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PROVINCIAL DEPARTMENT OF EDUCATION - NORTH WESTERN PROVINCE

SECOND TERM TEST - 2018

SCIENCE - I

Grade 11 **One Hour**

Name / Index No. :

- **Answer all questions on this paper itself.**
- **Select the most suitable or correct answer for the following questions**
- **Mark a cross (x) on the number corresponding to your choice in the answer sheet provided**

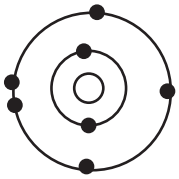
---

01. Select the answer which is included only "Bio-molecules".

(1) Lipids, Water, Proteins (2) Proteins, Water, Minerals.

(3) Carbohydrates, Proteins, Minerals (4) Lipids, Proteins, Carbohydrates.

02. To which group of the periodic table, the atom shown in the picture belongs to,



(1) I (2) III (3) V (4) VI

03. What is the unit of the 'displacement' ?

(1) N (2) m (3) ms^{-1} (4) ms^{-2}

04. Which of the following is considered as the basic structural and functional unit of the living matter?

(1) Cell (2) Tissue (3) Reflex arc. (4) System

05. The answer which shows the 'avogadro constant' is ?

(1) $6.022 \times 10^{23} mol^{-1}$ (2) 6.022×10^{-23}

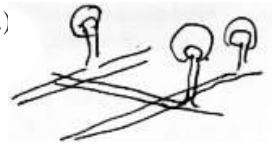
(3) $6.022 \times 10^{23} mol$ (4) 6.022×10^{23}

06. Select the formula for the externally unbalanced force acting on an object when the mass is "m" and the acceleration is "a".

(1) F = m + a (2) F = m a (3) $F = \frac{m}{a}$ (4) $F = \frac{a}{m}$

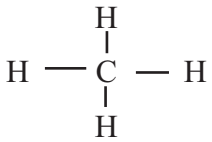
07. Which of the below diagram indicates the group that shows both living and non-living characteristics ?

(1) 

(2) 

(3) 

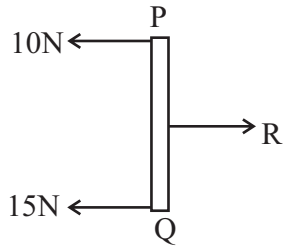
(4) 

08. 

The diagram represents the molecule of Methane (CH_4) is

(1) Dot and cross diagram (2) Chemical formula

(3) Lewis dot diagram (4) Lewis structure

09. 

What is the magnitude of force "R" for the equilibrium of the object "P" in the above diagram ?

(1) 5 N (2) 25 N
(3) 150 N (4) 50 N

10. The vertebrate which has one aquatic stage in the life cycle and breed by eggs is,

(1) Mosquito (2) Tilapia (3) Frog (4) House fly

11. Select the response including elements with the lowest electronegetivity and the highest electronegetivity out of the first twenty elements in the periodic table respectively.

(1) K and F (2) Li and K (3) K and Li (4) F and K

12. Which of the following shows the occasion that uses the moment of couple of forces ?

(1) Hydrolic pressure jack (2) Sea-saw
(3) Spanner (4) Water tap

13. Select the correct answer regarding the process that takes place in the ovary during the menstrual cycle.

Phase	Process	affected hormone
(1) Follicular phase	Releasing ovum	Follicular stimulating hormone (FSH)
(2) Follicular phase	Development of a primary follicle	Lutenising hormone (LH)
(3) Luteal phase	Releasing ovum	Follicular stimulating hormone (FSH)
(4) Luteal phase	Development of a primary follicle	Lutenising hormone (LH)

14. a) Melting of wax b) Dissolving glucose in water
c) Converting ice into water d) Burning of a magnesium strip

Which one of the above is/are not considered as a physical change / changes.

(1) only a (2) only b (3) only b and c (4) only d

15. What is the answer that shows the benefit of decreasing pressure ?

(1) Keeping a wooden plank under the jack when it is used to raise a vehicle.
(2) Easy to cut with knives with sharp edges.
(3) Difficulty in sewing cloths with a needle with a blunt end.
(4) Easy to stand a stick with a pointed end.

16. Some applications of knowledge of inheritance are given below.

A) Production of Insulin hormone by inserting the human gene related to insuling production into E-coli bacteria.

B) Rice enriched with vitamins A gene that produces vitamin A in carrot is obtained and inserted into paddy.

C) Obtaining the healthy plants with more favourable characteristics using two hybrid plants.

of the above statements, the recombination gene engineering technology is/are used in,

(1) only A (2) only A and B (3) only A and C (4) All A, B and C

17. If the chemical formula of the hydroxide formed by the element X is $X(OH)_2$, What is the formula of the sulphate formed by X

(1) XSO_4 (2) X_2SO_4 (3) $X(SO_4)_2$ (4) X_4SO

18. What is the gravitational potential energy, when water of mass of 3 kg flows down from a waterfall of the height of 10 m ? ($g = 10ms^{-2}$)

(1) 3 x 10 J (2) 3 x 10 x 10 J (3) $\frac{3 \times 10\ J}{10}$ (4) ½ x 3 x 10 x 10 J

19. Statement - The phloem sap mixed with sucrose is transported by phloem tissue.

Reason - Phloem fibers are living cells with large cavities.

Which answer gives the correct relationship between the statement and the reason.

Answer	Statement	Reason
(1)	True	True
(2)	False	True
(3)	True	False
(4)	False	False

20. Oxygen gas is produced by the decomposition of Hydrogen peroxide in the laboratory. What strategy can be used to product oxygen gas very quickly ?

(1) Decreasing the temperature as possible.

(2) Adding water to Hydrogen peroxide.

(3) Fixing a balloon to the test tube.

(4) Adding Manganese Dioxide.

21. An electron flow is travel through the AB conductor from A to B as shown in the diagram.

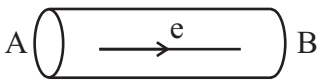
Select the correct statement.

(1) An electric current flow from A to B

(2) An electric current flow from B to A

(3) Positive charges flow from A to B

(4) Negative charges flow from B to A



22. Which of the following given the correct relationship ?

(1) Myelin sheath - Transmits impulses to the cell body.

(2) Dendrites - Transmits impulses away from the cell body.

(3) Axon - Transmits impulses away from the cell body.

(4) Nucleus - Transmits impulses to the cell body.

23. Which one is not a characteristic of a homogeneous mixture ?

(1) Composition is similar through out the mixture.

(2) It is always transparent

(3) Particle distribution is identical through out the mixture.

(4) Colour is identical everywhere.

24. Consider the following statements regarding the electromagnetic waves.

A) The waves propagate perpendicular to the directions of both the electric and magnetic fields.

B) They do not required a material medium for propagation.

C) The electric field and the magnetic field are parallel to each other in the wave.

(1) A and B are true (2) B and C are true

(3) A and C are true (4) All A, B and C are true

25. KOH solution is used in the experiment to show that the carbondioxide gas is necessary for the photo synthesis. The reason for using a KOH solution is,

(1) Increases the rate of photosynthesis (2) Absorb Carbondioxide

(3) Releas Carbondioxide (4) Absorbs Oxygen.

26. A solution of total volume of 500 cm^3 was made by adding distilled water to 50 cm^3 of acetic acid (CH_3COOH) . What is the volume fraction of acetic acid in this solution ?

(1) 0.2 (2) 0.11 (3) 0.09 (4) 0.1

27. Which of the followings can be considered as the same set of musical instruments.

(1) Drum, Violin, Sitar, Saxophone,

(2) Harmonium, Flute, Moth organ, Violin

(3) Guitar, Tabla, Mandeline, Rabana

(4) Violin, Mandelin, Sitat, Guitar

28. Select the miss matched answer regarding the food digestive enzymes of human.

(1) Starch is converted into Maltose by Ptyalin in the month cavity.

(2) Protein is converted to polypeptid by pepsin in the stomach.

(3) Lipids are digested by the lypase secreted from stomach.

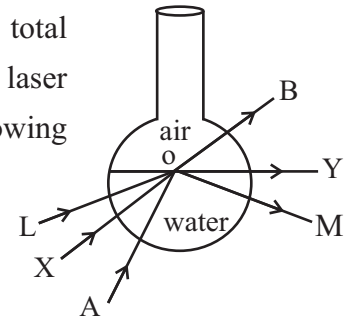
(4) Glucose is produced as the end product of the digestion of maltos in the small intestine.

29. What is the by product that is obtained in extraction of salt from sea water ?

(1) Sodium Carbonate (2) Bitumen

(3) Gypsum (4) Sodium Silicate

30. The following is a classroom experiment which is demonstrated 'the total internal reflection.' After putting water into a round bottomed flask the laser light rays have been sent from L X and A Places which of the following repracent the light ray of total internal reflection



(1) AOB (2) AOY

(3) XOY (4) LOB

31. Which one is not a function of ATP (Adenosine Tri Phosphate) in cellular respiration ?

(1) Storing energy (2) Producing energy

(3) Releasing energy (4) Functioning as an energy carrier.

32. Which one of the following is true regarding the strong bases.

Characteristic	Example
(1) Release OH^- by complete ionisation in aqueous medium.	Sodium Hydroxide
(2) Release H^+ by complete ionisation in aqueous medium.	Sulphuric
(3) Release OH^- by incomplete ionisation in aqueous medium.	Potassium Hydroxide
(4) Release OH^- by incomplete ionisation in aqueous medium.	Ammonia liquid

33. The following instruments are used in optical science.

A - Kaleidoscope B - Simple Microscope C - Optic fibres

The answer which shows correct phenomenon used in each optical instrument is.

A	B	C
(1) Reflection	Refraction	Total internal reflection
(2) Reflection	Total internal reflection	Refraction
(3) Total internal reflection	Reflection	Refraction
(4) Refraction	Reflection	Total internal reflection

34. The ideas regarding the diseases of excretory system presented by a student are given below.

A) Cystallization of calcium oxalate in urinary bladder is the reason for calculi in the bladder.

B) There may be a lack of essential proteins due to Nephritis.

C) Heavy metals cause for the diseases associated with urinary system.

Which of the above statements are true regarding the diseases which are associated with kidney ?

(1) A and B only (2) B and C only (3) A and C only (4) All A, B, and C

35. In an exothermic reaction.

A) Temperature increases in the external environment.

B) Energy contained in reactants is always less than the energy content of the products.

C) Increasing temperature of the external environment affects for the decreasing of the rate of reaction.

of the above statements.

(1) A and B are true (2) B and C are true (3) A and C are true (4) All A, B, and C are true

36. Which one of the following is not a strategy to prevent the loss of heat energy from a vaccum flask by conduction ?

(1) The container of hot water is made up of glass.

(2) Not using metals to connect that glass container to the external bottle.

(3) The stopper of the glass container is made of plastics.

(4) Plating the silver and shiny material on the outer surface of glass container.

37. What is the incorrect statement regarding a Thalassaemia carrier ?
    (1) All the children are not thalassaemia patients. When such a couple get married.
    (2) Blood transfusions should be done at least once a month for their survivals.
    (3) They are resistant to Malaria (Plasmodium)
    (4) They can never be cured.

38. Given below is a part of information sheet relevant to the patients who are admitted to a hospital.

Disease / Disease condition	Number of patients
Gastritis	257
High Blood pressure	234
Silicosis	57
Malfunctioning of kidneys	435
Atherosclerosis	150
Diarrhea / Typhoid	400

The most suitable statement regarding the patients who admitted to the hospital is,
    (1) Majority of patients are due to improper food habits.
    (2) Diseases are common due to the infections of microorganisms.
    (3) High amount of fat is included in the diets of these patients.
    (4) Derth of health facilities in the area where the hospital is situated.

39. Some materials such as clay. Aluminium, Teflon are used to make the cooking pans. There are some advantages as well as disadvantages of it. Which of the following statements does not match regarding this ?
    (1) The work done by aluminium good is less than the clay goods due to the density of Aluminium is less than clay.
    (2) The clay pans are easily broken due to the brittleness of clay.
    (3) The Aluninium pans get heated quickly, because the specific heat capacity of Aluninium is higher than that of clay.
    (4) The Tefton pans are mostly not eco-frendly.

40. The following table shows the power of electric appliances that are used in a home for many purposes.

Name of the electric appliance	Power [watt (W)]	Time period used (minutes)
LED Bulb	15	500
Immersing heater	1500	50
Rice cooker	1000	100
Electric iron	900	120
Electric fan	450	70

The most suitable strategy can be taken to reduce the monthly electricity bill and environmental pollution is,
    (1) using a solar cooker to cook rice
    (2) using a gas cooker instead of an immersion heater.
    (3) closing all the doors and windows of house.
    (4) using the materials which are not shrinked for the clothes.

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PROVINCIAL DEPARTMENT OF EDUCATION - NORTH WESTERN PROVINCE

Second Term Test 2018

SCIENCE - II

Grade 11 **Time : 3 hours**

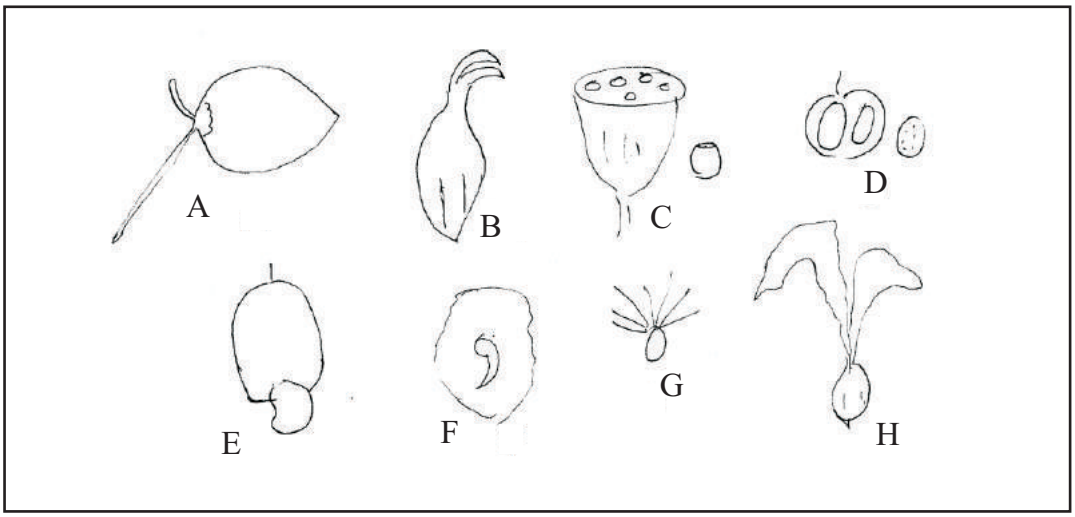
Name / Index No.

Instructions,

- **Write your answers in neat hand writing.**
- **Answer the four questions in part A, in the space provided.**
- **Answer only 3 questions in Part B.**
- **Attach part A and the answer script of part B together and hand - over.**

PART - A

(01) (A) Several specimen collected by a group of students in an environmental excavation are shown in the diagram below. These specimen are some plants or plant parts.



(a) (i) What is name of the plant to which the seed B belongs? (01m.)

.....

(ii) Mention two English letters of the seeds which are dispersed by water. (02m.)

.....

(iii) Mention one adaptation of seed G and H for their dispersal. (01m.)

.....

.....

(b) It is taken a long time to propagate some plants by their seeds. As a remady for this, those plants are propagated by some other methods

(i) What is the easiest method of vegetative propagation for the plants like ginger, potato, onion. (01m.)

.....

(ii) New plants of mango can be obtained by plating seeds and by grafting. State one difference between these two types of plants. (01m.)

.....

(B) Elements can be classified in different ways. One way of classifying them is as metals & non metals. Mention a ✓ mark for the correct feature.

(i)

Element	Metal	Non-metal	Metalloids	
Silicon (Si)				(01m.)
Sodium (Na)				(01m.)
Phosphorus (P)				(01m.)

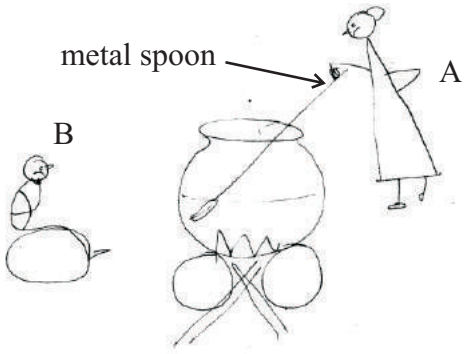
(ii) The chemical properties for the oxide of any element differs according to the situation of that element in the periodic table. Elements belong to third period of the periodic table are given below. State the acidity and basicity in place denoted as *x* and *y*.

Na	Mg	Al	Si	P	S	Cl	Ar
x					y		

x ..... (01m.)

y ..... (01m.)

(C) A cartoon designed by a student of Grade 11 for a wall paper is given below. His aim was to give an idea of heat transfer to the other students.



(i) State the three methods of heat transfer. (01m.)

.....

(ii) State the method of heat transfer according to the above cartoon.

(a) To the face of B from the hearth. ..... (01m.)

(b) To the metal spoon from the pot. ..... (01m.)

(iii) The water in a clay pot is cooler than the water in a metal pot in hot days. What is the reason for this. (01m.)

.....

.....

.....

(02) (A) The origin of earth and life occurred in water. The most abundant inorganic compound in living body is water.

(i) State two special characteristics in water to support the life (02m.)

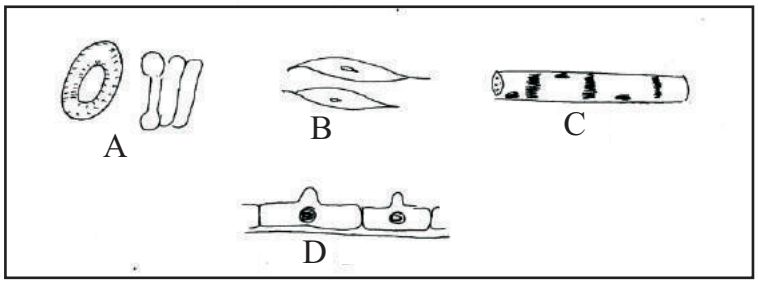
.....

.....

(ii) Complete the following table based on biological molecules. (03m.)

Biological molecules	Building unit	Constituent elements
1. Protein	(a)	C, H, O, N
2. Lipids	(b)	(c) .....

(B) Rough sketches of some cells present in human body are given below. Answer using this diagram.



(i) What is the cell belongs to a fluid connective tissue? (01m.)

.....

(ii) What type of cells is present in the walls of blood vessels and bladder ? (01m.)

.....

(iii) What is the latter that denotes skeletal muscle cell? (01m.)

.....

(iv) Name the type of muscle cell that is not denoted here? (01m.)

.....

(v) State one feature of that muscle type you mentioned in (iv) to differentiate it from skeletal muscle cells. (01m.)

.....

(C) Organs are arranged as systems in multicellular organisms.

(i) Explain what "excretion" is. (02m.)

.....

(ii) Filtration of urine in human is done by kidneys. What is the functional unit of the kidney? (01m.)

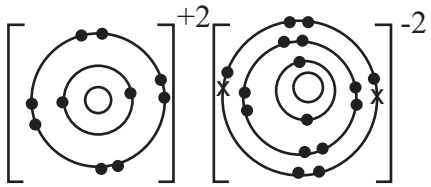
.....

(iii) State two steps of forming urine in the structure you mentioned in (ii)? (02m.)

.....

.....

(03) (A) A diagram of a certain type of compound is given below.



(i) What type of compound is this, according to the type of bond present? (01m.)

.....

(ii) How do such type of compounds form? (01m.)

.....

(iii) What is the name used to introduce compounds formed by sharing electrons between atoms? (01m.)

.....

(iv) Draw the Lewis structure of the compound formed between Hydrogen (H) and Oxygen (O). (02m.)

(B) 10 ml of dilute HCl is present in each of 5 test tubes. 5g of Mg, Al, Zn, Fe and Cu are added separately into 5 test tubes.

(i) In which test tube does the emition of gas bubbles fast? (01m.)

.....

(ii) State the balanced chemical equation for the above reaction. (02m.)

.....

(iii) Which type of chemical reaction is this? (01m.)

.....

(iv) How is the reaction in the test tube with Cu? (01m.)

.....

(v) Arrange the above 5 metals according to the ascending order of their reactivity. (02m.)

.....

(C) The common reaction for any acid - base reaction is given below.

$$H^{+}_{(aq)} + OH^{-}_{(aq)} \longrightarrow H_2O_{(l)}$$

(i) What is the term used to introduce above process? (01m.)

.....

(ii) Mention 2 instances in which this process is used practically? (02m.)

.....

.....

(04) (A) Grease and oil like lubricants are applied in-between machinery parts contact with each other.

(i) What is the advantage provided by grease and oil for mechanical motions? (01m.)

.....

(ii) State the disadvantage of not using oil or grease to machinery parts. (01m.)

.....

(iii) State one strategy that can be used for the easy motion of rotating machinery parts? (01m.)

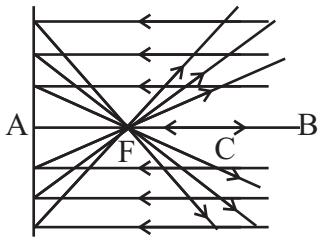
.....

(iv) Mention the forces that are opposite to motion, exerting before the motion and during the motion of machinery parts.

(a) Before the motion. ..... (01m.)

(b) During the motion. .....(01m.)

(B) The way of travelling a parallel beam of light after reflecting from a certain optical instrument is given below.



(i) Name A and F here.

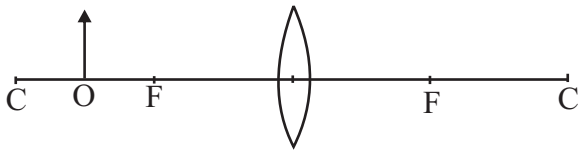
A ..... (01m.)

F ..... (01m.)

(ii) What is the type of mirror that should be kept in the place of A? (01m.)

.....

(iii) State the formation of the image in the following instance. (02m.)

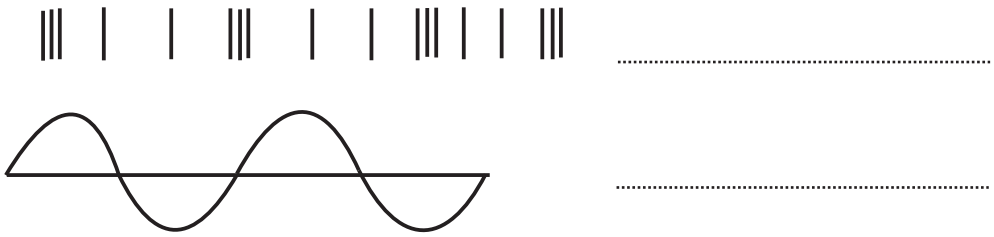


(C) Transverse waves and longitudinal waves are two types of mechanical waves.

(i) Which type of wave is formed during a disturbance of still water? (01m.)

.....

(ii) Mention the type of wave shown in the diagram below. (02m.)



.....

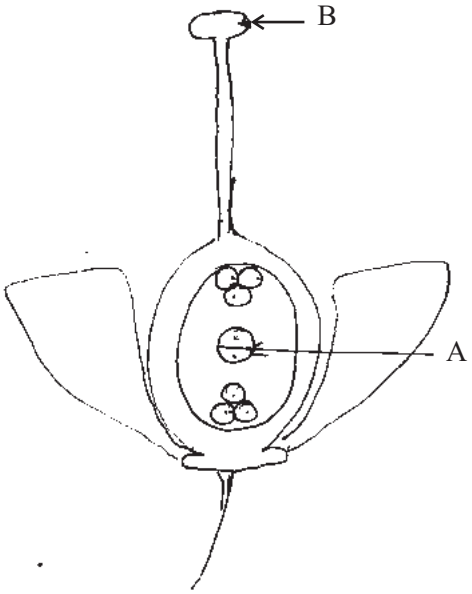
.....

(iii) Fill in the blanks using suitable words.

In mechanical waves (a)..... is transmitted without transmission of (b)..... (02m.)

- **Answer only 3 questions from the questions 5, 6, 7, 8, 9**

(05) (A)



(i) What is the sexual reproductive structure of plants. (01m.)

(ii) Name the structure denoted as B. (01m.)

(iii) State the function of A (01m.)

(B) Gregory Mendal did experiments regarding inheritance using garden pea plant.

(i) What is the factor that carries hereditary charactors from generation to generation in organisms. (01m.)

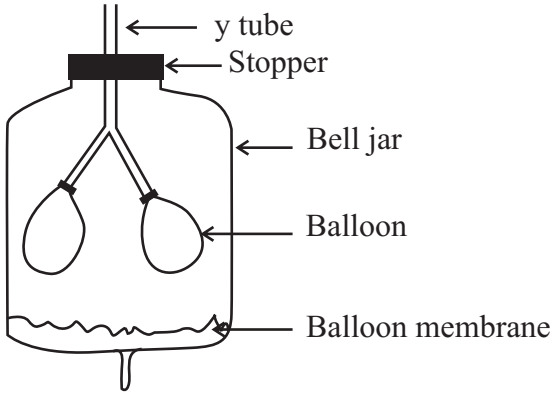
(ii) State one human genetical disorder which causes due to sex-linked genes. (01m.)

(iii) Mendal used two contrasting charactors of garden pea plant, tall and short. (Take tall as T and short as t)

(a) If the dominant character is tall, state the two genotypes for tall. (02m.)

(b) There was a cross between a heterozygous tall plant with a short plant. State the results in a punnett square. (02m.)

(C) The following diagram shows a setup made by a student to demonstrate the respiratory process.



(i) State the organs in the respiratory system corresponding to the given parts in the above set-up.

(a) Balloon membrane (01m.)

(b) Y tube (01m.)

(ii) State the steps in inhalation process. (02m.)

(iii) Write the balanced chemical equation for cellular respiration. (02m.)

(iv) The process that produces glucose needed for the cellular respiration is photosynthesis.

(a) Name a row material of photosynthesis. (01m.)

(b) Draw a suitable laboratory setup to show that Oxygen is released during photosynthesis. (02m.)

(v) Which nervous system regulates involuntary actions like rate of respiration ? (01m.)

(06) (A) A part of the periodic table is given below. The symbols used here are not standard symbols.

	i	ii	iii	iv	v	vi	vii	viii
1	A							B
2	C			D			E	
3	F						G	H
4	I	J						

(i) Mention the elements which has the highest and the lowest first ionization energy from the elements given above. (02m.)

(ii) What is the number of valance electrons in element E? (01m.)

(iii) Mention the chemical formula of the compound formed between the elements F and G? (01m.)

(B) To express the mass of atoms, mass of another atom is taken relatively.

(i) Is the mass of which element taken as the atomic mass unit at present? (01m.)

(ii) Calculate the relative molecular mass of Calcium Hydroxide ($Ca(OH)_2$). (Ca = 40, O = 16, H = 1) (02m.)

(iii) The relative atomic mass of magnesium (Mg) is 24. What is the number of magnesium atoms contained in 24g of magnesium? (01m.)

(iv) Two molecular moles of Sodium Hydroxide (NaOH) is necessary for an activity. What is the mass of Sodium Hydroxide that should be weighed?

(Na = 23, O = 16, H = 1) (03m.)

(C) Solutions are formed by dissolving following substances in water.

Salt, Ethyl alcohol, Blue powder, Glucose, Sugar, Grease

(i) From the above solutions, state,

(a) a homogeneous mixture (01m.)

(b) a heterogenous mixture (01m.)

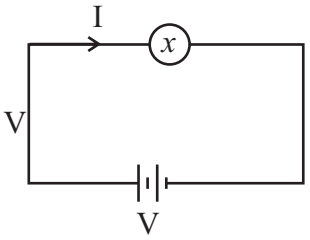
(ii) Mention one strategy to increase the amount of sugar dissolved in a certain mass of water. (01m.)

(iii) Ethyl alcohol dissolves in water but, grease does not dissolve in water. What is the reason for this? (01m.)

(iv) In preparing mixtures, 180g of glucose was dissolved in 180g of water. Calculate the molar fraction of glucose in the mixture. (02m.)

(v) 30g of urea $CO(NH_2)_2$ was dissolved in $500cm^3$ of water. Calculate the urea concentration in the solution? (H = 1, C = 12, O = 16, N = 14) (03m.)

(07) (A) A simple circuit is given below.



(i) State the quantities V and I with their units. (02m.)

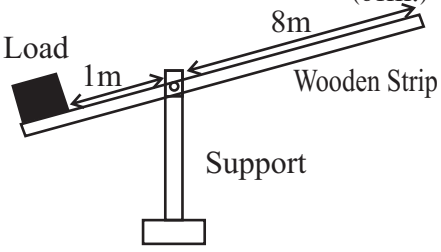
(ii) Mention the relationship including V, I and the resistance R. (01m.)

(iii) Calculate the current flows through the circuit when there are 2 dry cells of 1.5V each and the resistance of the bulb is 6 . (01m.)

(iv) (a) Represent kinetic energy by an equation. (01m.)

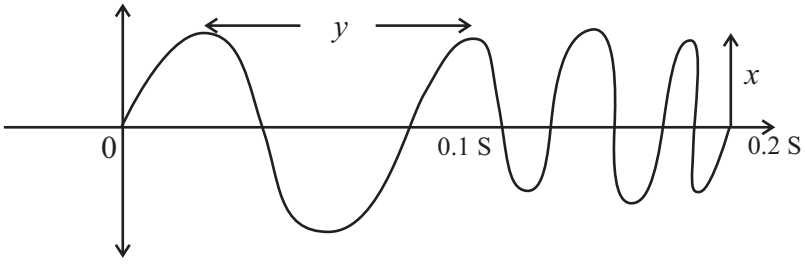
(b) What is the kinetic energy present in a vehicle of 1000kg mass and moving it in a velocity of 2 ms^{-1}. (01m.)

(v) A gate used in a railway crossing is given below. The load used here is 600N. (02m.)



What is the force that should be exerted to the end of the wooden strip when closing the gate ?

(B) A graphical representation of an electro - magnetic wave is given below.

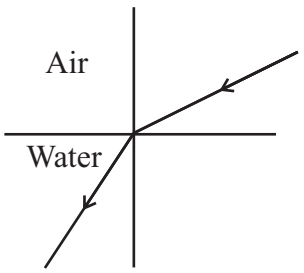


(i) Which are the properties belong to the wave denoted as *x* and *y*. (02m.)

(ii) During which time does the frequency increase? (01m.)

(iii) What is the velocity of ultra violet rays in a vacuum? (01m.)

(C) (i) Copy the diagram in your answer script and mark the angle of incidence and angle of refraction. (Use standard english letters) (02m.)



(ii) State an expression for the refraction index. (02m.)

(iii) An object is kept 25cm away from a concave lense of 10cm focal length. Draw a ray diagram to show the formation of the image. (02m.)

(iv) What is the reason for writing the word "AMBULANCE" as inverted laterally in ambulance vehicle? (02m.)

(08) (A) For the continuation of life, reproduction is essential. It occurs in different ways and there are some advantages and disadvantages of those methods.

(i) State the two main methods of reproduction shown by living organisms. (02m.)

(ii) After the maturity, males and females can be differentiated by external appearances. What is the term used to introduce this feature ? (01m.)

(iii) What is the hormone responsible for the occurrence of secondary sexual characteristics in females. (01m.)

(iv) Mention two substances transported by blood, except hormones. (02m.)

(v) What is the cell organelle which contain hereditary materials. (01m.)

(vi) State the term to introduce following description regarding human reproduction. (03m.)

Description	Term
(a) Human male sex cell	
(b) Fertilized ovule	
(c) A disease caused by a virus & transmitted sexually	

(B) (i) State two properties present in a liquid used in thermometers. (02m.)

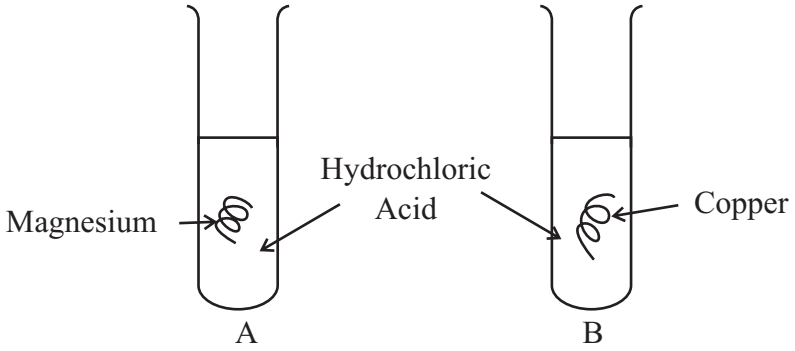
(ii) State 2 differences between a clinical thermometer and a normal thermometer. (02m.)

(iii) The heat capacity of a membrane of rabana is 1800 J^0C^{-1}. Calculate the amount of heat needed to increase its temperature from $30C^0$ - $70C^0$. (02m.)

(iv) After heating rabana, the sound becomes sharp. Explain the reason for this. (02m.)

(v) Mention the two possible ways of existance of an object, when there is no an unbalanced force acting on it. (02m.)

(09) (A) Two setups used by a student for an experiment is given below.



(i) From which setup, is it possible to emit a gas? (01m.)

(ii) Draw a rough sketch for a set up which can be used to produce hydrogen gas. (02m.)

(iii) To which type of reaction, does the reaction between an acid and base belong, according to the change of energy? (01m.)

(iv) Draw the energy diagram to show the change of energy in the reaction between magnesium and hydrochloric acid. (02m.)

(v) What is the main raw material used for the extraction of iron? (01m.)

(vi) (a) What is method used to extract magnesium? (01m.)

(b) Write the electronic configuration of Mg^{+2}. (01m.)

(c) Name a negatively charged iron which is similar to the electronic configuration of Mg^{+2}. (01m.)

(B) The weight of a stone in air is 20N. The apparent weight of it when it immersed in water is 16N. The density of water is 1000 kgm^{-3} .

(i) What is the upthrust exerted by water on the stone. (01m.)

(ii) What is the weight of water displaced due to the stone? (02m.)

(iii) What is the volume of water displaced? (02m.)

(iv) How can we find the volume of a stone of irregular shape? (02m.)

(v) Calculate the power of a heating coil, if that coil takes 2 minutes to increase temperature of water of mass 250g from 30^0C to 50^0C . (Take specific heat capacity of water as 4200 J kg^{-1} C^{0-1}) (03m.)

PROVINCIAL DEPARTMENT OF EDUCATION - NORTH WESTERN PROVINCE

Second Term Test 2018

Grade 10 **Answer paper - Part I** **SCIENCE**

Question number	Answer Number	Question number	Answer Number	Question number	Answer Number	Question number	Answer Number
1	4	11	1	21	4	31	2
2	3	12	4	22	3	32	1
3	2	13	3	23	2	33	1
4	1	14	4	24	1	34	2
5	1	15	1	25	2	35	3
6	2	16	2	26	4	36	4
7	3	17	1	27	1	37	2
8	4	18	2	28	3	38	1
9	2	19	3	29	3	39	3
10	3	20	4	30	4	40	4

(2 x 40 = 80 marks)

Part II

(1)

A	a	i	Tiger-claw (Nagadarana)	1
		ii	A and C	2
		iii	Having structures to blow, Possess wing like structures, Seeds being very light	1
	b	i	Through under-ground stems	1
		ii	Planting seeds – Occurrence of new characteristics, Occurrence of ne variations, Taking much time for harvesting Building – Can obtain hairest in a short time, Not occurring new vriations	1
B		i	Silicon – Metalliods Sodium – Metals Phosphorus – Non – metals	1 1 1
		ii	X - Basic Y - Acid	1 1
C		i	Conduction, convection, radiation (for three methods)	1
		ii	a - radiation b – conduction	1 1
		iii	The clay pot contains small pores. The metal pot does not contains pores. Water particles are evaporated through pores. For evaporation heat is taken from water. So, the water in clay pot becomes cool.	1
				15

w

(2)

A	i		Solvent property / high specific heat capasity	2
	ii		(a) Amino acids (b) Fatty acids (c) C, H, O	1 1 1
B	i		A / blood cells	1
	ii		B / Smooth muscle cells	1
	iii		C	1
	iv		Cardiac mucles	1
	v		branched / presence of intercalated discs / uni-nucleated / do not fatigue easily	1
C	i		The process of removel of wastes produced in living cells during metabolism	2
	ii		Nephron	1
	iii		Ultra filtration, Selective reabsorption, Secretion (two of them)	2

(3)

A	i		Ionic compound	1
	ii		Forming ionic bonds between ions / forming ionic bonds	1
	iii		Covalent compounds	1
	iv		For Lewis structure	2
B	i		The tube which contain Magnesium	1
	ii		$Mg + 2HCl \longrightarrow MgCl_2 + H_2$	2
	iii		Single displacement reaction	1
	iv		No reaction occurs	1
	v		Cu ,Fe, Zn ,Mg, Al in order	2/0
C	i		Neutralization	1
	ii		Showing two instances of application of acid - base neutralization	2

(4)

A	i		Increase lubricant / Reduce friction	1
	ii		Wearing out machinery parts quickly / wasting energy / Reducing efficiency	1
	iii		Applying lubricating oil - Grease Using bearing - ball / roll bearing Reducing roughness	1
	iv	(a) (b)	Static friction Dynamic friction	1 1
B	i		A - Reflecting surface / concave mirror F - focus	1 1
	ii		Concave mirror	1
	iii		Drawing at least two rays Determine the image	1 1
C	i		Transverse waves	1
	ii	(a) (b)	Longitudinal waves Transverse waves	1 1
	iii	(a) (b)	Energy Particles	1 1

(5)

A	i		A flower	1
	ii		Stigma	1
	iii		Proving nourishment to the embryo after fertilization	1
B	i		Gene	1
	ii		Haemophilia / Red, green colour blindness	1
	iii	a b	TT and Tt × | T | t t | Tt | tt t | Tt | tt	2 2
C	i	a b	Diaphragm Trachea	1 1
	ii		Contraction of intercostal muscle Contraction of muscles in the diaphragm Increasing the volume of thorasic carity and decreasing pressure. Air enters into lungs	3
	iii		$C_6H_{12}O_6 + 6O_2 = 6CO_2 + 6H_2O$ + Energy	2/0
	iv	a b	Carbon dioxide / Water Suitable diagram	1 2
	v		Autonomous nervous system	1

(6)

A	i		Highest - B Lowest - I	1 1
	ii		7 / seven	1
	iii		FG	1
B	i		Mass of the Carbon atom	1
	ii		Ca +2 O + 2 H 40 +2×16+2×1 74	1 1
	iii		Avagadro number / 6.022 x.10^{23}	1
	iv		Na + O +H 23 + 16+ 1 40 40 × 2 = 80 g	1 1 1
C	i	a b	Ethyl alcohol / Salt solution / Glucose solution / Sugar solution Water mixed with blue powder	1 1
	ii		Increasing the temperature of the mixture / Dissolving in hot water	1
	iii		Water and ethyl alcohol are a polar solvent and a polar solute. Grease is a non-polar solute. So, ethyl alcohol dissolves in water	1
	iv		Number of glucose mole = $\frac{180\ g}{180g\ mol-1}$ = 1 mol Number of water moles = $\frac{180\ g}{18\ g\ mol-1}$ = 10 mol Molar fraction of glucose = $\frac{1}{1+10}$ = $\frac{1}{11}$	1 1
	v		Molar mass of urea = 60 g mol^{-1} Moles of urea = $\frac{30\ g}{60\ g\ mol-1}$ = 0.5 mol Concentration = $\frac{0.5mol}{500\ ml} \times 1000$ = 1 mol dm^{-3}	1 1 1

A	i		The unit of potential difference - Volt / V The unit of current - Ampere / A	1 1
	ii		V = IR	1
	iii		Current = $\frac{3.0\ V}{6\Omega}$ = 0.5 A	1
	iv	a	$E = \frac{1}{2}mv^2$	1
		b	Kinetic energy = $\frac{1}{2} \times 1000\ kg \times 2\ ms^{-2}$ = 1000 J	1
	v		600 N × 1m = force × 8 m force = 75 N	1 1
B	i		x = Amplitude y= Wave length	1 1
	ii		Between the time period of 0.0015 seconds to 0.0030 seconds	2
	iii		300000000 ms^{-1} or $3 \times 10^8 ms^{-1}$	1
C	i		Marking the incident angle as i correctly Marking the angle of refraction as r correctly	1 1
	ii		Refractive index $= \frac{\sin i}{\sin r}$ or $= \frac{1}{\sin c}$ or $= \frac{\text{Real depth}}{\text{Apparent depth}}$	1
	iii		Drawing two rays Determing the image	1 1
	iv		To avoid the difficulty of reading due to lateral inversion by plane mirrors and convex mirrors.	2

(8)

A	i		Sexual reproduction Asexual reproduction	1 1
	ii		Sexual dimorphism	1
	iii		Oestrogen	1
	iv		Glucose / Amino acids / Vitamin / minerals / Ureas	2
	v		Nucleus	1
	vi	a b c	Sperm Zygote AIDS / Herpes	1 1 1
B	i		Transparency / Good heat conductor / more expansion by less heat	2
	ii		Range is low in clinical thermometer / having a bend	2
	iii		1800 JC^{-1} × 40C = 72000J or 72kJ	2
	iv		High tension in membrane / high frequency / high loudness	2
	v		Exist in stationary / moving at a constant velocity	2

(9)

A	i		A	1
	ii		A set up produce Hydrogen gas	2
	iii		Exothermic	1
	iv		For energy diagram	2
	v		haematite	1
	vi		(a) Electrolysis (b) 2,8 (c) F^-	1 1 1
B	i		4 N	1
	ii		4 N	2
	iii		400 cm^3	2
	iv		Using displacement vessel / Immersing the stone in a graduated measuring cylinder with water	2
	v		$\frac{250}{1000} \times 4200\ J\ kg^{-1}C^{-1} \times 20\ C^0$ = 21000 J and 21 k J $\frac{21000}{120}$ = 175 W	2