



## Open-Test-2074(Mangshir)

**Class: XII (Science)**

**Time: 3Hrs**

### English

1. Briefly explain two different levels of meaning in the poem. 3
2. What is the connection between the atmosphere and Alyohins's behavior with the woman he loves, and the outcome of relationship? 3
3. Explain the title of the poem The lamentation of the Old Pensioner. 3
4. Explain the significance of the refrain in the poem The lamentation of the Old Pensioner. 3
5. What do the words seared, bleared and smeared suggest? 3
6. what leads Moti Nissani to the belief that the world is facing an overpopulation crisis? 10
7. Is there anything you can do to save Nepal's remaining forests? 10
8. Join the following sentences together using a non-defining relative clause. 5
  - i. Finally Brown (Willis had been sharing an office with him) decided to retire.
  - ii. Mrs Aldrich (she was married with two children) never recovered consciousness.
  - iii. The old house (the family had lived in it for 300 years) was finally sold.
  - iv. Mary noticed that he was wearing her ring (she had lost it five years before).
  - v. Nobody liked the eldest son(old Lord Banbury had left his all money to him).
9. Rewrite these sentences beginning 'If there's one thing.....'. 5
  - i. People who smoke in restaurants annoy me.
  - ii. People who are cruel to animals upset me.
  - iii. People who break promises make me angry.
  - iv. I hate people who smoke in restaurants.
  - v. I loathe people who ring me up early in the morning.

10. Complete the following as in the example. 5  
 Example: *Didn't you get me a ticket?*  
*No, I didn't realize, you would join us, too*
  - a) I'm starving. I could swallow a stone.  
But you told me just now .....
  - b) Oh look, it's raining.  
What? But they said on the weather forecast .....
  - c) The rent's Rs.1000 a month.  
But when I spoke to you earlier you said.....
  - d) Can I have one of your cigarettes?  
But I thought .....
11. Report the following remarks as shown in the example. 5  
 Example: My mother is ill.  
 Answer: She said that her mother was ill.
  - (a) I've been sleeping very badly.
  - (b) I'll tell her when I see her.
  - (c) I'm from Pokhara.
  - (d) I don't earn much money.
  - (e) I'll go to London.
12. Some people consider that man is becoming the slave of the machines. Certainly machines are playing an ever increasing part in our life. Let us hope that they will never become more important than the men they are invited to serve. Charlie Chaplin, in his film "Modern Times" drew attention to this danger. In the film he got a job in a factory that used mass production methods. He had to stand by a machine with a spanner in his hand. An endless belt passed in front of him carrying slowly an endless line of articles. As each one passed, he tightened one nut on one bolt with his spanner. His work was done with one turn of the wrist repeated throughout the day. Very soon his mind became affected and the film shows the amusing things which he did as a result of his mental disorder. Although it was a funny people do, far from giving them pride and pleasure, is more likely to fit them for the lunatic asylum.  
 We must all hope that means will be found to retain the advantages arising out of mass production, while at the same time giving the worker some of the pride and pleasure of the old craftsmen. 15  
**Questions:**
  - a. Who are becoming the slaves of machines?
  - b. What was the job of Charlie Chaplin?
  - c. What was the result of the hard job on Charlie Chaplin?
  - d. What was the intention of the writer to show us about?
  - e. Which topic would be suitable for this paragraph?
13. Write an essay on "The role of civil society in promoting peace and harmony among different ethnic combination in Nepal" 10

## अनिवार्य नेपाली

१. लोक सेवा आयोगले शाखा अधिकृत पदका लागि निकाल्ने विज्ञापनको नमुना तयार पार्नुहोस्
२. तलको अनुच्छेदलाई एक तृतीयांशमा सङ्क्षेपीकरण गर्नु होस्  
कम्प्युटरले काम गर्नका लागि हार्डवेयर र सफ्टवेयरको मिलन हुनु पर्छ । हार्डवेयर भन्नाले कम्प्युटरका विभिन्न भागहरू जस्तै : कृञ्जिपट (किबोर्ड), केन्द्रीय प्रशोधन एकाइ (सी.पी.यू.), मनिटर, प्रिन्टर इत्यादिलाई बुझिन्छ, जसलाई हामीले आँखाले देख्न र हातले छुन सक्छौं र सफ्टवेयर भन्नाले कम्प्युटरले बुझ्ने भाषामा क्रमबद्ध गरी लेखिएका निर्देशनहरूका विभिन्न सेटहरू हुन्, जसलाई हामीले हातले छुन सक्दैनौं । ती क्रमबद्ध निर्देशनहरूका सेटलाई प्रोग्राम भनिन्छ । कम्प्युटरले आगत, प्रशोधन र निर्गत सिद्धान्त अनुसार काम गर्दा तथ्यहरू आगतको रूपमा प्राप्त गर्छ र प्राप्त तथ्यहरूलाई प्रशोधन गरी आवश्यक परिणाम निर्गतको रूपमा दिन्छ, जसलाई हामी छापन तथा भण्डारण गरि राख्न सक्छौं । कम्प्युटर प्रयोग कर्ताले इन्पुट साधनहरू जस्तै : किबोर्ड, माउस, माइक्रोफोन, स्क्यानर इत्यादिको प्रयोग गरेर कम्प्युटरलाई निर्देशन तथा तथ्यहरू दिन्छ । त्यसपछि कम्प्युटरले ती प्राप्त भएका निर्देशन तथा डाटाहरूलाई सी. पी. यू. भित्र लगी प्रशोधन गरी अर्थपूर्ण नतिजामा परिणत गरि दिन्छ र त्यो नतिजा हामीले आउटपुट साधनहरू जस्तै : मनिटर, प्रिन्टर इत्यादिबाट प्राप्त गर्न सक्छौं ।
३. तल दिइएका मध्ये एक शीर्षकमा निबन्ध लेख्नुहोस् :  
क) जलवायु परिवर्तन र सम्भावित जीवन  
ख) मेरो देश : मेरो भविष्य  
ग) नेपालको नयाँ संविधान
४. एक चिहान' उपन्यासको तल दिइएको अंश पढी सोधिएका प्रश्नको उत्तर दिनुहोस् :  
'उसो भए डर लाग्दो कुरा छ बाबु । अब कहिल्यै नबोलाउनु ती डाक्टरलाई फेरि । मलाई राम्रै थाहा छ उनी हृदयमा लेश पनि दया भएका मानिस होइनन् । आजसम्म टोलको कोही विरामीलाई मुफतमा हेरि दिएका पनि छैनन् ।' सशङ्कित भावमा अष्टनारानले भने ।  
वृद्ध, अनुभवी आँफुना बाबुको यो कुरा सुनेर शिवनारानको हृदयमा पनि शङ्काको बीजारोपण भयो तापनि आपत्तमा काम दिएको हुनाले उनको गरिवीले त्यो शङ्कालाई जिउन दिएन । यसैले शिवनारानले आँफुना पिताज्यू अष्टनारानलाई सम्झाएर भने- "डाक्टर गोदत प्रसाद सायद अगि खराबै थिए होलान्, तर पछि बदलिन मानिसहरू पनि त धेरै छन् वा प्र कति दयालु मानिस पनि त पछि अनौठोसँग निर्दयी भएर गएका छन् ।"  
**प्रश्नहरू**  
क) माथिको प्रथम अनुच्छेदमा गोदत प्रसादको चरित्रबारे गरिएको आशङ्का कतिको उचित छ ? तर्कसहित लेख्नुहोस् ।  
ख) माथिको दोस्रो अनुच्छेदमा व्यक्त गरिएको भनाइ अनुसार गोदत प्रसादमा परिवर्तन आएको हो त ? उपन्यासका आधारमा स्पष्ट पार्नु होस् ।
५. तलको कवितांश पढी सोधिएका प्रश्नको उत्तर दिनुहोस्:  
तिमी मेरो उत्पीडन बुझ्दैनौ  
म तिम्रो उत्पीडन बुझ्छु  
आज आज आमी उत्पीडनहरू साटासाट गरौं  
हामी मासिकताले एकाकार हाऔं  
हामी एक अर्का सवना बाँच्न सक्ने प्राणी होइनौं  
म तिम्रो हात दहो गरी समाउँछु  
तिमी मलाई तिमी पुगेको ठाउँसम्मै पुऱ्याऊ  
त्यहाँ, जहाँ तिमिले मलाई मैले  
सभ्यताको आदि कालमा पुऱ्याइ सकेकी थिएँ ।  
**प्रश्नहरू**  
क) कवितामा 'तिमी' र 'म' ले कसलाई सङ्केत गरेको छ ?  
ख) तिमी मेरो उत्पीडन बुझ्दैनौ भनी कसलाई भनिएको हो ?  
ग) उत्पीडनहरू किन साटासाट गरिनु पर्दछ ?  
घ) नारी र पुरुष बीचको सहयात्रा किन आवश्यक छ ?  
ङ) 'तिमीलाई मैले सभ्यताको आदि कालमा पुऱ्याइ सकेकी थिएँ' भन्नुको तात्पर्य के हो ?

६. तलको अनुच्छेदबाट सन्धियुक्त दसवटा व्युत्पन्न शब्द पहिचान गरी तिनको विच्छेद गर्नुहोस् :  
हामी सानिमा अत्यावश्यक समानहरू किनेर सूर्यास्त हुनु भन्दा अगाडि नै घर आइ पुगिन् । साना बाले भावुक बनेर भने, 'हे अर्धाङ्गिनी ! जीवनको उन्नति र अधोगति कार्यका आधारमा नै हुँदो रहेछ । बाल्यावस्था, युवावस्था वा वयोवृद्ध समयमा पनि आत्मोन्नति र राष्ट्रोन्नतिलाई बराबर देखेले नै जीवनको पर्वतारोहण गरेको मैले देखेको छु ।
७. शुद्ध गरी पुनर्लेखन गर्नु होस् :  
मैले भने हिमाल धीमाल नेपाल कपाल सबै सब उच्चारणमा उस्तै छन यि कति अक्षरको रहेछन् बुबाले तत्काल जवाफ दिनुभयो यि सबै दुइ अक्षरका हुन ।
८. तलको अनुच्छेदबाट सामान्य र विशिष्ट पदक्रम छुट्याउनुहोस्:  
उज्यालो उघ्रदै थियो विहान नजिकैको वनमा कराए । स्यालहरू र गिहले युद्धको सङ्केत गरे । म उही पुरानो हुइयाँमा बाँच्न विवश । धरतीको पल्लो छेउमा अझै देखिँदैन उज्यालो ।
९. तलको अनुच्छेदबाट रेखाङ्कित गरिएका शब्दहरूको कारक र विभक्ति पत्ता लगाउनुहोस् :  
विहान दुधको हुइयो काँधमा बोकेर घरबाट वजार जाँदै गरेकी कालेकी आमालाई बोराको घुम ओढेर फरुवाले आँगनमा भल काट्दै गरेको कालेको बाबुले कराएर भन्यो ।

## Physics

### Numericals

- The speed of sound in air at 20°C was found to be 344 m/s. What is the change in speed for a 1°C change in air temperature?
- The value of dip at a place is 45°. If the plane of the dip circle is turned through 60° from the meridian, what will be the apparent dip?
- A beam of protons is accelerated from rest through a potential difference of 2000V and then enters a uniform magnetic field which is perpendicular to the direction of the proton beam. If the flux density is 0.2T, calculate the radius of the path which the beam describes. (Proton mass =  $1.7 \times 10^{-27}$  kg, Electronic charge =  $1.6 \times 10^{-19}$  C.)
- A battery of emf 24V and internal resistance r is connected to a circuit having two parallel resistors of 3Ω and 6Ω in series with an 8Ω resistor. The current flowing in the 3Ω resistor is then 0.8A. Calculate (i) the current in the 6Ω resistors, (ii) r, (iii) the terminal p.d. of the battery.

### Long questions

- Describe with a ray diagram, the Foucault's method of determining the velocity of light.
- What is a Helmholtz Coil? Derive an expression for the magnetic field due to this coil.
- Describe the construction and working of He-Ne gas laser?
- Describe the Wheatstone bridge circuit and deduce the condition for balance using Kirchoff's law.

### Short questions

- How can a spherical wave front be converted into plane wave front and plane wave front into spherical wave front?
- Why does an empty vessel produced more sound than a filled one?

- By observing the path of motion of a deflected electron, if it possible to decide whether it is moving in an electric or in a magnetic field?
- Does the lenz's law violet the law of conservation of energy? Explain.
- Why a glowing gas, such as that in a neon tube, gives only certain wavelengths of light?
- Differentiate between stimulated & spontaneous emission of radiation.
- Why are standard resistors made of alloys such as constantan and manganin?
- Why is potentiometer used to measure the emf than voltmeter?

## Chemistry

### Very short

- What do you mean by philosophers wool?
- What happens when  $\text{HgCl}_2$  is allowed to react with  $\text{SnCl}_2$ ?
- Why is cinnabar directly smelted without roasting?
- What is tailing of mercury?
- Draw the labeled energy profile diagram to show the influence of catalyst in the rate of chemical reaction.
- Distinguish between order & molecularity.
- Why is boiling point of ethanol greater than that of ethoxy ethane?
- What happens when the product obtained by dehydrogenation of ethanol is allowed to react with Tollen's reagent?
- Why is Phenol more acidic than aliphatic alcohols?
- How can you convert?
  - Ethoxyethane into methoxyethane?
  - Ethoxyethane into methoxymethane?
- What action takes place when
  - Methanal is warmed with Tollen's reagent?
  - Benzaldehyde is heated with ethanoic anhydride in presence of sodium ethanoate?
- Write an example of cannizaro's reaction

### Short

- Describe briefly galvanization.
- Write two methods of preparation of corrosive sublimate. Give its action upon excess of KI and  $\text{NH}_3$
- Calculate the half life period of a first order reaction when the rate constant is  $5 \text{ year}^{-1}$ .
- Describe Victor Meyer's method for the distinction between 1°, 2° and 3° alcohols.

- Show your acquaintance with the Friedal Craft's reaction
- An alkene A on ozonolysis yields acetone and an aldehyde. The aldehyde is easily oxidized to an acid B. when B is treated with  $\text{Br}_2/\text{P}$  it yields a compound C which on hydrolysis gives a hydroxyl acid D. This acid can also be obtained from acetone by the reaction with HCN followed by hydrolysis. Identify the compounds A, B, C, D.

### Long questions

- Write short note on
  - Benzoin condensation
  - Iodoform reaction

### Numerical

- 7.35 g of a dibasic acid was dissolved in water and dilute to 250 ml. 25 ml of this solution was neutralized by 15 ml of N-NaOH solution. What is equivalent weight and molecular weight of the acid?
- 100 ml of 0.1M HCl id mixed with 50ml of 0.1M KOH. Calculate the concentration of acid in terms of gm/litre in the resulting solution.
- Hydrogen and nitrogen oxide react according to the following equation
 
$$2\text{H}_2(\text{g}) + 2\text{NO}(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{g}) + \text{N}_2(\text{g})$$

Experiments were performed at  $800^\circ\text{C}$  in order to determine the order of reaction and the following result were obtained.

Initial conc <sup>n</sup> NO	Initial conc <sup>n</sup> H <sub>2</sub>	Rate of production of N <sub>2</sub> (mole liter <sup>-1</sup> sec <sup>-1</sup> )
Mole per liter	Mole per liter	
$6 \times 10^{-3}$	$1 \times 10^{-3}$	$3 \times 10^{-3}$
$6 \times 10^{-3}$	$2 \times 10^{-3}$	$6 \times 10^{-3}$
$6 \times 10^{-3}$	$3 \times 10^{-3}$	$9 \times 10^{-3}$
$1 \times 10^{-3}$	$6 \times 10^{-3}$	$0.5 \times 10^{-3}$
$2 \times 10^{-3}$	$6 \times 10^{-3}$	$2 \times 10^{-3}$
$3 \times 10^{-3}$	$6 \times 10^{-3}$	$4.5 \times 10^{-3}$

## Zoology

- Describe about the female reproductive system with well labeled diagram. 7.5
- Write an account of the structure and working of human heart.
- Discuss the internal structure of human lung and mention its working mechanism.

## Botany

- What is criss-cross inheritance? Discuss about sex-linked inheritance with special reference to the eye colour of *Drosophila*.
- What is transpiration? Describe an experiment to show the unequal transpiration.
- Describe an experiment to show the rate of transpiration by Ganong's Potometer.

## Mathematics

- Find, from the first principle (from the definition), the derivative of the following functions
  - $x^x$
  - $a^x$
  - $\ln(\cos^{-1} x)$
  - $\ln(\cos\sqrt{x})$
- Prove:  $\int \operatorname{cosec} x \, dx = \log \left| \tan \frac{x}{2} \right| + c$
- Evaluate  $\int \frac{dx}{1-2 \cos x}$
- Evaluate  $\int \frac{\cos x - \sin x}{\sqrt{\sin 2x}} \, dx$
- Evaluate  $\int \frac{dx}{3 \sin x + 4 \cos x}$
- Find the derivative of the following functions.
  - $\ln \left( \sin \frac{x}{a} \right)$
  - $\ln(\sinh x)$
  - $x^{\cosh \frac{x}{a}}$
  - $2 \tan^{-1} \left( \tanh \frac{x}{2} \right)$
- $\lim_{x \rightarrow 0} \frac{\log_e(1+x)}{x} = 1$
- $\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = 1$

- Using L Hospital's rule, evaluate  $\lim_{x \rightarrow 0} \frac{e^x + e^{-x} - 2 \cos x}{\sin^2 x}$
- At what angle does the curve  $y(1+x)=x$  cut the x-axis?
- Find the angle of intersection between the curves  $y=x^2$  and  $6y=7-x^3$  at (1, 1).
- Find where the tangent is the parallel to the x-axis for the curve  $y=x^3-3x^2-9x+15$ .
- Find the angle of intersection of the curves  $y^2=8x$  and  $4y=x^2+12$  at the point (2, 4).
- Find the slope and inclination with x-axis of the tangent of  $x^2+y^2=36$  at (0, 6).
- Evaluate  $\int \frac{dx}{\sqrt{(x-\alpha)(x-\beta)}}, \beta > \alpha$
- Evaluate  $\int \frac{dx}{3 \sin x + 4 \cos x}$
- Find the equation of the normal to the parabola  $y^2 = 5x$  perpendicular to the line  $x + 2y = 7$ .
- Prove that the line  $3x + 4y + 6 = 0$  is tangent to the parabola  $2y^2 = 9x$ . Find its point of contact.
- Find the eccentricity and the foci of the ellipse:  $x^2 + 4y^2 - 4x + 24y + 24 = 0$ .
- Prove that : (i)  $\frac{1+\frac{1}{2!}+\frac{1}{4!}+\frac{1}{6!}+\dots}{1+\frac{1}{3!}+\frac{1}{5!}+\frac{1}{7!}+\dots} = \frac{e^2+1}{e^2-1}$  .
- Prove that :  $1 + \frac{1+2}{2!} + \frac{1+2+2^2}{3!} + \frac{1+2+2^2+2^3}{4!} + \dots = e^2 - e$ .
- Calculate the coefficients of skewness based on mean, mode and standard deviation from the following data :
 

Wages (in Rs.)	100	110	120	130	140
No. of students	2	6	10	8	4
- If  $n = 10, \sum X = 60, \sum Y = 60, \sum X^2 = 400, \sum Y^2 = 580, \text{ and } \sum X.Y = 415$ , find the correlation coefficients between the two variables .
- Find the regression equation of y on x when :  $n = 5, \sum X = 15, \sum Y = 25, \sum X^2 = 55, \sum Y^2 = 140, \text{ and } \sum X.Y = 78$  .