

Rukmani Birla Modern High School

Session 2025-26

SUMMER ASSIGNMENT

*Summer days, so warm and bright,
Filled with laughter, pure delight.
Every day a chance to see,
The world in all its mystery.*

*Explore the world, both near and far,
Find out just how brave you are.
Let curiosity be your guide,
In every step, take pride.*

*When you return to books and class,
You'll be refreshed and strong at last.
For summer's magic, soft and slow,
Is the seed where knowledge grows.*

*Balance work with time for play,
Enjoy the sunshine every day.
Rest and dream, let your mind soar,
Summer's gifts hold so much more.*



HOLIDAYS... FUN TIME ...

Summer holidays are around the corner. Despite the hot sun, we can still have a lot of fun, so vacation is here for a sweet treat. To enhance the child's creativity and innovation for the progressive learning, we have designed a few engaging activities and holiday homework. Kindly encourage your ward to do the following activities to enhance their skills and make learning a joyful experience.

Morning Blessings- Parents can help children to inculcate good habits by doing, Surya Namaskar and encouraging them to greet all elders in the morning.

Being responsible- Spend a week with your elders. Observe their routine. Listen to their childhood memories, incidents from the past and watch their old family albums. This will strengthen the bond between you and your elders. Don't forget to capture them in the form of short videos.

Engage in Hobbies - Explore Interests, Spend time on activities you enjoy, such as sports, music or art.

Adopt a Tree - Encourage your child to adopt a tree in the park around you and make sure that you take care of it daily by watering it. Also, click a picture with it and share it with your class teacher.

Stay Active: Engage in regular exercise, whether through sports, walking, cycling, or home workouts.

Outdoor Activities: Spend time outdoors, enjoying nature through hiking, swimming, or camping.

Helping Others: Do a good deed at least once a week, fostering a sense of community.

Travel and Explore: Visit local museums, parks, or historical sites.

Trips: Plan trips, whether it's a family vacation or day trips to nearby attractions.

Stay Safe: Follow health guidelines, stay hydrated.

Parents can help their ward to memorize their home address and contact numbers

IMPORTANT: Please feel free to contact the class teacher regarding any query.



RUKMANI BIRLA MODERN HIGH SCHOOL
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CLASS X

Subject	Assignment
English	<p>Creative Writing & Speaking Skill Task: Podcast Script – “Voices of the Youth” Assignment: Prepare a 3-minute podcast script for an imaginary episode of a youth podcast titled “Voices of the Youth.” The topic is: “What Does Freedom Mean to Gen Z?” Instructions: 1. Your script must: #Express your personal understanding of freedom in today’s world. #Reflect on the challenges faced by Gen Z in the pursuit of freedom -identity, expression, equality, etc.. Read biographies and include references to Nelson Mandela, Martin Luther King Jr., Abraham Lincoln, and Mahatma Gandhi, connecting their struggles with modern youth ideals.</p> <p>2. The script should be 350–400 words (about 3 minutes when read aloud). 3. Format it neatly with clear headings on A4 size coloured ruled sheets. 4. Optional: Record your podcast audio and submit it along with the script.</p> <p>Suggested Reading: "What better way to spend your summer than getting inspired by real-life heroes? must-read biographies that will boost your reading skills while opening your mind to incredible journeys!" ➤ The Story of My Experiments with Truth- Mahatma Gandhi ➤ Long Walk To Freedom – Nelson Mandela</p>
Science	<p>Multiple Choice Questions:</p> <p>Q.1 A convex mirror of radius of curvature 30cm forms an image that is half the size of the object. The object distance is (a) 45cm (b) -15cm (c) -45cm (d) 15cm (JEE Main 29th Jan Ist Shift 2024)</p> <p>Q.2 If the distance between object and its two times magnified virtual image produced by a curved mirror is 15cm, the focal length of the mirror must be (a) -10cm (b) -12cm (c) 10/3cm (d) 15cm (JEE Main 29th Jan IInd Shift 2024)</p> <p>Q.3 An object is placed at a distance of 12cm in front of a plane mirror. The virtual and erect image is formed by the mirror. Now the mirror is moved by 4cm</p>

towards the stationary object. The distance by which the position of image would be shifted, will be

(a) 2cm towards mirror (b) 4cm toward mirror (c) 8cm away from mirror (d) 8cm toward mirror (**JEE main 10th April 1st shift 2023**)

Q.4 When one light ray is reflected from a plane mirror with 30° angle of reflection, the angle of deviation of the ray after reflection is

(a) 130° (b) 120° (c) 110° (d) 14° (**JEE main 11th April 2nd shift 2023**)

Q.5 Two objects A and B are placed at 15cm and 25cm from the pole in front of a concave mirror having radius of curvature 40cm. The distance between images formed by the mirror is

(a) 40cm (b) 160cm (c) 60cm (d) 100cm (**JEE main 1st Feb 2nd shift 2023**)

Q.6 The light rays from an object have been reflected towards an observer from a standard flat mirror, the image observed by the observer are

A. Real B. Erect C. Smaller in size than object D. Laterally Inverted

Choose the most appropriate answer from the options given below:

(a) B and C only (b) A, C and D only (c) B and D only (d) A and D only

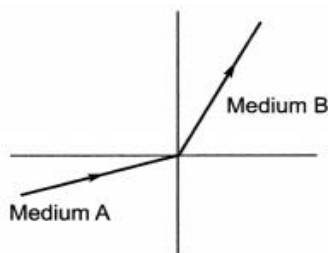
(**JEE main 25th Jan 2nd shift 2023**)

Q.7 An object is placed at a distance of 40cm from a concave mirror of focal length 15cm. If the object is displaced through a distance of 20cm towards the mirror, the displacement of the image will be (**NEET 2018**)

(a) 30cm away from the mirror (b) 36 cm away from the mirror

(c) 30 cm towards the mirror (d) 36cm toward the mirror

Q.8 A light ray enters from medium A to medium B as shown in figure. The refractive index of medium B relative to A will be (**NCERT Exemplar**)



(a) greater than unity (b) less than unity (c) equal to unity (d) zero

Q.9 In which mode of nutrition an organism derives its food from the body of another living organism without killing it?

(a) Saprotrophic nutrition

(b) Parasitic nutrition

(c) Holozoic nutrition

(d) Autotrophic nutrition

Q.10. In which group of the organisms the food material is broken down outside the body ?

- (a) Mushroom, green plants, amoeba (b) Yeast, mushroom, bread mould
(c) Paramecium, amoeba, cuscutea (d) Cuscuta, lice, tapeworm

Q.11 Which of the following statements about the autotrophs is incorrect?

- a) They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll
b) They store carbohydrates in the form of starch
c) They convert carbon dioxide and water into carbohydrates in the absence of sunlight
d) They constitute the first trophic level in food chains

Q.12 Raw materials required in the autotrophic mode of nutrition involves:

(i) Carbon dioxide and water (ii) Chlorophyll (iii) Nitrogen (iv) Sunlight

- a) (i), (ii) and (iii)
b) (i) and (iii)
c) (i), (ii) and (iv)
d) All (i), (ii), (iii) and (iv)

Q.13 Which of the following equations is the summary of photosynthesis?

- a) $6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$
b) $6\text{CO}_2 + \text{H}_2\text{O} + \text{Sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 + 6\text{H}_2\text{O}$
c) $6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$
d) $6\text{CO}_2 + 12\text{H}_2\text{O} + \text{Chlorophyll} + \text{Sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2 + 6\text{H}_2\text{O}$

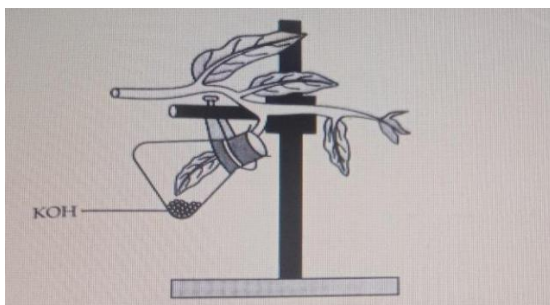
Q.14 The internal (cellular) energy reserve in autotrophs is:

- (a) glycogen (b) protein (c) fatty acid (d) starch

Q.15 Choose the event that does not occur in photosynthesis:

- a) Absorption of light energy by chlorophyll
b) Oxidation of carbon to carbon dioxide
c) Reduction of carbon dioxide to carbohydrates
d) Conversion of light energy to chemical energy

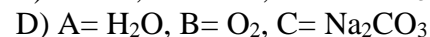
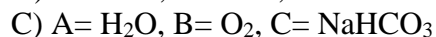
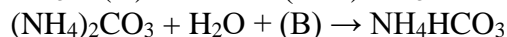
Q.16 A twig of plant was kept inside the flask as shown in the diagram and it was kept in sunlight For a few hours. What is the aim of the experiment?



- (a) To prove that carbon dioxide is necessary for photosynthesis.

- (b) Sunlight is necessary for photosynthesis.
 (c) To show that O_2 was used up by the inside leaf part..
 (d) To show that chlorophyll is necessary for photosynthesis.

17. Find A, B and C in the following reactions : **(IIT-JEE 2021)**



18. Which one of the following have Largest number of atoms **(JEE Mains- Online 2013)**

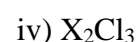
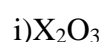
- i) 127g of Iodine ii) 48 g Magnesium iii) 71 g of chlorine iv) 4 g Hydrogen

19. 16 g of oxygen has same number of molecules as in

- i) 16 g of CO. ii) 28g of N_2 . iii) 14 g of N_2 . iv) 2 g of H_2

20. Choose the incorrect formula out of the four compounds for an element X below:

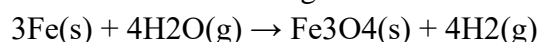
(JEE Mains- Online 2015)



21. The amount of Oxygen in 3.6 moles of water is: **(JEE Mains- Online 2014)**

- i) 28.8g. ii) 18.4 g iii) 115.2g. iv) 57.6 g

22. Which of the following statements about the given reaction are correct?



- (i) Iron metal is getting oxidized
 (ii) Water is getting reduced
 (iii) Water is acting as reducing agent
 (iv) Water is acting as oxidizing agent

(a) (i), (ii) and (iii)

(b) (iii) and (iv)

(c) (i), (ii) and (iv)

(d) (ii) and (iv)

23. $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ **(Main 29th July 1st Shift 2022)**

Consider the above reaction, the limiting reagent of the reaction and number of moles of NH_3 formed respectively are

- i) H_2 1.42 moles. ii) H_2 0.71 moles.
 iii) N_2 1.42 moles. iv) N_2 0.71 moles.

24. Consider the reaction $4HNO_3(l) + 3KCl(s) \rightarrow Cl_2(g) + NOCl(g) + 2H_2O(g) + 3KNO_3(s)$ The amount of HNO_3 required to produce 110.0 g of KNO_3 is

(Main 29th July 2nd Shift 2022)

- i) 32.2g. ii) 69.4 g. iii) 91.5 g iv) 162.5 g

Assertion - Reasoning based questions.

These consist of 2 statements- Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

A. Both A and R are true, and R is the correct explanation of A.

B. Both A and R are true, but R is not the correct explanation of A.

C. A is true, but R is false.

D. A is false, but R is true.

25. **Assertion(A)** : The centre of curvature is not a part of the mirror. It lies outside its reflecting surface.

	<p>Reason (R) : The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre.</p> <p>26. Assertion (A) : A ray passing through the centre of curvature of a concave mirror after reflection, is reflected back along the same path. Reason (R) : The incident rays fall on the mirror along the normal to the reflecting surface.</p> <p>27. Assertion (A) : Bile is essential for digestion of lipids. Reason (R) : Bile juice contains enzymes.</p> <p>28. Assertion (A) : In anaerobic respiration, one of the end product is alcohol. Reason (R) : There is an incomplete breakdown of glucose.</p> <p>29. Assertion (A) : Decomposition of vegetable matter into compost is an example of exothermic reactions. Reason (R) : Exothermic reaction are those reactions in which heat is evolved.</p> <p>30. Assertion (A): Atomic mass of sodium is 23 u. Reason (R) : An atom sodium is 23 times heavier than an atom of Carbon -12 isotope.</p>
<p>Mathematics</p>	<p>Prepare a model on any one of the following topics: Trigonometry, Conic Sections, Algebra, Congruency of Triangles, Geometry Map Project, Optical Illusion, Tessellation, Probability, Fractals, Three-Dimensional Geometry, Combination of Solid Figures, Combinatorics, Spirograph, Sierpinski Triangle, Arithmetic Progression and Geometric Progression, Cartesian Plane, Vectors and Scalars Quantities in Real Life etc.</p> <p>Do the following case study questions in Math Assignment register:</p> <p>Q1. A morning walk may help improve your mental clarity and ability to focus throughout the day. A recent study found that amongst older adults, those who started their days with a morning walk improved their cognitive function, compared to those who remained sedentary. Walking may also help you think more creatively. In a morning walk three students step off together, their steps measure 80 cm, 85 cm and 90 cm respectively.</p> <div> </div> <p>(i) What is the HCF of 80 and 90? (ii) Find the sum of exponents of the prime factors of total distance. (iii) What is the minimum distance each should walk so that he can cover the distance incomplete steps?</p> <p>Q2. The below picture are few examples of natural parabolic which is represented by a quadratic polynomial. A parabolic arch is an arch in the shape of a parabola. In structures, their curve represents an efficient method of load and so can be found in bridges and in architecture in a variety of forms.</p>



Based on the above information, answer the following questions.

- (i) If α and $1/\alpha$ are the zeroes of the quadratic polynomial $2x^2 - x + 8k$, then find the value of k .
- (ii) Find the sum of zeroes of $p(x) = kx^2 - kx + 5$.
- (iii) Write a quadratic polynomial whose one zero is 4 and product of zeroes is 0.
- (iv) Find the zeroes of $p(x) = x^2 - 7x + 12$

Q3. Two friends purchased the same company car and same green colour. They are travelling in separate car which starts at place A and other car at place B. Place A and B are 100 km apart on a highway. One car starts from A and another from B at the same time.

Situation 1: If the cars travel in the same direction at different speeds, they meet in 5 hours.

Situation 2: If they travel towards each other, they meet in 1 hour.



- (a) Assuming that the speed of first car and second car be x km/h and y km/h respectively, find the pair of linear equations representing the situations.
- (b) What is the speed of car starts at A and speed of car starts at B?

Q4. Generally, new methods such as aquaponics Raised-bed gardening raised beds and cultivation under glass are used. Marketing can be done locally in farmers markets, traditional markets or farmers can contract their whole crops to wholesalers, canners or retailers. A farmer wishes to grow a 100 m^2 rectangular vegetable garden. Since he has with the only 30 m barbed wire, he fences three sides of the rectangular garden letting compound wall of his house act as the fourth side-fence.



	<p>(a) Represent given problem in quadratic form.</p> <p>(b) Find the length of the vegetable garden.</p> <p>(c) If length of the vegetable garden is 5 m, then find the breadth.</p>
Social Science	<p>SUSTAINABLE DEVELOPMENT</p> <p>Project Title: Sustainable Development in Jaipur: Challenges and Initiatives</p> <p>Objective: To explore sustainable development practices in Jaipur (Pink City), analyze challenges, and highlight local initiatives promoting environmental, economic, and social sustainability.</p> <p>Project Components:</p> <ol style="list-style-type: none"> 1. Introduction to Sustainable Development & Jaipur as Smart City <ul style="list-style-type: none"> - Definition of sustainable development - Why is sustainability important for Jaipur? - Key environmental challenges in Jaipur: -Sustainable Initiatives in Jaipur (Use of Solar Panels in Heritage Sites e.g., Hawa Mahal lighting, promoting e-rickshaw, etc) 2. Sustainable Development Goals (SDGs) Relevant to Jaipur <ul style="list-style-type: none"> - Focus on the 5 key SDGs that apply to Jaipur: <ol style="list-style-type: none"> 1. SDG 6 2. SDG 7 3. SDG 11 4. SDG 12 5. SDG 13 3. Challenges & Solutions <ul style="list-style-type: none"> • Problem: Excessive groundwater depletion <ul style="list-style-type: none"> ◦ Solution: • Problem: Air pollution due to construction & traffic <ul style="list-style-type: none"> ◦ Solution • Problem: Plastic waste in markets (like Johari Bazaar) <ul style="list-style-type: none"> ◦ Solution: 4. Individual & Student's Role in Sustainability <ul style="list-style-type: none"> - What can Jaipur's residents do? - What can students do? <p>Project Presentation Format:</p> <ul style="list-style-type: none"> ✓ Handwritten (8-12 pages) ✓ Charts / Infographics (e.g., SDGs, Jaipur's pollution data) ✓ Photos / Collage (Sustainable landmarks: Jal Mahal, Solar Panels in Jaipur) <p>Submission Guidelines:</p> <ul style="list-style-type: none"> - Format: A4 Sheets / Scrapbook - Creativity & Original Research will be rewarded -Do project work on A4 size sheets <p>Resources for Reference:</p> <ul style="list-style-type: none"> - Jaipur Municipal Corporation (https://jaipurmc.org) - Rajasthan Renewable Energy Corporation (https://energy.rajasthan.gov.in) - NCERT Class X Geography (Chapter: Resources & Development)
Sanskrit	<ol style="list-style-type: none"> 1. असम और राजस्थान के ऐतिहासिक स्थलों का वर्णन करते हुए पाँच-पाँच वाक्य संस्कृत भाषा में लिखिए। 2. श्रीमद् भगवद् गीता के पाँच श्लोक कंठस्थ कीजिए।

Hindi	<p>आपको असम के चाय-बागानों में काम करने वाले लोगों, मालिकों एवं चाय के उपयोगकर्ताओं का साक्षात्कार लेना है। इसके लिए प्रश्न-सूची तैयार कीजिए।</p> <p>-साक्षात्कार के प्रश्नों हेतु आवश्यक बिंदु -</p> <ul style="list-style-type: none"> - व्यक्तिगत जानकारी - चाय बागान का अनुभव - कौशल और क्षमता - कार्य और जिम्मेदारी - चुनौतियाँ और समाधान
French	<p>1. Write a short travel blog in french titled ‘ From Green Hills to Golden Sands: My journey in context of Assam and Rajasthan .(in 100-150 words)</p> <p>2. List and compare two endangered species from Assam (One horned rhinoceros) and Rajasthan (Great Indian Bustard) in french . What efforts are being made to protect them?</p>
Artificial Intelligence	<p>Project: "Create Video Using AI"</p> <p>Product Idea : "NexEar – AI Wireless Earbuds" (Electronic Gadget)</p> <p>Concept: Earbuds that auto-adjust music based on your mood (AI emotion detection).</p> <p>40-Second Video Script:</p> <p>Scene 1 (0-5 sec):</p> <ul style="list-style-type: none"> • Visual: Frustrated student stuck in traffic → inserts earbuds. • Text: <i>"Bad mood? Let NexEar fix it!"</i> <p>Scene 2 (5-15 sec):</p> <ul style="list-style-type: none"> • Visual: AI interface detecting stress → switches to calm music. • Voiceover: <i>"Real-time mood analysis → perfect playlist!"</i> <p>Scene 3 (15-25 sec):</p> <ul style="list-style-type: none"> • Visual: Gym montage (earbuds boosting bass during workout). <p>Scene 4 (25-35 sec):</p> <ul style="list-style-type: none"> • Visual: Battery icon showing <i>"50 hrs playtime"</i>. Text: <i>"Charge less. Live more."</i> <p>Scene 5 (35-40 sec):</p> <ul style="list-style-type: none"> • Visual: Earbuds morphing into a heart. Tagline: <i>"NexEar – Hear Your Heart!"</i> <p>AI Tools to Create These Videos for Free:</p> <ol style="list-style-type: none"> 1. Video Generation: Pika Labs (AI video clips) / Runway ML (Green screen effects). 2. Voiceover: ElevenLabs (Free tier for AI voices). 3. Editing: Shotcut (Open-source video editor). 4. Graphics: Canva AI (Text-to-image for product mockups). <p>Students can choose any other free available AI tool for the same.</p>

Classes
Nursery to VIII
IX to XII

Summer Vacation
May 10, 2025 to June 24, 2025
May 25, 2025 to June 24, 2025

*Do Your Assignments
But Do Not Forget To Read Books
Spend Time With Family & Friends
Help Birds & Stray Animals
Learn A New Skill, Sharpen Your Talent
Come Back Rejuvenated, Relaxed, Refreshed,
Revived, Recharged*

*Happy
Holidays*

