**Provincial Department of Education - North Western Province**
# Third Term Test 2020

**Grade 10**      **Science I**      Time - one hour

| Name / Index number : |
|---|

- **Answer all questions.**
- **In each of the questions 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider as correct or most appropriate.**
- **Marks a cross (x) on the number corresponding to your choice in the answer sheet provided.**

01. The proteins which catalyze the chemical reactions in a cell or body are known as,
    1) High proteins
    2) Amino acids
    3) Enzymes
    4) Antibodies

02. What are the factors which affect the pressure created by a liquid column?
    1) Vertical height of the liquid column, Density of liquid and Gravitational acceleration.
    2) Liquid volume, Density of liquid and Gravitational acceleration.
    3) Density of liquid, Gravitational acceleration and Weight of liquid column.
    4) Vertical height of the liquid column, Density of liquid and Up thrust.

03. The maximum number of electrons that may present in M energy level of first 20 elements in the periodic table is,
    1) 2
    2) 8
    3) 18
    4) 32

04. A and B diagrams show replicas created by students to show two organelles of a typical cell. These replicas represent.
    1) Golgi body and mitochondria
    2) Chloroplast and endoplasmic reticulum
    3) Endoplasmic reticulum and Golgi complex
    4) Mitochondria and chloroplast



A          B

05. The nature of motion of a fruit which was released from its petiole is,
    1) Uniform velocity
    2) Uniform deceleration
    3) Uniform acceleration
    4) Acceleration which increases gradually

06. What is the disease which is sexually transmitted by a bacterium?
    1) AIDS
    2) Gonorrhea
    3) Genital warts
    4) Herpes

07. What is the correct statement regarding the meiosis?
    1) Take place in diploid as well as haploid cells
    2) One mother cell produces two daughter cells
    3) Daughter cells are identical to the mother cell in every aspect.
    4) Daughter cell receive half number of chromosomes as the mother cell.

08. What is the relative molecular mass of $CO(NH_2)_2$ molecule ? ( C = 12, H = 1, O = 16, N = 14)
    1) 33                2) 58                3) 60                4) 88

09. What is the acceleration occupied by an object with 2 kg mass, when a force of 20 N is applied?
    1) $0.1 \, m \, s^{-2}$          2) $10 \, m \, s^{-2}$          3) $20 \, m \, s^{-2}$          4) $22 \, m \, s^{-2}$

10. Who is the organisms without an organizational level as ?
    Cell $\longrightarrow$ Tissue $\longrightarrow$ Organ $\longrightarrow$ System $\longrightarrow$ Organism
    1) Amoeba          2) Earth worm          3) Snail          4) Human

11. The living forms which are difficult to recognize as living things and nonliving objects are
    1) Bacteria, virus and yeast          2) Virus, yeast and euglena
    3) Yeast, amoeba and sea anemone          4) Amoeba, sea anemone and bacteria.

12. The living group of the organism shown in the following picture is,
    1) Pisces
    2) Amphibia
    3) Reptilia
    4) Aves

13. What is the alternative which contains elements can displace hydrogen from diluted hydrochloric acid?
    1) Mg, Zn, Cu and K     2) Mg, Zn, Hg and K     3) Na, Zn, Au and Fe     4) Mg, Zn, Fe and Na

14. When friction is created on a moving object by contact surfaces,
    1) The static friction takes a constant value
    2) The dynamic friction takes a constant value
    3) The dynamic frictional force is slightly greater than the static frictional force
    4) The frictional force takes a minimum value at the limiting situation

15. The reaction occur in which way to give a minimum rate of reaction?
    1) A strip of Mg react with diluted HCl acid.
    2) A strip of Mg react with concentrated HCl acid.
    3) A strip of magnesium is converted Into pieces and react with diluted HCl.
    4) A strip of magnesium react with diluted HCl which is kept In a hot water vessel.

16. The condition which occur due to the mutation of a gene responsible for making hemoglobin of an autosomal chromosome is?
    1) Thalassimia          2) Hemophilia
    3) Albinisms          4) Red green colorblindness

17. Which is defined as sexual reproduction is
    1) Reproduction takes place among animals
    2) Reproduction takes place among plants
    3) Production of a new organism by fertilization of gametes
    4) Production of new off springs by spores

18. What is the correct statement regarding the frictional force?
    1) The frictional force of a road always acts as a barrier to the motion.
    2) When moving on a road with a constant velocity, the frictional force becomes zero
    3) When riding a bicycle, the frictional force by both wheels acts backwards
    4) When moving with a uniform velocity, the force given by the engine for motion is equal to the friction

19. When forming an ionic bond,
    1) Only the donation of electrons takes place
    2) Only the reception of electrons takes place
    3) Donation and reception of electrons should take place
    4) Sharing of electrons should takes place and polarization must happen

20. Followings are three inherited characteristics which are seen among humans
    A. Dimpled cheek
    B. Left handedness or right handedness
    C. Syndactyly and polydactyly
    Rarely seen inherited characteristic out of them is / are,
    1) A and B only    2) B and C only    3) A and C only    4) C only

21. Protium, which is an isotope of hydrogen is standardly represented as $_{1}^{1}H$ . The number of neutrons of protium is,
    1) 0    2) 1    3) 2    4) 3

22. Consider the following statements regarding the equivalent resistance of a circuit.
    A. The equivalent resistance increases when equal resistors are connected in series connection
    B. The equivalent resistance decreases when equal resistors connected in parallel connection
    C. The equivalent resistance decreases when un equal resistor are connected in series connection
    The correct statements our of them are,
    1) A and B only    2) B and C only    3) A and C only    4) A, B and C only

23. As shown in the diagram, two men's apply forces on an object which is kept on the floor. What is the resultant force created on the object? (Assume that forces of two persons act on the same line of action.)
    1) 0 N
    2) 100 N
    3) 400 N
    4) 700 N

    400 N ← ... → 300 N
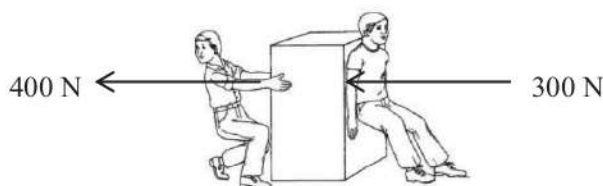
24. What is the correct statement regarding the number of atoms contained in 17 g of $NH_3$

    1) There is a higher number of N atoms        2) The number of H atoms is three times as the N atoms

    3) There is an equal number of N and H atoms   4) The number of N atoms is three times as the H atom

25. $^{40}_{20}Ca$ atom removes two electrons and form an ion as $Ca^{2+}$. The number of protons, neutrons and electrons of that ion respectively are?

    1)  20, 20 and 40        2)  20, 20 and 38        3)  20, 20 and 20        4)  20, 20 and 18

26. Following diagram shows how chlorine atoms share their electrons. It represents.

    1)  The bond formation of chlorine by a diagram

    2)  The dot cross diagram of chlorine molecule

    3)  Lewis dot diagram of chlorine molecule

    4)  Lewis structure of chlorine molecule
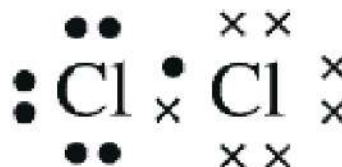
27. The diagram shows a Blast furnace. What is the decomposition reaction takes place in it out of the followings

    1)  $C + O \longrightarrow CO_2$

    2)  $CaCO_3 \longrightarrow CaO + CO_2$

    3)  $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

    4)  $2KMnO_4 \longrightarrow K_2MnO_4 + MnO_2 + O_2$

28. Consider the following statements regarding the conditions that must be fulfilled in equilibrium of two forces.

    A.  Two forces must be equal in magnitude.

    B.  The line of action of two forces must be parallel.

    C.  Two forces must be opposite in direction

    Correct statements out of them are

    1)  A and B.            2)  B and C.            3)  A and C.            4)  A, B and C all

29. The diagram shows an apparatus used to produce $CO_2$ by reacting a mass of $CaCO_3$ as large pieces and small pieces in two occasions with diluted hydrochloric acids. What is the most suitable method to measure the rate of reaction of that instance?

    1) Compare the mass of $CaCO_3$ consumed in a unit time.

    2) Compare the mass of the volume of HCl acid consumed in a unit time

    3) Compare the volume of $CO_2$ gas collected in a unit time

    4) Compare the remaining $CaCO_3$ in a unit time
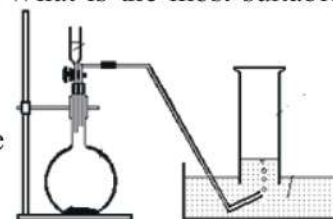
30. Five equal resistors of $6\Omega$ are connected as shown in the diagram. What is the equivalent resistance between A and B?
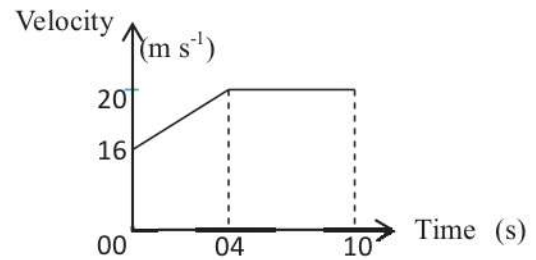
    1)  $6\Omega$                        2) $18\Omega$

    3)  $14\Omega$                       4) $30\Omega$
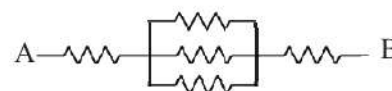
- Following shows the velocity-time graph of the motion of an object. Use this graph for the questions 31, 32 and 33.

31. What is the time spent by the object moving with a uniform velocity?

    1)   4 s                    2)   6 s

    3)   10 s                   4)   14 s

32. Consider the following statements regarding the motion of the object.

    A.   Object starts its motion from rest and moved with a uniform acceleration and uniform velocity.

    B.   The graphical representation includes the motion after acquiring $16\ m\,s^{-1}$ velocity

    C.   The object has arrived to the rest at the end of 10S.

    D.   The object has moved with $1\ m\,s^{-2}$ acceleration and a uniform velocity of $20\ m\,s^{-1}$

    The correct statements out of them are,

    1)   A and C only       2)   B and C only       3)   A and D only       4)   B and D only

33. What is the displacement of the object during the motion?

    1)   72 m               2)   120 m              3)   160 m              4)   192 m

34. As shown in the diagram, two students apply forces on a light weighted sphere

    A)   The sphere remains at rest if the two forces applied by the students are same.

    B)   If the force exerted by one child is greater than the other child, the Sphere moves to the direction with higher force

    C)   A turning effect may occur if the line of action of two forces are parallel
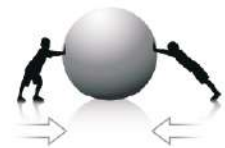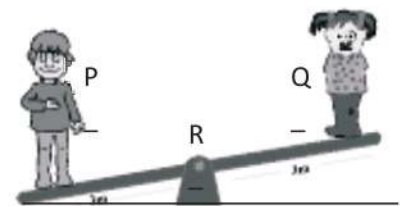
    The correct statements out of them are.

    1)   A and B.           2)   B and C.           3)   A and C.           4)   A, B and C.

35. As shown in the diagram two persons stay at equal distance on a see saw. There is no motion in see sow. Two statements are as follows

    A)   The mass of P person is greater than the person Q.

    B)   Clockwise rotation may happen when the person P moves Towards R direction.

    C)   If the see saw is balanced horizontally when two persons Sta as this, the person who close to the R is P person.

    Correct statements out of them are,

    1)   A and B.           2)   B and C.           3)   A and C.           4)   A, B and C.

36. Following are three characteristics used in classification of organisms

    A.   Can destroy by antibioties

    B.   Live in extreme environments

    C.   Eukaryotes

    If the characteristics are mentioned to classify the organisms in to the domains Arehaea, Bacteria and Eukarya in order, the correct answer is,

    1)   A, B and C.        2)   B, A and C.        3)   A, C and B.        4)   C, A and B.

37. A hydrogen filled balloon is moving up, Consider the following statements regarding this,

   A) Up thrust created by air is greater than the weight of the balloon

   B) Resultant force is exerted in upward direction

   Out of these statements,

   1) A is correct and B is incorrect.        2) B is correct and A is incorrect

   3) A and B statements are correct           4) A and B statements are incorrect

38. A person is pushing a wheel barrow to 10m distance on a horizontal road by applying a continuous force of 500N. What is the work done by the person?

   1) 0 J

   2) 0.02 J

   3) 50 J

   4) 5 000 J

39. Followings are some properties of water

   A. Most of the substances are soluble in water

   B. Ice floats on water

   C. More heat should be supplied to convert liquid water in to the gas.

   Out of them, the properties which help for the maintenance of life

   1) A and B only                             2) B and C only

   3) A and C only                             4) A, B and C only

40. Consider the following statements regarding the Covid 19 epidemic.

   A. It is not important to wear a mask by a person who is travelling in a closed motor vehicle.

   B. Hands should be washed by students when departing the school.

   C. Masks should be worn when suffering from cold or staying close to a patient with cold.

   Out of these statements, the actions that should be taken to protect from Covid 19 epidemic are

   1) A and B only                             2) B and C only

   3) A and C only                             4) A, B and C all

**Provincial Department of Education - North Western Province**

# Third Term Test 2020

**Grade 10**     Science II     Time - three hours

| Name / Index number : |
|---|

**Instructions:-**

- Write your answers in neat hand writings.
- Answer the four questions in part A, in the space provided.
- Answer only 03 questions out of five questions in part B. Use separate papers to write answers.
- Attach part A and Part B answer script together and hand over.

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### Part A - Structured Essay

01. Respiration can be considered as a characteristic of life. The diagram shows an apparatus used to identify a gaseous product of respiration.
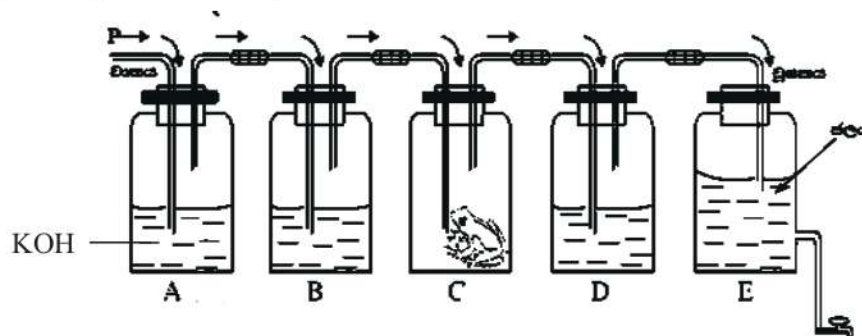


i. What is the gasecous product expected to identify using the above apparatus?............................... (01 m.)

ii. Name the gaseous and the solid matter used by living beings to synthesize energy.   (02 m.)

................................................................................................................................................

iii. When the tap connected to the vessel E is opened, the air enters from P end and travels through A, B, C and D vessels. The vessel A contains a KOH solution and the vessels B and D contain a solutions of lime water. State the purpose of putting those solutions in A, B and D vessels in the table given below.

| Vessel | Liquid contain | Function |
|---|---|---|
| A | KOH | |
| B | Lime water | |
| D | Lime water | |

iv. Mention the observation and the reason when bubbling air through the limewater in B and D vessels.

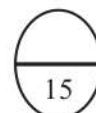| Vessel | Observation | Reason for the observation |
|---|---|---|
| B | | |
| D | | |

v. What would be the observation when the air is bubbled through the lime water in A and D Vessels without putting a frog in vessel C as prepared in the above step? (02 m.)
...............................................................................................................................................

vi. What is the organelle which produce energy in the process of respiration?.........................
.................................................. (01 m.)

vii. If the amount of moles of KOH dissolved in the vessel A is 0.1, what is the mass of KOH dissolved.

( K = 39, O = 16, H = 1 ) (02 m.)

...............................................................................................................................................
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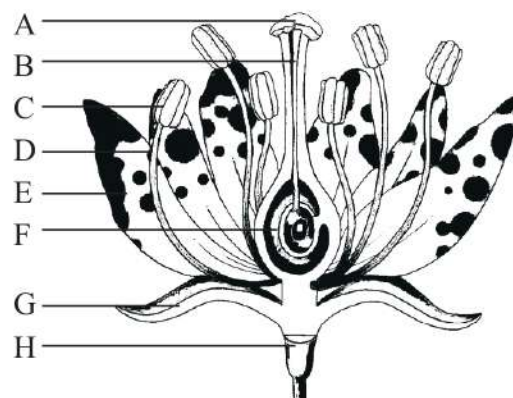............................................................................................................................... ⊖ 15

02. A. The diagram shows a longitudinal section of a typical flower.

Lable the parts of the flower shown by the following letters.

A. ....................................................

B. ....................................................

C. ....................................................

D. ....................................................

E. ....................................................

F. ....................................................

i. What is the letter which indicates the structure produce male gametes or pollens
.................................................................................................................. (01 m.)

ii. Write using the letters o the path which the male nucleus of a pollen grain is travelled till the fertilization takes place....................................................................... (01 m.)

iii. Write an adaptation shown by E for pollination by insects. (01 m.)
...............................................................................................................................................

iv. What is the use of the structure G ? ..................................................................... (01 m.)

v. If this flower shows the adaptations for cross pollination, state a such

adaptation (03 m.)

...............................................................................................................................................

B. Fruits are formed after fertilization of ovules. Dispersal of those fruits and seeds important for the existence of the plant.

    i.    Write an adaptation shown by plants mango, Hora and rubber for dispersal of seeds. (03 m.)

        a.    Mango - ...............................................................................................................

        b.    Hora - ...............................................................................................................

        c.    Rubber - ...............................................................................................................

    ii.    State four requirements for seed germination. (02 m.)

        ........................................................................................................................

        ........................................................................................................................

    iii.    Dormancy or seeds not being germinated although the required factors are fulfilled. Write a factor which affect this condition (01 m.)

        ........................................................................................................................

        **15**
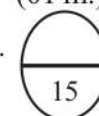
03. Following table shows the information of some elements. The symbols given are not real and use only those symbols to answer the questions.

| Element | P | Q | R | S | T | U |
|---------|---|---|---|---|---|---|
| Atomic number | 3 | 5 | 6 | 8 | 9 | 11 |

    i.    What are the two elements of the periodic table belong to the same group ................................................................................................................ (01 m.)

    ii.    Name the period and the group in which the element U belongs ................................. (01 m.)

    iii.    Write the formula of the compound formed by combining elements U and T.............................................................................................................. (01 m.)

    iv.    Out of the elements given in the table, name a metal, metalloid and a non metal. (03 m.)

        Metal: ..................... Metalloid: ..................... Non metallic element : .....................

    v.    If the atomic mass of the element U is $3.818 \times 10^{-23}$ g and the value of atomic mass of carbon atom is mass unit is $1.66 \times 10^{-24}$ g What is the relative atomic mass of the element U ? (02 m.)

        ........................................................................................................................

        ........................................................................................................................

        ........................................................................................................................

    vi.    If the relative atomic mass of element S is 16. Of the element S

        a.    What is the molar mass ? ........................................................................ (01 m.)

        b.    What is the mass of two moles ? ............................................................. (01 m.)

        c.    What is the number of atoms in three moles? ......................................... (01 m.)

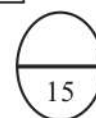vii.  Provide following information regarding the element S

   a.   Number of electrons :

   b.   Electronic configuration :

   c.   In order to show the nature of bond created by sharing electrons.

| | |
|---|---|
| Dot cross diagram | Lewis structure |

(15)

04.  A.   The diagram shows how a metallic sphere is hanged in a newton balance and that sphere is submerged in a graduated vessel caontining water. (Density of water = 1000 kgm$^{-3}$ / 1 g cm$^{-3}$)

   i.   If the reading was raised from 100cm$^3$ when the metallic sphere is submerged in water.

      a.   Express the mass of raised volume of water by g and k.g.

         ................................................................................. (01 m.)

      b.   What is the weight of this volume of water?

         ................................................................. (02 m.)

      c.   What is the up thrust created by the metallic sphere

         by water? ........................................................ (02 m.)
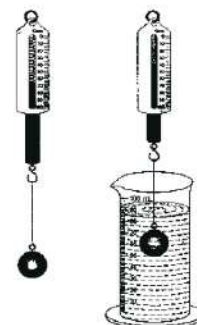
   ii.   If the volume of water in the vessel is replaced by a similar volume of coconut of coconut oil and the metal sphere is submerged again. State whether the following measurement get decrease, increase or no change relative to the prevoius value.

                                                                                    (03 m.)

      a.   The raised volume of coconut oil : ..............................................................

      b.   The reading of newton balance : ..................................................................

      c.   The upthrust created by coconut oil : ............................................................

   iii.   Following shows readings of the newton balance of the above three instances.

| | | |
|---|---|---|
| 4 N | 4.1 N | 5 N |

      Out of this, what can be the weight of the metallic sphere? .................................. (01 m.)

04

04. B. The diagrams A and B show two situations where a force is applied on an object.
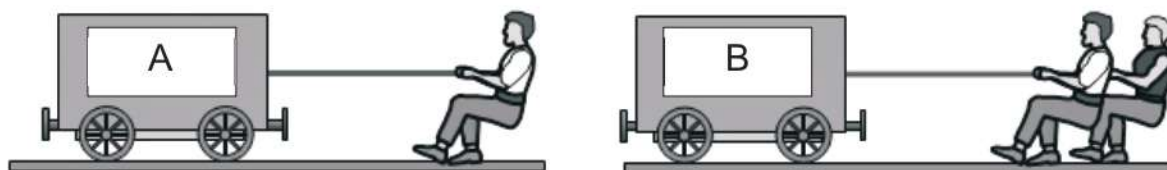


        A-     Exerts a 500 N force. No movement

        B-     Exerts a 600 N force. Movement just begins.

i.    Out of the static, limiting and dynamic friction, how is the frictional forces created in these two situations can be defined.      (02 m.)

     A   - .................................................................................................................

     B   - .................................................................................................................

ii.    Is that the force exerted in the above two situations. less than , greater than or equals to the frictional force acted oppose to them ?      (02 m.)

     A   Situation ߃ .........................................................................................

     B    situation ߃.........................................................................................

iii.    If the force exerted by a person in B situation is 500N what is the force exerted by the other person ?      (01 m.)

     .................................................................................................................

iv.    Show with an arrow in the diagram A how the frictional force is created when the person exerts a force in A instance.      (01 m.)



15

**Part - B**

05. A. Carbohydrates, proteins, lipids and nucleic acids can be stated as organic compounds which make up the living matter. Following table shows some information regarding these organic compounds.

| Compound | Constituent elements | | Building unit |
|---|---|---|---|
| Carbohydrate | Carbon, Hydrogen, | A | Glucose |
| Protein | Carbon, Hydrogen, Oxygen | B | Q |
| Lipids | A, C, D | - | R |
| Nucleic acids | Carbon, Hydrogen, Oxygen | B, E | S |

    i. Name the elements A,B,C,D and E correctly (03 m.)

    ii. What are building units stated as Q,R and S (03 m.)

    iii. Name the reagents used to identify the following compounds and state the observations in the presence of the above compounds. (06 m.)

        a. Starch

        b. Protein

        c. Lipid

B. Pay your attentions to the living creatures given in the following picturers. Write answers using given organisms only.



| Thilapia | Scorpion | Hydra | Earth worm |
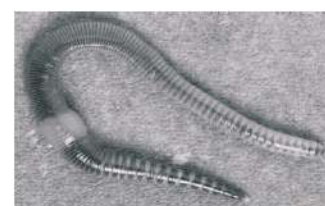
    i. Classify the above organisms as vertebrates and invertebrates. (02 m.)

    ii. Who is the diploblastic organism? (01 m.)

    iii. Write separately the living groups of the above four organisms. (01 m.)

    iv. Write a feature which is present only in the group in which the scorpion belongs, but not in the other three organisms. (01 m.)

(Total marks 20)

06. A. Consider the following 20 elements. Answer the following questions using these elements.

| He, B, H, Na, Mg, C, Li, N, Ca, S, Ar, K, Si, P, Be, O, Al, F, Ne, Cl, |
|---|

    i. Arrange the above 20 elements according to the atomic number from 1 to 20. (02 m.)

    ii. Write all the elements which have the valency 2 (02 m.)

    iii. What is the formula of compounds formed by Mg with Cl and O. (02 m.)

    iv. What is the element with highest electronegativity (01 m.)

    v. Select and write the element having highest first ionization energy (01 m.)

    vi. Write two elements which naturally exist as di atomic molecules (02 m.)

B. A group of students planned an activity to identify the nature of bonds in ionic and covalent compounds. There were compounds namely A, B, C and D used in the experiment. The compounds A and B were in solid state and C and D were in liquid state.

Bulb
Battery
BATTERY
Conductive wires
Carbon rod
Breaker
Solution
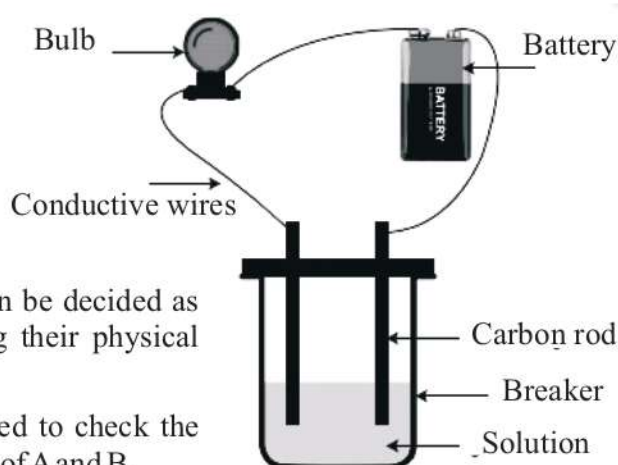
i. Name the two compounds which can be decided as covalent compounds by considering their physical state? (02 m.)

ii. Following type of apparatus was used to check the conductivity of the aqueous solutions of A and B.

- The bulb in the external circuit was lighted up when A is used as the aqueous solution.

- The bulb in the external circuit didn't get lighted Up when B is used as the aqueous solution.

  a. Out of the A and B compounds name the Compound with ionic bond and covalent bond respectively (02 m.)

  b. If a fused liquid is used instead of the aqueous solution of A What would be the observation regarding the glowing of The bulb? (01m.)

  c. State repectively whether the solid state of compounds A and B conduct electricity or not. (02 m.)

  d. State the observation regarding the glowing of the bulb when C and D compounds are used as the aqueous solutions. (02 m.)

  e. Write a reason of using carbon electrodes for the experiment. (01 m.)

07. A. A turning effect can be made by applying a force on an object. The force applied for this depends on the distance from the axis of roation to the line of the action of force.
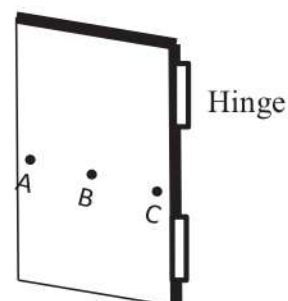
Hinge
A   B   C

i. Following diagram shows three places where force is applied to turn a door. What is the point to which a higher force should be applied to turn the door? (01 m.)

ii. The distance from the rotational axis of two hinges to the Point A is 90 cm. If the minimum force to turn the door. From the point is 5N, Calculate the moment of the force. When turning the door. (03 m.)

iii. If the distance from axis of rotation to the point B is 45m. Calculate the minimum force should be applied to turn the door from the point B. (02 m.)

iv. What is suitable place fix a handle to open and to close the door out of A, B, C points. (02 m.)

v. State whether a couple of force creates or not in the following situations where a moment of force is created. (03 m.)

  a. Turning the padel of a bicycle.

  b. Turning the handle of a bicycle with both hands.

  c. Turning the steering wheel of a vehicle with a single hand.

B. If an object remains at rest when the forces are applied, the external forces exerted on the object are said to be at an equilibrium. Following diagram shows such an instance.



A    B
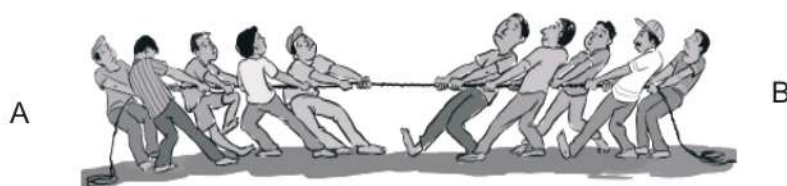
i. Write three requirements to be fulfilled to remain the rope at rest. although the people are applying forces. (03 m.)

ii. If the resultant force exerted by the people in Side A is 1500 N and all the people in side B exert equal forces.

    a. What is the resultant force exerted by people in the side B? (02 m.)

    b. What is the force exerted by a person in the side B? (01 m.)

iii. The diagram shows how a child is rest on a swing.

    a. What is the resultant force created on the swing ? (01 m.)

        300 N       300 N

    b. What is the mass of the child ($g=10ms^{-2}$) (20 m.)
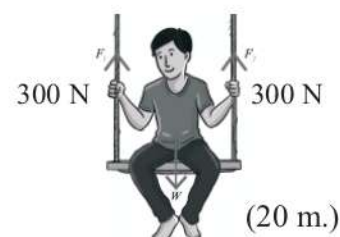
08. A. In the process of human reproduction, the fertilization of male gametes with female gametes take place in the female reproductive system.

i. Write the names of male gametes and female gametes respectively. (02 m.)

ii. Name the place where fertilization of male gamete with a female gamete takes place? (01 m.)

iii. Simply explain the words fertilization and implantation. (02 m.)

iv. If the number of chromosomes in male gametes is 23, state the number of chromosomes in female gamete and zygote respectively. (02 m.)

v. Simply explain how meiosis is important for the process of human reproduction. (02 m.)

vi. Name a hormone which helps to regulate the menstrual cycle of females. (01 m.)

B. A and B of the diagram show two positions passed by a child with 40kg mass when swinging ($g = 10$ ms$^{-2}$)

- The vertical height to the position A from the ground is 2m
- The vertical height to the position B from the ground is 1m.

i. What is the potential energy of the child at the position of A? (03m.)

ii. What is the potential energy of the child at the position B ? (01m.)

iii. What are the positions having highest and lowest kinetic energy out of A and B positions? (02m.)
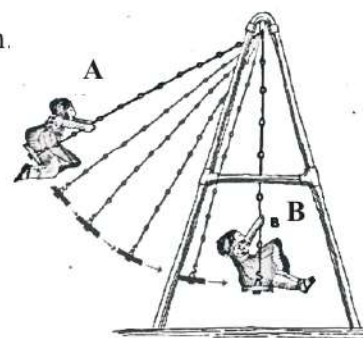
C. A ripen fruit with the mass of 250g falls on to the ground from a tree of 5m height

    i.    What is the kinetic energy of the fruit at the moment of touching the ground?    (02m.)

    ii.   What is the velocity occupied by the fruit at the moment of touching the ground? (02m.)

                                                                    (20 marks)

09. A. The diagrams an apparatus used to collect the hydrogen gas in the laboratory.
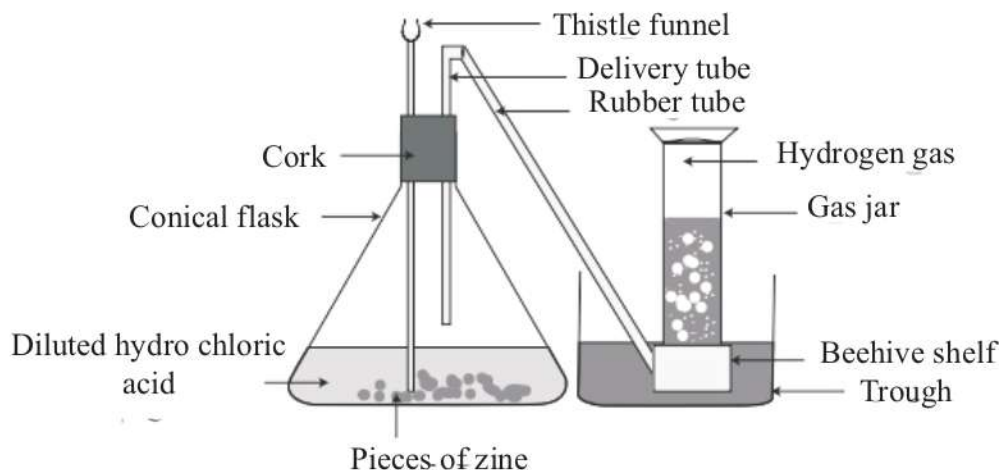


    i.    State the reactants and products relevant to the production of hydrogen gas.    (02m.)

    ii.   Write the balanced chemical equation for the reaction takes place         (02m.)

    iii.  What is the reaction type of the above reaction based on the reactants and products?

                                                               (01m.)

    iv.  Write two observations when the reaction takes place           (02m.)

    v.   Write two properties of hydrogen gas                     (02m.)

    vi.  Explain in brief how the produced gas is identified as hydrogen.      (01m.)

B. The diagrams shows how 2 dry cells, a bulb, ammeter and a voltmeter is connected by wires.

    i.    Name the instruments A and B connected to the circuit.            (02m.)

    ii.   Based on which fact you identified the instruments A and B of the circuit?   (02m.)

    iii.  What is the method of connecting dry cells in the circuit?          (01m.)

    iv.  It was stated that the reading of the ammeter as 0.2 A and the reading of the Volt meter as 2V. Calculate the resistance of the bulb filament.

                                        (03m.)

    v.   What is the relationship between the current flowing through the circuit and the potential difference?

    vi.  If another identical bulb is connected in parallel connection to the bulb connected in the above circuit. state the observations in the brightness of the bulbs.
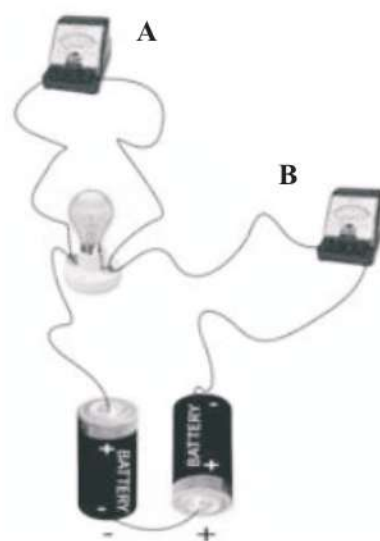
                                                                 (20 marks)

## Provincial Department of Education-North Western Province
# Third Term Test- 2020
# Science I

**Grade 10**                                                                 **Time : one hour**

| Question no | Answer | Question no | Answer | Question no | Answer | Question no | Answer |
|---|---|---|---|---|---|---|---|
| 1 | 3 | 11 | 1 | 21 | 1 | 31 | 2 |
| 2 | 1 | 12 | 3 | 22 | 1 | 32 | 4 |
| 3 | 2 | 13 | 4 | 23 | 4 | 33 | 4 |
| 4 | 1 | 14 | 2 | 24 | 2 | 34 | 4 |
| 5 | 3 | 15 | 1 | 25 | 4 | 35 | 1 |
| 6 | 2 | 16 | 1 | 26 | 2 | 36 | 2 |
| 7 | 4 | 17 | 3 | 27 | 2 | 37 | 3 |
| 8 | 3 | 18 | 4 | 28 | 3 | 38 | 4 |
| 9 | 2 | 19 | 3 | 29 | 3 | 39 | 4 |
| 10 | 1 | 20 | 4 | 30 | 3 | 40 | 2 |

# Science-II
## Part A – Structured Essay

| | | | |
|---|---|---|---|
| 01 | | | |
| A | i | Carbon dioxide gas/ $CO_2$ | 01 |
| | ii | Oxygen(01) , Glucose(01) (Must be in a correct order ) | 02 |
| | iii | Vessel A – Removes carbon dioxide gas in the air that enter(01)<br>Vessel B - Confirm that carbon dioxide gas is absent in air that enters. (01)<br>Vessel C – To identify whether the carbon dioxide gas release during the respiration of frog (01) | 03 |
| | iv | B – No colour change/ Lime water will not turn into milky.(01) - Carbon dioxide gas is absent in the air that enters. (01)<br>D - Lime water will turn in to milky (01) Carbon dioxide gas is present in the air that bubbles. | 04 |
| | v | B and D both vessels (01) Lime water will not turn in to milky/ No colour change is seen.(01) | 02 |
| | vi | mitochondria | 01 |
| | vii | To find the relative molecular mass 56 of KOH (01)<br>Since 1 mol = 56 g    0.1 mol = 5.6 g (01) | 02 |
| | | | 15 |
| 02 | | | |
| A | i | A- Stigma<br>B- Style<br>C- Anther<br>D- Filament<br>E- Petals<br>F- Ovary | If 6 parts are correct- 03 marks<br>If 4-5 parts are correct -02 marks<br>If 2-3 parts are correct -01 marks<br>No marks if only one part is marked |  | 03 |
| | ii | C | 01 |
| | iii | A, B, F ( If all three letters are correct ) | 01 |
| | iv | Being colorful/ Being large/ Having a fragrance | 01 |

| | | | | |
|---|---|---|---|---|
| | v | To protect the parts of tender flower | | 01 |
| | vi | Self sterility or Dichogamy | | 02 |
| B | i | a. Having edible /Fleshy parts. (01)<br>b. Having wing/feather like structures (01)<br>c. Cracks when drying/ Explosion (01) | | 03 |
| | ii | Viability , Oxygen (air), Water and optimum temperature ( One mark per answer if two factors are correct) | | 02 |
| | iii | Embryo not being matured ./Impermeability of testa for oxygen and water | | 01 |
| | | | | 15 |
| 03. | i | P and U (Only if two letters are correct ) | | 01 |
| | ii | 3 and 01 (Only if two answers are correct ) | | 01 |
| | iii | UT | | 01 |
| | iv | Metal- L, U (01)<br>Metalloid - Q (01)<br>Non metal - R, S, F (01) | | 03 |
| | v | $R.A.M = \dfrac{\text{Mass of the atom}}{\text{Atomic mass unit}} = \dfrac{3.818 \times 10^{-23}}{1.66 \times 10^{-24}}$ (01)<br>= **23** (01) | | 02 |
| | vi | a. 16 g mol$^{-1}$ (01)<br>b. 32 g (01)<br>c. $3 \times 6.022 \times 10^{23}$ (01) | | 03 |
| | v | a. 8 (01)<br>b. 2,6 (01)<br>c. For correct dot-cross diagram using the letter S (01) For correct Lewis structure (01) No marks when the diagram is drawn using the letter O. | | 04 |
| | | | | 15 |
| 04 | | | | |
| A | i | a. 100 g (01) 0.1 kg (01 ) | | 02 |
| | | b. 1 (01) N (01) | | 02 |
| | | c. 1N | | 01 |
| | ii | a. No change. (01)<br>b. Increase (01)<br>c. Decrease(01) | | 03 |
| | iii. | 5 N | | 01 |
| B | i | A- Static (01)<br>B- Limiting(01) | | 02 |
| | ii | A – Equals.<br>B – Equals. (01) | | 02 |
| | iii | 100 N | | 01 |
| | iv | <br>When the arrows are indicated oppose to the moving direction of one wheel or both wheels 01 | | 01 |
| | | | | 15 |

<div align="center">Total marks for part A - 60.</div>

| | | | Part B | | |
|---|---|---|---|---|---|
| **05** | | | | | |
| A | i | | A – Oxygen/ O<br>B – Nitrogen / N<br>For C and D - Carbon / C or Hydrogen /H<br>E – Phosphorous | If six elements are correct m-03<br>If 04/05 elements are correct m-02<br>If 02/03 elemnets are correct -01 | 03 |
| | ii | | Q – Amino acid (01)<br>R - Fatty acid and glycerol 01<br>S – Nucleotide (01) | | 03 |
| | iii | | a. Iodine solution (No marks for only the word iodine )(01) - is added turns into blue/purple.(01)<br>b. When Sodium hydroxide / NaOH and copper sulphate/ $CuSO_4$ (01) are added Mixture turn in to dark violet colour(01)<br>c. Sudan III (01) - Red coloured globules can be seen.(01) | | 06 |
| B | i | | Vertebrates- only if the thilapia is written (01)<br>Invertebrates-Only if the three organisms scorpion, hydra, earth worm are written ( 01) | | 02 |
| | ii | | Hydra | | 01 |
| | iii | | thilapia- Pisces(01)<br>scorpian - Arthropoda (01)<br>Hydra- Coelenterata / Cnidaria(01)<br>Earth worm -Annelida (01) | | 04 |
| | iv | | Body is segmented/ Presence of jointed appendages/ Presence of chitinous epidermis on the body | | 01 |
| | | | | | **20** |
| **06** | | | | | |
| A | i | | H, He, Li, Be, B, C, N, O, F, Ne, Na, Mg, Al, Si, P, S, Cl, Ar, K, Ca [ Correct order of first 10 elements (01) marks] [Correct order of second 10 elements (When writing Cl and Ca the capital and simple letters should be correct)(01) mark] | | 02 |
| | ii | | Be, O, Mg, S, Ca (When 05 elements are correct 02 marks, 03 or 04 elements are correct 01 mark, No marks when 02 or 01 elements are correct | | 02 |
| | iii | | $MgCl_2$ (01) , MgO (01) Cl and O When writing Mg and Cl capital and simple letters should be correct | | 02 |
| | iv | | F | | 01 |
| | v | | He | | 01 |
| | vi | | H/ N/ O/ F/ Cl One mark per element. No marks if written as ( $H_2$/ $N_2$/ $O_2$/ $F_2$/ $Cl_2$ )molecules | | 02 |
| B | i | | C and D one mark per answer | | 02 |
| | ii | | a. Ionic - A (01) Covalent - B (01)<br>b. Bulb glows (01)<br>c. A – Electricity doesn't conduct. (01)<br>  B – Electricity conducts (01)<br>d. C – Electricity doesn't conduct. (01)<br>  D – Electricity doesn't conduct. (01)<br>e. Conduction of electricity/Being an inert electrode/ Not reacting with aqueous solutions (01) | | 08 |
| | | | | | **20** |
| **07** | | | | | |
| A | i | | A | | 01 |
| | ii | | Moment of force = Magnitude of force x Perpendicular distance to the line of action of force (01)<br>= 0.9 x 5 (01)<br>= 4.5 N m (01) No marks if the unit is absent | | 03 |

| | | | | |
|---|---|---|---|---|
| | iii | Moment of force = Magnitude of force x Perpendicular distance to the line of action of foce <br> 4.5 = Force x 0.45 (01) <br> = 10 N (01) | 02 |
| | | | |
| | iv | A (01) Decreasing the force that should apply (01) | 02 |
| | v | a. Not created (01) <br> b. Created. (01) <br> c. Not created (01) | 03 |
| B | i | A and B resultant forces that applied in both side becomes equal (01) <br> The forces are being collinear (01) <br> A and B forces are Opposite to each other (01) | 03 |
| | ii | a. 1500 N (02) If unit is absent 01mark <br> b. 300 N (01) If unit is absent ,no marks | 03 |
| | iii | a. 0 N (01) Unit is not essential <br> b. Weight = Mass x Gravitational acceleration / $W = m\ g$ or <br> 600 = m x 10 (01) <br> m = 60 kg (01) | 03 |
| | | | 20 |
| 08 | | | |
| A | i | Sperms (01) Ova (01) | 02 |
| | ii | In fallopian tube ( Upper part ) | 01 |
| | iii | Fertilization- Fusion of the nuclear materials of sperm and ova (01) <br> Implantation – Morula disintegrates the tissue of uterine wall, sinks and deposits in the wall (01) | 02 |
| | iv. | Female gamete – 23 (01) zygote 46 (01) | 02 |
| | v | An idea such as number of chromosomes becomes half when forming gametes | 02 |
| | vi | Oestrogen/ Progesterone/ FSH /LH | 01 |
| B | i | $E_p = mgh$ (01) <br> = 40 x10 x2 (01) <br> = 800 J (01) No mark if the unit is absent | 03 |
| | ii | $E_p = mgh$ <br> = 40 x10 x 1 = 400 J (01) No marks if the unit is absent | 01 |
| | iii | Maximum - B (01) , Minimum - A (01) | 02 |
| C | i | Potential energy when located on tree = Kinetic energy at the moment of touching the ground(01) <br> $mgh$ = 0.250 x 10 x 5 = 12.5 J (01) No marks if the unit is absent | 02 |
| | ii | $E_k = 1/2\ mv^2$ (01) <br> 12.5= 1/2 x 0.25 x $v^2$ <br> 25 = 0.25 $v^2$ <br> 100 = $v^2$ <br> $v$ = 10 m s $^{-1}$ (01) No marks if the unit is absent | 02 |
| | | | 20 |
| 09 | | | |
| A | i | Reactants : Zn and HCl (01) <br> Products : Zn Cl$_2$ and H$_2$ (01) | 02 |
| | ii | $Zn + 2HCl \longrightarrow Zn\ Cl_2 + H_2$ | 02/00 |
| | iii | Single displacement reactions. | 01 |
| | iv | Emission of gas bubbles/ Pieces of zinc dissolves/ Decreasing the water level in the gas jar, 01 mark per such an answer. | 02 |
| | v | Colourless/ Odourless/ Less denser than air/ Combustible gas. 01 M per answer | 02 |
| | vi | Burns with a pop sound when a flame is introduced in to a sample of gas. | 01 |
| B | i | A – Volt meter (01) <br> B – Ammeter (01) | 02 |
| | ii | A is connected in series connection (01) B is connected in series connection (01) | 02 |

| | iii | Series connection | 01 |
|---|---|---|---|
| | iv | $V = IR$ (01) <br> $2 = 0.2\,R$ (01) <br> $R = 10\,\Omega$ (01) No marks if the unit is absent | 03 |
| | v | Voltage is directly promotional to the current | 01 |
| | vi | The brightness of the bulbs relatively decreases | 01 |
| | | | **20** |
| Marks for MCQ paper  2 x 40 | | | 80 |
| Marks for part A  15 x 4 = 60  and Part B  20 x 3 = 60 | | | 120 |
| Total Marks 200 / 2 | | | **100** |

Notice:-

- Allocate marks if the correct answers are written other than the answer given in the answer script. ( When the answer is written by understanding the concept correctly )
- Don't allocate marks when the unit is not written with the final answer where it is compulsory.
- Consider this as a pre practice for G.E.E (O/L) examination when marking and discussing the answers with students after correcting the papers.