmer in a swimming pool.

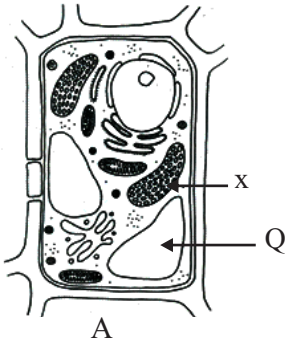


2

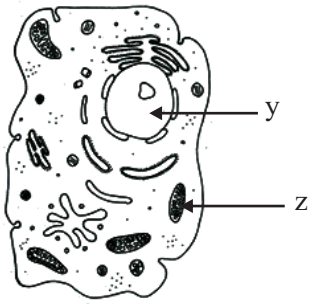
When the swimmer is in the rest under the water, as shown in the picture.

i. What is the up thrust, if the mass of the swimmer is 50 kg.
(Gravitational accelarations 10 m s^{-2})
ii. The liquid pressure exerted on the swimmer is 40000Pa. What is the depth of swimmer, when swimming (density of water 1000 kg m^{-3})
iii. Calculate the pressure of deep and in the pool.(atmospheric pressure = 1 x 10^5 Pa)
iv. S and T are different objects in the pool. Give the relation ship between weight of the objects with up thrust separatly.
v. Why person who wearing lifeguards kit not sinking in water.

8. A. Following A , B diagram shows microscopic structure of two cells.



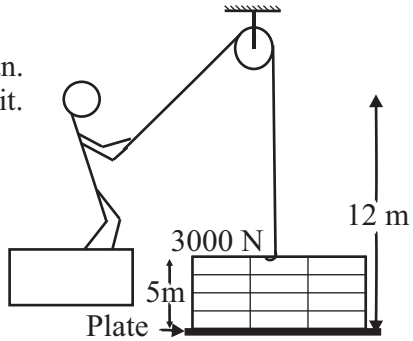
A



B

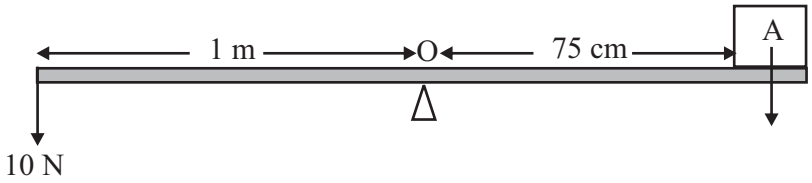
i. Name A and b structures.
ii. Write one structural difference between A and B.
iii. Write functions done by parts x and y respectively.
iv. Which organelle presence of D.N.A. in above cells.
v. Write a field of an application of gene technology and one example for that field, expect agricultural field and food production.
vi. Mitosis is one of cell division method.
a. What is the number of chromosomes should be received to the daughter cell from mother cell during mitosis cell division.
b. What is the other type of cell division. and give one significance of that cell division for existing of life.

B. In the building constructions site 3000N weighted box with bricks lifted 12 m up word from the ground level, by using following method ($g = 10ms^{-2}$)



i. Write the energy transformation when pulling the rope by man.
ii. Find the potential energy of the box with bricks before lifted it.
iii. Find the potential energy of the box with bricks after lifted it 5 m hight.

C. Following diagram shows a weight lifted by using a uniform rod



i. Find the moment of 10N force around the point o.
ii. Find the weight of the object when the system is in equilibrium
iii. What is meant by the couple of forces.
iv. Write one application of couple of forces.

9. A. Some of the reactions we used are given below. (H=1, S=32, O=16, C=12, Mg=24)

P - $CaCO_3 \rightarrow CaO + CO_2$
Q - $CO_2 + C \rightarrow 2CO$
R - $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$

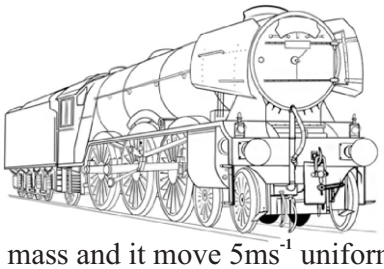
(i) Find the relative molecules mass of H_2SO_4

(ii) What is the mass of H_2 gas emitted from reaction of the 48g Mg with H_2SO_4

(iii) Name the main product which produce by using reaction P

(iv) a. What is the metal which extract by using haematite react with the product of reacion Q
b. What is the name for the equipment which used to extract the metal you mention above.
c. Write two reactions occurring in above (b) equipment except reaction Q.
d. Why we used above extracting method to extract metal you mention in (a). Explain it by using your knowledge about the metals in the activity series.

B. Following picture shows engine of a train.



(i) This engine with 10000kg mass and it move $5ms^{-1}$ uniform velocity in strait path

a. Find the momentem of this engine

b. Find the kinetic energy of the engine when it moving.

(ii) a. This engine pulling one apartment of a train by applying 1000N force. And that apartment move 25m. What is the work done by the engine.
b. If the engine took 10 seconds to do the work above. What is the power of the engine.

(iii) Give one reason to decrease the power of the engine

(iv) Suggest a method to overcome above reason you mention in (iii).

* * * * * *