



The Times Secondary School

Dillibazar, Kathmandu

First Terminal Examination – 2075

Grade: - XI

Set – A

Full Marks: 100

Stream: Science

Pass Marks: 40

Subject: C. English

Time : 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate the full marks.

Attempt ALL questions.

1. a. Put the following words in alphabetical order. [2]
Recent, recover, reclusive, real
b. Choose the correct guidewords for each headword. [3]

Head word	Guideword
i. Crisis	a) Cripple/croquet b) Crosswise/cruiser
ii. Daughter	a) datebook/dazzle b) Death/deal
iii. Evidence	a) everything/example b) exchangeable/excursion
2. Put the words below into the correct order to make sensible sentences. [3]
 - a. his\he\ to\had\dinner\started\just\eat
 - b. he\her\him\of\ a\to\tea\cup\asked\give
 - c. a\she\hospital\hoped\in\doctor\become\to\ a
- b. Write the antonyms of the following words. [2]
 - i. happy ii. Bright iii. Good iv) auspicious
3. Write a description of a historical place in your country in about 100 words. [5]
4. Answer any TWO of the following questions. [2×10=20]
 - a. Narrate the story of The Lost Doll.
 - b. Summarize the story “Fear”. Was there any objective cause to be afraid of or it was just an imagination of Armando Gonzalez? Explain
 - c. What sort of dream does Kimberly have every night? What was mysterious about the dream? Describe briefly.
5. Give short answers to any three of the following questions. [3×5=15]
 - a. Why did Rosa Soto give her daughters’ clothes and playthings to a priest from another village?
 - b. How is the statement “The Child is a Father of the Man” a paradox? Explain.

- c. Why does Janet Wilson suggest Kim to go to her parent’s farm house?
 - d. What evidences are there in the story to show that the Soto family was poor?
6. **Use the following words or phrases in your own sentences.** [5]
To make a living, to make one’s escape, to turn a blind eye to, unlike, disclaim.
7. **Change the following sentences into passive form using “get”.** [5]
 - a. People often telephone me in the middle of night.
 - b. People give me something to eat now and again.
 - c. People occasionally threaten me.
 - d. Now and again people stare at me in the street.
 - e. They sometime send me to football matches.
8. **Rewrite the following sentences using the instructions given in brackets.** [5]
 - a. You can't decide whether to pay in cash or by cheque. (shall)
 - b. Is anybody making the tea? (passive)
 - c. He goes abroad.(March , September, March, September)
 - d. Alex has taken all of his money out of his bank account.(planning to)
 - e. Now and again they call me to a road accident.(get)
9. **Rewrite these sentences, filling the gap with correct tense.** [5]
 - a. I(buy) this book yesterday.
 - b. My friend(like) travelling very much.
 - c. The bus(leave)already.
 - d. She(not write) to me for quite a long time.
 - e. The earth..... (go) round the sun.
10. Write any two of the following [2×10=20]
 - a. Write a letter to your friend, who is intending to go abroad for his/her higher studies mentioning the pros and cons of studying overseas.(250-300 words)
 - b. Write an essay on the topic "The Position of Women in Nepalese Society". (250-300 words)
 - c. Write a brief geographical description of your country, including only important and interesting information.

11. Read the following passage and answer the questions below.

[2×5=10]

The Underground Railroad, a vast network of people who helped fugitive slaves escape to the Northern USA and to Canada, was not run by any single organization or person. Rather, it consisted of many individuals—many whites but predominantly black—who knew only of the local efforts to aid fugitives and not of the overall operation. Still, it effectively moved hundreds of slaves northward each year—according to one estimate, the Southern US states lost 100,000 slaves between 1810 and 1850.

An organized system to assist runaway slaves seems to have begun towards the end of the 18th century. In 1786 George Washington complained about how one of his runaway slaves was helped by a "society of Quakers (a religious group), formed for such purposes."

The system grew, and around 1831 it was dubbed "The Underground Railroad," after the then emerging steam railroads. The system even used terms used in railroading: the homes and businesses where fugitives would rest and eat were called "stations" and "depots" and were run by "stationmasters," those who contributed money or goods were "stockholders," and the "conductor" was responsible for moving fugitives from one station to the next. For the slave, running away to the North was anything but easy. The first step was to escape from the slaveholder. For many slaves, this meant relying on his or her own resources. Sometimes a "conductor," posing as a slave, would enter a plantation and then guide the runaways northward. The fugitives would move at night. They would generally travel between 16 to 32 kilometers to the next station, where they would rest and eat, hiding in barns and other out-of-the-way places. While they waited, a message would be sent to the next station to alert its stationmaster.

The fugitives would also travel by train and boat—conveyances that sometimes had to be paid for. Money was also needed to improve the appearance of the runaways—a black man, woman, or child in tattered clothes would invariably attract suspicious eyes. This money was donated by individuals and also raised by various groups, including vigilance committees. Vigilance committees sprang up in the larger towns and cities of the North, most prominently in New York, Philadelphia and Boston. In addition to soliciting money, the organizations provided food, lodging and money, and helped the fugitives settle into a community by helping them find jobs and providing letters of recommendation.

The Underground Railroad had many notable participants, including John Fairfield in Ohio, the son of a slaveholding family, who made many daring rescues, Levi Coffin, a Quaker who assisted more than

3,000 slaves, and Harriet Tubman, who made 19 trips into the South and escorted over 300 slaves to freedom.

Questions:

- a) What is Underground Railroad and why was it dubbed so?
- b) How did the Underground Railroad function? What was unique about it?
- c) Who were the fugitives and how would they move from one place to another?
- d) In what ways did vigilance committees help the fugitives?
- e) Who were the three most notable individuals who contributed to the underground network?

The End



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Attempt ALL questions

1. a. Put the following words in alphabetical order. [2]
Publish, public, punish, plumber.
- b. In which quarter of the dictionary, will you find the following words. [3]
shower, work, mother, language, hunter, neutral.
2. a. Choose the appropriate word from the brackets. [3]
 - i. I am sorry, but your handwriting is (eligible\ illegible)
 - ii. He was in the earthquake last year.(died/killed)
 - iii. I'll for you near the entrance. (expect/wait)
- b. Write the antonyms of the following words. [2]
 - i. dawn
 - ii. best
 - iii. ugly
 - iv) cheerful
3. You have come back from a very disappointing holiday. Describe why it was disappointing? [5]
4. Answer any TWO of the following questions. [2×10=20]
 - a. Do dreams have any connection to our real life? Discuss your personal view. Also relate your answer to the story "The Recurring Dream".
 - b. Summarize the story "Fear". Was there real fear or it was just an imagination of Armando Gonzalez? Explain.
 - c. Show the points of similarities and differences between the two supernatural stories "A House Call" and "The Loving Mother".
5. Give short answers to any three of the following questions. [3×5=15]
 - a. Who was Dr. Emily Braun? How old was he when he visited Elda?
 - b. Why were the people looking at Armando?
 - c. Rosa said to her husband, "False hope is not good." When does hope become false?

d. "The Child is Father of the Man." Do you agree with this statement? Give reasons.

6. Give your opinion about the following using the superlative form. [5]

Ex: Bad/ days Nepal has ever seen

The worst days Nepal has ever seen are the days after the earthquake 2072.

- a. Boring/ person that I know
- b. Difficult to learn/ language
- c. Strange /film that I have seen
- d. Powerful / political person in the world
- e. Friendly/ teacher in our college

7. Change the following sentences into passive. [5]

- a. His newspaper pays him a huge salary
- b. Ron Glib made a mistake.
- c. My brother has sent me a camera.
- d. The police arrested the criminals.
- e. They ask us some questions.

8. Use following words or phrases in your own Sentences. [5]

Out of his mind, set free, came up with, disinterested, disarm

9. Rewrite these sentences, filling the gap with the correct tense. [5]

- a. They(not go) out yet.
- b. Everyday Hari (go) home by bus.
- c. If the balloon bursts, the child(ask) for another.
- d. I(no find) the film interesting.
- e. The Principal and Raju(work) in the office.

10. Write any two of the following. [2×10=20]

- a. Write a short article describing the changes Nepal witnessed in the year 2017.
- b. Write a letter to your friend comparing your childhood days with your present life.
- c. There is saying "Not all knowledge is found in books." Compare and contrast between the knowledge acquired from books and the knowledge acquired from experience. Which do you consider more important, and why?

11. Read the following passage and answer the questions given below.
[5×2 =10]

Generations of American schoolchildren have been taught the story of how the Great Fire of Chicago in October 1871 was started by Daisy, a cow belonging to one Mrs. O' Leary. The cow, stabled in a barn behind Mrs. O'Leary's house, supposedly kicked over a kerosene lamp, which set fire to hay and other combustible materials stored there. The blaze quickly spread, and fanned by a strong southwest wind and aided by intensely dry conditions, the conflagration engulfed and entirely destroyed more than three square miles of build-up area. Almost 100,000 people were left homeless, and about 300 lost their lives. Property damage was estimated to be 200 million dollars, an immense sum in those days.

Soon after the fire, the O'Leary-cow story became an almost unchallenged truth and, over the years, took on the status of a modern-day myth- a staple ingredient in the fabric of American folklore. However, there are good reasons to believe that neither Mrs. O'Leary nor Daisy was culpable. First, a police reporter later claimed to have invented the whole story. Of course, it is not a conclusive refutation, but his reasoning was valid and his alternative suggestions credible. Furthermore, the testimony of one of the main witness, a neighbor called "Peg Leg" Sullivan, is now thought to be questionable. Some claim he invented the story to avoid censure, since he himself was not above suspicion and there were inconsistencies in his account. Other accusers have focused the blame on a variety of targets – some local boys smoking in the barn, a different neighbor, an unnamed terrorist organization, spontaneous combustion, and, most recently, an asteroid. The asteroid theory gains credence from the fact that on the same night as the Chicago fire, neighboring states suffered more than a dozen major fires. One fire destroyed the entire town of Peshtigo, Wisconsin, with the loss of more than 1,200 lives.

Whatever the real origin of the fire, the truth is that it was inevitable, given the near-drought conditions of the time and the fact that much of the city consisted of densely packed wooden shacks served by an undermanned fire department. It seems that Mrs. O'Leary and her cow were perhaps no more than convenient and vulnerable scapegoats on which a devastated populace could center its frustrations.

Questions:

- a. What is the phenomenon discussed in the text and why is it devastating?
- b. Who has been blamed for the incident? Why?
- c. Why is Sullivan's name mentioned in the text?
- d. Write any three main theories put forward on the cause of the disaster.
- e. Why does it seem convincing that it was caused by an asteroid?

The End



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GROUP A

1. Answer in brief any SIX questions: (6×2=12)

- a. The radius r of a circle inscribed in any triangle whose sides are a , b , and c are given by

$$r = \frac{[(s-a)(s-b)(s-c)]^{\frac{1}{2}}}{s}$$

Where s is an abbreviation for $\frac{(a+b+c)}{2}$.

Check this formula for dimensional consistency.

- b. The magnitude of vectors \vec{A} , \vec{B} and \vec{C} are 3, 4, and 5 units respectively. If $\vec{A} + \vec{B} = \vec{C}$, then find the angle between \vec{A} and \vec{C} .
- c. The difference between velocity and speed is the consequences of the difference between displacement and distance. Explain with example.
- d. A projectile is fired at an angle 18° has certain horizontal range. State another angle of projection for the same horizontal range.
- e. The resultant of two vectors having magnitude of 7 unit and 4 unit is 3 unit. Find the magnitude of the cross product of the vectors?
- f. Define the term modulus of rigidity?
- g. A package is dropped out of an aeroplane in level flight. If the resistance could be neglected how would the motion of the package look to the pilot?
- h. Why the spring is made of steel and not of copper?

2. Answer in brief any TWO questions:

(2×2=4)

- a. The relationship between Celsius and Fahrenheit scale is $T_f = \frac{9}{5}T_c + 32^\circ \text{F}$
What is the physical significance of the factor (9/5) in the above equation? Why this factor is absent in the equation relating between the Celsius and Kelvin scale?
- b. Why is it much more difficult to make a precise determination of coefficient of expansion of a liquid than that of a solid?
- c. A student claimed that when two bodies, not initially in thermal equilibrium are placed in contact, the temperature rise of the cooler body must always be equal to the temperature drop of the warmer. Do you agree? Is there a principle of conservation of temperature?

3. Answer, in brief, any one question: (1×2=2)

- a. What can we infer about the wavelength of light from rectilinear propagation of light?
- b. A parabolic mirror is used in headlight of vehicles and in search light. Explain?

4. Answer, in brief, any ONE question: (1×2=2)

- a. Is it possible for a body to have charge of 1.5 e? Explain.
- b. Explain from an atomic viewpoint why charge is usually transferred by electrons.

GROUP B

5. Answer any three questions: (3×4=12)

- a. State the parallelogram law of vector addition. Derive the expression for the magnitude and direction of the resultant of two vectors inclined at an angle α from each other.
- b. Derive an expression for the energy stored in a stretched wire, Define the term energy density of a body under strain.
- c. What is relative velocity? Explain with an example.

- d. Define trajectory? Show that the path of a projectile projected horizontally from the top of a tower is parabolic. At what angle does it hit on the ground?

6. Answer any two questions: (2×4=8)

- a. Why do substances expand on heating? Show that $\alpha = \frac{\gamma}{3}$, where α and γ are the coefficients of linear and cubical expansions of a substance.
- b. Define heat capacity. Describe the method of mixture to determine the specific heat of a solid.
- c. Distinguish between real and apparent expansion of liquid. Describe with mathematical detail, a method to determine real expansivity of a liquid

7. Answer any one questions: (1×4=4)

- a. What do you understand by the principal focus of a spherical mirror? Derive the relation between object distance, image distance and the focal length of a concave mirror.
- b. What is magnification? Show that the ratio of image distance to the object distance is equal to the ratio of size of image to the size of object for a convex mirror.

8. Answer any one questions: (1×4=4)

- a. What is conservation of charge? How can you charge a neutral body negatively by the method of induction?
- b. Define Electric field intensity. Is the electric field at a point due to one charge changed if other charges are brought about nearby? Hence find the net electric field intensity at a point due to a number of discrete charges.

GROUP C

9. Answer any three numerical problems: (3×4=12)

- a. Water drops fall at regular interval from a tap which is 5.0m above the ground. The third drop is leaving the tap at the instant, the first drop touches the ground. How far above the ground is the second drop at that instant?
- b. When a force of 2N is applied to a spring, it is extended by 30mm. What is the energy stored in the spring when it hangs vertically supporting a mass of

0.20kg, if the spring was unstretched before applying the mass? Also calculate the potential energy of the mass.

- c. A stone is dropped from the top of a tall building and 1sec later a second stone is thrown vertically downward with a velocity of 20ms⁻¹. When and where will the second stone overtake the first?
- d. A projectile is launched with an initial velocity of 30m/s at an angle of 30° with the vertical. Calculate the magnitude and direction of its velocity 5.0s after launch.

10. Answer any two numerical questions: (2×4=8)

- a. A steel cylinder has an aluminum alloy piston and at a temperature of 20°C when the internal diameter of the cylinder is exactly 10cm, there is an all-round clearance of 0.05mm between the piston and the cylinder wall. At what temperature will the fit be perfect? [Linear expansivity of steel = 1.2 x 10⁻⁵ K⁻¹, Linear expansivity of aluminum = 1.6 x 10⁻⁵ K⁻¹]
- b. Equal volumes of two liquids have same heat capacity. The relative density of one liquid is 0.87 and that of another is 0.70. If the specific heat of the first liquid is 1.813Jg⁻¹K⁻¹. Find the specific heat capacity of second liquid.
- c. A 60 grams of water and equal volume of kerosene (density 0.8gcc⁻¹) are placed one after another in the same calorimeter of water equivalent 10g. Water takes 4 minutes to cool from 45°C to 40°C. What time does kerosene take to cool through the same range of temperature? Specific heat of kerosene = 0.6 Cal g⁻¹ °C⁻¹.

11. A mirror forms an erect image 30cm from the object and twice its height. What is its radius of curvature. (4)

12. Find the position of point charge -1 μC is in between the two charges 4 μC and 1 μC separated by a distance 4cm in a straight line so that the system of three charges will be in equilibrium. (3)

The End



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GROUP A

1. Answer in brief any SIX questions:

(6×2=12)

- Which of the equations below are dimensionally correct?
 - $s = u + a(2n-1)/2$, where s is the distance travelled by a body in n^{th} second.
 - $y = (2m) \cos(kx)$, where $k = 2 \text{ m}^{-1}$
- A body constrained to move in Y direction is subjected to a force given by $\vec{F} = -2\hat{i} + 15\hat{j} + 6\hat{k}$ Newton. What is the work done by the force in moving the body a distance of 10m along the Y- axis?
- Give with an example a case where the velocity of an object is zero but its acceleration is not zero.
- If a car is slowing down, can its acceleration be positive?
- A ball is dropped gently from the top of a tower and another ball is thrown horizontally at same time. Neglecting the air resistance, which ball hit ground earlier?
- Forces \vec{F}_1 and \vec{F}_2 act on a point mass in two mutually perpendicular directions. What will be the magnitude of the resultant force on the point mass?
- Why are bridges declared unsafe after a long use?
- What is Poisson's ratio?

2. Answer, in brief, any two questions:

(2×2=4)

- If you quickly plunge a room-temperature thermometer into very hot water, the mercury level will go down briefly before going up to a final reading. Why?

- Why are the telephone wires taut in winter and slackened in summer?
- Why does boiled hot milk freeze faster in the freezer than cold milk?

3. Answer, in brief, any one questions: (1×2=2)

- Why are convex mirrors used in cars for rear view?
- Ray optics as a limiting case of wave optics. Explain.

4. Answer, in brief, any one questions: (1×2=2)

- What is permittivity of the medium? Write its significance.
- Can you electrify a metal rod by rubbing it while holding in your hand?

GROUP B

5. Answer any three questions:

(3×4=12)

- State triangle law of vector addition. Obtain an expression for the magnitude and direction of the resultant of two vectors \vec{P} and \vec{Q} inclined at an angle β .
- State Hooke's law and describe different types of modulus of elasticity.
- What are point of projection and angle of projection? A projectile is fired from the ground at an angle α with the horizontal and with a velocity u . Calculate the horizontal range, time of flight and time to reach the maximum height for the projectile.
- Prove the equation of motion by analytical and graphical method.

6. Answer any two questions:

(2×4=8)

- Define linear and cubical expansivities of solids. Derive an expression for the variation in density of a solid when temperature is raised from $\theta_1^{\circ} \text{C}$ to $\theta_2^{\circ} \text{C}$.
- What is meant by real expansion and apparent expansion? Show that $\gamma_r = \gamma_a + \gamma_g$, where symbols have usual meanings.
- State the Newton's law of cooling. Use Newton's law of cooling to determine the specific heat of a liquid?

7. Answer any one questions:

(1×4=4)

- Point out the difference between real and virtual images. Obtain an expression for the relation between object distance, image distance and the focal length in the case of convex mirror.
- Define lateral magnification? Discuss about it in the case of concave mirror.

8. Answer any one questions:

(1×4=4)

- What is electrostatic induction? How can you charge a given spherical ball positively by the method of induction?
- Write the law for the force between two-point charges placed a certain distance apart. Is the coulomb force that one charge exerts on another charge changed if other charges are brought nearby? Find the net force experienced by a charge due to a number of discrete charges.

GROUP C

9. Solve any three numerical problems:

(3×4=12)

- A rubber cord of a catapult has a cross-sectional area 1.0mm^2 and a total unstretched length 10.0cm . It is stretched to 12.0cm and then released to a missile of mass 5.0g . Calculate the velocity of projection, taking the young modulus for the rubber as $5.0 \times 10^8 \text{Nm}^{-2}$.
- Drops of water are observed to drip from a faucet at uniform intervals of time. As any drop B begins to fall freely, the preceding drop A has already fallen by 0.2m . Determine the distance drop A will have fallen by the time the distance between A and B will have increased to 1.2m .
- A projectile shot at an angle of 60° above the horizontal strikes a building 20m away at a point 10m above the ground. Find the velocity of projection and the magnitude and direction of the velocity of the projectile when it strikes the building.
- A particle experiences a constant acceleration for 20 seconds after starting from rest. It travels a distance s_1

meter in first 10 seconds and a distance s_2 in next 10 seconds: then find the ratio of these distances (s_1/s_2)

10. Solve any two numerical problems:

(2×4=8)

- A glass vessel is completely filled with 340gm of mercury at 0°C . What weight of mercury will overflow when the vessel is heated to 100°C ? [Cubical expansivity of mercury = $1.8 \times 10^{-4} \text{K}^{-1}$, Linear expansivity of glass = $9 \times 10^{-6} \text{K}^{-1}$]
- The pendulum of a clock is made of brass whose linear expansivity is $1.9 \times 10^{-5} \text{K}^{-1}$. If the clock keeps correct time at 15°C , how many second per year will it lose or gain at 20°C .
- In an experiment performed by Dulong and Petit's method, the height of the cold and hot column mercury are found to be 99.5cm and 101.2cm . If the temperature of cold column is 0°C , calculate the temperature of hot column.
[Cubical expansivity of mercury = $1.8 \times 10^{-4} \text{K}^{-1}$]

11. At what position an object be placed in front of a concave mirror of radius of curvature 0.4m so that an erect image of magnification 3 be produced?

(4)

12. Two exactly equal positive charges $4\ \mu\text{C}$ each are separated by a distance 1cm . What should be the value of another charge Q to be placed exactly midpoint of the line joining these two charges so that the system of three charges will be in equilibrium.

(3)

The End



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Group A

Attempt any fifteen questions.

[15 × 2 = 30]

1. Define acid radical and basic radical with examples. Write a test reaction to detect NO_3^- radical.
2. Mention essentials of good chemical equations with examples.
3. Balance the following reactions using partial equation method
 - a) $\text{I}_2 + \text{HNO}_3 \rightarrow \text{NO}_2 + \text{HIO}_3 + \text{H}_2\text{O}$
 - b) $\text{Cl}_2 + \text{hot and conc. NaOH} \rightarrow \text{NaCl} + \text{NaClO}_3 + \text{H}_2\text{O}$
4. Which one is more massive? 0.8 gram atoms of hydrogen or 3.011×10^{23} H atoms and why?
5. An hourly energy requirement of an astronaut can be satisfied by the energy released when 34gm of sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) are burnt in his body. How many grams of oxygen would be needed to be carried in space capsule to meet his requirement for one day?
6. Density of one drop of water is 1.0gm/cc. How many molecules are there in a drop of water if its volume is 0.1cc?
7. What weight of AgCl will be formed when 20 gm of AgNO_3 is treated with excess HCl? (At. Wt. of Ag= 108 amu)
8. How does Avogadro's hypothesis make a clear distinction between atom and molecule? Explain.
9. "Periodicity of elements is according to electronic configuration" justify it?
10. What are Transition elements and representative elements? Why are they called so?
11. Distinguish between minerals and ores with necessary examples.

12. Why do most of the metals not occur in Free State? Name any three metals which occurs in native state.
13. Define Calcination and Roasting with example reactions.
14. What are the differences between Ortho and Para hydrogen?
15. Why AgCl is not soluble in water but NaCl is? Explain.
16. Justify the amphoteric nature of PbO_2 and PbO .
17. Explain basic character of liquid ammonia gas giving any two example reaction.
18. Write down the resonance structure of Ozone molecule. Give any two uses of deuterium.
19. Give the primitive concept about the synthesis of organic compound.
20. Write the IUPAC name of the following organic compounds



21. Why does the organic compounds need to be studied separately from inorganic compounds? Explain.
22. What is the common system for the Nomenclature of Organic compound? Explain with examples.

Group B

Attempt any five questions.

[5 × 5 = 25]

23. Give your explanatory ideas about the types of chemical reactions using necessary examples. Justify the statement "Precipitation reaction is an example of double displacement reaction". [4+1]
24. Define Mole. Show your acquaintance with the term mole that leads to signify number of information in chemical calculation involving necessary examples and method of calculations. One atom of an element 'A' weight 6.644×10^{-23} gm, calculate the number of gram atom in 80kg of its. [4+1]
25. State and explain Avogadro's hypothesis. How would you apply Avogadro's hypothesis to calculate molar volume of gas at NTP or STP? Explain [1+4]
26. State Modern periodic law. Describe superiority of modern periodic law over Mendeleev's periodic law. How elements are

divided into different blocks in modern periodic law. [5]

27. Define oxides. Classify the following oxides with necessary chemical explanation

- a. N_2O_3 b. Na_2O c. Al_2O_3
d. Na_2O_2 e. RbO_2

[5]

28. Explain about the method of extraction of metal with reference to

- a) Magnetic and Gravity separation method
b) carbon reduction method

[5]

29. Define homologous series. What are the characteristics of homologous series? Write the homologous series of

- i) alkanol ii) alkanolic acid.

[5]

Group C

The End

Attempt any two questions.

[2 × 10 = 20]

30. a) Describe the theoretical background about the concept of limiting and excess reagent in stoichiometric chemical calculation.

b) For a reaction



25 gram of sample $NaHCO_3$ when heated strongly gives

310cc

of CO_2 gas at $27^\circ C$ and 760mm of Hg pressure

- i. calculate the percentage purity of the sample $NaHCO_3$
ii. How many moles of water are produced?
iii. What mass of pure HCl is required to neutralize Na_2CO_3 produced in the reaction?

c) An oxide of nitrogen contains half of its own volume of nitrogen and vapour density is equal to 54. Determine its molecular formula using Avogadro's hypothesis.

[3+4+3]

31. Describe with principle, neat and well labelled explanatory diagram for the manufacture of ammonia by Haber's Process. How ammonia does reacts with

- a. heated CuO b. $FeCl_3$ solution
c. excess Cl_2 d. CO_2 gas

[10]

32. Write short notes (any two)

- a. Theories of different forms of Hydrogen
b. Chemistry of Oxides
c. Classification organic compounds.

[10]



The Times Secondary School

Dillibazar, Kathmandu

First Terminal Examination – 2075

Grade: - XI

Set – B

Full Marks:-75

Stream: Science

Pass Marks:-30

Subject: - Chemistry

Time : 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate the full marks.

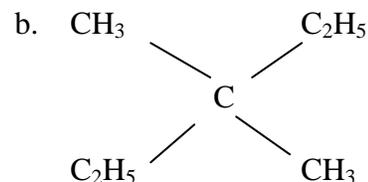
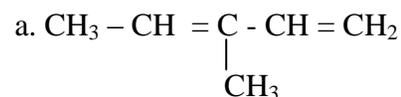
Group A

Attempt any fifteen questions.

[15 × 2 = 30]

1. Define simple radical and compound radical with examples. Write a test reaction to detect CO_3^{2-} and SO_4^{2-} radical in the sample.
2. Explain the significances of chemical equation with necessary example reaction.
3. Balance the following reaction using partial equation method.
 - a. $\text{Ag} + \text{HNO}_3 \longrightarrow \text{AgNO}_3 + \text{N}_2\text{O} + \text{H}_2\text{O}$
 - b. $\text{Cl}_2 + \text{Cold dil, NaOH} \longrightarrow \text{NaCl} + \text{NaClO} + \text{H}_2\text{O}$
4. Which one is more massive?
2 gram atoms of Na or 1.2×10^{24} atoms of Na and why?
5. A daily energy requirement of an astronaut can be satisfied by the energy released when 816gm of sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) are burnt in his body. How many grams of oxygen would be needed to be carried in the space capsule to meet his requirement for a month
6. Calculate the weight of 80% pure sulphuric acid required to decompose 75 gm of chalk.
7. What weight of BaSO_4 will be formed when 5 gm of sodium sulphate is treated with excess BaCl_2 ? (at. wt of Ba = 137 amu)
8. How does Avogadro's hypothesis become successful to evaluate the atomicity of nitrogen gas? Explain.
9. What is meant by periodicity in modern periodic law? Explain with examples.
10. What are inner transitional and normal elements? Why they are called so?

11. Distinguish between flux and slag with necessary examples.
12. Why do most of the metals not occur in free state? Name any three metals of IB which occur in native state.
13. Defines alloy and amalgam with examples. How does alloy impart special property to the parent metal?
14. What do you mean by stoichiometric and non-stoichiometric hydrides? Give occlusion phenomena of hydrogen.
15. Why BaCO_3 is not soluble in water but Na_2CO_3 is? Explain.
16. Justify the super oxide nature of KO_2 and suboxide nature of C_3O_2 .
17. Explain the precipitant character of liquid ammonia in qualitative analysis using two chemical reactions.
18. Give the resonating structure of ozone. Write any two uses of tritium.
19. Define functional group. What are the characteristics of functional group?
20. Organic compounds are far greater than that of inorganic compounds. Explain it.
21. Name the 1st synthesized organic compound in lab. Give a chemical reaction for such synthesis.
22. Write the IUPAC name of the following organic compounds.



Group B

Attempt any five questions.

[5 × 5 = 25]

23. Give your explanatory ideas about the types of chemical reaction involving necessary examples. Define molecular, total ionic and net ionic reactions along with their simple representations. [4+1]

24. Define mole. Why this concept was introduced in chemical calculation. Describe significances of mole in detail giving examples and method of calculations. [4+1]
25. State and explain Avogadro's hypothesis. Apply this hypothesis to deduce molecular weight and vapour density of gas or vapour. [5]
26. State Mendeleev's periodic law. Explain the anomalies of Mendeleev's periodic table. How these anomalies were removed by modern periodic table. [1+2+2]
27. Define oxides. Classify the following oxides with necessary chemical explanations.
- N_2O_5
 - ZnO
 - BaO
 - BaO_2
 - N_2O_4
- How ozone is prepared artificially? [5]
28. Explain about extraction of metal with reference to
- Carbon reduction process and
 - leaching [5]
29. What are organic compounds? Give the chemistry for classification of organic compounds in detail. [5]
- c) An oxide of nitrogen contains half of its own volume of nitrogen and vapour density equal to 23. Determine exact molecular formula of oxide of nitrogen using Avogadro's hypothesis. [3+4+3]
31. Describe with principle neat and well labeled explanatory diagram for the manufacture of ammonia by Haber's process. How ammonia reacts with
- Nessler's reagent
 - Salts of mercury
 - Halogens
 - Mg and Na [10]
- 32 Write short note (on any two)
- Theories of atomic and nascent hydrogen
 - Chemistry of oxides
 - Homologous series and its characteristics. [10]

The End

Group C

Attempt any two questions. [2 × 10 = 20]

30

- Describe the theoretical background about the concept of limiting and excess reagent in chemical calculation. [3]
- How much sulphuric acid containing 90% sulphuric acid by weight is required for the production of 500kg of hydrochloric acid containing 38% hydrochloric acid by weight according to the following reaction





The Times Secondary School

Dillibazar, Kathmandu

First Terminal Examination – 2075

Grade: - XI

Set – A

Full Marks:-75

Stream: Science

Pass Marks:-30

Subject: - Biology

Time : 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate the full marks

Use separate answer sheets for Group A and Group B

Group A “Botany”

1. Answer in very short.(any seven) (7×1=7)
 - a. Define cyclosis.
 - b. What do you mean by cellular totipotency?
 - c. What is mesosome?
 - d. Define tetradynamous androecium.
 - e. What is actinomorphic flower?
 - f. Write specific characters of bryophyte.
 - g. Define phyllotaxy.
 - h. Mention criteria of five kingdom classification.
 - i. Define autecology.
 - j. State abiotic factors of ecosystem.
2. Answer in brief.(any five). (5×3=15)
 - a. Write exception or shortening of cell theory.
 - b. Differentiate between plant cell and animal cell.
 - c. Explain the types of flower on the basis of position of ovary.
 - d. Describe the sporophyte of *Marchantia* with well labelled diagram.
 - e. Write down biotic factors of ecosystem.
 - f. Describe merits and demerits of natural system of classification.
 - g. Write effects of temperature and light on ecosystem.
3. Describe life cycle of *Spirogyra* with well labelled diagram.(7.5)

Or

Describe the family Brassicaceae in semi-technical terms with its floral formula and floral diagram. Also mention any two botanical names of plant belonging to this family .

4. Describe the structure of prokaryotic cell(Bacteria) with well labelled diagram. Point out differences between prokaryotic

and eukaryotic cell.

(8)

Group A “Zoology”

1. Answer in very short.(any seven)
(7×1=7)
 - a. What is meant by inanimate substance?
 - b. Who coined the term Biology?
 - c. Define coelom.
 - d. Give the scientific name of pork tapeworm.
 - e. What was the concept of Biogenesis on the origin of life?
 - f. Define Embryology and Paleontology.
 - g. On what basis protozoan protists are classified into Phyla?
 - h. Why do the frogs have inbulging eyes?
 - i. Define Chemoheterotrophs.
 - j. What is meant by venous heart?
2. Answer in brief.(any five).
(5×3=15)
 - a. Explain the experiment which discarded the theory of Abiogenesis.
 - b. “Biology as a science of exception.” Justify.
 - c. Give the characteristics of class oligochaeta.
 - d. Differentiate between hibernation and aestivation.
 - e. Write important characters of ciliata with examples.
 - f. Mention the types of spicules and their composition in sponges.
 - g. Write the important characteristics of class Reptilia with examples.
3. Write the general characteristics of phylum Coelenterata. Also classify it up to classes with one important characters from each class. (7.5)

Or

Discuss the general characteristics of phylum Aschelminthes and classify it up to classes with one example from each class.

4. Discuss the most accepted theory for the origin of life on the earth. (8)

The End



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First Terminal Examination – 2075

Grade: - XI

Set – B

Full Marks:-75

Stream: Science

Pass Marks:-30

Subject: - Biology

Time : 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate the full marks

Use separate answer sheets for Group A and Group B

Group A “Botany”

1. Answer in very short.(any seven) (7×1=7)
 - a. Define endocytosis.
 - b. Give the name of membraneless cell organelles.
 - c. What is exstipulate leaf?
 - d. Define cruciform corolla.
 - e. What is zygomorphic flower?
 - f. Write the function of gemmae.
 - g. Give two role of light in ecosystem.
 - h. Mention similarities of algae and bryophyte.
 - i. Define synecology.
 - j. What is the function of hapteron in *Spirogyra*?
2. Answer in brief.(any five). (5×3=15)
 - a. Write about cell theory.
 - b. Differentiate between prokaryotic cell and eukaryotic cell.
 - c. Write about Steward experiment.
 - d. Describe venation and margin of leaves with necessary diagrams.
 - e. Draw morphological structure of *Spirogyra* with description.
 - f. Describe merits and demerits of phylogenetic system of classification.
 - g. Write effects of edaphic and topographic factor of ecosystem.
3. Describe life cycle of *Marchantia* with well labelled diagram. (7.5)

Or

Describe the family Cruciferae in semi-technical terms with its floral formula and floral diagram. Also mention the identifying characters.

4. What are ecological factors? Explain structural factors of

ecosystem.

(8)

Group A “Zoology”

1. Answer in very short.(any seven) (7×1=7)
 - a. When was earth evolved?
 - b. Mention two important characteristics of mammals.
 - c. Write two important characters of class calcarea.
 - d. Define the term Histology and Ornithology.
 - e. What is meant by pre- biotic soup?
 - f. Name a reptile having monocondylic skull.
 - g. Give the scientific name of bath sponge.
 - h. What is meant by poikilothermic animal? Give an example.
 - i. What was the view of spontaneous generation on the origin of life?
 - j. Name any three life processes common to all plants and animals.
2. Answer in brief.(any five). (5×3=15)
 - a. Describe Francesco Redi’s experiment with well labeled diagram.
 - b. Discuss the relation of Biology with other sciences.
 - c. Write the distinguishing characteristics of class aves with examples.
 - d. Differentiate between flat worm and round worm.
 - e. Discuss the characteristics of Hemichordata with examples.
 - f. Write the distinguishing characters of protozoan protists with examples.
 - g. Mention the characteristics of class hydrozoa with two examples.
3. Give the general characters of phylum Annelida and classify it up to classes with one example from each class. (7.5)

Or

Describe briefly the morphology of frog with a well labeled diagram.
4. Explain briefly Oprarin and Haldane’s theory for the origin of life. (8)

The End



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Dillibazar, Kathmandu

First Terminal Examination – 2075

Grade: - XI

Full Marks:-75

Stream: Science

Pass Marks:-30

Subject: - Computer Science

Time : 3 hrs

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(Group 'A')

(Long Answer Questions)

Attempt all questions.

[3×10=30]

1. Draw block diagram and explain the main components of a computer system.
2. What are the application area of computer? Explain any ten of them.
3. Describe the main feature of all generation of computer.

(Group 'B')

(Short Answer Questions)

Attempt all Questions.

[9×5=45]

4. Differentiate between main frame and mini computers.
5. What is hexa number system? Convert (F10C2) hexa into octal number.
6. Discuss the characteristics of computer.
7. Differentiate between primary memory and secondary memory .
8. Classify the computer on the basis of working principle.
9. Perform the following:
 - a. $(1101.11011)_2 = (?)_{10}$
 - b. Subtract 0001101 from 1110111 using 1's and 2's complement methods.
10. Differentiate between IBM and IBM compatible computer .
11. Convert the following:
 - a. $(4106)_8 = (?)_{16}$
 - b. $(89.68)_{10} = (?)_8$
12. Explain briefly the followings:
 - a. Mobile computing
 - b. Floppy disk

The End



Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate the full marks.

Attempt all the questions.

Group A [5×3×2=30]

1. (a) For any two real number, prove that $|x + y| \leq |x| + |y|$.
(b) Prepare a truth table for the compound statement $p \vee (p \wedge q)$.
(c) Let $A = [-3,1)$ and $B = [-2,4]$. Perform the indicated operations:
(i) $A \cup B$ (ii) $A - B$.
2. (a) show that $\frac{3+2i}{2-5i} + \frac{3-2i}{2+5i}$ is a purely real number.
(b) Prove that: $(1-w).(1-w^2).(1-w^4).(1-w^8)=9$.
(c) If -4 is a root of the equation $x^2+px-4=0$ and the equation $x^2 + px + q = 0$ has equal roots, find the value of q .
3. (a) If the roots of the equation $x^2+ax+c=0$ differ by 1, prove that $a^2 = 4c+1$.
(b) Find the value of p so that each pair of the equations may have one root common $4x^2 + px - 12 = 0$ and $4x^2 + 3px - 4 = 0$.
(c) For what value of k will make the three points $(1,4), (-3,16), (k,-2)$ collinear?
4. (a) Find the equation of the straight line perpendicular to $5x+4y = 9$ and making an intercept -5 on the x -axis.
(b) Evaluate: $\lim_{x \rightarrow 1} \frac{\sqrt{2x-\sqrt{3-x^2}}}{x-1}$.
(c) Find the limiting value of $\lim_{x \rightarrow 0} \frac{\sin x^0}{x}$.
5. (a) Evaluate: $\lim_{x \rightarrow a} (a-x) \tan \frac{\pi x}{2a}$.
(b) At what points is the function $f(x) = \frac{x+1}{(x-2).(x-3)}$ is discontinuous?
(c) Find the value of k so that the given function is continuous at point $x = 2$.

$$f(x) = \begin{cases} kx^2 & \text{if } x \leq 2 \\ 3 & \text{if } x > 2 \end{cases} \quad \text{at } x = 2$$

Group 'B' [5×2×4=40]

6. Define power set. Prove that $A - (B \cup C) = (A - B) \cap (A - C)$.
7. If p, q, r be three statements, prove that: $(P \Rightarrow q) \wedge (P \Rightarrow r) \Rightarrow (p \Rightarrow r)$ is a tautology.
8. Define absolute value of complex number. If z and w are two complex number then prove that $|z + w| \leq |z| + |w|$.
9. Solve the inequality $|2x - 1| \geq 3$ and draw its graph.
10. If the quadratic equations $ax^2 + bx + c = 0$ and $bx^2 + cx + a = 0$ have a common root, show that $a + b + c = 0$ or $a = b = c$.
11. Find the equation of the line through the point of intersection of the straight lines $2x-3y+4=0$ and $3x+4y-45=0$ and parallel to the straight line $2x + 3y = 5$.
12. Evaluate: $\lim_{x \rightarrow 2} \frac{x - \sqrt{8-x^2}}{\sqrt{x^2+12}-4}$.
13. Evaluate: $\lim_{x \rightarrow c} \frac{\sqrt{x}-\sqrt{c}}{\sin x - \sin c}$.
14. When does a function $f(x)$ become continuous at $x = a$? Discuss the continuity of $f(x) = \begin{cases} 2x + 1 & \text{for } x < 1 \\ 2x & \text{for } x = 1 \\ 3x & \text{for } x > 1 \end{cases}$ at $x = 1$.
15. Find, from the first principle that the derivative of $\frac{1}{\sqrt{x+2}}$.

Group 'C' [5×6=30]

16. State De-Moivre's theorem. Find fourth root of 1 by using De-Moivre's theorem.
17. Prove that if the equations $x^2 + bx + ca = 0$ and $x^2 + cx + ab = 0$ have a common root, their other roots will satisfy $x^2 + ax + bc = 0$.
18. Find the angle between the two lines whose equations are $y = m_1x + c_1$ and $y = m_2x + c_2$. Also find the conditions for the lines to be (i) parallel (ii) perpendicular.
19. Prove that: $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$ [Geometrically].
20. Find, from the first principle that the derivative of $\frac{ax+b}{\sqrt{x}}$.

The End



The Times Secondary School
Dillibazar, Kathmandu
First Terminal Examination – 2075

Grade: XI
Stream: Science
Subject: Mathematics (116)

Set B

Full Marks: 100
Pass Marks: 40
Time: 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate the full marks.

Attempt all the questions.

Group A [5×3×2=30]

- For any real number, prove that $|x \cdot y| = |x| \cdot |y|$.
 - Prepare a truth table for the compound statement $\sim [p \vee (\sim q)]$.
 - Rewrite $-4 \leq x \leq -1$ using absolute value sign.
- show that: $\frac{4+3i}{2-5i} + \frac{4-3i}{2+5i}$ is a purely real number.
 - Prove that: $(1+w-w^2)^3 - (1-w+w^2)^3 = 1$.
 - If the equation $x^2 + 2(k+2)x + 9k = 0$ has equal roots, find the value of k.
- If the roots of the equation $x^2 + bx + p = 0$ differ by 1, prove that $b^2 = 4p + 1$.
 - Find the condition for the equations $ax^2 + bx + c = 0$ and $a'x^2 + b'x + c' = 0$ to have both roots common.
 - Prove that the three points (1, 4), (-3, 16) and (1, 4) collinear?
- Find the equation of the straight line parallel to $5x + 4y = 9$ and making an intercept 5 on the x-axis.
 - Evaluate: $\lim_{x \rightarrow 1} \frac{x^2 + 3x - 4}{x - 1}$.
 - Find the limiting value of $\lim_{x \rightarrow 0} \frac{1 - \cos 6x}{x^2}$.
- Evaluate: $\lim_{x \rightarrow b} (b-y) \tan \frac{\pi y}{2b}$.
 - At what points is the function $f(x) = \frac{1}{(x-2)(x+1)}$ is discontinuous?
 - Find the value of k so that the given function is continuous at point $x = 2$.

$$f(x) = \begin{cases} kx + 5 & \text{if } x \leq 2 \\ x - 1 & \text{if } x > 2 \end{cases} \quad \text{at } x = 2$$

Group 'B' [5×2×4=40]

- Define symmetric difference. Prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.
- Define contraposition, prove that: $(P \Rightarrow Q) \equiv (\sim P \Rightarrow \sim Q)$.
- Define absolute value of complex number. If z and w are two complex number then prove that $|z + w|^2 = |z|^2 + |w|^2 + 2 \operatorname{Re}(\overline{z}w)$.
- Define absolute value in a real number. If $x \in \mathbb{R}$ and a be any positive real number then $|x| < a \Rightarrow -a < x < a$ and conversely.
- If the quadratic equations $x^2 + px + q = 0$ and $x^2 + p'x + q' = 0$ have a common root, show that it must be either $\frac{pq' - p'q}{q - q'}$ or $\frac{q - q'}{p' - p}$.
- Find the equation of the line through the point of intersection of the straight lines $2x + 3y + 4 = 0$ and $3x - 4y - 45 = 0$ and perpendicular to the straight line $2x + 3y = 5$.
- Evaluate: $\lim_{x \rightarrow 2} \frac{x - \sqrt{8 - x^2}}{\sqrt{x^2 + 12} - 4}$.
- Evaluate: $\lim_{x \rightarrow c} \frac{\sqrt{x} - \sqrt{c}}{\sin x - \sin c}$.
- When does a function f(x) become continuous at $x = a$? Discuss the continuity of $f(x) = \begin{cases} 2x - 1 & \text{for } x < 2 \\ 2x & \text{for } x = 2 \\ 3x & \text{for } x > 2 \end{cases}$ at $x = 2$.
- Find, from first principle that the derivative of $\frac{1}{\sqrt{x-3}}$.

Group 'C' [5×6=30]

- State De-Moivre's theorem. Find fourth root of -1 by using De-Moivre's theorem.
- Prove that if the equations $x^2 = -bx - ca$ and $x^2 = -cx - ab$ have a common root, their other roots will satisfy $x^2 + ax = -bc$.
- Find the angle between the two lines whose equations are $y - m_1x - c_1 = 0$ and $y - m_2x - c_2 = 0$. Also find the conditions for the lines to be (i) parallel (ii) perpendicular.
- Prove that: $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$ [Geometrically] where θ is measured in the radian measure.
- Find, from the first principle that the derivative of $\frac{3x+5}{\sqrt{x}}$.

The End