Military College Murree

Upper Topa, Murree Hills

Character, Courage and Commitment

SYLLABUS, TEST DESCRIPTION

& MODEL PAPER CLASS XI

MILITARY COLLEGE MURREE
ENTRANCE EXAM XI YEAR
# SYLLAUBUS AND TEST DESCRIPTION

1. 4 x hours exam of 200 marks will be based on the following parts /subjects:-
    a. Part- 1 English
    b. Part –II Mathematics
    c. Part-IIIPhysics
    d. Part- IV Chemistry

PART-I
ENGLISH

Test Description of English (50 Marks)

2. This part is divided into three sections:
    a. **Section – A Objective Type (15 Marks)**: Multiple choice items will be asked to measure candidates' ability in a specific content area. Multiple choice items will have a stem which asks aquestion, describes data or presents a situation. Four responses include a keyed correct response and three distractors or foils.MCQwill be based on:
        (1) Text Book
        (2) Use of prepositional/phrasal verbs
        (3) Direct / Indirect narration
    b. **Section – B Short Question (15 Marks)**: Short-answer questions will be open-ended questions that require students to create an answer. They will be asked to assess the basic knowledge and understanding of a topic before more in-depth assessment questions are asked on the topic. Short questions will include:
        (1) Answer in the light of the lesson from Text book e.g "It's a slow food in a world given over to fast food". Explain the statement picked up from the lesson "A World without Books".
        (2) Write down the theme of poem
        (3) Reading the stanza and answering the questions
    c. **Section CTranslation & Composition (20 Marks)**: This section gives an opportunity to show how effectively a student can develop and express his ideas in writing. This section of paper will consist of 2translation questions and one OEQ (Open Ended Question):-
        (1) Urdu to English
        (2) English to Urdu
        (3) Picture Description

7. **English Syllabus:** Following contents comprise the syllabus:-
    - Hazrat Muhammad (SAW) an embodiment of justice
    - Chinese New Year
    - Try Again
    - First Aid
    - The Rain
    - Television vs Newspapers
    - Little by Little One walks Far!
    - Peace
    - Selecting the Right Career
    - A World Without Books
    - Great Expectations

8. **Recommended Books**
    a. English 10 : Caravan Book House, Lahore

b. English Grammar & Composition 9-10:   Punjab Textbook Board, Lahore
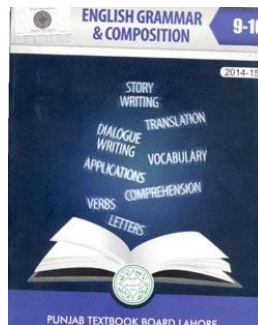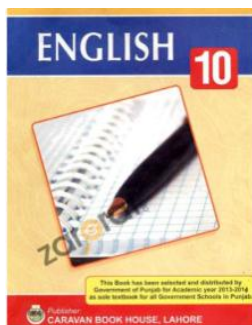
PART-II

MATHEMATICS

Test Description of Mathematics (50 MARKS)

9.   This part is divided into three sections:
   a.   **Section – A Objective Type (15 Marks)**: Multiple choice item will be asked to measure candidate ability with regard to a specific content area. A multiple choice item will have a stem which asks aquestion, describes data or presents a situation.Four responses include a keyed correct response and three distractors or foils.MCQ will be based on text book.
   b.   **Section – B Short Question(15 Marks)**: Short-answer questions will be open-ended questions that require students to create an answer. They will be asked to assess the basic knowledge and understanding of a topic before more in-depth assessment questions are asked on the topic.
   c.   **Section C Constructed Response Questions (20 Marks)**: This section will give an opportunity to show how effectively a student can develop and express his ideas in writing. This section of paper will consist of 4 CRQs (Constructed Response Questions).

10.   **Mathematics Syllabus:** Following contents comprise the syllabus:-

Title of Chapter	Chapter
a. Quadratic Equations	1
b. Theory Of Quadratic Equations	2
c. Variations	3
d. Partial Fractions	4
e. Sets And Functions	5
f. Basic Statistics	6
g. Introduction To Trigonometry	7
h. **Theorems**: Following statements of theorems comprise the syllabus:	8-11

STATEMENTS	Chapter
(1) In any triangle ,the square on the side opposite to acute angle is equal to sum of the squares on the side containing that acute angle diminished by twice the rectangle contain by one of those sides and the projection on it of the other.	8
(2) In an obtuse angled triangle ,the square on the side opposite to the obtuse angle is equal to the sum of the square on the side containing the obtuse angle together with twice the rectangle contained by one of the sides and the projection on it of the	9

other

(3)	In any triangle, the sum of the squares on any two sides is equal to twice the square on half the third side together with twice the square on the median which bisects the third side.	9
(4)	One and only one circle can pass through three non collinear points	9
(5)	A straight line, drawn from the center of a circle to bisect a chord (which is not a diameter)is perpendicular to the chord	9
(6)	Perpendicular from the center of a circle on a chord bisects it.	9
(7)	If two chords of a circle are congruent then they will be equidistant from the center	9
(8)	Two chords of a circle equidistant from the center are congruent	10
(9)	If a line is drawn perpendicular to a radial segment of a circle at its outer end point it is tangent to the circle at the point	10
(10)	The tangent to a circle and the radial segment joining the point of contact and the center are perpendicular to each other.	10
(11)	Two tangent drawn to a circle from a point outside it are equal in length.	10
(12)	If two circles touch externally then the distance between there center is equal to the sum of their radii.	11
(13)	If two circles touch each other internally ,then the point of contact lies on the line segment through there centers and distance between there centers is equal to the difference of their radii	11
(14)	If two arcs of a circle (or of congruent circles) are congruent then the corresponding chords are equal.	11
(15)	If two chords of a circle (or of congruent circles) are equal, then there corresponding arcs (minor, major or semi-circle) are congruent in equal circles or in the same circle, if two chords are equal thy cut of equal arcs.	11
(16)	Equal chords of a circle (or of congruent circles) subtends equal angles at the center (at the corresponding centers).	11
(17)	If the angles subtends by two chords of a circle (or congruent circle) at the center (corresponding centers) are equal, the chords are equal.	11

11. **Recommended Book.**The question papers will be syllabus oriented. However, the following book is recommended for reference and supplementary reading: -

Mathematics 10 (Science Group)
IlmiKitabKhana, Kabir Street
Urdu Bazar, Lahore
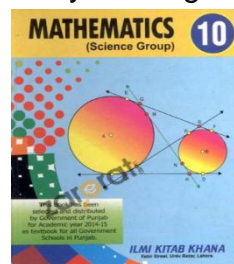
PART-III & IV
PHYSICS & CHEMISTRY

Test Description of Physics / Chemistry (50 Marks each)

12. Entrance Exam of Physics / Chemistry is divided into three sections:-
    a. **Section – A MCQs(15 Marks)**: Multiple choice item will be asked to measure candidate ability with regard to a specific chemistry area. A multiple

choice item will have a stem which asks aquestion, describes data or presents a situation. Four responses include a keyed correct response and three distractors or foils. MCQ will be based on Syllabus.

b. **Section – BShort Question(15 Marks)**: Short-answer questions will be open-ended questions that require students to create an answer. They will be asked to assess the basic knowledge and understanding of a topic before more in-depth assessment questions are asked on the topic. Sections 'B' questions therein are to be answered on This book.

13. **Section C Open Ended Questions (20 Marks)**. This section gives an opportunity to show how effectively a student can develop and express his ideas in writing. This section of paper will consist of 4 OEQs (Open Ended Questions)basing on syllabus.

14. **Physics Syllabus.** Following contents comprise the syllabus:-
   ➢ Simple Harmonic Motion and Waves

➢ Sound	➢ Geometrical Optics	➢ Electrostatics
➢ Current Electricity	➢ Electromagnetism	➢ Introductory Electronics

15. **Physics Recommended Book**. The question papers will be syllabus oriented. However, the following book is recommended for reference and supplementary reading: **Physics 10**
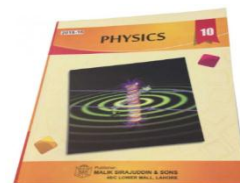
   Malik Sirajuddin& Sons Lahore

16. **Syllabus Chemistry**. Following contents comprise the syllabus:-

➢ Chemical Equilibrium	➢ Acids, Bases, and Salts	➢ Organic Chemistry
➢ Hydrocarbons	➢ Biochemistry	➢ Environmental Chemistry I: The Atmosphere
➢ Environmental Chemistry II: Water		

17. **Chemistry Recommended Book**. The question papers will be syllabus oriented. However, the following book is recommended for reference and supplementary reading:

   Chemistry 10
   Carvan Book House, lahore.

MODEL PAPER

PART-1 ENGLISH (50)

SECTION – A (MARKS: 15)

Q.1: Insert the correct option i.e. A / B / C / D in the empty box opposite each part. Each part carries one mark.

i. On his deathbed, the holy Prophet Muhammad (PBUH) offered himself, his honour and his property for _____:

A. Zakat   B. revenge
C. war   D. peace

ii. On the arrival of the new year in China, symbolic foods are eaten, colours used   and gifts exchanged, all focusing on one thing i.e.

A. love   B. good luck
C. patriotism   D. joy

iii. The Holy Prophet Muhammad (PBUH) decided the disputes of Jews:

A. according to the Holy Quran   B. according to the conventions
C. according to the Jewish law   D. according to their desires

iv. The scope of any field in terms of market demand should be considered

A. the least   B. very seriously
C. rarely   D. by the poor only

v. Within no time, the ghost appeared. The underlined part of the sentence is a/an:

A. Adverb Phrase   B. Noun Phrase
C. Prepositional phrase D. Adjective phrase

vi. The cuckoo sings and woods come to life. The underlined part of the sentence is a/an:

A. transitive verb   B. auxiliary verb
C. intransitive verb   D. infinitive

vii. A rolling stone gathers no moss. The underlined part of the sentence is a/an:

A. Gerund   B. Present Participle
C. Past Participle   D. Infinitive

viii. Because he was late, he missed the first period. The sentence is:
A. Simple sentence   B. Compound sentence
C. Complex sentence   D. Compound complex sentence

ix.   Which of the following is not a noun?

    A.   Excellent   B.   Excellence
    C.   Tokyo   D.   Unity

x.   Do you know anybody here? The underlined part of the sentence is a/an:

    A.   Relative pronoun   B.   Indefinite pronoun
    C.   Interrogative pronoun   D.   Demonstrative pronoun

xi.   He has firmly discarded the idea of attacking the enemy. The underlined part of the sentence is a/an:

    A.   Adverb of manner   B.   Adverb of reason
    C.   Adverb of time   D.   Adverb of place

xii.   Auditory imagery is very common in Wordsworth's poetry. The underlined part of the sentence is a/an:

    A.   abstract noun   B.   adjective
    C.   adverb   D.   indefinite pronoun

xiii.   Which one of the following options shows the correct spellings?

    A.   Entercede   B.   Intersede
    C.   Intercede   D.   Interscede

xiv.   Which one ption gives the synonym of the word 'leisure'?

    A.   free time   B.   pleasure
    C.   poultry   D.   wave

xv.   Which one of the following options provides the antonym of 'convenient'?

    A.   easy   B.   just
    C.   wise   D.   uncomfortable

SECTION – B (MARKS: 15)

Q.2:   Answer any FIVE of the following parts in about 30 to 40 words. Each part carries equal marks. $(5 \times 3 = 15)$

    i.   Why did the Jews bring their suits to the Holy Prophet?

    _____

    _____

    _____

    _____

ii.   When is Chinese New Year celebrated?
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iii.   How did Holy Prophet solve the dispute of Black Stone?
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iv.   How is Television different from Newspaper?
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v.   What does the Chinese word *fu* mean?
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Q.3:   Read the following stanza carefully and answer the questions given at the end.   (5)
       And when the Sun comes out,
       After this ran shall stop,
       A wondrous light will fill,
       Each dark, round drop,
       I hope the Sun shines bright,
       'Twill be a lovely sight.

Questions:
i.   What does the Sun symbolize?   (1)
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ii.   What does the line 'I hope the Sun shines bright' mean?   (2)
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iii.   What is meant by the word 'Wondrous'?   (2)

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SECTION – C (MARKS: 20)

Q.4:   Translate the given sentences into English.   (10)

a. یہ راستہ کراچی کو جاتا ہے

_____

b. اسے امتحان میں نقل کرنے کی سزا ملی

_____

c. رشوت ناسور کی طرح اس ملک میں پھیل چکی ہے

_____

d. میرے گھر پہنچنے سے پہلے مہمان جا چکے تھے۔

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e. ملکی معیشت کو مضبوط بنانے کیلیے ہمیں ٹیکس دینا ہو گا

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Q 5:   Translate the given sentences into Urdu.   (10)

a.   Pakistan is progressing by leaps and bounds.

_____

b.   Ali has been studying in this college for two years.

_____

c.   Cars are faster than bikes and bicycles.

_____

d.   Women are very important members of our society.

_____

e.   Human civilization is on the verge of chaos.

_____

Q.No.6: Write a story in the given space based on the prompt / sketch / picture and give it an appropriate title. Use the given space only to write your story.   (10)

Suitable Title:_____   **(2)**

Plot	2
Diction	1
Language	2
Characters	2

Shaheryar was recently married to Ulfat. They loved each other. They looked forward to a beautiful life. One day they planned a bonfire in their house-lawn.

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Lesson /Moral: _____**(1)**

PART-II
MATHEMATICS
SECTION A MARKS: 15

Q.7   Insert the correct option i.e. A / B / C / D in the empty box provided opposite each part. Each part carries one mark.

i.   If α, β are the roots of the equation $px^2 + qx = r$ then sum of roots 2α, 2β is:-

A. $\frac{-p}{q}$ B. $\frac{r}{p}$ C. $\frac{-2q}{p}$ D. $\frac{-q}{2p}$

ii.   Two factors of $x^2 - 15x + 56$ are:-

A. $(x - 7), (x + 8)$ B. $(x + 7), (x + 8)$

C. $(x - 7), (x - 8)$ D. None of these

iii.   If $\frac{a}{b} = \frac{c}{d}$ then compnendo property is:-

A. $\frac{a}{a+b} = \frac{c}{c+d}$ B. $\frac{a}{a-b} = \frac{c}{c-d}$ C. $\frac{ad}{bc}$ D. None of these

iv.   A. function $f(x) = \frac{N(x)}{D(x)}$ with $D(x) \neq 0$ where N(x) and M(x) are polynomial is called:-

A. an identity   B. a fraction   C. an equation   D. None of these

v.   The set $\{ x \mid x \in W \wedge x \leq 101 \}$ is:-

A. infinite set   B. subset   C. null set   D. finite set

vi.   If number of elements in set A is 3 and in set B is 2, then number of elements in A x B is:-

A. 6   B. 2^6 C. 2^8 D. 2^2

vii.   Mean is affected by change in:-

A. place   B. scale   C. rate   D. None of these

viii.   The most frequent occurring observation in a data set is called:-

A. median   B.mode   C. harmonic mean D. None of these

ix.   An angle is called _____ angle if its terminal side lies on the $x -$ axis or $y -$ axis:-

A. quadrantal   B.standard   C. coterminal   D. None of these

x. $\dfrac{1}{1+\sin\theta} + \dfrac{1}{1-\sin\theta}$ is equal to:-

A. $2sec^2\theta$ B. $2cos^2\theta$ C. $sec^2\theta$ D. $cos\theta$

xi. A _____ of a circle is the plane figure bounded by two radii and the arc intercepted between them:-

A. segment   B. sector   C. chord   D. None of these

xii. A _____ of circle is the portion of a circle bounded by an arc and a corresponding chord:-

A. segment   B. sector   C. chord   D. None of these

xiii. Tangents drawn at the ends of a diameterare _____ to each other:-

A. parallel   B.non-parallel   C. collinear   D. perpendicular

xiv. A line which has two points in common with a circle is called _____ of a circle:-

A. sine   B.cosine   C. tangent   D. secant

xv. The number of common tangents that can be drawn for two disjoint circles are:-

A. 2   B. 3   C. 4   D. None of these

SECTION-B (MARKS: 15)

Q.8   Attempt **All** parts.   **(Marks 5x3 = 15)**

i. Solve the equation: $3x^{-2} + 5 = 8x^{-1}$

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ii. Solve the equation: $\sqrt{3x + 100} - x = 4$

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iii.   If $\propto, \beta$ are the roots of the equation $x^2 - 3x + 6 = 0$. Form equations whose roots are $\frac{1}{\propto}, \frac{1}{\beta}$

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iv.   Prove that $x^3 + y^3 = (x + y)(x + wy)(x + w^2 y)$

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v.   The difference of a number and its reciprocal is $\frac{15}{4}$, find the number.

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SECTION – C (MARKS: 20)

Q.9   In any triangle square on the side opposite to acute angle is equal to sum of the squares on the sides containing that acute angle diminished by twice the rectangle contained by one of those sides and the projection on it of the other.

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Q.10 Prove that, if two tangents drawn to a circle from a point outside it, are equal in length.

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Q.11: Prove that measure of central angle of minor arc of a circle, is double in measure that of the angle subtended by the corresponding major arc.

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Q.12: Draw two equal circles of each radius 2.4cm. If the distances between their centres are 6cm then draw their transverse tangents.

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PART-III

PHYSICS 50)

SECTION – A (MARKS: 15)

Q.13: Insert the correct option i.e. A / B / C / D in the empty box opposite each part. Each part carries one mark.

i. If F=0.08N and x = 4cm, then value of k is:

   A. $4Nm^{-1}$ B. $0.2Nm^{-1}$ C. $8Nm^{-1}$ D. $2Nm^{-1}$

ii. Waves transfer:

   A. frequency   B. Wave length   C. Velocity   D. Energy

iii. The SI unit of intensity of sound is:

   A. Wm B. Wm^{-1} C. Wm^3 D. Wm^{-2}

iv. The inner part of Fiber Optics is called:

   A. Metal jacket   B .Boundary   C. Core   D. Cladding

v. The SI unit of electromotive force is:

   A. Joule   B. Newton   C. Volt   D. Coulomb

vi. The particles emitted from a hot cathode surface are called

   A. Positive ions   B. Negative ions   C. Electrons   D. Protons

vii. Which of the following quantities do not change during refraction of light?

   A. Frequency   B. Direction   C. Wavelength   D. Speed

viii. Which one is OHMIC in nature?

   A. Fixed resistor   B. Filament Lamp   C. Thermistor   D. Insulator

ix. House safety wiring is connected in:

   A. Parallel   B. Series   C. At Random   D. Gates

x. When we double the voltage in a simple circuit, as a result following is doubled:

   A. Gates   B. Power   C. Charge   D. Current

xi. The distance between optical center and principle focus is called:

   A. Principal Axis   B. Optical center   C. Principal Focus   D. Focal Length

xii. In Cathode Ray Oscilloscope electrons are deflected in:

   A. Filament   B. Anode   C. Electron Gun   D. Electric & Magnetic Field

xiii. The Index of Refraction depends upon:

A. Focal Length   B. Speed of Light   C. Image distance   D. Object distance

xiv. Electric field lines:

A. Always cross each other   B. Never cross each other

C. Cross each other in weak field   D. Cross each other in strong field

xv. What is the voltage across 6 Ohm resistor when 3 Ampere of current passes through it?

A. 2 Volt   B. 9 Volt   C. 18 Volt   D. 36 Volt

SECTION-B (MARKS: 15)

Q.14: Attempt All parts.   (Marks 5x3 = 15)

i. Give any three uses of ultrasound.

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ii. Define Ohm's Law.

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iii. What is the wavelength of a radio wave transmitted by an FM Station at 90 MHz? Speed of radio wave is 3×10^8 m/sec.

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iv. Why driver side mirror of a car is a convex mirror rather than plane or concave?

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v.   A current of 3 mA is flowing through a wire for 1 minute. What is the charge in the wire?

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SECTION – C (MARKS: 20)

Q.15: What is SHM? Mathematically prove that acceleration of a mass attached to a spring is directly proportional to its displacement from mean position.   (1+4)

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Q.16: What is meant by refraction of Light? Explain total internal reflection in Optical.(1+4)

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Q.17: What is intensity of sound and how you will relate intensity of sound with loudness of sound?   (1+4)

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Q.18: Define Electrical Energy? State and explain Joule's Law?   (1+4)

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PART-IV
CHEMISTRY
SECTION A MARKS (15)

Q.19: Insert the correct option i.e. A / B / C / D in the empty box provided opposite each part. Each part carries one mark.

i.   Sour milk contains which acid?
     A.   Lactic acid   B.   Citric acid
     C.   Acetic acid   D.   Formic acid

ii. Reactions which have comparable amounts of reactants and products at equilibrium state have_____ K_C value
     A.   Very small   B.   Moderate
     C.   Very large   D.   None

iii. Which of the following does not contain protein?
     A.   Eggs   B.   Pulses
     C.   Potatoes   D.   Bean

iv. The order of reactivity of Hydrogen halides with alkenes is
     A.   HI >HBr   B.   HBr> HI
     C.   HCl>HBr   D.   HBr>HCl

v.   Night blindness is because of deficiency of

     A.   Vitamin A   B.   Vitamin E
     C.   Vitamin C   D.   Vitamin D

vi. Permanent hardness of water is removed by adding

     A. Na_2 zeolite   B.   Soda lime
     C.   Lime water   D.   Quick lime

vii. The functional group –COOH is found in:-
     A.   Carboxylic acids   B.   Aldehydes
     C.   Alcohols   D.   Esters

viii. About 99 % atmosphere's mass lies within
     A.   30 kilometre   B.   35kilometre
     C.   15kilometre   D.   11kilometre

ix. The end product of oxidation of acetylene is
     A.   Oxalic acid   B.   Glycol
     C.   Glyoxal   D.   None of these

x.   The ability of carbon atom to form long chains is called
     A.   Isomerism   B.   Catenation
     C.   Resonance   D.   Condensation

xi. Which of the following does not cause hardness in water
     A. Ca^{2+} B. Mg^{2+}
     C. SO_4^{2-} D. Na^+

xii. For a reaction between PCl_3 and Cl_2 to form PCl_5 the units of K_C are

A.	mol dm^{-3}	B.	mol^{-1} dm^{-3}
C.	mol^{-1} dm^3	D.	mol dm^3

xiii. Dilute acids react with carbonates to produce given products except
A.	Salt	B.	Water
C.	Carbon dioxide	D.	Hydrogen

xiv. Normally rain water is weakly acidic because of
A.	SO_3 gas	B.	CO_2 gas
C.	SO_2 gas	D.	NO_2 gas

xv. Photo synthesis process produces
A.	Starch	B.	Cellulose
C.	Sucrose	D.	Glucose

SECTION-B (MARKS: 15)

Q.20: Attempt **All** parts.   (Marks 5x3 = 15)

i. How carbon tetra chloride is prepared from Methane?

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ii. What are the effects of acid rain on environment?

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iii. Calculate the pOH of 0.001 M HNO_3 solution

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iii. What is the difference between Oligosaccharide and Polysaccharide?

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v.   What are the limitations of Arhenius concept?

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SECTION – C (MARKS: 20)

Q.21 When nitrogen reacts with hydrogen to form ammonia, the equilibrium mixture contains 0.31 mol dm^{-3} and 0.50 mol dm^{-3} of nitrogen and hydrogen respectively. If the K_C is 0.50 mol^{-2} dm^6, What is equilibrium   concentration of ammonia?

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Q.22: Write down the complete methods with reactions to remove temporary hardness from water?

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Q.23: What do you know about Green House effect? Write in detail.

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Q.24: Define and explain Lowery Bronsted concept of acids and bases._____
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