



Open Test – 2075 (Mangsir)

Class: XII (Science)

Time: 3 Hrs

English Set A

1. **Answer the following:** 5×2= 10
- i) What point does King try to drive home with his analogy of bad check? (I Have a Dream)
- ii) How does the poet maintain balance between the reality of mind and the reality of heart in “Traveling through the Dark”?
2. **Answer the following:**
- i) Change the following questions into indirect questions: 5×1= 5
- a) Was he alone?
Did you notice ...?
- b) Has the train left?
Have you found out?
- c) When are they getting married?
I am longing to know ...
- d) What time does the film start?
I wonder ...
- e) How much do LED TVs cost these days?
Have you any idea ...?

- ii) Change the suggestions below, using **ought to**, **ought not to**, **might as well** or **there’s no point in**: 5×1= 5
- a) Let’s not argue about it- that won’t solve the problem.
- b) Let’s not sell it- it’s not worth anything anyway.
- c) Don’t ask him- he doesn’t speak English anyway.
- d) Let’s not talk about it- the children are listening.
- e) Let’s not take a lift- he stays on the first floor.
3. Write a short dialogue between two friends, who are discussing advantages and disadvantages of **being rich and famous**. 5

Set B

1. **Answer the following:** 5×2= 10
- i) What does King mean by the “marvelous new militancy which has engulfed the Negro community”? Does this contradict King’s nonviolent philosophy? (I Have a Dream)
- ii) How does Hopkins establish grandeur of the God? (God’s Grandeur)
2. **Answer the following:** 5×1= 5
- i) Choosing verbs from the list, write sentences which *have the same meaning* as those below:
- allow, discourage, prevent, make it more difficult, enable**
- a) When they took the drug, it was more difficult for them to think rationally.
The drug ...
- b) When they took the drug, they were able to forget all their problems.
The drug
- c) Although there was a shortage of food, people still wanted to take the drug.
Even the food shortage ...
- d) After the new law was introduced, people still took the drug.

The new law didn't ...

- e) When the drug was exported, they were able to sit in the sun all day long.

This ...

- ii) Change the following questions to information questions:

5×1= 5

- a) Are you Dino's brother/cousin/nephew?
b) Are there *two/three/four* of you?
c) Was it *raining/foggy/cold* when you were in Pokhara?
d) Is it *200 miles/400 miles/ a long way* to Dhangadhi from here?
e) Would you like to do *manual/office/outdoor* work?

3. Write a short paragraph describing the profession you like most. 5

नेपाली

समूह क

१. तलको कवितांश पढी सोधिएका प्रश्नको उत्तर दिनुहोस ५
म तिम्रो मृतदेहसँग जिउँदै मर्न सक्छु
म तिमिहरूको सामूहिक बलात्कार खपेर बाँच्न सक्छु
तिमीलाई त त्यस्तो कहिल्यै भएन,
तिमीले रजस्वलाको कष्टप्रद क्षण भोगेका छैनौ
तिमीलाई आफ्नो अस्मिताको जोखिम उठाउनु पर्दैन
तिमीलाई गर्भधारणको अतिशय पट्यार लाग्दो अवधि थाहा छैन
तिमीलाई प्रशव कालको सीमातीत कष्ट भोग्नु पर्दैन ।
प्रश्नहरू
क) कविले अन्तिम पङ्क्तिमा के भन्न खोजेको हो ?
ख) कविले 'म'ले भोगेका कस्ता समस्या देखाएकी छन् ?
ग) नारीलाई के कस्ता कारणले पछि पारिएको हो ?
घ) 'तिमीलाई आफ्नो अस्मिताको जोखिम उठाउनु पर्दैन' भन्नुको तात्पर्य के हो ?
ङ) 'सीमातीत' र 'अस्मिता' शब्दको अर्थ लेख्नुहोस् ।

२. कसरी निम्नवर्गीय मानिसको जीवनावस्था कहाली लाग्दो हुन्छ ? 'रातभरि हुरी चल्थो' कथाका आधारमा प्रस्ट पार्नुहोस् ५
३. ले, लाई, देखि बाट, द्वारा विभक्तिको प्रयोग गरी आफू कलेज आएको पहिलो दिनको वर्णन गर्नुहोस् ५
४. तल दिइएको वाक्यलाई शुद्ध गरी पुनर्लेखन गर्नुहोस् ५
प्रीय सून खानी तिमरा अरु छोराछोरीको खबर के छ तिमिहरू तिमरो बक्षस्तलको तप्तोले नपुगेर शम्साभै बोलतभिन्नको सिरकमा लपेटिएर हिँड्छन रे ।
५. दिइएका शीर्षकमध्ये कुनै एकको २५० शब्दको निबन्ध लेख्नुहोस् : १०
क) विज्ञान र प्रविधिको महत्त्व
ख) हाम्रो पर्यावरण हाम्रो सर्वस्व

समूह ख

१. तल दिइएको कवितांश पढी अन्त्यमा सोधिएका प्रश्नहरूको उत्तर लेख्नुहोस् : ५
तिमी मेरो उत्पीडन बुझ्दैनौ
म तिम्रो उत्पीडन बुझ्छु
आऊ आज हामी उत्पीडनहरू साटासाट गरौं
हामी मानसिकताले एकाकार होऔं
हामी एक अर्काबिना बाँच्न सक्ने प्राणी होइनौं
तिम्रो हात दबो गरी समाउँछु
तिमी मलाई तिमि पुगेको ठाउँसम्मै पुऱ्याऊ
त्यहाँ, जहाँ तिमिलाई मैले
सभ्यताको आदिकालमा पुऱ्याइ सकेको थिएँ ।
प्रश्नहरू :
अ. माथिको कवितांशमा 'म' र 'तिमी' ले कस-कसलाई सङ्केत गरेको छ ?
आ. 'तिमी मेरो उत्पीडन बुझ्दैनौ' भनी किन भनिएको हो ?
इ. किन उत्पीडनहरू साटासाट गर्नु परेको हो ?
ई. नारी र पुरुषबीच सहकार्य किन आवश्यक परेको हो ?
उ. 'तिमीलाई मैले सभ्यताको आदिकालमा पुऱ्याइ सकेकी थिएँ' भनी कवितांशमा के भन्न खाजिएको हो ?
२. 'रातभरि हुरी चल्थो' कथामा विपन्नवर्गको कष्टकर जीवनलाई के कसरी प्रस्तुत गरिएको छ ? आफ्नो प्रतिक्रिया सहित उत्तर दिनुहोस । ५
३. 'ले', लाई, बाट, देखि, द्वारा विभक्ति प्रयोग भएका पाँच वाक्यमा वनभोज जाँदाको रमाइलो दिनको वर्णन गर्नुहोस् ।

४. शुद्ध गरी पुनर्लेखन गर्नुहोस् : ५
 विसवको मानचित्रमा हाम्रो देश नेपाल साना मुलुक हो तर यसको प्राकृतिक सुन्दरता हेर्नु
 होस त तपाईंलाई कस्तो लाग्छ, तो अवर्ननिय छ भन्ने मलाई लाग्छौ
५. दिइएको कुनै एक शीर्षकमा २५० शब्दमा नघटाई निबन्ध लेख्नुहोस् : १०
 क. नयाँ युगको सुरुवात
 ख. वैज्ञानिक शिक्षा : मेरो भविष्य

Physics

Modern Physics

- Using Bohr's postulates, derive an expression for the energy of electron in 2nd orbit of hydrogen atom.
- What do you mean by duality? Derive an expression for the de-broglie wave length for particle & electron both.
- An electron having 500 eV energy enters at right angle to a uniform magnetic field of 10^{-4} Tesla, if its specific charge is $1.75 \times 10^{11} \text{ Ckg}^{-1}$, calculate the radius of its circular orbit
- What is a closed organ pipe? Describe the various possible modes of vibration of air column inside a closed organ pipe.
- In a Newton's ring experiment the wavelength of 15th dark ring was found to be 0.590 cm and that of 5th dark ring was 0.336 cm. Calculate the wavelength of monochromatic light if the radius of curvature of plane-convex lens was 100 cm.
- The time interval between the flash of lighting and the thunder is 2 seconds, when temperature is 10°C . How far is the storm if the velocity of sound in air at 0°C is 330ms^{-1} .

Physics

- State and explain Faraday's law of electromagnetic induction. Obtain an expression for the emf induced in the rectangular coil radius in a uniform magnetic field.
- Describe the structure and working principle of a transformer. Define the efficiency of a transformer.

- A coil consisting of 100 circular loops with radius 0.60 m carries a current of 5 A. At what distance from the center along the axis, the magnetic field of magnitude $\frac{1}{8}$ as great as it is at the center?

Physics

- Write down the working principle of potentiometer. Also explain the application of potentiometer to determine internal resistance of a cell.
- Peltier's effects are reversible process. Explain. Also write down the difference between Thomson's effect and Joule's law of Heating.

Chemistry

Very short questions

(2 marks each)

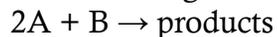
- A solution of NaOH is found to contain 20g of NaOH in 250ml. Calculate the concentration of solution in g/liter and percentage.
- What are the pre-requisites for substances to be primary standard?
- What is ionic product of water? How does it vary with Temperature?
- The solubility product of chalk is 9.3×10^{-8} . Calculate its solubility in gm/liter.
- How can you convert ethanol into phenol?
- What happens when sodium phenoxide is heated with iodomethane?
- Give a chemical test to distinguish ethanol and methanal with chemical equation?
- How can you prepare phenol from aniline?
- Show your acquaintance with wolf-Kishner reduction.
- Is Naphthalene aromatic or non-aromatic? Give reason to your answer.

- Write down all the possible isomers of ether with their IUPAC names for molecular formula $C_4H_{10}O$
- How is Nessler's reagent prepared from corrosive sublimate? Write a laboratory use of Nessler's reagent.
- Differentiate between Cast Iron and Wrought Iron.

Short questions

(5 marks each)

- The following rate data are obtained at 303K for the reaction.



Expt.	[A] molL ⁻¹ Min ⁻¹	[B] molL ⁻¹ Min ⁻¹	initial rate:
1	0.1	0.1	6.0×10^{-3}
2	0.3	0.2	7.2×10^{-2}
3	0.3	0.4	2.88×10^{-1}
4	0.4	0.1	2.4×10^{-2}

- Find the rate law.
- What is the order with respect to each reactant and overall order?
- Calculate the rate constant.

Write short note on:

- Common ion effect and solubility product principle.
- Describe Victor Meyer's test to distinguish 1^o, 2^o and 3^o alcohols.
- An organic compound ($C_5H_{10}O$) react with Phenylhydrazine to form Phenylhydrazine. The Compound does not reduce Fehling's solution but gives iodoform test. The compound on Clemensen's reduction gives n-Pentane. Identify the organic compound giving necessary chemical equations.
- Draw a neat labelled sketch of blast furnace for the extraction of pig iron and write down the chemical reactions involved at different zones.

Zoology

Very Short

- Where are the mast cells located?
- Define the term blastulation.
- What is the function of lungs?
- Which part of human brain is the centre of intelligence?
- Name two proteolytic enzymes present in the intestinal juice.
- Name the hormone secreted by corpus luteum.

Short Question

- What is coelom? How is it formed in the embryo of frog?
- Describe the structure and functions of pancreas in human with diagram.
- Discuss briefly about the fat-soluble vitamins.
- What are the differences between striped and unstriped muscles?
- How carbohydrate digested in human digestive tract?
- Explain the functions of medulla oblongata.
- Explain the role of diaphragm in respiration.

Long Question

- Describe the pulmonary respiration and mechanism of breathing in human being. Or, Describe the structure and function of human brain with well labeled diagram. 8
- Describe the human alimentary canal with well labeled diagram. Or, Describe male reproductive system in human being. 7.5

Botany

Genetics

Very Short

1. Give one example of co-dominance. 1
2. Give one example of polygenic inheritance. 1
3. What is multiple allelism? 1
4. What is gene interaction? 1
5. What is co-dominance? 1

Short

1. What are intra-allelic and inter-allelic interactions with examples? 3
2. Explain incomplete dominance with the help of punnett square.
3. Differentiate between incomplete dominance and co-dominance. 3
4. What is epistasis? What are its types? explain its types with the help of punnett square. 8

Anatomy & Physiology

Very Short questions

1. What is imbibition? 1
2. What is apical meristem? 1

Short questions

1. Differentiate between spongy and palisade parenchyma

Long Questions 7.5

1. Define secondary growth. Explain the process of secondary growth in dicot stem with necessary diagram. Or,
Describe various steps of light reaction of photosynthesis.

Mathematics

1. Find the coefficient of x^6 in the expansion of $(3x^2 - \frac{1}{3x})^9$.
2. If α, β, γ are the angles which a line makes with the coordinate axes, prove that $\sin^2\alpha + \sin^2\beta + \sin^2\gamma = 2$
3. Find the length of perpendicular from the point (2, 3, 4) on the plane $3x - 2y + 6z + 4 = 0$
4. Integrate: $\int \frac{dx}{(\sin x + \cos x)^2}$
5. Solve: $2xy \, dx - x^2 \, dy = 0$
6. Find the regression equation of y on x when $\sum x = 15$, $\sum y = 25$, $\sum x^2 = 55$, $\sum y^2 = 140$, $\sum xy = 78$, $x = 5$

4 Marks

1. Find the equation of the plane through the points (2, 2, 1) and (9, 3, 6) and normal to the plane $2x + 6y + 6z = 9$.
2. Solve: $\frac{dy}{dx} = \frac{y}{x} - \sin^2(\frac{y}{x})$
3. Solve: $\frac{dy}{dx} + \frac{x^2 - y^2}{3xy} = 0$
4. Find the regression equation of y on x from the following data

x	5	9	13	17	21
Y	3	8	13	18	23

Estimate the value of x when y=18

5. Prove that the lines whose direction cosines are given by the relations $al + bm + cn = 0$ and $fmn + gnl + hlm = 0$ are perpendicular if $\frac{f}{a} + \frac{g}{b} + \frac{h}{c} = 0$

6 Marks

1. A line makes α, β, γ with the four diagonals of a cube, prove that $\cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma + \cos^2 \delta = \frac{4}{3}$

2. Find the derivatives from the first principle:

$$\log(\sin^{-1}x)$$

3. Prove that: $(1 + \frac{1}{2!} + \frac{1}{4!} + \dots \dots \dots)^2 - (1 + \frac{1}{3!} + \frac{1}{5!} + \dots \dots \dots)^2 = 1$

Best of Luck