



KATHMANDU

DON BOSCO COLLEGE

2nd Terminal Exam - 2059

Stream : Science
Class: XII
Subject: Chemistry

F. M. : 100
P. M. : 40
Time : 3 hrs.

Attempt all questions:

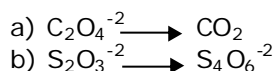
[10x4=40]

Group 'A'

1. Why is -NO₂ a meta directing group towards electrophilic substitution reaction?
2. Amino group of aniline is protected before nitration why?
3. Arrange the following compounds in the increasing order of their acidity with reason.

CH₃COOH, HCOOH and C₆H₅COOH

4. Classify carbohydrate with respect to hydrolysis and give an example of each.
5. Why is trichloroacetic acid stronger acid than acetic acid?
6. Prove with suitable examples that formic acid is reducing agent where as acetic acid is not.
7. Define specific conductance and molar conductivity.
8. Explain specific conductivity decreases by the dilution where as molar conductivity increases by dilution.
9. How much change is required for oxidation of:



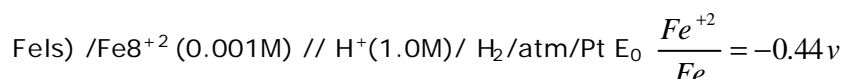
10. Construct a galvanic cell and also calculate EMF of the cell.
Given $Zn \longrightarrow Zn^{+2} + 2e$ $E_o = +0.76$ v
 $Fe \longrightarrow Fe^{+2} + 2e$ $E_o = +0.44$ v
11. The resistivity of a 0.8N solution of electrolyte is 5×10^{-3} ohm¹ cm, Calculate the equivalent conductivity.
12. What is the action of i) heat on white vitrol ii) Mercury on dil Nitric acid?

Group 'B'

Attempt any five questions:

[5x12=60]

13. How is diethyl ether prepared in the laboratory? How does it react with Conc. and cold mineral acids?
14. Show your acquaintance with following reactions
a) Aldol condensation b) Diazotization reaction.
15. How is formic acid prepared in the laboratory? Describe how will you proceed to get anhydrous formic acid.
16. Write Nernst equation for a galvanic cell corresponding to following reaction.
calculate the EMI of the cell at 298^oK.



17. Ka for the formic acid and acetic acid 2.1×10^{-4} and 1.1×10^{-5} . Respectively calculate the strength of acid.
18. How is mercury extracted from its ore? How is it purified?
19. Name two important ores of zinc. How is metal extracted from its sulphide ore?
20. I. write short note on rusting of iron or galvanization.
II. How does aniline reacts with a) Br₂ and b) Cone H₂SO₄ acid?

Best of Luck



**KATHMANDU
DON BOSCO COLLEGE**

2nd Terminal Exam - 2059

Stream : Science

Class: XII

F. M. : 100

Subject: Basic Math

P. M. : 40

Time : 2 Hrs.

Group A

Short Answers Type Questions :

[(5x3)x3=45]

1.
 - a) Find the sum of first n terms of the series $1.3+2.4+3.5+\dots$
 - b) How many numbers of at most three different digits can be formed from the integers 1,2,3,4,5,6?
 - c) Find the middle term in the expansion of $\left(ax - \frac{1}{ax}\right)^{2n}$
2.
 - a) If the line $lx+my=1$ touches the circle $x^2+y^2=a^2$, prove that point (l,m) lies on the circle whose radius is $\frac{1}{a}$.
 - b) Find the equation of the parabola whose vertex at (2,3) and focus at (2,5).
 - c) Find the limit of function $f(x) = x \sin \frac{1}{x}$ at point $x=0$ if it exists.
3.
 - a) Solve the following differential equation $\tan x \, dy + \tan y \, dx = 0$
 - b) If the position vectors of M and N are $3\hat{i} + \hat{j} - 3\hat{k}$ and $4\hat{i} - 2\hat{j} + \hat{k}$, determine the direction cosines of \overrightarrow{MN} .
 - c) Prove by using vector method : $b=c \cos A + a \cos C$
4.
 - a) Prove that the algebraic sum of the deviations of the items taken from their arithmetic mean is zero.
 - b) Find the resultant of the two forces $P=4N$ and $Q =3N$ when P acts towards east and Q acts towards northwest.
 - c) A ball is thrown vertically upwards at a speed of 4.0ms^{-1} . Find the maximum height reached.
5.
 - a) A particle slides down on inclined plane 20m long and acquires a velocity of $10\sqrt{2} \text{ms}^{-1}$. Find the inclination of the plane.
 - b) Find the weighted arithmetic mean of the first n natural numbers, the weight being the corresponding numbers.
 - c) Prove that: $\int \sec x \, dx = \log \left| \tan \left(\frac{p}{4} + \frac{x}{2} \right) \right| + c.$

Group B

Long Answers Type Questions:

(11x5=55)

6. Find the sum of squares of first n natural numbers.
7. From 10 persons, in how many ways can a selection of 4 be made?
i) When one particular person is always included.
ii) When two particular person is always excluded.
8. Show that :

$$\frac{\frac{1}{2!} + \frac{1}{4!} + \frac{1}{6!} + \dots}{\frac{1}{1!} + \frac{1}{3!} + \frac{1}{5!} + \dots} = \frac{e-1}{e+1}$$

9. Find the equation of the line through the point (1, -1) which cuts off a chord of length $4\sqrt{3}$ from the circle $x^2 + y^2 - 6x + 4y - 3 = 0$.
10. Find the condition that the straight line $y = mx + c$ to be tangent to the parabola $y^2 = 4ax$.
11. Evaluate $\int \frac{dx}{a + b \cos x}$ ($a < b$)

or

Solve the following linear differential equation $\cos^2 x \frac{dy}{dx} + y = 1$

12. Prove that the following vectors are coplanar.

$$\vec{a} - 2\vec{b} + 3\vec{c}, \quad -2\vec{a} + 3\vec{b} - 4\vec{c}, \quad \text{and} \quad -\vec{b} + 2\vec{c}$$

Where $\vec{a}, \vec{b}, \vec{c}$ are any vectors.

13. Prove that the sum of the squares of the deviations of the items is minimum when taken from their arithmetic mean.

Or

Amend the following table and locate the median from the amended data.

Size	10-16	16-17.5	17.5-20	20-30	30-35	35-40	40 and onward
Frequency	10	15	17	25	28	30	40

15. Forces 1N, 2N and 3N act at a point in direction parallel to the sides of an equilateral triangle taken in order. Find their resultant.
16. Two cars start off to race with velocity V and V^1 and travel in a straight line with uniform acceleration a and a^1 . If the result be a dead heat, prove that the length of the course is

$$\frac{2(v - v^1)(va^1 - v^1a)}{(a - a^1)^2}$$

Or

Show that the time of fall down an inclined plane of a given base is least when the inclination is 45° .

BEST OF LUCK



**KATHMANDU
DON BOSCO COLLEGE**

2nd Terminal Exam - 2059

Stream : Science A & B

Class: XII
Subject: C. English

F. M. : 80
P. M. : 40

You all know that U. S presidents always live in the White House, which is in Pennsylvania Avenue in Washington, D. C. What I am going to describe today is some of the changes in White House decor that have occurred over the years. As you know, the White House was first built in 1792 on a site chosen by the first president, George Washington. He didn't live there, though, John Adams, the second president, was the first one to live in White House even though it wasn't finished when he and his wife Abigail moved in. In fact, Abigail Adams once commented that she used the East Room, which is the room where large reception are held now, to hang out her washing since the room was still bare and unfinished. In 1814 the house was burned down by the British, but was then rebuilt and renovated. It was at that time that it was painted white. Though it had been called "the White House" even before it burned down, it wasn't until Theodore Roosevelt became president, at the beginning of the last century, that it was officially named "the White House." The White House has always reflected the styles of its inhabitants, and sometimes the Public hasn't been too pleased with the changes. In 1820s, for instance, John Quincy Adams put in a billiard table, and people criticized him for wasting government money on such a thing. And about fifteen years later, Martin Van Buren was criticized for spending too much money on carpets purchased from abroad. There have always been some Americans who have argued the objects used to decorate the white House should only be American, But in fact, many of the oldest and most elegant pieces are not American. James Monroe, for instance, graced the White House with gilded furniture from France. There is only one object that has been in the white House ever since it was first inhabited, and that is a portrait of George Washington.

Questions:

1. What is the main topic of this Passage ?Why?
2. What did Abigail Adams use the East Room for ?
3. What have some American Criticized ?
4. Mention the names of Americans Presidents . Describe in the passage and also the cause of their description.
5. Was White House ever burnt down ? How ?

2. Answer any one of these questions in length (10)

- a. What are major differences in eastern and western perspectives of pregnancy and child bearing ? (A child is Born)
- b. How is "Tell – Tale Heart "a romantic as well as realistic story ?

3. Answer Three of these questions (15)

- What significance does Lydia E. Pinkham occupy as a business woman ? Explain.
- What were the bitter experiences that led the Luther king, Jr to led the march of 200,000 people in Washington D. C.?
- Describe the principal theme of “God’s Grandeur”.
- what factors account for the changing scenario of adoption in American context ?

4. What might you regret in these situations, using I wish-----, if only -----or – shouldn't have...(6)

- You’re suffering from sunstroke.
- You’re short of sleep
- Your house has burnt down.

5. Change these sentences using either *as soon as +v2* or *as soon as +past perfect*. (6)

- I wrote the letter and posted it straight away.
- He got married again immediately after his wife’s death.
- The television programme finished and then I went straight to bed.

6. Compare the prices of the things below at least in two ways for each.------(6)

- cotton sheets Rs. 14 silk sheets Rs. 150
- colour TV: £ 310 black – and –white TV: £ 60

7. Explain the newspaper headlines below using either ---had only just---

When-----or No sooner had-----than----- (6)

- peace talks break down on first day
- Jewel thief caught red – handed.
- New Casino destroyed in blaze

8. Ask an information question about each of these. (8)

- arson/ blackmail / asault
- A4 / foolscap / quarto
- Crimson / scarlet / maroon

9. Write paragraphs for these following situation (20)

- Advantages and disadvantages of being unemployed.
- An occasion (real or imaginary) when you had an oral examination.
- An elderly relative tells you” I’m older than you , so my advice is worth listening to”. Disagree with him / her giving your reason.
- You’re feeling depressed. Make a wish.

10. Write an essay on any one (10)

- Physical fitness and Dieting Revolution
- Scientific Assistance in Home- Appliances

Best of Luck



KATHMANDU

DON BOSCO COLLEGE (10+2)

2nd Terminal Examination -2059

**Stream: Science
Class: XII
Subject: Biology**

**Time: 2 hrs.
F.M.: 100
P.M.: 40**

Attempt all questions:

1. Answer the following questions in short :

[2x11=22]

- a) Write the position & function of choroids plexus.
- b) What are meninges?
- c) What is criss-cross mechanism?
- d) Write the nitrogen base pair in DNA.
- e) Name the fungus that secretes gibberellin?
- f) Define plant hormone.
- g) Mention the objectives of Bio-technology.
- h) Define the term plant tissue culture.
- i) What is osmoregulation?
- j) What is Glomerular filtration?
- k) What is the function of seminal vesicle?

2. Answer briefly the following questions:

[5x6=30]

- a) Write the structure of t RNA.
- b) Write the roles of light & CO₂ in the rate of respiration.
- c) Mention 3 differences between self & cross pollination.
- d) Write in brief the ventricles of brain.
- e) Discuss the selective reabsorption in the kidney tubules in brief.
- f) What is Axon?

3. Describe the structure & function of human Fore-brain. [12]

Or

Explain the human brain in brief.

4. Describe the structure of nephron in case of Human being. [12]

Or

What is drug? Discuss the types of drugs and preventive measures of drug addicts from our society.

5. Describe the structure & semi-conservative mode of replication of DNA. [12]

Or

Explain the sex-linked inheritance in *Drosophila*.

6. Discuss the application of auxin in plant. [12]
or

What is double fertilization? Explain it with reference of angiospermic plant & mention its significance.

Best of Luck



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