

**NEB - GRADE XII
2081 (2024)****Compulsory English
New Course**

(For regular and grade increment students whose first two digits of registration number starts from 78, 79 and 80)

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

Time: 3 hrs.

Full Marks: 75

Attempt all questions

1. Read the following text and do the tasks that follow :

In this age of texts and tweets, it is easy to send messages. You just press a few buttons, and boom ! Your message is sent. The person to whom you sent it will get it in just a few seconds. Distance is no longer an issue. But things weren't always so easy.

In 1848 gold was found in California. Thousands of people **rushed** there to get some. Many people liked living there and decided to stay. But there wasn't a whole lot between California and Missouri, where the nearest trains ran. The train line to California wasn't finished until 1869. It took a long time to ride a horse to Missouri.

Imagine that it is the year 1860. You have moved to California to open a shop. Most of your family stayed back East. Your shop is doing well and now you want your family to join you. How do you get news to them ? There's no phone, no train, and you can't leave your shop for too long. What do you do ? Well, you could use the Pony Express.

In 1860 and 1861, the Pony Express was the fastest way to get news to and from the West. The trail that they rode was around 2000 miles long. It took most people weeks or months to ride that far. The Pony Express could make the **trip** in just ten days. Those speeds were unheard of at the time. So how did they do it ? Well, they had a good system.

The Pony Express had 184 stations along the **trail**. The stations were around ten miles apart. This is about how far a horse could run at a gallop before tiring. The rider would **switch** to a new horse at each station. He would only take his mail pouch with him. Every 75-100 miles, the rider would get to a home station. At each home station, riders would rest. Before resting, he

(Contd...)

would give his mail **pouch** to a new rider. The mail never stopped moving, even while the horses and riders rested.

It was tough to ride for the Pony Express. Each rider had to weigh less than 125 pounds. Speed was the key. Most of the riders were teenage boys. They rode at a fast pace for up to 100 miles a day. If there were an emergency, one might have to ride 200 miles in a day. The ride could be rough and **dangerous**. Attacks by Native Americans were common. But in its time, running, the Pony Express only lost one mail pouch.

The Pony Express filled an important role for a time, but it did not last. The Civil War started in April of 1861. This was bad news for the owners. The worst for them was yet to come. On October 24th, 1861, the first telegraph line to California was finished. This linked them to the rest of the country. People could send messages in an instant. Two days later the Pony Express closed. But the **lore** of the brave riders lives on even today.

A. Complete the following sentences using the appropriate words highlighted in the text. Two of them are not necessary. [5×1=5]

- a. While you are in Pokhara, take a to Dhamphus.
- b. Running away was less than participating in revolution, but it was till a risk.
- c. Don't worry. You will find the hotel easily. It is well off the
- d. At the end of the class, the teacher out of the class.
- e. You can see inside the box. There is a small containing five marbles.

B. Read the text again and write:

TRUE if the statements agree with the information given in the text.

FALSE if the statements contradict the information given in the text.

NOT GIVEN if there is no information in the text. [5×1=5]

- a. There was a train line between California and Missouri in 1848.
- b. The Pony express was the only fastest means of transportation in the USA in 1860.
- c. The Pony express stations were exactly at a distance of ten miles.
- d. Pony express carrying young boys could travel 200 miles in a day in an emergency.
- e. The Civil War began in April 1861.

C. Answer the following questions. [5×1=5]

- a. When was gold found in California ?
- b. How would people living between California and Missouri get newspapers to their family in 1860 ?
- c. Who does the word 'they' in the second line of the sixth paragraph refer to ?
- d. Why does the author refer to Native Americans in the text ?
- e. What can you conclude from the last paragraph ?

2. Write short answers to the following questions in about 75 words each. [5×2=10]

- a) How did the visitors irritate the old man ?

(*A Very Old Man with an Enormous Wings*)

- b) What were the children doing during the sunset ? (*A Day*)

OR

Why did the old guards grow desperate ? (*I was My Own Route*)

- c) State the relationship between the father and the children. (*Facing Death*)
- d) The essayist calls the readers around the world to puncture the hot-air balloons inflated by their own tribes. What do you think is the reason behind ? (*Humility*)

OR

Why is the Universal Declaration of Human Rights important to you ? (*Human Rights and the Age of Inequality*)

- e) In your opinion, what should the treasure hunters have done to succeed in their venture of treasure hunt ? (*Treasure in the Forest*)

3. Write long answers to the following questions in about 150 words each. [2×5=10]

- a) "Before she reached the house, Gouvernail had lighted a fresh cigar and ended his apostrophe to the night." Does this expression indicate a possible conflict that went in Gouvernail's mind ? Explain your view.

(*A Respectable Woman*)

OR

"The play depicts the social picture where the King's pet gets extra care and the people are neglected." Explain the social satire with reference to this example. (*The Bull*)

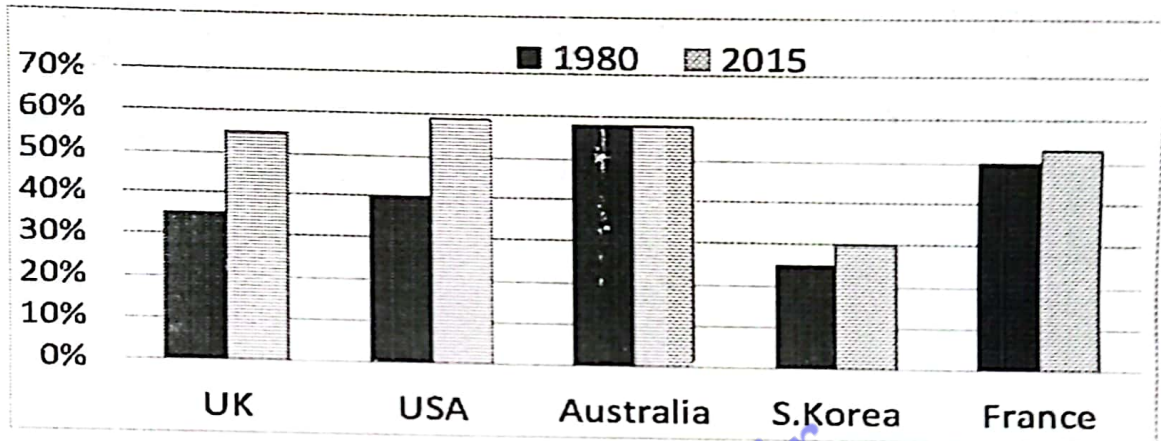
- b) Evaluate the lesson Lu Xun learnt from his latest visit to his old home.

(*My Old Home*)

(Contd...)

4. The Chart below gives information on the percentage of women going into higher education in five countries for the Year 1980 and 2015. Summarise the information in about **150 words** by selecting and reporting the main features and make comparisons where relevant. [7]

The percentage of women going into higher education in five countries.



5. You are Manjit Sharma, coordinator of your school literacy club. You are deeply concerned about adult illiteracy in slums and villages. On behalf of your club, write a letter in about **180 words** to the editor of a national daily highlighting the causes and consequences of the issue. [8]
6. Some say that parents should encourage their children to take part in organized group activities in their spare time. Others say that it is important for children to enjoy the activities they like individually. What do you think? Now, write an essay in about **300 words** expressing your opinions. [10]
7. Do as instructed in the brackets and rewrite the complete sentences. [10]
- The assignment looked easy. (*Identify adjective in this sentence*)
 - The findings will lead (by/for/to/in) future research on the topic.
(*Choose the correct preposition to complete the sentence*)
 - Neither my mother nor my sisters (is/are/has been/have been) coming to visit me this summer. (*Choose the correct verb forms to complete the sentence*)
 - You have just had a huge breakfast. You(may not/won't/can't/needn't) be hungry anymore. (*Fill in the blanks with appropriate auxiliary verb.*)
 - To help me **calm** down, the teacher **advised** me to **put** several cabbages in the room where I **practise**.

(*Identify which bolded verb form is incorrectly written, and correct it.*)

(Contd...)

- f) If you are lost in a snow storm, it's best (dig/digging/to dig/to have been digging) a hole and sit in it until it stops snowing. (*Fill in the blanks choosing appropriate infinitive or gerund to complete the sentence.*)
- g) She left the clothes out. It was raining. (*Combine the pair of sentences using appropriate connective.*)
- h) There is someone at the door. He wants to speak to George.
(*Join the pair of sentences using appropriate relative pronoun.*)
- i) After a complete examination, the patient (are sent/were sent/was sent/to be sent) home. (*Choose the appropriate passive form of the verb and write it*)
- j) She asked, "Have you seen this film ?" (*Report the speech using the verb 'wondered'.*)

8. Choose and copy the correct alternatives.

[5×1=5]

a) Which of the following words has a different final consonant sound ?

- (i) eyes (ii) rise (iii) price (iv) dies

b) Which of the following words is correctly spelt ?

- (i) forign (ii) foreign (iii) foriegn (iv) foregin

c) Which of the following words is synonymous with the word 'stop' ?

- (i) cease (ii) eliminate
(iii) commence (iv) commend

d) Which one of the following words comes between 'minimum' and 'minister' ?

- (i) minimart (ii) minimize
(iii) minstrel (iv) miniseries

e) 'I was nervous about my English exam, but I passed with flying colours.'

Which of the following refers to the idiom underlined in this sentence ?

- (i) scored mixed grades. (ii) scored low grades.
(iii) scored high grades. (iv) scored average grades.

NEB-GRADE XII

2081 (2024)

Mathematics

(For Regular Students only)

(For the students whose first two digits of registration number starts from 80)

Attempt all the questions.

Group 'A'

[11×1=11]

Rewrite the correct options of each questions in your same answer sheet.

1. The number of combination of n things taken ' r ' at a time is...

- A) $\frac{n!}{r!}$ B) $\frac{n!}{(n-r)!}$ C) $\frac{n!}{r!(n-r)!}$ D) $\frac{n!}{r(n-r)!}$

2. The polar form of complex number $\frac{1-i}{1+i}$ is...

- A) $\cos 0^\circ + i \sin 0^\circ$ B) $\cos 90^\circ + i \sin 90^\circ$
C) $\cos 120^\circ + i \sin 120^\circ$ D) $\cos 270^\circ + i \sin 270^\circ$

3. In a triangle ABC, $a=1$, $b=\sqrt{3}$ and $\angle C = 30^\circ$. Which one of the following is the type of triangle?

- A) isosceles and obtuse angled B) equilateral
C) right angled D) isosceles triangle

4. If a conic section has eccentricity $(e) = \frac{\sqrt{a^2+b^2}}{a}$, what is the equation of that conic section?

- A) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ B) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
C) $x^2 + y^2 = a^2$ D) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = -1$

5. Which one of the following is the angle between two vectors $\vec{i} + \vec{j}$ and $\vec{j} + \vec{k}$?

- A) 0° B) 60° C) 90° D) 180°

Contd...

6. Let A and B be two dependent events. If $P(A) = 0.5$, $P(B) = 0.75$ and $P(A \cap B) = 0.4$. What is the value of $P(A/B)$?
A) equal to $P(B)$ B) less than $P(A \cap B)$
C) less than $P(B/A)$ D) equal to $P(B/A)$
7. Which one of the following is the derivative of $\tan^{-1}x$?
A) $\frac{1}{1-x^2}$, $|x| < 1$ B) $\frac{1}{\sqrt{1-x^2}}$, $|x| < 1$
C) $\frac{-1}{1+x^2}$, $|x| < 1$ D) $\frac{-1}{1-x^2}$, $|x| < 1$
8. Which one of the following is equal to $\lim_{x \rightarrow \frac{1}{2}} \frac{\tan \pi x}{\sec^2 \pi x}$?
A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) 0 D) 1
9. Which one of the following is the angle made by the tangent to the curve $2y = 2 - x^2$ at $x=1$?
A) 0° B) $\frac{\pi}{4}$ C) $\frac{\pi}{2}$ D) $\frac{3\pi}{4}$
10. Which one of the following differential equation gives integrating factor?
A) $xdy - y^2dx = 0$ B) $x^2dy - xy^2dx = 0$
C) $\sin^2 x \frac{dy}{dx} + y = 2$ D) $3xy dy - y^2dx = 0$
11. After using forward elimination of the variable in solving system of equations by Gauss method, the equation changed into matrix form will be in.
A) Lower triangular matrix B) Upper triangular matrix
C) Identity matrix D) Symmetric matrix

Or

The highest point reached by a projectile is 40m above the horizontal. If the initial velocity is $40\sqrt{2} \text{ ms}^{-1}$, then the angle of projectile is ($g=10\text{ms}^{-2}$)

- A) 0° B) 30° C) 45° D) 60°

(3) Sub.Code : 0081(new course) set 'E'

NEB-GRADE XII

2081 (2024)

Mathematics

(For Regular Students only)

(For the students whose first two digits of registration number starts from 80)

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

Time: 3 hrs.

Full Marks: 75

Attempt all the questions.

Group 'A'

Question No. 1 to 11 (Multiple Choice Questions) will be provided after 30 minutes of starting examination. Rewrite its (MCQ) correct options (answer) in the same answer sheet.

Group 'B'

8×5=40

12. a) Write the total number of permutations of set of n objects arranged in a circle. [1]
b) Write the general term in the expansion $(a+x)^n$. [1]
c) Write the series of $\log_e(1-x)$ [$x < 1$]. [1]
d) Write the complex number $(\cos\theta + i\sin\theta)$ in Euler's form. [1]
e) Write the sum of cube of first n natural numbers. [1]

13. a) Show that $\frac{a + b\omega + c\omega^2}{b + c\omega + a\omega^2} = \omega$, where, ω and ω^2 are cube root of unity. [2]

- b) Solve the following system of equations by row equivalent matrix method.
 $4x - 5y + 2z = 1$, $3x = 4z - 10$, $2y = 3z - 6$. [3]

- ✓ 14. a) If $\sin C \cdot \sin(A - B) = \sin A \sin(B - C)$, prove that a^2 , b^2 , c^2 are in A.P. [3]

- b) Find the equation of ellipse whose major axis is twice the minor axis and passes through the point (1, 0). [2]

- ✓ 15. a) Does a conic, $y^2 = 12x$ have two tangents from the point (6, 9)? Justify it with calculation. [3]

Contd...

- b) The dot product of two non-zero vectors gives a positive real number. Justify it with example. [2]
16. a) Write the slope of tangent to the curve $y = f(x)$ at (x_p, y_p) . [1]
 b) Write the derivative of $\operatorname{cosech} x$ with respect to x . [1]
- c) A differential equation is in the form $\frac{dy}{dx} + Py = Q$, where P and Q are functions of x only. Name the differential equation. [1]
- d) Write the integral of $\int \frac{1}{a^2 - x^2} dx$ [1]
- e) Write a characteristic of L-Hospital's rule. [1]
17. The following table gives the age and weight of school children in a locality

age in year	x	4	5	7	9	10	11
weight in kg.	y	20	25	28	30	32	33

- a) Find the co-efficient of correlation between age and the weight. [2]
 b) Estimate the weight when the age is 12 years. [3]
18. a) Integrate : $\int \frac{dx}{x^2 + 9}$ [2]
 b) Solve: $\frac{dy}{dx} = \frac{1-y}{2x+1}$ [3]
19. Use the Simplex method and maximize $z = 15x + 12y$ subject to $2x + 3y \leq 21$, $3x + 2y \leq 24$, $x, y \geq 0$. [5]

Or

- a) Write any one example that satisfies triangle of forces. [2]
 b) The velocity of a particle when at its greatest height is $\frac{\sqrt{10}}{5}$ of its velocity when at half its greatest height. Find the angle of projection. [3]

Group 'C'

[3×8=24]

20. a) If $z = \cos \theta + i \sin \theta$, find the value of $z^n + \frac{1}{z^n}$ by using De-moivre's theorem. [2]
 b) In a group of 12 students, 8 are boys and remaining girls. In how many ways can 5 students be selected for quiz competition so as to include at most three girls. [3]

Contd...

- c) Prove by the method of principle of mathematical induction that $n^3 + 2n$ is divisible by 3. [3]
21. a) Find the equation of tangents to the circle $x^2 + y^2 = 25$ drawn through the point (13, 0). [3]
- b) If three sides of a triangle are proportional to $2 : \sqrt{6} : \sqrt{3} + 1$, find the angles. [2]
- c) Find the area of a triangle formed by the points whose position vectors are $2\vec{i} - \vec{j} + 3\vec{k}$, $\vec{i} - \vec{j} - 2\vec{k}$ and $\vec{i} + 2\vec{j} + 3\vec{k}$. $\frac{1}{2}$ [3]
22. a) Which type of differential equation $\sin x \frac{dy}{dx} + y \cos x = x \sin x$ represents? Also solve it. [3]
- b) Evaluate: $\int \frac{x}{(x-1)(x^2+1)} dx$. [3]
- c) Two cars start from certain places at the same instant. One goes east at 60km/hr and other goes south at 80km/hr. How fast is the distance between them increasing? Express in symbolic form. [2]

विषय कोड : ००२१ 'A'

NEB - GRADE XII

2081 (2024)

अनिवार्य नेपाली

(नयाँ पाठ्यक्रम)

(रजिस्ट्रेशन नम्बरका सुरुका दुई अङ्क ७८, ७९ र ८० भएका साधारण धारतर्फका नियमित तथा ग्रेडवृद्धि परीक्षार्थीहरूका लागि मात्र)

विद्यार्थीहरूले सकेसम्म आफ्नै शब्दमा उत्तर दिनुपर्ने छ । दायाँ किनारामा दिइएको अङ्कले पूर्णाङ्क जनाउँदछ ।

समय : ३ घण्टा

पूर्णाङ्क : ७५

१. दिइएको अनुच्छेदमा रेखाङ्कन गरिएका शब्दहरूको अक्षर संरचना देखाई अक्षर सङ्ख्यासमेत देखाउनुहोस् : [३]
पोखरा पर्यटकीय दृष्टिले नेपालको सुन्दर सहरमा गनिन्छ । हरेक नेपाली त्यहाँ पुगेपछि स्वर्गीय आनन्दको अनुभव गर्दछन् ।
२. दिइएको अनुच्छेदलाई शुद्ध गरी पुनर्लेखन गर्नुहोस् : [३]
वर्तमान नेपाल का नयाँ चुनौतीमध्ये ज्येष्ठ नागरिकहरूको भविष्य व्यवस्थापन पनी टड्कारो छ उहिलेको संयुक्त परिवार अहिले छिन्नभिन्न छ ।
३. कुनै एक प्रश्नको उत्तर दिनुहोस् : [२]
(क) दिइएको अनुच्छेदबाट एउटा पारिभाषिक शब्द र एउटा अनुकरणात्मक शब्द पहिचान गरी तिनलाई वाक्यमा प्रयोग गर्नुहोस् :
भूगोलमा अक्षांश र देशान्तरका विषयमा पनि अध्ययन गर्नुपर्छ । विद्यार्थीहरूले खुरुखुरु पढ्नुका साथै वैज्ञानिक अनुसन्धान र आविष्कारका विषयमा समेत चासो दिँदा म खुसीले गदगद हुन्छु ।
(ख) दिइएको अनुच्छेदबाट एउटा उखान र एउटा टुक्का पहिचान गरी तिनलाई वाक्यमा प्रयोग गर्नुहोस् :
हुने हार दैव नटार भन्छन् । सधैं निराश हुनुभन्दा आफ्नो नाक राख्ने कामतिर लागेर हुने विरूवाको चिल्लो पात भन्ने कुरालाई पनि त मनन गर्नुपर्छ नि । हामी सबै आफ्नो टाउको जोगाउने कुरामा पनि सचेत त बन्नैपर्छ ।
४. दिइएको अनुच्छेदमा रेखाङ्कन गरिएका शब्दहरूको पदवर्ग पहिचान गरी लेख्नुहोस् : [३]
त्यो केटो एक्कासि बाटामा लड्यो अनि हामी नजिकै गयौं । हामीले एम्बुलेन्स भिकायौं । अस्पताल लगेर उपचार गरेपछि उसको होस खुल्यो ।
५. दिइएको अनुच्छेदबाट दुईओटा तत्सम र दुईओटा आगन्तुक शब्द पहिचान गरी लेख्नुहोस् : [२]
शीतल वायुमा आनन्द मान्दै कम्प्युटर चलाउँदै गरेको हर्कले जीवनमा आत्मीय मित्र फेला पारेपछि उसलाई एउटा मोबाइल र ब्याग पनि उपहार दिएको रहेछ ।

क्रमशः

६. कुनै एक प्रश्नको उत्तर दिनुहोस् :

[३]

(क) दिइएको अनुच्छेदबाट तीनओटा उपसर्ग व्युत्पन्न र तीनओटा प्रत्यय व्युत्पन्न शब्द पहिचान गरी तिनको निर्माण प्रक्रिया देखाउनुहोस् :

प्रत्येक मानिसले जीवन सुखमय बनाउने सपना बुनेको हुन्छ । ऊ सुनौलो भविष्यको सपना पूरा गर्न निरन्तर सङ्घर्ष गर्छ । सत्कर्मबाट प्राप्त सफलता र सम्पत्ति अत्यन्त प्यारो हुन्छ । सफलता प्राप्त गर्न चाहनेले कठिनतम परिस्थितिको पनि सामना गर्नुपर्छ ।

(ख) दिइएको अनुच्छेदबाट तीनओटा समस्त शब्द र तीनओटा द्वित्व व्युत्पन्न शब्द पहिचान गरी समस्त शब्दको विग्रह र द्वित्व व्युत्पन्न शब्दको निर्माण प्रक्रिया देखाउनुहोस् :
जगन्नाथ र पुरुषोत्तमले आवश्यक मालताल जोडजाड गर्न सोह्रखुट्टेमा भेटघाट गर्ने सरसल्लाह गरेछन् । मुसलधारे पानीमा रुक्नेर पनि उनीहरूलाई भेट्न गरगुहनाले सजिएर ठुल्यामा र भान्दाइ टुप्लुक्क आइपुगनुभएछ ।

७. कुनै एक प्रश्नको उत्तर दिनुहोस् :

[४]

(क) ले, लाई, बाट, देखि, को, रो, नो र मा विभक्ति चिह्न प्रयोग गरी आफूले गरेको रमाइलो यात्रालाई चारओटा वाक्यमा वर्णन गर्नुहोस् ।

(ख) दिइएको अनुच्छेदमा दिइएका वाक्यहरूलाई एकवचन भए बहुवचन र बहुवचन भए एकवचनमा परिवर्तन गरी पुनर्लेखन गर्नुहोस् :
मेरो भाइ विद्यालय जान्छ । ऊ असल र ज्ञानी छ । बहिनीहरू मिलेर बस्छन् । उनीहरूले परिवारको इज्जत राखेका छन् ।

८. कुनै एक प्रश्नको उत्तर दिनुहोस् :

[४]

(क) सामान्य भूतकालका फरक फरक क्रियापदको प्रयोग गरी आफ्नो मातृभूमिका बारेमा चार वाक्यको एक अनुच्छेद लेख्नुहोस् ।

(ख) वाक्य परिवर्तन गर्नुहोस् :

पवन कृषि व्यवसायमा लागेको छ । उसले बहुबर्से बाली रोपेको छ । ऊ तरकारी व्यवसायबाट मनग्य आम्दानी गर्छ । उसले परिवारमा खुसी बाँडेको छ ।

९. कुनै एक प्रश्नको उत्तर दिनुहोस् :

[४]

(क) दिइएका चारओटा सरल वाक्यलाई एउटै वाक्यमा संश्लेषण गर्नुहोस् :

आदिकवि भानुभक्त आचार्य तनहुँमा जन्मेका हुन् । भानुभक्तले रामायण लेखे । उनले नेपाली भाषा र साहित्यको सेवा गरे । उनको नाम नेपाली साहित्यमा अमर छ ।

(ख) दिइएका अप्रत्यक्ष कथनका वाक्यहरूलाई प्रत्यक्ष कथनमा परिवर्तन गरी पुनर्लेखन गर्नुहोस् :

कृष्णले मुनासँग पुस्तकालय जाने प्रस्ताव राख्यो । मुनाले हुन्छ भनेर स्वीकृति जनाई । धनमायाले आफू पनि पुस्तकालय जान चाहेको बताई । हर्कबहादुरले उनीहरूसित पुस्तकालय आउनुको कारण सोध्यो ।

क्रमशः

१०. दिइएको अनुच्छेद पढी सोधिएका प्रश्नको उत्तर दिनुहोस् :

[५]

आजको विश्वमा मानव जातिका लागि मानव अधिकार भन्ने कुरा अपरिहार्य विषय बन्न पुगेको छ । मानव अधिकारको अभावमा मानिसको वैयक्तिक विकास सम्भव छैन । जब एउटा नागरिक आफ्ना अधिकारहरूबाट वञ्चित हुन्छ तब त्यसको असर समाज र राष्ट्रले समेत भोग्नुपर्ने हुन्छ । मानव अधिकार कुनै एउटा व्यक्ति वा कुनै एउटा राज्यको मात्र सरोकारको कुरा होइन । यसको सम्मानमा संसारका हरेक व्यक्ति, समाज, राष्ट्र र अन्तर्राष्ट्रिय जगतकै सहयोग आवश्यक हुन्छ । आफ्नो मुलुकमा मानव अधिकारलाई सम्मान गर्ने परिपाटी कायम गर्ने कि नगर्ने भन्ने विषयचाहिँ त्यस मुलुकको राज्य व्यवस्था वा सरकारमा निर्भर गर्दछ । यस अर्थमा मानव अधिकारको सम्मान गर्न र त्यसलाई सुदृढ पार्न सरकारकै महत्त्वपूर्ण भूमिका रहने देखिन्छ । जहाँ मानव अधिकारको सम्मान हुँदैन, त्यहाँ लोकतन्त्र पनि हुँदैन । जहाँ लोकतन्त्र हुन्छ त्यहाँ मात्रै मानव अधिकार प्राप्त गर्न सहज हुन्छ । मानव अधिकारलाई गौण विषय ठानेर त्यसको बेवास्ता गर्दै लोकतन्त्रको कुरा गर्नु निरङ्कुशतालाई आत्मसात गर्नु हो । आज पनि विश्वका कतिपय मुलुकमा प्रजातन्त्र वा लोकतन्त्रका नाममा मानव अधिकारको अवहेलना गर्ने कार्य भएको पाइन्छ । मानव अधिकारप्रति सम्मान दर्साउने प्रजातान्त्रिक संविधानको निर्माण भए तापनि व्यवहारमा त्यसको पालना नगरिएका उदाहरणहरू प्रशस्तै पाइन्छन् । संविधानमा मात्रै मानव अधिकारको प्रतिबद्धता जाहेर गरेर वास्तविक रूपमा मानव अधिकारको सम्मान हुन सक्दैन । मानव अधिकारको पूर्ण सम्मानका लागि प्रजातान्त्रिक संविधानअनुसार स्थापित हुने सरकारको कार्यशैली पनि प्रजातान्त्रिक हुनु अत्यावश्यक छ ।

प्रश्नहरू :

- (क) मानव अधिकार किन आवश्यक छ ?
 - (ख) मानव अधिकारको सम्मान कसको सरोकारको विषय हो ?
 - (ग) प्रजातन्त्र र मानव अधिकारका बिचमा कस्तो सम्बन्ध हुन्छ ?
 - (घ) मानव अधिकारको सम्मानका लागि सरकारले के गर्नु आवश्यक छ ?
 - (ङ) मानव अधिकारको अवहेलना हुन नदिन कुन कुरामा ध्यान दिनु आवश्यक छ ?
११. दिइएको अनुच्छेद पढी मुख्य मुख्य चारओटा बुँदा टिपोट गर्नुहोस् र एकतृतीयांशमा सारांश लेख्नुहोस् :

[२+३]

(पाठ्यक्रम शिक्षाको मूल आधार भएकाले यसकै आधारमा सम्पूर्ण शैक्षिक क्रियाकलापहरू सञ्चालन गरिन्छन्) । पाठ्यक्रममा शैक्षिक उद्देश्य, विषयवस्तुको छनोट, शैक्षिक सामग्री, शिक्षण प्रक्रियाको निर्माण र मूल्याङ्क प्रक्रियाको किटान गरिएको हुन्छ । पाठ्यक्रममा विद्यार्थीको जीवनमा परिवर्तन ल्याउने सिकाइ अनुभवलाई एकीकृत गरिएको हुन्छ । यस्ता अनुभव विद्यार्थीले सिकिसकेको थाहा पाउन र त्यसको अनुगमन गर्नका लागि समेत पाठ्यक्रममा आवश्यक योजना बनाइएको हुन्छ । (पाठ्यक्रमकै माध्यमबाट शिक्षकले विद्यार्थीको रुचि र चाहनाअनुसारका सिकाइ अनुभव प्रदान गर्दछन् भने विद्यार्थी त्यस्ता अनुभव सिकी आफ्नो चौतर्फी विकास गर्छन्) । पाठ्यक्रममा शिक्षाको राष्ट्रिय उद्देश्य, तहगत, कक्षागत र विषयगत उद्देश्य, सिकाइको न्यूनतम उपलब्धि,

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स्तरअनुकूलको समसामयिक विषयवस्तु, समुदायको चाहना आदि व्यापक विषय समेटिएका हुन्छन्। पाठ्यक्रमकै गुणस्तर, प्रभावकारिता र कार्यान्वयनका आधारमा शैक्षिक जनशक्ति तयार हुन्छ र तिनले समाज र राष्ट्रको अगुवाइ गर्ने हुँदा राष्ट्रको भूत, वर्तमान र भविष्य पनि पाठ्यक्रममै निर्भर रहन्छ। यस दृष्टिले हेर्दा पाठ्यक्रम शिक्षण सिकाइ प्रक्रियाको एक अनिवार्य र अपरिहार्य तत्त्व हो।

१२. कुनै एक प्रश्नको उत्तर दिनुहोस् : [४]

(क) हालै बजारमा आएको 'मयुर' नामक साहित्यिक पत्रिकाको प्रचारप्रसारका लागि आवश्यक पर्ने विज्ञापनको नमुना तयार पार्नुहोस्।

(ख) सुन्दरनगर सामुदायिक वन उपभोक्ता समिति, झापाले वार्षिकोत्सवका अवसरमा गर्न लागेको बृहत् वृक्षरोपण कार्यक्रमको बैठक निर्णय तयार पार्नुहोस्।

१३. कुनै एक प्रश्नको उत्तर दिनुहोस् : [५]

(क) तपाईं संलग्न कुनै सामाजिक संस्थाले सम्पन्न गरेको एकदिने सरसफाइ कार्यक्रमलाई समेटि १५० शब्दसम्मको प्रतिवेदन लेख्नुहोस्।

(ख) 'सामाजिक सञ्जालको दुरुपयोग' शीर्षकमा १५० शब्दसम्मको टिप्पणी लेख्नुहोस्।

१४. कुनै एकको व्याख्या गर्नुहोस् : [४]

(क) हो, त्यो आउँछ,

त्यो बिहानको सूर्य भैं उज्यालो छर्दै आउँछ।

(ख) वास्तवमा सभ्यता भनेको जाति, भाषा र संस्कृतिको समष्टि हो।

१५. कुनै एक प्रश्नको उत्तर दिनुहोस् : [४]

(क) दिइएको कथांश पढी सोधिएका प्रश्नहरूको उत्तर दिनुहोस् :

तिनले चारैतिर हेरिन्। टाढा पूर्वतिर पातलो जङ्गलको पारि केही छाप्रा रहेजस्तो तिनलाई लाग्यो। तीन दिनदेखि नरनारीको मुखसम्म नदेखेकी दमयन्तीमा मानिसको सान्निध्यको अनुभवले आनन्द दिन थाल्यो भने आशाका लहर पनि उठ्न थाले। सूर्यास्त हुँदै गयो। टाढाका तिनै छाप्रातिरबाट कुखुरा बासेका स्वर तिनले सुनिन्। त्यो स्वरले उल्लासमय मनोदशामा पुगेकी दमयन्तीको मनलाई तिनै छाप्राका नरनारीतिर, मानिसको सामीप्यतिर तान्न थाल्यो। तथापि दमयन्तीले प्रबल आत्मनियन्त्रणलाई अँगालेर खेतका हरिया मुना र कलिला काँचा जौका झारद्वारा भोकलाई शान्त पार्दै त्यही ढुङ्गामाथि लम्पसार परिन्।

प्रश्नहरू :

(अ) दमयन्तीको मनोदशा किन उल्लासमय भयो ?

(आ) माथिको अनुच्छेदमा कस्तो परिवेशको चित्रण गरिएको छ ?

(ख) दिइएको संवादांश पढी सोधिएका प्रश्नहरूको उत्तर दिनुहोस् :

नेपालमा थुप्रै जाति छन्। हरेक जातिको आफ्नै प्रकारका परम्परा, संस्कृति, ज्ञान अनुभव छन्। त्यस्तै नेपालमा अनेक भाषा छन्। भाषा भनेको मानव पुर्खाको आविष्कार हो। जातिमा

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जस्तै हरेक भाषामा पनि मानिसका ज्ञान, अनुभव, संस्कृति सुरक्षित हुन्छन् । हामी मानव सभ्यताका कुरा गर्छौं नि । वास्तवमा सभ्यता भनेको जाति, भाषा र संस्कृतिको समष्टि हो । त्यसैले जाति, भाषा, संस्कृतिमा विविधता हुनु भनेको सभ्यतामा पनि विविधता हुनु हो । यसैले जाति, भाषा, संस्कृतिमा विविधता भएको हाम्रो समाज विविध सभ्यताको सङ्गम पनि हो । त्यसैले विविधता आफैँमा सम्पत्ति भएन र ?

प्रश्नहरू :

- (अ) जाति र भाषाभित्र के के कुरा रहेका हुन्छन् ?
 (आ) हाम्रो समाज कसरी विविध सभ्यताको समाज हो ?

१६. कुनै एक प्रश्नको उत्तर दिनुहोस् :

[४]

(क) 'मातृत्व' कथामा सुबोधले ममताका छोराछोरीलाई हप्काउनु उपयुक्त हो वा होइन ?
 प्रतिक्रिया लेख्नुहोस् ।

(ख) लेखकका सहयोगी बनेर पाटन पुगेका भरियाहरू भोलिपल्ट डडेलधुरा जान किन नमानेका होलान् ? 'घनघस्याको उकालो काट्ता' पाठका आधारमा प्रतिक्रिया लेख्नुहोस् ।

१७. कुनै एक प्रश्नको समीक्षात्मक उत्तर दिनुहोस् :

[८]

(क) 'एक चिहान' उपन्यासका पात्र नानीथकुँ र रञ्जनादेवीका चरित्रको तुलना गर्नुहोस् ।

(ख) हकिडले मानवीय चेतनालाई उचाइमा पुऱ्याउन के कस्ता कामहरू गरेका छन् ? 'स्टिफन विलियम हकिड' पाठका आधारमा विवेचना गर्नुहोस् ।

१८. कुनै एक शीर्षकमा कम्तीमा २५० शब्दसम्मको निबन्ध लेख्नुहोस् :

[८]

- (क) वनजङ्गलको महत्त्व
 (ख) स्वस्थ खाना : स्वस्थ जीवन
 (ग) मलाई मन पर्ने पुस्तक

NEB - GRADE XII

2081 (2024)

Physics

(New Course)

(For the regular and grade increment general stream's students whose first two digits of registration number starts from 78, 79 and 80)

Attempt all the questions.

Group 'A'

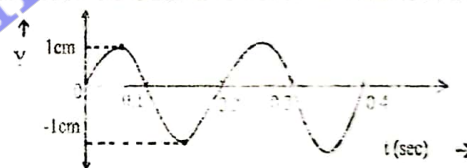
Rewrite the correct options of each questions in your answer sheet. [11×1=11]

1. If the rotational kinetic energy of a body is E and moment of inertia is I then angular momentum will be :

(A) EI (B) $\sqrt{2EI}$ (C) $\frac{E}{I}$ (D) $\sqrt{IE}$

2. The displacement versus time graph of particles in SHM is shown in figure. The maximum velocity of the particle is

(A) 1 cm s^{-1} (B) 0.2 cm s^{-1}
(C) 3.14 cm s^{-1} (D) 31.4 cm s^{-1}



3. Two capillary tubes P and Q of radii 4 mm and 2 mm are dipped in water. What is the ratio of heights through which liquid rises in the tubes P and Q?

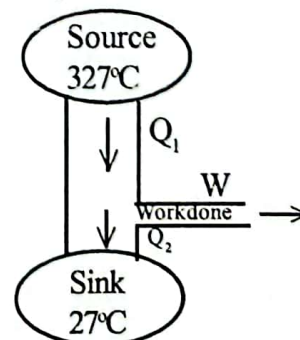
(A) 1:2 (B) 2:1 (C) 1:4 (D) 4:1

4. A system undergoes an isochoric process so that its temperature changes from 127°C to 227°C . What is the ratio of initial pressure to final pressure?

(A) $\frac{4}{5}$ (B) $\frac{5}{4}$ (C) $\frac{227}{127}$ (D) $\frac{127}{227}$

5. Given figure represents the block diagram of a heat engine. What is the efficiency of this engine?

(A) 25% (B) 50%
(C) 60% (D) 75%



Contd...

1021'B'

(2)

6. What is the distance between two consecutive particles in a wave which are in the same phase ?
(A) $\frac{\lambda}{4}$ (B) $\frac{\lambda}{2}$ (C) $\frac{3\lambda}{4}$ (D) λ
7. A polarizer is used to
(A) reduce intensity of light (B) produce diffracted light
(C) increase intensity of light (D) produce unpolarized light
8. Which of the followings is the ferromagnetic material ?
(A) Aluminium (B) Gold (C) Copper (D) Cobalt
9. The temperature of inversion of a thermocouple is 600°C and the neutral temperature is 310°C . What must be the temperature of cold junction ?
(A) 0°C (B) 10°C (C) 20°C (D) 30°C
10. In our country Nepal, the supply ac voltage is 220V. The peak value of voltage is about
(A) 110V (B) 220 V (C) 310V (D) 350V
11. If a P-Wave were to go from a solid to a liquid, what would happen to its velocity ?
(A) remains the same (B) increases
(C) decreases (D) decreases up to zero

NEB - GRADE XII

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Physics

(New Course)

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

Time: 3 hrs.

Full Marks: 75

Attempt all the questions.

Group 'A'

Question No. 1 to 11 (Multiple Choice Questions) will be provided after 30 minutes of starting examination. Rewrite its (MCQ) correct options (answer) in the same answer sheet.

Group 'B'

Short answer questions.

[8×5=40]

12. a) Define the moment of inertia. [1]
b) A uniform rod of mass m and length L is rotating about an axis AB passing through its one end and perpendicular to the length. Calculate the moment of inertia of the rod about the axis AB . [2]
c) A fly wheel of moment of inertia 0.32 kgm^2 is rotated steadily at 120 rad/sec by a 50 watt electric motor. Calculate: [2]
i) the kinetic energy of the fly wheel.
ii) the frictional couple opposing the rotation.

OR

- a) One end of a light spring having spring constant 18 N/m is attached to a rigid support. A mass of 0.15 kg is suspended from other end of the spring. A student pulls down it such that extension of spring increases by 4 cm . The student now releases it, as a result, the mass performs SHM.
i) Define simple harmonic motion. [1]
ii) Calculate the maximum acceleration and time period of SHM. [2]
b) Write an expression for total energy of a particle executing SHM. Also draw a graph showing the variation of K.E. and P.E. of it. [2]

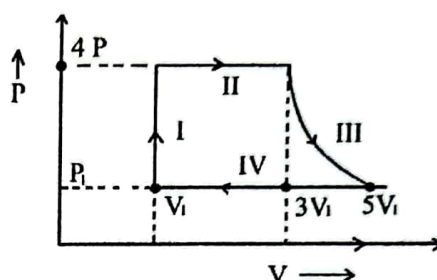
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13. a) Derive a relation between surface tension and surface energy. [2]
 b) N identical spherical drops of water falling with a terminal velocity v_1 were to coalesce to form a bigger drop and fall with a new terminal velocity v_2 through air. (Neglect air resistance)
 i) Obtain a relation between v_2 and v_1 . [2]
 ii) If $N=2$ and $v_1 = 0.4 \text{ ms}^{-1}$ then calculate v_2 . [1]
14. The given figure represents the P-V diagram of a cyclic process.

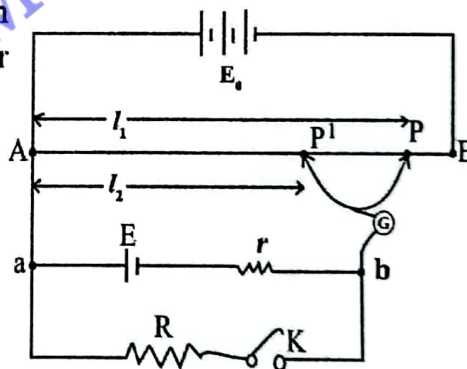
a) Define indicator diagram. [1]

b) Estimate the workdone during II process. [2]

c) Identify the thermodynamic processes represented by I, II, III and IV. [2]



15. a) What correction was made by Laplace over the Newton's formula for velocity of sound in a gas? Obtain the corrected formula. [3]
 b) Calculate the wavelength of wave in air at 25°C if the frequency of sound wave is 256 Hz and velocity of sound at 0°C is 330 ms^{-1} . [2]
16. a) The arrangement of potentiometer circuit for the determination of internal resistance of a cell (r) is shown in figure. Derive an expression for internal resistance of the cell. [3]

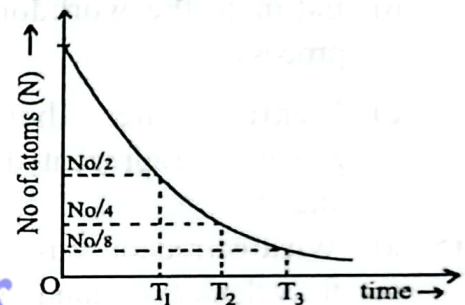


- b) How can you convert a galvanometer into an ammeter of suitable range? [2]
17. a) Obtain an expression for the magnetic field intensity at any point due to a straight current carrying conductor using Ampere's circuital law. [3]
 b) A wire of length 0.5 m carrying a current of 2A is placed in a uniform magnetic field of strength 0.4T. Find the maximum and minimum force experienced by it. [2]

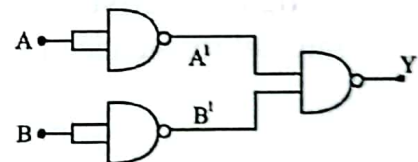
18. a) Explain quantization of charge. [2]
 b) An ion of specific charge $4.40 \times 10^7 \text{ C/kg}$ is moving in a circular orbit in a magnetic field of flux density 0.4 T with velocity of $3.52 \times 10^5 \text{ ms}^{-1}$. Calculate the radius of this orbit. [2]
 c) Why are x-rays used in Millikan's oil drop experiment? [1]

OR

- a) Define the terms half life and mean life of a radioactive substance. [2]
 b) If 2 gm of a radioactive material having half life period of 50 years disintegrates, find out mean life of the given sample. [2]
 c) Given figure represents decay graph of a radio active sample of half life 10 years. Estimate the value of T_3 . [1]



19. a) What is rectification? Explain full wave rectification using two P-N junction diodes. [1+2]
 b) For the digital circuit given below write the truth table showing the outputs A' , B' and Y for all possible inputs A and B . [2]

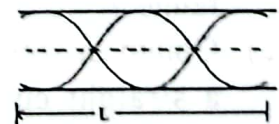


Group 'C'

Long answer questions:

[3×8=24]

20. a) The diagram shows a standing wave in an open organ pipe.
 i) Redraw the diagram and show the position of nodes and antinodes. [1]
 ii) Derive an expression for frequency of this mode. [2]
 b) What will be the effect of velocity of transverse wave in a stretched string if the radius of the string is doubled? [2]
 c) A car is sounding its horn has a frequency 400 Hz and travelling towards a stationary traffic post. A traffic police at the post detects the change in frequency of 60 Hz when the car crosses him. Find the velocity of car if velocity of sound in air is 340 ms^{-1} [3]



Contd...

OR

- a) How can a plane wavefront be converted into a spherical wavefront ? Justify. [2]
- b) What is interference of light ? Two coherent waves, each of intensity I , are producing an interference pattern. What will be the resultant intensity at a point of
- constructive interference and
 - destructive interference ? [3]
- c) A monochromatic light of wavelength $5890 \text{ \AA}$ is incident normally on a diffraction grating which has 6000 lines per centimeter.
- At what angle will the second order image be seen ? [2]
 - Is third order image possible with this grating ? [1]
21. a) A moving coil is very sensitive device to measure very small current.
- Define voltage sensitivity of moving coil galvanometer. On which factors does it depend ? [2]
 - Why is magnetic field made radial in a moving coil galvanometer ? [1]
- b) State Faraday's laws of electromagnetic induction. The magnetic flux passing perpendicular to the plane of a coil is given by $\phi = 4t^2 + 5t + 2$, where ϕ is in weber and t is in seconds. Calculate the magnitude of instantaneous emf induced in the coil when $t = 3\text{s}$. [3]
- c) Derive an expression for energy stored in an inductor. [2]
- OR
- a) Obtain an expression for magnetic field strength at the centre of current carrying circular coil using Biot-Savart's law. [3]
- b) A slice of indium antimonide 2.5 mm thick carries a current of 150 mA . A magnetic field of flux density 0.5 T , correctly applied, produces a maximum Hall voltage of 8.75 mV between the edges of the slice. Calculate the number of free charge carriers per unit volume assuming they each have a charge of $-1.6 \times 10^{-19} \text{ C}$. [2]
- c) Derive an expression for the force exerted per unit length between two parallel current carrying conductors if currents are flowing in the same direction. Hence, define one ampere current. [3]
22. a) Explain photoelectric effect and write Einstein photoelectric equation. [2]
- b) Obtain an expression for the velocity of an electron in the first excited state. [3]
- c) Calculate the de-Broglie wavelength of an electron which has been accelerated through a potential difference of 300 V . [3]
- [Mass of electron = $9.1 \times 10^{-31} \text{ kg}$. Planck's constant, $h = 6.6 \times 10^{-34} \text{ Js}$]

NEB-GRADE XII

2081 (2024)

Chemistry

(New course)

(For general stream students whose first two digits of registration number start from 78, 79 and 80)

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

Attempt all the questions.

Group 'A'

[11×1=11]

Rewrite the correct option of each question in your answer sheet.

1. What is the molarity of 0.4 N Na_2CO_3 solution?
A) 0.1 M B) 0.2 M C) 0.4 M D) 0.8 M
2. Which of the following will have highest pH in water solution ?
A) NaCl B) Na_2CO_3 C) KCl D) CuSO_4
3. What kind of battery is used in a laptop computer and mobile phone ?
A) Li-ion battery B) Dry cell battery
C) Fuel cell battery D) Simple cell battery
4. What is the enthalpy change in the reaction, $2\text{CO} + \text{O}_2 \rightarrow 2\text{CO}_2$ called?
A) Enthalpy of combustion B) Enthalpy of formation
C) Enthalpy of fusion D) Enthalpy of reaction
5. Which one of the following complex ions gives tetrahedral geometry ?
A) $[\text{Ni}(\text{CN})_4]^{2-}$ B) $[\text{NiCl}_4]^{2-}$ C) $[\text{PtCl}_4]^{2-}$ D) $[\text{CoF}_6]^{3-}$
6. Which of the following molecules does not act as a ligand ?
A) CO_2 B) NH_3 C) H_2O D) CO
7. Which of the following is used to convert $>\text{C}=\text{O}$ group to $-\text{CH}_2-$?
A) $\text{Ni}/\text{H}_2/\Delta$ B) LiAlH_4/Δ
C) $\text{Zn-Hg}/\text{HCl}/\Delta$ D) $\text{Pd}/\text{H}_2/\Delta$

Contd...

8. Benzoic acid gives benzene on being heated with 'X' and phenol gives benzene on being heated with 'Y'. Therefore, X and Y are respectively:
A) Sodalime and copper B) Zn dust and NaOH
C) Zn dust and sodalime D) Sodalime and Zn dust
9. $CH_3Cl \xrightarrow{Alc. AgCN} (A) \xrightarrow[\Delta]{LiAlH_4} (B)$, what would be the product B ?
A) Methanamine B) Ethanamine
C) N - methyl methanamine D) N-methyl ethanamine
10. When the compound sodium ethoxide reacts with chloroethane, it gives the compound $C_4H_{10}O$. What reaction is this ?
A) Wurtz's reaction B) Williamson's synthesis
C) Rosenmund's reduction D) Dehydrohalogenation reaction
11. What would be the product when ketone is treated with Grignard's reagent?
A) Primary alcohol B) Secondary alcohol
C) Tertiary alcohol D) Methyl alcohol

NEB-GRADE XII

2081 (2024)

Chemistry

(New course)

(For the regular and grade increment general stream's students whose first two digits of registration number starts from 78, 79 and 80)

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

Time: 3 hrs.

Full Marks: 75

Attempt all the questions.

Group 'A'

Question No. 1 to 11 (Multiple Choice Questions) will be provided after 30 minutes of starting examination. Rewrite its (MCQ) correct options (answer) in the same answer sheet.

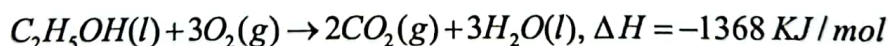
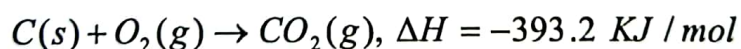
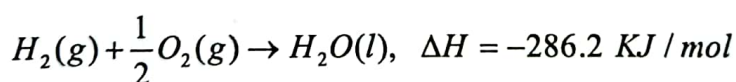
Group 'B'

[8×5=40]

12. An electrochemical cell (galvanic cell) is designed by coupling Zn-electrode with standard hydrogen electrode (SHE). Given, $E_{Zn^{++}/Zn} = -0.76 V$.
- Draw the galvanic cell. [2]
 - Write down complete cell reaction. [2]
 - Calculate the emf of the cell. [1]

Or

What is Hess's law of constant heat summation ? Calculate the heat of formation of ethanol from the following data : [1+4]



13. Define the following terms.
- Lewis base
 - Basic buffer [2]
- ✓ Calculate the pH of solution obtained by mixing equal volumes of two solutions having $pH=3$ and $pH=5$. [3]
14. A heavy metal is extracted from its oxide ore. During extraction, smelting of the calcined ore is done in a blast furnace.
- Name the metal and the ore.
 - Draw the clean and labelled diagram of the blast furnace showing different zones.
 - Write down the balanced chemical equations of slag formation reactions.

Contd...

[1+3+1]

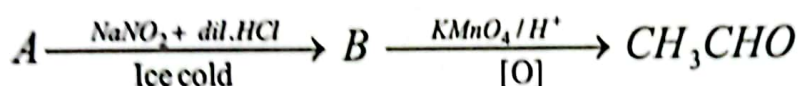
15. Write two methods of preparation of corrosive sublimate. Give its action with a) excess of KI b) NH_3 [2+2+1]

16. i) Starting from nitrobenzene, how would you prepare aniline? Convert aniline into:

a) phenyl isocyanide b) azo-dye [1+2]

ii) Nitrobenzene prefers electrophilic substitution reaction at meta-position. Explain. [2]

17. A sequence of chemical reactions is represented as:



a) Identify the compounds (A) and (B). [1]

b) Write the laboratory test of compound (B). [1]

c) Starting from compound (B), how would you obtain nitrolic acid? [2]

d) Predict the product when compound (A) is heated with chloroform in alcoholic medium. [1]

Or

Make a correct sequence of reactions using suitable conditions and reagents of the following compounds.

Benzene, Benzaldehyde, Toluene, Cinnamic acid, Sodium benzoate, Benzoic acid.

18. Write a chemical equation for each of the following.

a) 2, 4- DNP test [1]

b) Oxo-process [1]

c) Claisen condensation reaction [1]

d) Wurtz-Fittig reaction [1]

e) Carboxylation reaction [1]

19. The chlorinated compound 'A' reacts with acetone to give sleep-inducing drug.

a) How would you prepare compound 'A' by using one of the isomers of $\text{C}_2\text{H}_6\text{O}$? [2]

b) What happens when compound 'A' is:

i) Exposed in air? [1]

ii) Heated with phenol in the presence of aq. NaOH? [2]

Group 'C'

[3×8=24]

20. a) Distinguish between pseudo first order and first order reaction giving an example of each. [2]

Contd...

(3)

3021 'P'

- b) Draw an energy profile diagram showing energy of activation for endothermic reaction. [2]
- c) The hypothetical data for the reaction, $2A + B \rightarrow C$, are,

Expt No.	[A] molL ⁻¹	[B] molL ⁻¹	[rate] formation of [C] molL ⁻¹ Sec ⁻¹
1	0.1	0.1	6×10^{-3}
2	0.3	0.2	7.2×10^{-2}
3	0.3	0.4	2.88×10^{-1}
4	0.4	0.1	2.40×10^{-2}

Calculate the rate of formation of 'C' when the concentration of 'A' and 'B' are $[0.6] \text{ molL}^{-1}$ and $(0.3) \text{ molL}^{-1}$, respectively. [1+1+1+1]

Or

- a) Deduce normality equation. [2]
- b) Give reason.

i) Methyl orange is used as indicator for the titration between H_2SO_4 and Na_2CO_3 . [1]

ii) Oxalic acid solution is warmed by adding *dil.* H_2SO_4 before titration with KMnO_4 . [1]

c) 0.70 g of a sample of $\text{Na}_2\text{CO}_3 \cdot x\text{H}_2\text{O}$ was dissolved in water and volume was made 100 ml. 20 ml of this solution required 19.8 ml of $\frac{N}{10}$ HCl for complete neutralization. Find the value of x. [4]

21. a) Give any two chemical reactions for the preparation of ethanoic acid. [2]

b) How does ethanoic acid react with [2]

i) P_2O_5 ii) NH_3 ?

c) A carbonyl compound 'A' gives both Tollen's and iodoform tests positively.

i) Identify the compound 'A'. [1]

ii) How does the compound 'A' react with *dil.* NaOH? Give chemical equation involved. [1]

iii) Write the chemical equation when compound 'A' reacts with HCN followed by hydrolysis. [2]

Contd...

3021'P'

(4)

Or

a) An aromatic compound (A) undergoes Sandmeyer's reaction to give (B). The compound (B) is reduced with Ni-Al in presence of alkali to give compound (C). The compound (C) further reacts with CH_3Cl in the presence of Anhydrous AlCl_3 . The compound (B) when heated with chloral in acidic medium gives a common insecticide. Identify (A), (B), (C) and (D) giving complete reaction. [4]

b) How do you separate the isomers of $\text{C}_3\text{H}_9\text{N}$ by Hoffmann's method? Explain with suitable chemical equations. [4]

22. a) Define homopolymer and co-polymer. [2]

b) Differentiate between paper and pulp. [2]

c) Distinguish between OPC and PPC cement. [2]

d) Write down any two uses of radioisotopes in medical field. [2]

NEB - GRADE XII
2081 (2024)
Computer Science
(New course)

(For the regular and grade increment students whose first two digits of registration number starts from 78, 79 and 80)

Multiple Choice Questions

Rewrite the correct option of each question in your same answer sheet.

Group 'A'

[9×1=9]

1. Which one of the followings given statement correct ?
☒ A) Select * from emp where eopid = 103;
☐ B) Select from emp where eopid = 103;
☐ C) Select eopid where emp = 103 from emp;
☐ D) Select eopid where eopid = 103 and table = emp;
2. Which database system normally offers better performance for geographically dispersed users ?
☐ A) Centralized database system ☒ B) Distributed database system
☐ C) NoSQL database system ☐ D) Relational database system
3. Which of the following is an example of a public IPV4 address ?
☒ A) 192.168.1.1 ☐ B) 172.16.10.1
☐ C) 10.10.10.10 ☐ D) 203.0.113.10
4. What is the correct syntax for a 'for-loop' in JavaScript ?
☐ A) for (var i = 0; i < 5; i++) {} ☐ B) for (i = 0; i < 5; i++) {}
☒ C) for (var i = 0; i < 5) {} ☐ D) for (var i < 5; i++) {}
5. Which PHP function is commonly used to execute SQL queries on a database connection established using mysqli extension ?
☒ A) mysqli_query () ☐ B) pdo_query ()
☐ C) mysql_query () ☐ D) pgsql_query ()

Contd...

- What is the correct syntax to declare a structure in C ?
A) struct { } B) define struct { }
C) struct [] D) struct <name> { }
- In C, which operator is used to get the address of a variable ?
A)* B) & C) -> D) .
- Which OOP feature allows a class to inherit properties and behavior from another class ?
A) Inheritance B) Encapsulation
C) Polymorphism D) Abstraction
- Which model of SDLC is characterized by a linear progression of phases from requirements gathering to maintenance ?
A) Waterfall model B) Agile model
C) Spiral model D) RAD model

NEB - GRADE XII
2081 (2024)
Computer Science
(New course)

(For the regular and grade increment students whose first two digits of registration number starts from 78, 79 and 80)

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

Time: 2 hrs.

Full Marks: 50

Group 'A'

Multiple Choice Questions (No. 1 to 9) will be provided after 30 minutes of starting examination. Rewrite its (MCQ) correct options (answer) in your same answer sheet.

Group 'B'

Short answer questions

[5×5=25]

10. Evaluate the advantages of DBMS compared to traditional file-based data storage systems. [5]

OR

How does Second Normal Form (2NF) differ from First Normal Form (1NF), and what are the key benefits of achieving 2NF in database design? Explain. [2+3]

11. Write a JavaScript function that checks if a number is even or odd and print the result. [1+4]

OR

What is purpose of the `mysqli_connect ( )` function in PHP? Describe its usage and parameters. [2+3]

12. Write short note on class and object in OOPs with a real-world example. [2.5+2.5]

13. How do various requirement gathering techniques help in achieving a careful grasp of user needs and system requirements during SDLC's analysis phase? [5]

14. Give five examples of AI applications in the education. [5]

Contd...

Group 'C'**Long answer questions****[2×8=16]**

15. How does the star network topology differ from the bus network topology in terms of its architectural layout and data transmission methodology in modern computing environments ? [8]
16. Write a C program that uses structures to represent details of five books (title, author, publisher and price) and prints them out. [8]

OR

Discuss the concept of binary file handling in C programming and explain how `putw()` and `getw()` functions facilitate binary input/output operations. Give examples. [8]

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Note Mandir