Sub.Code : 0041'C'

NEB - GRADE XII
2083 (2026)
Compulsory English
(For regular students whose first two digits of registration number starts from 82)

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

Full Marks: 75

Time: 3 hrs.

Attempt all questions

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

In a quiet corner of the bustling city, there stood an old, dusty library. While most people hurried past, its **unassuming** exterior hid an incredible secret. The librarian, an elderly woman named Ms. Abernathy, was not an ordinary librarian; she was the guardian of a magical library.

One sunny afternoon, Sarah, an eighth-grader with an **insatiable** love for books, stumbled upon the library. She had always been drawn to stories of magic and adventure, and something about the library's unassuming facade *piqued her curiosity. As she stepped inside, a small bell above the door tinkled, announcing her arrival. Ms. Abernathy greeted her with a warm smile, sensing Sarah's keen interest in books.*

Sarah soon discovered the true enchantment of the library. Its shelves held volumes that could transport readers to other worlds. She found herself **immersed** in tales of knights and dragons, enchanted forests, and talking animals. These books had a way of making her feel like she was right there, part of the adventure.

As the weeks passed, Sarah spent hours at the library, delving into one captivating story after another. She uncovered a book about a boy who could fly, and as she read, she felt her feet lifting off the ground. She found herself soaring over the city, experiencing the thrill of flight. Another day, she read about a time-traveling watch, and suddenly, she was witnessing historical events unfold before her eyes.

One day, as Sarah was browsing the shelves, she noticed a book titled "The Lost Amulet of Althoria." The cover featured a golden amulet with a shimmering blue gem. Ms. Abernathy explained that this was a unique book—it was unfinished. No one knew how the story ended because no reader had ever returned the book. Sarah decided to take on the challenge. She opened the book and was immediately drawn into a tale of a young adventurer, Alaric, on a **quest** to find the lost amulet. She felt herself journeying through dark forests crossing treacherous rivers, and facing

mythical creatures. The more she read, the deeper she became entangled in the story. It was as though she had become Alaric, feeling his determination and bravery.

As the days turned into weeks, Sarah's friends and family grew concerned. She had become so absorbed in the book that she neglected her usual activities. Ms. Abernathy gently reminded her to take breaks, but Sarah was determined to reach the end of the story.

Finally, one evening, as Sarah read the last page, she found herself standing in a clearing, facing an **ornate** door. Through the door, she saw a **dazzling** chamber with the lost amulet resting on a pedestal. With a deep breath, she opened the door and approached the amulet. As she touched it, a burst of blue light enveloped her, and she felt herself returning to the library.

When she opened her eyes, she was back among the dusty bookshelves, holding the book in her hands. Ms. Abernathy congratulated her on completing the unfinished story. Sarah had not only finished the tale but had also experienced an adventure unlike any other.

From that day on, Sarah continued to visit the magical library, understanding that the real magic was not just in the stories but in the way they made her feel and the adventures they allowed her to live.

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

a. World leaders are now united in their ..... for peace.
b. People are impressed by her ..... manner and relaxed style of writing.
c. As I started to live on my own, I ..... myself in my career.
d. The stuff written about me helped to establish me as a/an .....figure in public.
e. His desire for money is ..... .

B) Choose and copy the correct alternatives. [5×1=5]

a. Where is the story set?
(i) a bustling city (ii) a dazzling chamber
(iii) an enchanted building (iv) a magical forest

b. Who is Ms. Abernathy in the story?
(i) a magical creature (ii) a narrator
(iii) a librarian (iv) a character from a book

c. What unique quality do the books in the library have?
(i) They can speak to the readers gently.
(ii) They can make readers a part of the adventure.
(iii) They grant wishes reading their inner motives.
(iv) They can predict the reader's fortune.

(Contd.)

d. How does Sarah feel when she touches the lost amulet?
(i) disappointed (ii) afraid
(iii) awakened (iv) enchanted

e. What kind of character is Sarah in the story?
(i) brave and proud (ii) determined and courageous
(iii) imaginative and obsessed (iv) obedient and tactful

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

a. Why did Sarah go to the library in the beginning?
b. What happened when Sarah reads the book about a boy who can fly?
c. What was special about the book "The Lost Amulet of Althoria"?
d. What was Alaric searching for in the tale?
e. Was Sarah more determined to read books at the end? Give a reason.

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

a. How would you react if you were in the young man's situation at the end of the story? (*Neighbours*)
b. How was Gouvernail different from Mrs. Baroda's expectation?
(*A Respectable Woman*)

OR

Do you think Rakesh was a devoted son? Explain. (*A Devoted Son*)

c. What does the poet say about God's greatness?
(*Every Morning I Wake*)
d. Where was the author when he was late for lunch? (*On Libraries*)

OR

What is the goal of the Universal Declaration of Human Rights?
(*Human Rights and the Age of Inequality*)

e. Do you think that August Strindberg portrays despair in a very powerful and realistic way ? Give a reason. (*Facing Death*)

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

a. What was the reaction of the community to the old man with enormous wings and what does it show about humanity and compassion?
(*A Very Old Man with Enormous Wings*)

OR

What are Nock's ideas about marriage in society? Do you agree or disagree with him? Why? (*Marriage as a Social Institution*)

b. Explain the following lines of the poem, '*A Day*' with reference to the context

The hills untied their bonnets,
The bobolinks begun.
Then I said softly to myself,
That must have been the sun!

4. Study the following table and interpret the information given in the table in about **150 words**. Make comparison where necessary. [7]

Monthly Sales Data for XYZ Company (in thousands of dollars)

Month	Product A	Product B	Product C	Total Sales
January	50	40	30	120
February	60	35	25	120
March	70	45	35	150
April	65	50	40	155
May	75	55	45	175
June	80	60	50	190

5. It is often said, 'Save nature to save the future'. Write a letter to the editor of a national newspaper about the effects of environmental pollution in about **180 words**. [8]

6. Walking is not just a physical activity. It has many benefits. Write an essay on walking as a physical activity and its role in building physical, mental and social behavior of an individual in about **300 words**. [10]

7. Do as instructed in the brackets and rewrite the sentences. [10×1=10]

a. Health care in Nepal is not as expensive as it is in the US.
(*Identify the adjective in the sentence.*)
b. My car needs .....(repair/repairing/to repair/repaired) right now.
(*Choose the correct form of the verb to complete the sentence.*)
c. This is the house. We spent our childhood in the house.
(*Join the sentences using appropriate relative pronoun.*)
d. Sumsher along with his friends .....(know/knows/have known/knowing) me well.
(*Choose and write the correct form of the verb that completes the sentence.*)
e. Don't stare.....me. I have no mistake.
(*Use appropriate preposition in the blank space.*)
f. You ..... (may/must/would/could) not tell anyone about this. It's too confidential. (*Choose the correct modal verb to complete the sentence.*)
g. The customer.....the machine before he complained about the error.
(*Write the correct form of the verb 'purchase' to complete the sentence.*)
h. We are close friends. We have not seen each other's houses.
(*Join the sentences with 'despite'.*)
i. Yangma said, "You are my source of inspiration in life."
(*Change the sentence into indirect speech.*)
j. Loku was presenting his project for the first time.
(*Change the sentence into passive voice.*)

(Contd...)

8. Choose and copy the correct alternatives. [5×1=5]

a. It's a beautiful present for me. What is the word class of the underlined word ?

(i) noun (ii) adjective (iii) adverb (iv) verb

b. Which of the following words comes before the word 'choice' in the dictionary?

(i) choose (ii) chrome (iii) chide (iv) chord

c. The babysitter ..... the girl while her parents were not at home. Which of the following phrasal verbs correctly completes the sentence?

(i) looked after (ii) looked at

(iii) looked over (iv) looked up

d. Which of the following words takes the prefix 'il-'?

(i) balance (ii) fertile (iii) legal (iv) mobile

e. Which of the following words has same initial sound as in the word 'chaos'?

(i) chance (ii) chemical (iii) circus (iv) cinema

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Sub.Code : 9111

NEB-GRADE XII

2083 (2026)

Chemistry

(For Technical stream)

(For regular and partial students whose first two digits of registration number starts from 79, 80, 81 and 82)

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' [11×1=11]

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

1. Which of the following is the primary standard substance?
   A) Sodium carbonate B) Potassium permanganate
   C) Ferrous sulphate D) Caustic soda
2. According to Lewis concept, what dose a base do?
   A) Donates an electron pair B) Accepts an electron pair
   C) Produces hydronium ion D) Combines with OH^-
3. The cell reaction of a cell is: $Mg_{(s)} + Cu^{2+}_{(aq)} \rightleftharpoons Cu_{(s)} + Mg^{2+}_{(aq)}$. If the standard electrode potentials of Mg and Cu are -2.37 and +0.34V respectively. What will be the emf of cell ?
   A) 2.03V B) -2.03V C) +2.71V D) -2.71V
4. What is the water of crystallization number for a blue vitriol molecule?
   A) 2 B) 5 C) 7 D) 10
5. The substance (A) reacts with infusible impurities present in an ore to form fusible mass. What is the substance (A) called?
   A) Matte B) Gangue C) Slag D) Flux
6. What product can you get, when the mixture of Cu_2O and Cu_2S are heated in a Bessemer converter?
   A) $CuO + CuS$ B) $Cu + SO_2$ C) $Cu + SO_3$ D) Cu_2SO_3
7. $+F_2C\text{-}CF_2+_n$ is a polymer. Which of the following is correct name of such polymer?
   A) TFE B) Nylon C) Teflon D) Polyethene

Contd...

8. Trichloromethane reacts with compound 'X' to give chloropicrin which is used as an insecticide and war gas. What is the compound 'X' ?
A) Nitric acid B) Nitrous acid
C) Sulphurous acid D) Sulphuric acid

9. Which of the following is an example of dihydric alcohol?
A) Ethyl alcohol B) Ethylene glycol
C) Glycerol D) Phenol

10. CH_3CH_2Cl in aq. KOH gives compound 'A' and when 'A' is heated with Cu, at 300°C gives 'B'. What compound is 'B' ?
A) Ethanol B) Propanone
C) Ethanal D) Propanal

11. Formalin is mainly used to preserve biological specimen. Which of the following is the correct composition of formalin?
A) 40% aq. solution of ethanol B) 40% aq. solution of phenol
C) 40% aq. solution of acetaldehyde D) 40% aq. solution of formaldehyde

Group 'B'

Attempt any answer questions [8×3=10]

12. Students are asked to find out the strength of $KMnO_4$ by titrating with standard oxalic acid solution in laboratory.
a) Name the type of titration involved and define it. [2]
b) $KMnO_4$ is not a primary standard substance. Give reason. [1]
c) Calculate the equivalent mass of $KmnO_4$ (Mol. Mass = 158) in acidic medium. [1]
d) Which indicator is used in this titration? Explain with reason. [1]

13. Enthalpy of formation of H_2O is -68 Kcal mol^{-1} and enthalpy of combustion of NH_3 is - 9.6 Kcal mol^{-1}.
a) Differentiate between enthalpy of formation and enthalpy of combustion. [2]
b) Calculate the enthalpy of formation of NH_3 from the above given data. [3]

OR

State and explain second law of thermodynamics. How does free energy change depend on the equilibrium constant? [5]

14. What is calomel electrode? Why is this electrode called a secondary reference electrode? You are given standard reduction potential of Cu^{2+}/Cu and Fe^{2+}/Fe as + 0.34V and - 0.44V, respectively. [1+1+2+1]
a) Construct a galvanic cell indicating cathode and anode with cell notation.
b) Calculate the standard emf of the cell.

15. a) Define the rate of chemical reaction. How do catalyst and temperature increase rate of reaction? [1+2]

Contd...

b) What is half life period of a reaction? Calculate the half life period of a first order reaction when the rate constant is 5 S^{-1}. [1+1]

16. Describe the major application of solubility product principle and common ion effect in precipitation reactions. [5]

17. What is metallurgy? Differentiate between: [1+2+2]
a) Pyrometallurgy and hydrometallurgy.
b) Carbon reduction and electrochemical reduction process.

18. a) Write an example of each of the following reactions: [3]
i) Dow's process
ii) 2,4 DNP Test
iii) Tollen's test
b) How would you prepare monohydric alcohols from [2]
i) Haloalkane and ii) Primary amines?

Or

An organic compound (A) reacts with acetone to produce a kind of seep inducing drug.
i) How would you prepare compound (A) by using one isomer of C_2H_6O? [2]
ii) Why is compound (A) stored in air-tight bottle by adding small amount of ethanol? [2]
iii) What happens when compound (A) is boiled with aq. alkali? [1]

19. An organic compound having molecular formula C_3H_6O gives two functional isomer (P) and (Q). The isomer (P) gives positive Tollen's and Fehling's test. [1+2+2]
a) Identify (P) and (Q) and write their IUPAC names.
b) How would you prepare compound (P) form
(i) Oxidation of alcohol and ii) Ozonolysis of alkenes ?
c) How would you prepare compound (Q) from i) Gem dihaloalkane and ii) Catalytic hydration of alkyne?

Group 'C'

Long answer questions [3×8=24]

20. Differentiate between average rate and instantaneous rate of reaction. Rate of reaction A+B→P is given below as a function of different initial concentration of A and B. [2]

[A] mol/litre	[B] Mol/litre	Rate mol $L^{-1}S^{-1}$
0.01	0.01	0.005
0.02	0.01	0.010
0.01	0.02	0.005

Contd...

i) Determine the order of reaction with respect to A and B, respectively. [2]
ii) What is overall order of reaction? [1]
iii) Write down the rate law equation. [1]
iv) Find the value of rate constant. [1]
v) What is the half life of A ? [1]

Or

a) Provide a short definition of each of the following terms. [4]
i) Equivalent weight ii) Standard solution iii) Indicator iv) Molality
b) What volumes N/2 and N/10 HCl must be mixed to give 2 litres of N/5 HCl? [4]

Explain the principle and process sketching a well-labelled diagram for the extraction of zinc from its ore. What happens when zinc is exposed to moist air ? How do you convert Zn into white vitriol? [5+1+2]

Or

a) Draw a well-labelled diagram for the manufacture of steel by open hearth process also write the reaction and process involved in it. [5]
b) What happens when copper is: [3]
i) exposed to air?
ii) treated with conc.HNO_3?
iii) treated with dil.H_2SO_4?

22. Answer the following questions:
a) Give structural formula of monomers and one use of each polymer. [1+1+1+1]
i) Polyethene
ii) Polyvinyl chloride
iii) Nylon-6, 6
iv) Bakellite
b) Distinguish between natural and artificial radioactivity. [2]
c) Define drug addiction. Write any one adverse effects of drug addiction. [2]

NEB - GRADE XII
2083 (2026)
Physics
(Technical Stream)

(For regular and partial technical stream (civil/computer/electrical engineering) students whose first two digits of registration number starts from 79, 80, 81 and 82)

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**

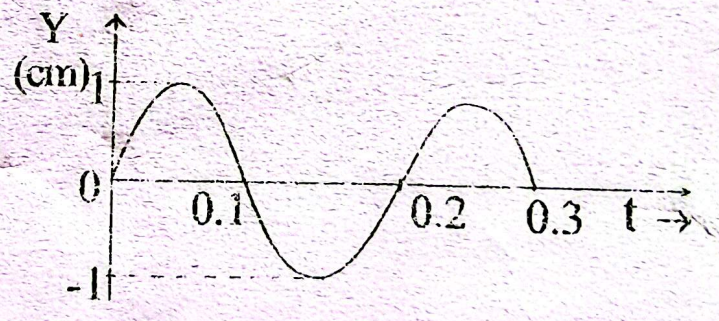
Attempt all the questions.

Group 'A' [11×1=11]

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

1. The product of moment of inertia and the angular velocity of a rigid body rotating about an axis is called
   (A) Torque (B) Couple
   (C) Angular momentum (D) Force

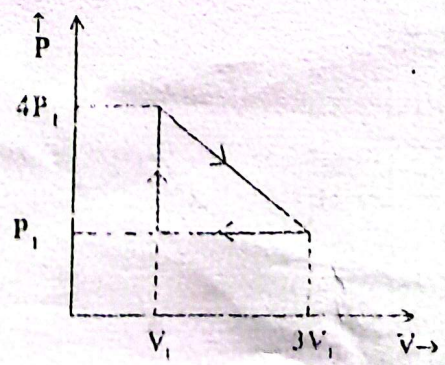
2. The displacement (Y) versus time (t) graph of particles in SHM is as shown in figure. The frequency of the particle is



   (A) 05HZ (B) 1HZ (C) 5 HZ (D) 50HZ

3. In a thermodynamic process, if the pressure remains constant, then the process is known as
   (A) Isothermal (B) Isobaric (C) Adiabatic (D) Isochoric

4. An ideal gas is taken through series of changes represented in the figure below. What is the net workdone by the gas at the end of the cycle?



   (A) $12P_1V_1$ (B) $6P_1V_1$
   (C) $3P_1V_1$ (D) P_1V_1

Contd...

5. Wave motion in a medium transfers
(A) Mass only (B) Energy only
(C) Mass and energy both (D) Neither mass nor energy

6. The distance between any two consecutive antinodes in terms of wavelength (λ) in a stationary wave is
(A) $\frac{\lambda}{2}$ (B) $\frac{\lambda}{4}$ (C) λ (D) 2λ

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. Kirchhoff's Current Law is based on the principle of conservation of
(A) Linear momentum (B) Mass
(C) Energy (D) Charge

9. For the paramagnetic material, which of the following is correct for the relative permeability (μ_r) ?
(A) $\mu_r = 0$ (B) $\mu_r < 1$ (C) $\mu_r > 1$ (D) $\mu_r \leq 0$

10. During the forward biasing of a P-N junction diode, thickness of depletion layer
(A) Increases (B) Decreases
(C) First increases then decreases (D) Remains Constant

11. The Work function for a photoelectric material is ϕ. The threshold wavelength would be
(A) $\frac{\phi}{hc}$ (B) $\frac{h}{\phi c}$ (C) $\frac{h^2}{\phi}$ (D) $\frac{hc}{\phi}$

Group 'B' [8×5=40]

12. a) Define radius of gyration. Calculate its expression for a thin uniform rod rotating about an axis passing through its centre. [2]
b) State the principle of conservation of angular momentum with two suitable examples. [2]
c) Express kinetic energy of a rotating body in terms of its angular momentum. [1]

13. a) Define surface tension and surface energy. [2]
b) Derive an expression for the terminal velocity of a small spherical ball of radius 'r' dropped gently in a viscous liquid of density 'σ' and coefficient of viscosity 'η' [3]

Contd...

14. a) State and explain first law of thermodynamics. Does it follow principle of conservation of energy? Justify.
    b) Apply first law of thermodynamics to prove $C_p - C_v = R$. Where, symbols have their usual meanings. [1+2]
15. a) Discuss the various modes of vibration of air column in an open organ pipe. [2]
    b) A car travelling at 20 ms^{-1} sounds its horn which has frequency of 600 Hz. What frequency is heard by a stationary distant observer as the car approaches? [velocity of sound=340 ms^{-1}] [3]
16. a) Define interference of light. [2]
    b) Write the required condition for constructive and destructive interference. [1]
    c) How is the width of central maximum in a single slit experiment of diffraction pattern affected if
    i) the width of slit is doubled and [2]
    ii) the wavelength of light used is increased? [1]
17. a) State two Kirchhoff's laws of electrical circuit. [2]
    b) Apply Kirchhoff's laws to derive the balanced condition for the wheat stonebridge circuit. [3]

OR

a) State the principle of pentiometer. Express potential gradient interms of specific resistance of the wire. [3]
b) How can a galvanometer be converted into an ammeter? Explain. [2]

18. a) State and explain Biot-Savart's law. [2]
    b) What is meant by current sensitivity of a moving coil galvanometer? [1]
    c) Calculate the force experiences by a charge of 2C moving with a velocity of 0.5 ms^{-1} at an angle of 30^0 with the direction of Magnetic field of 4 Tesla. [2]
19. a) Define rectifier. [1]
    b) Explain the working of a full wave rectifier using two semiconductor p-n junction diodes. [3]
    c) Write the truth table of NAND gate. [1]

OR

a) Show that the path of an electron moving through a transverse uniform electric field is parabolic. [3]
b) How does the Millikan's oil drop experiment verify the quantization of charge? Explain. [2]

Contd...

Group 'C' [3×8=24]

20. a) A simple pendulum is taken to the moon, how does its time period change? Justify. [2]

b) Obtain an expression for the total energy of a simple harmonic motion. [3]

c) A simple pendulum 4m long swings with an amplitude of 0.2m. Compute the velocity of the pendulum at its lowest point and its acceleration at extreme point. [3]

21. a) Define Work function and threshold frequency. [2]

b) State and explain Einstein photoelectric equation. [2]

c) Draw a graph showing the variation of photoelectric current with the intensity of light. [1]

d) A radiation of wavelength 150 nm is incident on the sodium surface having work function of 2eV. Calculate the maximum speed of emitted photoelectron and threshold frequency of the radiation. [3]

OR

a) What are x-rays? Write any two properties of x-rays. [2]

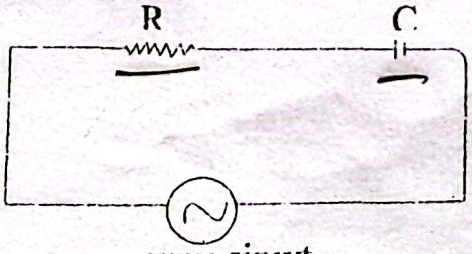
b) Define excitation energy. [1]

c) Which spectral series of hydrogen atom lie within ultraviolet region? Calculate the longest wavelength of that series. [$R=1.97\times10^{-7}m^{-1}$] [3]

d) A proton and an electron have the same kinetic energy. Which one has greater de-Broglie wavelength? Justify. [2]

22. a) Why 220v ac is more dangerous than 220v dc ? Justify. [2]

b) A series R-C circuit is shown in figure below.



$v=v_o \sin wt$

$f=50$ Hz

i) Define impedance. Write the impedance of above circuit. [2]

ii) Draw the phasor diagram for above circuit. [1]

iii) If $R=1000\Omega$, $C=2\mu F$ and $\hat{v}=240$ volts. Calculate impedance and current in the circuit. [3]

NEB-GRADE XII

2083 (2026)

Computer Network

(For regular and partial technical stream's students whose first two digits of registration number starts from 79, 80, 81 and 82)

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**

Attempt all the questions.

Group 'A'

Rewrite the correct option of each question in your answer sheet. [9×1=9]

1. Which situation best illustrates the advantage of a computer network?
   A) A standalone computer
   B) A laptop not connected to any device
   C) A computer working without internet
   D) A teacher printing exam papers
2. Online learning platforms such as Zoom and Google meet work because of:
   A) Mobile apps B) Offline software
   C) Computers D) Computer Networking
3. Which topology has a single backbone cable?
   A) Star B) Ring C) Bus D) Mesh
4. What is WLAN?
   A) Wireless LAN B) Wide LAN
   C) Wired LAN D) Wealth LAN
5. Which transmission media uses light signals ?
   A) Twisted pair B) Fiber Optic
   C) Co-axial cable D) Radio wave
6. Which device amplify signals in a network?
   A) Router B) Switch
   C) Repeater D) NIC
7. In which network architecture are all computers equal?
   A) Client - server B) Peer - to - peer
   C) Centralized D) Workgroup

Contd...

8. Which of the following is the standard loopback address used by a computer to test its own network software ?
   A) 192.168.0.1 B) 127.0.0.1
   C) 255.255.255.255 D) 0.0.0.0
9. Which is used to create secure connections over the internet ?
   A) Firewall B) VPN
   C) Antivirus D) NIC

Group 'B'

Short Answer Questions [5×5=25]

10. Write five differences between Ring and Star topologies.
11. What is Fiber optic cable? Why is it considered best for high-speed data transmission ?

OR

Explain bounded and unbounded media with examples.

12. What is network architecture? Describe centralized and decentralized networks.
13. What is subnetting? Why is it used in networking?

OR

Explain the application area of computer network.

14. Compare formal and informal workgroups.

Group 'C'

Long Answer Questions [2×8=16]

15. Explain OSI reference model in detail with each layer's functionalities. [3+5]
16. Define Network Security. Explain types of network security. [2+6]

OR

What is network protocol? Describe IP_V4 protocol with its classes. [2+6]

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Sub.Code : 9361

NEB-GRADE XII

2083 (2026)

Contemporary Technology

(For regular and partial students whose first two digits of registration number starts from 79, 80, 81 and 82)

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**

Attempt all the questions.

Group 'A'

Rewrite the correct option of each question in your answer sheet. [9×1=9]

1. Which of the following is an example of Generative AI ?
   A) Netflix B) ChatGPT
   C) Antivirus software D) Excel pivot table
2. Which E-commerce commercial enterprise model specifically specialized in selling service or product online ?
   A) Indirect Marketing B) Online Direct Marketing
   C) Land based Marketing D) Market based
3. Which tool is essential for authenticating users identity in e-governance applications to ensure security ?
   A) Email B) Digital signature
   C) SMS D) Social media
4. A manufacturing company uses a secure portal to take bulk orders from authorized retailers. This is an example of :
   A) B2C B) B2B C) C2C D) C2B
5. Which system is commonly used for prototyping IoT solutions (in Nepal) due to its low cost ?
   A) Intel Core i7 B) Arduino
   C) Cisco Router D) Laptop
6. Which of the following is not a type of AI agent ?
   A) Simple reflex agent B) Goal based agent
   C) Learning agent D) Sensorless agent
7. The process of making an object appear to move is called :
   A) Graphics B) Video C) Audio D) Animation

Contd...

8. A multimedia student is creating a presentation. Which of the following is an example of non-linear navigation in their project ?
   A) A video playing from start to end
   B) A linear slideshow presentation
   C) A main menu allowing user to jump to any chapter
   D) A pre-recorded video lecture
9. A social media platform uses machine learning to analyze user posts, comments and photo to suggest new friend. What is the primary role of Big Data ?
   A) Data Storage only
   B) Predictive Analytics
   C) Data Deletion
   D) Data Compression

Group 'B'

Short Answer Questions [5×5=25]

10. Write advantages and disadvantages of contemporary technologies in daily consumer life.
11. What is the role of social media in e-commerce marketing ? Explain.

OR

What are the differences in marketing strategies between B2B and B2C e-commerce ?

12. How can e-governance system supports to meet the need of rural and remote areas ? Give an example.
13. How does IoT contribute to the concept of smart cities ? Explain.

OR

Explain the applications of IoT in healthcare sector.

14. How does Big Data help in e-learning ? Explain.

Group 'C'

Long Answer Questions [2×8=16]

15. Discuss the major challenges faced by organization when implementing IoT solution.

OR

Describe different types of cloud services with suitable example.

16. What should be done to promote the AI applications in government services ? Explain. [8]

Sub.Code : 9371

NEB-GRADE XII
2083 (2026)

Software Engineering and Project Management

(For regular and partial technical stream's students whose first two digits of registration number starts from 79, 80, 81 and 82)

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**

Attempt **all** the questions.

Group 'A'

Rewrite the correct option of each question in your answer sheet. [9×1=9]

1. Which of the following best defines software engineering ?
   A) Writing code for software
   B) Designing hardware components
   C) Applying engineering principles to software development
   D) Testing software only
2. Software developed to billing system is an example of :
   A) System Software B) Application Software
   C) Embedded Software D) Utility Software
3. An essential skill for a project manager to manage people and communication goal is :
   A) Coding Reporting skills
   B) Leadership and communication
   C) UI/UX design and communication skills
   D) Data control and quality control skills
4. Which SDLC model is the oldest model?
   A) Prototype B) Waterfall C) RAD D) Spiral
5. Which software process model allows changes at every stages of development ?
   A) Waterfall model B) Agile model
   C) Spiral model D) RAD model
6. A company needs to develop a working application quickly using reusable components and user feedback. Which software development model is best ?
   A) Waterfall B) Spiral
   C) Incremental D) RAD
7. What does a lifeline in a sequence diagram represent ?
   A) A specific time duration for the system
   B) The existence of an object over time
   C) The number of classes in the system
   D) The physical network connections

Contd...

8. To decide loan approval based on multiple conditions and rules, the most suitable SAD tool is :
   A) Data Flow Diagram
   B) Use Case Diagram
   C) Decision Table
   D) Sequence Diagram
9. In an e-learning platform, a discussion forum mainly helps students to :
   A) Submit homework
   B) Interact with peers and instructors
   C) Download lectures and videos
   D) Track grades

Group 'B'

Short Answer Questions **[5×5=25]**

10. Explain the importance of software engineering in brief.
11. Define project management. Explain any two project management tools. [1+4]
12. Describe the phases of SDLC with diagram.
13. Which software development model best suits for developing small projects with clear requirements ? Explain the model with real world example. [1+4]
14. Draw use case diagram of library management system with its major components.

Or

Draw level -1 DFD of online exam admit card management system with its major components.

Group 'C'

Long Answer Questions **[2×8=16]**

15. Explain different phases of RAD model. List out any four advantages of RAD model. [6+2]
16. Explain E-learning platform with technology used for it. Also elaborate its advantages and disadvantages over traditional classroom teaching. [4+4]

Or

Explain the Game Development Process with the technologies used for it. How can game learning support to effective teaching learning ? [4+4]

NEB-GRADE XII **Sub.Code : 9141**

2083 (2026)

Mathematics

(Technical stream)

(For regular and partial civil/computer/electrical engineering students whose first two digits of registration number starts from 79, 80, 81 and 82)

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' [11×1=11]

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

1. What is the permutations of n different objects taken r at a time?

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

2. If w is an imaginary cube roots of unity, then $(1- w + w^2)^6$ equals.

   A) 64 w B) 64 C) $64w^2$ D) -64

3. If in any Δ ABC, aCosA = bCosB, then the triangle is

   A) right angle B) isosceles
   C) right angle isosceles D) equilateral

4. The directix of the parabola $x^2 = 16y$ is

   A) $y + 4 = 0$ B) $y - 4 = 0$ C) $x + 4 = 0$ D) $x - 4 = 0$

5. What is the angle between $\vec{i} - 2\vec{j}$ and $2\vec{i} + \vec{j}$?

   A) 0° B) 45° C) 90° D) 180°

6. Bowley's coefficient of Skewness lies in

   A) [-3, 3] B) (-3,3) C) [-3,3) D) (-3,3]

7. If P(A) = 0.68, P(B) =0.4 then P ($\overline{A}$) +P ($\overline{B}$) = ?

   A) 0.98 B) 0.99 C) 0.92 D) 0.9

8. The derivative of $ln(sinx)$ is

   A) $cotx$ B) $cosecx$ C) $cosx$ D) $tanx$

9. For the function $f(x) = x^2 - 3x$, which of the following is not true?

   A) Increasing at $x = 1$ B) Increasing at $x = 2$
   C) Decreasing at $x = 0$ D) Decreasing at $x = -1$

10. The value of $\int \frac{x^2}{x^2-9}dx$ is

A) $\frac{3}{2}ln\left|\frac{x+3}{x-3}\right|+C$ B) $\frac{2}{3}ln\left|\frac{x+3}{x-3}\right|+C$

C) $\frac{3}{2}ln\left|\frac{x-3}{x+3}\right|+C$ D) $\frac{2}{3}ln\left|\frac{x-3}{x+3}\right|+C$

11. The order and degree of the differential equation $\frac{d^3y}{dx^3}=\sqrt{5+\left(\frac{dy}{dx}\right)^4}$ respectively, is

A) 3 and 2 B) 3 and 4 C) 1 and 4 D) 2 and 3

Group 'B' [8×5=40]

12. a) What is the combination of n distinct objects, taken r at a time? [1]

b) Write the general term in the expansion of $(a+x)^n$. [1]

c) Write the series e^x in expansion form. [1]

d) Write the relation between roots and coefficients of quadratic equation $ax^2+bx+c=0\ (a\neq 0)$. [1]

e) Write the sum of the square of first n natural numbers. [1]

13. a) if $y=x-\frac{x^2}{2}+\frac{x^3}{3}-\frac{x^4}{4}+\ldots to\ \infty$

prove that ; $x=y+\frac{y^2}{2!}+\frac{y^3}{3!}+\ldots to\ \infty$ [3]

b) If the roots of the equation $(a^2+b^2)x^2-2(ac+bd)x+(c^2+d^2)=0$ are equal, then prove that $\frac{a}{b}=\frac{c}{d}$. [2]

14. a) In any ΔABC, prove that: $\frac{sinB}{sinC}=\frac{c-a\,cosB}{b-a\,cosC}$. [2]

b) If $A=30^\circ$, $B=45^\circ$, $a=6\sqrt{2}$ Solve the triangle. [3]

Contd...

15. Find the ratio in which the line joining the points (-2, 3, 4) and (1, -2, 3) in the plane $x = 0$. Also, find the direction cosines of the line which is perpendicular to the lines with direction cosines proportional to 3, -1, 1 and -3, 2, 4. [5]

16 a) If $\vec{a}$, $\vec{b}$ and $\vec{c}$ be the position vectors of three vertices A, B and C of the parallelogram ABCD, then find the area of the parallelogram in terms of $\vec{a}$, $\vec{b}$ and $\vec{c}$. [3]

b) Prove that $(\vec{a} - \vec{b}) \times (\vec{a} + \vec{b}) = 2(\vec{a} \times \vec{b})$ and interpret it. [2]

17. Calculate the coefficient of Skewness from the following data: [5]

Age in year (x)	40-50	50-60	60-70	70-80	80-90
No.of people (y)	7	10	20	18	7

18. Find the local maximum, minimum values and the point for inflection (if exist) for $f(x) = 4x^3 + 6x^2 - 9x + 1$. [5]

19. a) Write first principle of finding derivative in $y = f(x)$. [1]

b) Write the derivative of $\sinh x$ with respect to x. [1]

c) What is the integral equal to $\int \frac{1}{x^2 - a^2} dx$? Write it. [1]

d) Write one example of homogenous differential equation. [1]

e) Write one difference between derivative and antiderivative. [1]

Group 'C' [3×8=24]

20. a) A person has got 10 acquaintances of whom 6 are relatives. In how many ways can be invite 5 guests so that 3 of them are relatives? [2]

b) Prove by mathematical induction that for every natural number n. [3]

$$2 + 5 + 8 + 11 + \ldots + (3n - 1) = \frac{n(3n+1)}{2}$$

c) Use De-moivere's theorem to solve: $z^3 = 1$. [3]

21. a) Find the equation of tangent to the circle $x^2+y^2=25$ at (3, 4). [3]

b) Find the equation of the ellipse whose major axis is twice of the minor axis and which passes through the point (0, 1). [3]

c) If P (A) = 0.60, P(B) = 0.40 and P(A∩B) = 0.10, find P(A/B) and P(B/A). [2]

Contd...

9141

22. a) The derivative of hyperbolic function and trigonometric function are not same. Justify with an example. [3]

b) Write first order exact differential equation in term of x and y. Also solve it. [3]

c) Are $\int \frac{dx}{y^2+6y+10}$ *and* $\int \frac{dx}{(y+3)^2+10}$ have same integral ? If not what we need to make same integral ? Explain. [2]

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NEB - GRADE XII
2083 (2026)
सामाजिक अध्ययन

Sub.Code : 9011

(रजिस्ट्रेसन नम्बरका सुरुका दुई अङ्क ७९, ८०, ८१ र ८२ भएका प्राविधिक धारतर्फका नियमित तथा आंशिक परीक्षार्थीहरूका लागि)

विद्यार्थीहरुले सकेसम्म आफ्नै शब्दमा उत्तर दिनुपर्नेछ । दायाँ किनारामा दिइएको अङ्कले पूर्णाङ्क जनाउँदछ ।

समय : ३ घण्टा *पूर्णाङ्क : ७५*

सबै प्रश्नको उत्तर दिनुहोस् ।

समूह 'क'

अति संक्षिप्त उत्तरात्मक प्रश्नहरू [११×१=११]

१. सामाजिक अध्ययनका कुनै दुई बौद्धिक सीप लेख्नुहोस् ।
२. नेपाल कति देशान्तर र अक्षांशमा अवस्थित छ ? उल्लेख गर्नुहोस् ।
३. तपाईं बसोबास गर्ने प्रदेशमा हुन सक्ने कुनै एक विपत्को जोखिम पहिचान गरी न्यूनीकरण गर्न के गर्न सकिन्छ ? एक उपाय लेख्नुहोस् ।
४. कला र संस्कृतिको संरक्षण किन गर्नुपर्छ ? एक बुँदामा लेख्नुहोस् ।
५. सामाजिक सुरक्षाको एक उद्देश्य लेख्नुहोस् ।
६. सिम्रौनगढ राज्यका संस्थापक राजाको नाम लेख्नुहोस् ।
७. पञ्चायत शासनलाई किन निरकुंश शासन व्यवस्था भनिएको हो ? एक तार्किक विचार प्रस्तुत गर्नुहोस् ।
८. तपाईं वर्तमान संविधानको विशिष्ट विशेषता केलाई ठान्नुहुन्छ ? एक तार्किक धारणा उल्लेख गर्नुहोस् ।
९. अन्तरवैयक्तिक सीपले व्यक्तिको व्यक्तित्व विकासमा योगदान पुऱ्याउँछ, कसरी ? एक बुँदामा उल्लेख गर्नुहोस् ।
१०. तपाईं आफ्नो दैनिकीमा कस्तो अवस्थामा अनिर्णित भएको अनुभव गर्नु भएको छ ? आफ्नो एक अनुभव उल्लेख गर्नुहोस् ।
११. वातावरण संरक्षणमा समुदायको भूमिका एक वाक्यमा उल्लेख गर्नुहोस् ।

समूह 'ख'

संक्षिप्त उत्तरात्मक प्रश्नहरू [८×५=४०]

१२. सामाजिक अन्तरक्रियाको आवश्यकता पाँच बुँदामा लेख्नुहोस् । 3
१३. कृषि युग नै औद्योगिक विकासको आधार हो, कसरी ? प्रष्ट पार्नुहोस् । 2
१४. तपाईं बसोबास गर्ने प्रदेशको आर्थिक विकासका लागि गरिनुपर्ने कुनै पाँच कार्यहरू बुँदागत रूपमा उल्लेख गर्नुहोस् । 5

क्रमशः

१५. समाज रूपान्तरणमा समावेशीकरणको आवश्यकता पाँच बुँदामा उल्लेख गर्नुहोस्। 2

१६. औद्योगिक क्रान्तिका कुनै पाँच सकारात्मक प्रभाव स्पष्ट पार्नुहोस्।

१७. पहिलो हुने निर्वाचन प्रणालीका कुनै पाँच सवल पक्षहरू पहिचान गर्नुहोस्। 1

१८. तपाईं कुनै विषयमा उपयुक्त निर्णय गर्नुपूर्व के कस्ता कुरामा विचार पुऱ्याउनुहुन्छ ? पाँच बुँदामा उल्लेख गर्नुहोस्। 3

१९. नेपालमा शहरीकरणले सिर्जना गरेका कुनै पाँच सकारात्मक प्रभाव उदाहरणसहित प्रस्ट पार्नुहोस्। 2.3

समूह 'ग'

विस्तृत उत्तरात्मक प्रश्नहरु [३×८=२४]

२०. 'नेपाल भौगोलिक रूपमा मौलिक विशेषता भएको मुलुक हो'। उदाहरणसहित स्पष्ट पार्नुहोस्। 5

२१. नेपालमा प्रजातान्त्रिक/लोकतान्त्रिक आन्दोलनका सामाजिक, आर्थिक तथा राजनीतिक उपलब्धिलाई दीर्घकालीन रूपमा संस्थागत गर्न के गरिनुपर्छ ? उल्लेख गर्नुहोस्। 4

२२. नेपालको जनसङ्ख्या वितरणको प्रवृत्ति र त्यसको प्रभाव समीक्षा गर्नुहोस्।

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22

Sub.Code : 9341

NEB-GRADE XII
2083 (2026)
Visual Programming

(For regular and partial technical stream's students whose first two digits of registration number starts from 79, 80, 81 and 82)

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**

Attempt **all** the questions.

Group 'A' [9×1=9]

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

1. What is the Common Language Runtime (CLR)?
   A) A compiler for C#
   B) An integrated development environment
   C) A virtual machine for executing .NET code
   D) A database management system

2. Which of the following is a valid C# identifier ?
   (A) 2student (B) _name
   (C) class (D) First-name

3. Which is used to exit a loop prematurely ?
   (A) stop (B) exit (C) break (D) return

4. Which of the following is correct syntax to declare array in C# ?
   (A) int arr = new int[ ]; (B) int arr = new int( );
   (C) int arr = new arr int[ ]; (D) int[ ] arr = new int[ ];

5. What is the correct way to declare a string variable named "name" in C# ?
   (A) string = "Kiran"; (B) var name = "Kiran";
   (C) name = "Kiran"; (D) string name = "Kiran";

6. Which statement is correct ?
   (A) Structures can inherit from another structure.
   (B) Structures an inherit from classes.
   (C) Structures cannot inherit from other structures.
   (D) Structures support multilevel inheritance.

7. When a structure variable is assigned to another structure variable :
   (A) Reference is copied (B) Value is copied
   (C) Address is copied (D) Pointer is copied

Contd...

8. In pointer declaration, which symbol is used ?
   (A) @ (B) # (C) * (D) &

9. In database connection, which namespace is used for SQL operation ?
   (A) System.Data (B) System.IO
   (C) System.Net (D) System.Drawing

Group 'B'

Short Answer Questions **[5×5=25]**

10. Define identifer. Explain different data types used in C# . [1+4]

11. How do you declare and initialize a two dimensional array ? Give an example. [1+1+3]

Or

Write a program to find the greatest number among three user input numbers in C#.

12. Explain Concat( ) and Replace( ) string functions with example in C#.

Or

Write a C# program to read five integers in an array and display them in reverse order of input.

13. Write a C# program to store students details (roll, name, marks, age) using structure and display them.

14. What is a pointer ? How is unsafe code written in C# ?

Group 'C'

Long Answer Questions **[2×8=16]**

15. Explain different types of conditional statement in C#. Discuss their syntax and functionality. [2+6]

Or

Explain the purpose and usage of Jump statements in C#. Describe any two Jump statements with program example.

16. Describe the database connectivity procedure with C# console application. Write a C# program to perform insert and update operations. [4+4]