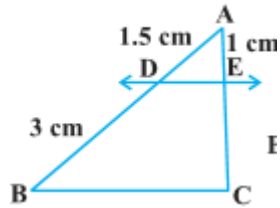


X Maths AUTUMN BREAK HOMEWORK

CLASS-X

TRIANGLES

Q.1: In the given figure, $DE \parallel BC$. Find EC. (1)



Q2. State and prove Basic Proportionality Theorem. (4)

COORDINATE GEOMETRY

Q.1: Find the distance between the given pairs of points (a, b) , $(-a, -b)$ (1)

Q.2: Find the length of all the sides of a triangle whose vertices are $(1, -1)$, $(-4, 6)$ and $(-3, -5)$. (1)

Q.4: Find the coordinates of a point A, where AB is the diameter of a circle whose centre is $(2, -3)$ and B is $(1, 4)$. (2)

Q.5: Find the coordinates of the point which divides the join of $(-1, 7)$ and $(4, -3)$ in the ratio $2 : 3$. (2)

Q.6: Find the point on the x-axis which is equidistant from $(2, -5)$ and $(-2, 9)$. (3)

Q.8: Find a relation between x and y such that the point (x, y) is equidistant from the point $(3, 6)$ and $(-3, 4)$. (3)

Q.9: Show that the points $(1, 7)$, $(4, 2)$, $(-1, -1)$ and $(-4, 4)$ are the vertices of a square. (3)

Q.10: Find the ratio in which the line segment joining $A(1, -5)$ and $B(-4, 5)$ is divided by the x-axis. Also find the coordinates of the point of division. (4)

CIRCLES

Q.1: How many tangents can a circle have? (1)

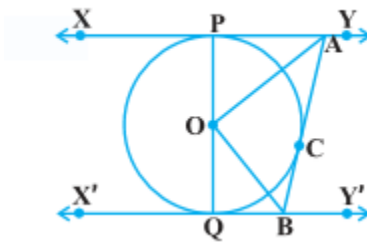
Q.2: A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that OQ = 12 cm. Find PQ . (1)

Q.3: Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact. (3)

Q.4: Prove that the lengths of tangents drawn from an external point to a circle are equal. (3)

Q.5: A quadrilateral ABCD is drawn to circumscribe a circle .Prove that $AB + CD = AD + BC$ (3)

Q.6: In the given figure, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB = 90^\circ$. (4)



Q.7: Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre. (4)

Q.8: Prove that the parallelogram circumscribing a circle is a rhombus. (3)

AREAS RELATED TO CIRCLES

- 1) Write the formula to find area of a sector of a circle.
- 2) Find the area covered by the minute hand 7 cm long when it moves from 2 to 5.
- 3) Find the area of the quadrant of a circle of diameter 14cm.
- 4) Find the area of minor segment of quadrant of a circle of radius
- 5) The area of a circle is 154cm^2 . Find the length of arc making an angle 60° at the centre.
- 6) Find the area of the sector of a circle with radius 14cm and angle 30° .

SURFACE AREAS AND VOLUMES

1. 2 cubes each of volume 64 cm^3 are joined end to end. Find the surface area of the resulting cuboid.

2. From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid to the nearest cm^2 .
3. A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1 cm and the height of the cone is equal to its radius. Find the volume of the solid in terms of π .
4. A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel.
5. A container shaped like a right circular cylinder having diameter 12 cm and height 15 cm is full of ice cream. The ice cream is to be filled into cones of height 12 cm and diameter 6 cm, having a hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.

CLASS: X

ENGLISH LANGUAGE AND LITERATURE (184)

AUTUMN BREAK HOMEWORK

1. Prepare a PPT on any one chapter
2. Write a letter to the Editor of a newspaper expressing concern about the increasing use of plastic and its harmful effects on the environment.
3. Grammar Practice: Prepare ten examples each of:
 - Tenses
 - Modals
 - Subject–verb agreement
 - Reported speech
 - Determiners
4. ***Practice and write five lines in the classwork note book for each topic given below:***
 - *Nelson Mandela: Long Walk to Freedom:*
What does Mandela say about courage and freedom?
Twin Obligations
 - *Two Stories about Flying:* How did the young seagull overcome his fear of flying?
 - *From the Diary of Anne Frank:* Why did Anne feel the need to keep a diary despite having a loving family and friends?
 - *Glimpses of India* How do the three accounts highlight India's cultural diversity and traditions?
 - *The Ball Poem:* What does the loss of the ball symbolize?
 - *Amanda!:* How does the poem express a child's desire for freedom?
 - Describe Mijbil's playful nature and his relationship with Maxwell.
 - *The Proposal:* Describe the humorous elements in the play.

- Madam Rides the Bus: What does Valli's bus journey reveal about her curiosity, courage and maturity?
- The Sermon at Benares: How did Buddha help Kisa Gotami overcome her grief?
- The Tale of Custard the Dragon: How does Custard prove that he is the bravest character in the poem?
- How does the ending create irony, and what lesson does Matilda's experience teach us?
- How did education give Bholi the confidence to stand up for herself?

CLASS X – SOCIAL SCIENCE

CBSE SAMPLE PAPER

INSTRUCTIONS

1. Write all 20 questions neatly on A4-size sheets.
2. Prepare all questions thoroughly for a test after the school reopens.
3. These questions are based on the CBSE Sample Paper.

HISTORY

1. (2 Marks) Which groups travelled along the Silk Routes in the pre-modern world?
2. (3 Marks) Why did Mahatma Gandhi support the Khilafat Movement?
4. (2 Marks) "The most powerful weapon of the Spanish conqueror was not a conventional military weapon at all." Justify the statement by giving two reasons.
5. (3 Marks) "The female figures become an allegory of the nation during the 19th century in Europe." Elaborate on the statement with examples.
6. (3 Marks) Assess the role of the Greek War of Independence in shaping nationalist consciousness among educated Europeans in the nineteenth century.
7. (2 Marks) Evaluate how the early printing activities contributed to the spread of knowledge in India before English newspapers became popular.

8. (2 Marks) Identify the following places on the outline map of India and write their correct names:

(a) The place where the Civil Disobedience Movement started.

(b) The place where Gandhiji organised a Satyagraha Movement among cotton mill workers.

GEOGRAPHY

9. (2 Marks) Mention the basic inputs of the iron and steel industry.

10. (2 Marks) A drought-prone district wants to adopt a sustainable water conservation method using traditional knowledge. Suggest two suitable rainwater harvesting practices that could be implemented.

11. (2 Marks) How does people's participation lead to more effective forest resource management? Elaborate with the help of two examples.

12. (3 Marks) On the outline map of India, locate and label any three of the following with suitable symbols:

(a) Tehri Dam

(b) Chennai Software Technology Park

© Chhatrapati Shivaji International Airport

(c) Narora Nuclear Power Plant

POLITICAL SCIENCE

13. (2 Marks) What is the difference between a state party and a national party?

14. (2 Marks) Explain the role of the judiciary in the federal system of India.

15. (3 Marks) Mention the functions of political parties.

16. (2 Marks) How were the powers shared between the central and state governments in Belgium to avoid the division of the country? Explain.
17. (2 Marks) Why is a democratic system of government regarded as the best form of governance in terms of involving the maximum number of citizens as stakeholders in political power? Explain with suitable arguments.
18. (3 Marks) The focus on caste in politics can sometimes give an impression that elections are all about caste and nothing else. However, that is far from true. Analyse this statement by giving three valid arguments.

ECONOMICS

19. (3 Marks) Ravi noticed that in many villages of India, more people are working on farms than actually needed, and yet many of them do not get proper wages or regular work.

What could be the reason behind such a situation? Suggest any two ways to tackle this problem effectively.
20. (3 Marks) Explain how Self-Help Groups (SHGs) help banks to minimise risk when providing loans to poor women who do not have any collateral.
21. (3 Marks) Improvements in technology and liberalisation together have accelerated globalisation. Evaluate.

Class 10 Science Question Bank

Category	Question Type	Marks per Q	Focus Areas
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Section A	Multiple Choice & Assertion-Reason		
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1 Mark

Concepts, Definitions, Facts

Section B	Short Answer I 2 Marks Reasoning, Equations, Diagrams		
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Section C

Short Answer II

3 Marks Derivations, Reactions, Comparisons

Section D Case-Based / Integrated 4 Marks Application, Context Analysis

Section E Long Answer 5 Marks Comprehensive Multi-part Problems

1. SECTION A: 1-MARK QUESTIONS (MCQs & Assertion-Reason)

Q1 (Biology): In human beings, the implantation of fertilised egg takes place in which part of female reproductive system?

(A) Oviduct

(B) Cervix

© Uterus

(C) Vagina

Q2 (Biology): Yeast multiplies by which of the following methods?

(A) Fragmentation

(B) Binary Fission

© Multiple Fission

(C) Budding

Q3 (Biology): Identify the part that controls the opening and closing of stomatal pores in plant leaves:

(A) Stomata

(B) Epidermal cells

© Guard cells

(C) Chloroplast

Q4 (Biology): Which of the following is a non-biodegradable pollutant?

(A) Paper

(B) DDT

© Wood

(C) Vegetable peel

Q5 (Biology): When a human egg is fertilised by a sperm having 'Y' chromosome, the resulting zygote combination is:

(A) 44 + XX

(B) 22 + XX

© 44 + XY

(C) 22 + XY

Q6 (Assertion-Reason): Assertion (A): The peristaltic movements occur all along the gut. Reason ®: The lining of the gut has muscles that contract rhythmically to push the food in a regulated manner.

Q7 (Assertion-Reason): Assertion (A): Bacteria produced as a result of asexual reproduction would be similar. Reason ®: There are only minor differences between bacteria generated due to small inaccuracies in DNA replication.

Q8 (Physics): To restore clear vision in persons whose eye ball size has reduced, it is suggested to use:

(A) Converging lens

(B) Diverging lens

© Bifocal lens

(C) Cylindrical lens

Q9 (Physics): Rays from the sun converge at 25 cm behind a convex lens. The distance at which an object should be placed in front of the lens to get a virtual image is:

(A) 20 cm

(B) 40 cm

© 50 cm

(C) More than 50 cm

Q10 (Biology): Which sequence correctly represents the events occurring during photosynthesis?

(A) Conversion of light energy -> Reduction of CO₂ -> Absorption of light

(B) Absorption of light energy -> Conversion to chemical energy & splitting of water -> Reduction of CO₂

© Reduction of CO₂ -> Absorption of light -> Splitting of water

(C) Splitting of water -> Reduction of CO₂ -> Absorption of light

Q11 (Assertion-Reason): Assertion (A): There are generally a greater number of individuals at the lower trophic levels of an ecosystem. Reason ®: The greatest number of individuals in an ecosystem is of the producers.

Q12 (Assertion-Reason): Assertion (A): Blood plasma transports carbon dioxide in dissolved form, while oxygen is transported by respiratory pigments. Reason ®: Carbon dioxide is more soluble in water than oxygen.

Q13 (Chemistry): Assertion (A): Carbon shows the property of catenation. Reason ®: C-C bond is weak due to its small size.

Q14 (Physics): Choose the option which gives a negative magnification greater than one:

(A) Concave mirror; Nature of image – real

(B) Concave mirror; Nature of image – virtual

© Convex mirror; Nature of image – real

(C) Convex mirror; Nature of image – virtual

Q15 (Biology): Identify the incorrect step in the experimental setup investigating requirement of CO₂ for photosynthesis using bell jars and KOH:

(A) Both plants kept in dark room for 3 days

(B) Both plants covered with wooden bell-jars

© Vaseline used to seal jar bottoms

(C) Plants placed in sunlight before starch test

Q16 (Assertion-Reason): Assertion (A): The basic filtration unit in kidneys, like in lungs, is a cluster of

Thin-walled blood capillaries. Reason ®: Each capillary cluster in kidney is associated with the cup-shaped end of a coiled tube called Bowman's capsule.

Q17 (Assertion-Reason): Assertion (A): Ozone (O₃) gas at higher levels of atmosphere is a product of UV radiation acting on Oxygen (O₂). Reason ®: Ozone shields the surface of the earth from damaging UV radiation.

Q18 (Chemistry): Assertion (A): There are a large number of compounds with many carbon atoms linked to each other. Reason ®: Carbon-Carbon bond is very strong and stable.

Q19 (Biology): Select the correct statement regarding Spirogyra, Leishmania, and Hydra:

(A) All reproduce sexually

(B) They are unicellular organisms

© They are multicellular organisms

(C) They reproduce asexually

Q20 (Biology): Identify the part of the human brain responsible for precision of voluntary actions and maintaining posture:

(A) Cerebrum

(B) Cerebellum

© Medulla

(C) Pons

Q21 (Biology): Choose the correct function of enzymes in pancreatic juice:

(A) Trypsin digests emulsified fats and Lipase digests proteins

(B) Trypsin digests proteins and Lipase digests emulsified fats

© Both Trypsin and Lipase digest fats

(C) Trypsin digests proteins and Lipase digests carbohydrates

Q22 (Physics): When you look at an object placed very close to your eyes, the:

(A) Ciliary muscles contract and eye lens becomes thick

(B) Ciliary muscles relax and eye lens becomes thick

© Ciliary muscles contract and eye lens becomes thin

(C) Ciliary muscles relax and eye lens becomes thin

Q23 (Assertion-Reason): Assertion (A): In human beings, the respiratory pigment is hemoglobin present in red blood cells. Reason ®: Hemoglobin has a very high affinity for carbon dioxide.

Q24 (Assertion-Reason): Assertion (A): Plants have hormones that do not control directional growth. Reason ®: Absciscic acid inhibits growth.

Q25 (Physics): A convex lens of focal length 15 cm forms a real image. If the size of the image is same as that of the object, the position of object and image are:

(A) -15 cm and -15 cm

(B) -15 cm and +15 cm

© -30 cm and +30 cm

(C) -30 cm and -30 cm

2. SECTION B: 2-MARK QUESTIONS (Short Answer I)

Q1 (A): Draw the reflex arc diagram and identify the labelled parts P, Q, R, and S.

OR

(B) Name the plant hormones responsible for: (i) Promoting cell division, (ii) Inhibition of growth, (iii) Detection of light, (iv) Wilting of leaves.

Q2: Briefly mention the steps involved in double-circulation through the human heart.

Q3: Given a diagrammatic cross-section of a leaf: (i) Identify 'P' (Guard cell / Chloroplast) and its role in plants.

(ii) Write down a balanced chemical equation for the process of photosynthesis.

Q4: How is a universal indicator obtained? How is it used to test a wide range of pH values of given solutions?

Q5: (a) Define absolute refractive index of an optical medium. . (b) Given media A (1.50), B (1.46), C (1.31), D (1.77), arrange them in increasing order of speed of light through them.

Q6 (A): How does the change in curvature of the eye lens help in viewing nearby objects clearly? State the range of accommodation for a normal human eye.

OR (B) Draw a ray diagram showing correction for hypermetropia/myopia.

Q7 (a): 'The timing and amount of hormone secreted by a gland are regulated in the human body.' Justify this statement with an example.

OR (b) State any two limitations of using electrical impulses to transmit information in animal bodies.

Q8 Do all variations in a species have equal chances of surviving in the environment in which they find themselves? Explain.

Q9 Suggest two effective ways of dealing with waste generated at home.

Q10 Why should chemical equations be balanced? Give reason.

Q11: In the food chain: Plant → Goat → Man, 5 J of energy is available to man. Calculate how much energy was available at the producer level and justify using the 10% law.

Q12: Comment on the following properties of ionic compounds with reasoning: (i) Physical nature, (ii) Melting and boiling points.

Q13 (a): What happens when light is scattered by: (i) Very fine particles, (ii) Very large size particles of a medium? Justify your answer.

OR (b) Explain the natural formation of a spectrum in nature using a ray diagram.

Q14: What is the function of the diaphragm in the human respiratory system? Where is it located in the body?

Q15 (a): State two differences between chewing food and salivation on the sight of food.

OR (b) State two differences between pollination and fertilization.

Q16: Draw a neat labelled diagram showing the process of germination of pollen grains on the stigma of a flower.

Q17: In an image formation setup with a lens, a real image is formed at a distance of 30 cm and its size is twice the object size. Determine object position and lens type.

Q18: A squirrel in a scary situation requires its body to prepare for 'fight or flight'. State the immediate hormonal and physiological changes taking place in its body.

Q19 (a): The resistance of a wire of radius 0.01 cm and length 1.0 cm is 7 ohms. Calculate its resistivity.

OR (b) An electric heater is rated 220 V, 11 A. Calculate the power consumed if operated at 200 V.

Q20 A mirror always forms a virtual, erect, and diminished image. Identify the mirror and draw a labelled ray diagram for image formation.

3. SECTION C: 3-MARK QUESTIONS (Short Answer II)

Q1 (a): Mention any one harmful effect of plastic bags on the environment and suggest better alternatives.

(b) Pesticides used in paddy fields reach human bodies through waterbodies and soil. What is this phenomenon called and how does it occur?

Q2 (a): Mention the gland and hormone secreted during scary or emergency situations in human beings.

(b) Write two body responses that prepare the human body to handle such situations.

Q3: What happens when: (i) Calcium carbonate is heated, (ii) Silver bromide is exposed to sunlight, (iii) Lead is added to copper(II) chloride solution? Write balanced chemical equations for each.

Q4 (a): Why does an electric bulb dim momentarily when a high-power electric heater in a parallel circuit is switched ON?

(b) How should three resistors of 8 ohms each be connected to get an equivalent resistance of 12 ohms? Draw diagram and justify.

Q5: An object is placed at a distance of 30 cm in front of a convex lens of focal length 15 cm. Use the lens formula to determine image position and calculate image size.

Q6 (a): Draw a ray diagram for refraction of light through a glass prism and mark the angle of refraction and angle of deviation

(b) What happens to the angle of deviation if the path of the refracted ray is reversed?

Explain.

Q7: Observe the setup comparing exhaled air bubbling through lime water vs yeast fermentation. (a) What changes occur in Cases P, Q, and R? (b) In which case does aerobic respiration and fermentation occur?

Q8(a): Justify with two examples that sex determination in all animals is not always genetic. (b) Differentiate between sex chromosomes present in human males and females.

Q9: Give reasons: (i) Chips bags are flushed with nitrogen gas, (ii) Respiration is an exothermic reaction, (iii) Silver chloride is stored in dark colored bottles.

Q10 (a): Why is it recommended that acid be added to water during dilution, and not water to acid? (b) Why does dry HCl gas not change the color of dry blue litmus paper while dilute HCl does?

Q11 For a given electric circuit, calculate: (i) Total resistance of circuit, (ii) Total current drawn from battery, (iii) Potential difference across points P and Q.

Q12: What is meant by scattering of light? How is scattering of light different from reflection? Explain.

Q13: A blue color flower (BB) bearing plant is crossed with a white flower plant (bb). (a) State flower color expected in F1 progeny.

(b) Calculate the percentage of white flower plants in F2 progeny.

Q14: Give reasons: (i) Potato chips bags filled with nitrogen, (ii) Respiration is exothermic, (iii) Silver chloride kept in dark bottles.

Q15 (a): Give reasons why acid is added to water during dilution. (b) Explain why dry HCl gas shows no acid behavior on dry litmus paper.

Q16: Identify an eye defect from a ray diagram where image forms behind retina. List two causes and calculate lens power needed for correction.

Q17: A tall pea plant with round seeds (TTRR) is crossed with a dwarf pea plant with wrinkled seeds (ttrr). Explain F1 and F2 inheritance patterns with Punnett square.

Q18: Identify the type of chemical reaction in each case and write balanced chemical equations: (i) Burning of natural gas, (ii) Electrolysis of water, (iii) Iron nails dipped in copper sulphate.

Q19: Describe an activity to demonstrate that a current-carrying conductor experiences a force when placed in an external magnetic field. State Fleming's Left-Hand Rule.

Q20: Draw magnetic field lines due to a current-carrying circular loop. Explain how field strength depends on current and number of turns.

Q21 (a): A couple has 4 daughters in sequence and no son. Does this indicate that the husband does not produce Y-chromosome bearing sperms? Explain. (b) What is the probability of this couple bearing another daughter? Show with a genetic cross.

Q22(a): (i) Give reasons: (I) Covalent compounds are poor conductors, (II) Soap does not form lather in hard water, (III) Carbon shows catenation but silicon does not. (ii) Write chemical equations for: (I) Oxidation of ethanol by acidified $K_2Cr_2O_7$, (II) Hydrogenation of ethene.

Q23: (a) Describe an activity showing force on a current-carrying conductor in a magnetic field. (b) An electron beam moving horizontally towards front wall is deflected to the right by a magnetic field. Find direction of magnetic field.

Q24 Explain how the pattern of magnetic field lines produced by a current-carrying wire depends on the shape of the wire.

4. SECTION D: 4-MARK INTEGRATED & CASE-BASED QUESTIONS

Q1 (Biology Case Study): Kidneys help regulate fluid volume and metabolic waste products. Normally kidneys filter ~180 L fluid daily, but actual excretion is only 1-2 L/day.

(a) Write structure and function of Bowman's capsule. [1 mark]

(b) Why is actual excretion only 1-2 L despite 180 L daily filtration? (c) Define excretion and explain why it is necessary for living organisms

. OR State two similarities between lungs and kidneys. [2 marks]

Q2 (Physics Case Study): Three students performed an experiment to study factors affecting electrical resistance using Nichrome wires of length l , $2l$, and copper wire.

- (a) If ammeter reading is X amperes for length l , what will reading be if length is doubled keeping area same? [1 mark]
- (b) What will ammeter reading be if area of cross-section is doubled keeping length l same? [1 mark]

© Define resistivity and state its SI unit. Compare resistivity of alloys with constituent metals

. OR Give reasons why tungsten is used in lamp filaments and alloys in toaster heating elements. [2 marks]

Q3 (Biology Case Study): Study on human reproductive health, endocrine regulation of gonads, and contraceptive methods (barrier, chemical, surgical).

- (a) Name organ producing male germ cells and list its

Non-reproductive hormone function. [1 mark]

- (b) State function of vas deferens and prostate gland. [1 mark]

© Differentiate between surgical contraception in males vs females and explain how it prevents pregnancy. [2 marks]

Q4 (Physics Case Study): Swati observes heat near a refrigerator exterior while internal contents remain cool. Based on Joule's Law of Heating:

- (a) State Joule's Law of Heating and express it mathematically. [1 mark]
- (b) Why are heating elements made of alloys rather than pure metals? [1 mark]

© Calculate heat generated in 5 minutes by an appliance of resistance $20\ \Omega$ operating at 220 V . [2 marks]

Q5 (Biology Case Study): Transpiration and translocation processes in plants. Water absorption by roots and upward transport through xylem vessels.

- (a) Define transpiration pull and state its importance. [1 mark]

- (b) Name tissue responsible for transport of soluble products of photosynthesis. [1 mark]

© Explain mechanism of translocation in phloem requiring ATP energy. [2 marks]

Q6 (Physics Case Study): Refraction through glass slab and determination of lateral displacement and refractive index.

- (a) Define lateral displacement. [1 mark]
- (b) State Snell's Law of Refraction. [1 mark]

© Light enters from air to glass plate having refractive index 1.50. Calculate speed of light in glass ($c = 3 \times 10^8$ m/s). [2 marks]

Q7 (Biology Case Study): Digestion in human alimentary canal and action of gastric and pancreatic enzymes.

- (a) What is the role of HCl in stomach? [1 mark]
- (b) Name the enzyme present in saliva and state its function.

© Explain how small intestine is designed to absorb digested food efficiently. [2 marks]

Q8 (Physics Case Study): Domestic electric circuits, safety devices, and electrical energy consumption calculations.

- (a) What is the purpose of earthing in domestic appliances? [1 mark] (b) Why are parallel circuits preferred over series circuits in homes? (c) An electric iron rated 1000 W is used 2 hours daily.

Calculate electrical energy consumed in kWh in 30 days. [2 marks]

Q9 (Biology Case Study): Blood circulation in human heart and double circulation system.

- (a) Why is separation of right and left side of heart useful in birds and mammals? [1 mark]
- (b) Name blood vessel carrying oxygenated blood from lungs to left atrium. [1 mark]

© Define double circulation and trace path of blood through pulmonary and systemic loops. [2 marks]

Q10 (Physics Case Study): Refractive index and lens image formation data analysis from experimental table of u and v .

(a) Determine focal length of convex lens from given $u = -30$ cm and $v = +30$ cm. [1 mark]

(b)] (b) Find magnification when $u = -15$ cm and $v = +30$ cm. [1 mark]

© © Draw a ray diagram for object placed between F and $2F$ of convex lens. [2 marks]

22. SECTION E: 5-MARK LONG ANSWER QUESTIONS

Q1 (Biology): (A) (i) Sugarcane does not produce seeds; name the process by which it reproduces (Vegetative propagation)

. (ii) List two advantages of this method.

(iii) Give two other plant examples

. (iv) Why is regeneration not possible in all complex animals?

OR (B) (i) Post-fertilization changes in flower: Zygote, Ovule, Ovary, Sepals

. (ii) Define seed germination.

Q2 (Chemistry): Alcohols form a homologous series with general formula $C_nH_{2n+1}OH$. Ethanol is widely used as solvent.

(a) Write structural formula and name of 4th member of alcohol series.

(b) What happens when ethanol is heated with alkaline $KMnO_4$? Write chemical equation

. © Write chemical equation for reaction of ethanol with ethanoic acid in presence of conc. H_2SO_4 . Name the reaction.

OR Explain reaction of ethanol with excess conc. H_2SO_4 at 443 K. What is the role of conc. H_2SO_4 ?

Q3 (Chemistry): (A) (i) Give reasons: (I) Ionic compounds have high MP/BP, (II) Solder alloy used for welding wires, (III) Carbon cannot reduce oxides of Na or Mg. (ii) Reaction of compound 'X' (Fe_2O_3) with aluminium used for joining railway tracks. Identify 'X' and write balanced chemical equation.

OR (B) Write electron dot structure for formation of Calcium Oxide (CaO). State ions present.

Q4(Physics): (A) (i) List two main features of domestic electric current in India (220 V, 50 Hz AC).

(ii) State two differences between DC and AC.

(iii) How to identify live and neutral wires in domestic circuit?

OR (B) (i) Why is fuse an important component in electric circuit? (ii) Distinguish between overloading and short-circuiting.

(iii) Explain material requirements for fuse wires.

Q5 (Biology): Human female reproductive system: Draw labelled diagram showing ovary, oviduct, uterus, cervix. Describe ovulation, fertilization, implantation, and contraception methods.

Q6 (Chemistry): Carbon and its compounds: (i) Define structural isomers and draw isomers of pentane (C_5H_{12}).

(ii) Explain substitution reaction of methane with chlorine in sunlight. (

कक्षा 10वीं

*शरद ऋतु अवकाश गृहकार्य-2026-27

1. अपने विद्यालय के प्राचार्य को चरित्र प्रमाण पत्र प्राप्त करने के लिए प्रार्थना-पत्र लिखें।
2. आपके शहर में सभी प्रकार के खाद्य पदार्थों में मिलावट का धंधा लगातार बढ़ता ही जा रहा है आपके राज्य के खाद्य मंत्री को dfpd@gov.in पर एक ईमेल लिखकर इस समस्या के प्रति उनका ध्यान आकृष्ट कीजिए।

3. छात्रों के लिए खेल सामग्री उपलब्ध कराने का अनुरोध करते हुए अपने प्रधानाचार्य महोदय को kvs@gmail .com पर एक ईमेल लिखें।
4. आप अमित / अमिता हैं। आप खेलकूद में निपुण हैं और दिल्ली के एक प्रतिष्ठित विद्यालय में 'शारीरिक शिक्षा शिक्षक' (Physical Education Teacher) के पद के लिए आवेदन करना चाहते हैं। इसके लिए अपने लगभग 80-100 शब्दों में एक स्ववृत्त (Bio-data) तैयार कीजिए।
5. PT-2 के प्रश्न पत्र SET-A और SET-B को हल करें और सही उत्तर लिखें।
6. एक स्वरचित कविता लिखें।

AUTUMN BREAK HOLIDAY HOMEWORK

2026

ARTIFICIAL INTELLIGENCE (AI) – CLASS X

Name: _____	Class/Section: _____
Roll No.: _____	Submission Date: _____

Chapters Covered: Communication Skills, Management Skills, ICT Skills, AI Project Cycle, Advanced Concepts of Modelling, and Evaluating Models.

General Instructions:

- Attempt all questions. Read each question carefully before answering.
- For MCQs, select only one correct option.
- For Assertion–Reasoning questions, choose the correct option from the given codes.
- Write answers neatly in your notebook or on A4 sheets. Use examples wherever relevant.
- For case-based questions, answer all sub-questions using information from the case.

Section A – Multiple-Choice Questions (5 × 1 = 5 marks)

1. Which of the following is an example of effective communication?
 - A. Interrupting the speaker repeatedly
 - B. Listening carefully and responding appropriately
 - C. Ignoring feedback
 - D. Using unclear language
2. Which practice best supports self-management during a school project?
 - A. Leaving every task until the last day
 - B. Setting goals and following a timetable
 - C. Avoiding difficult tasks
 - D. Depending entirely on others
3. Which of the following is an ICT tool used to create and edit documents?
 - A. Word processor
 - B. Calculator only
 - C. Speaker
 - D. Projector screen
4. In the AI Project Cycle, which stage involves understanding the problem, its goal, and its stakeholders?
 - A. Modelling
 - B. Evaluation
 - C. Problem Scoping
 - D. Data Exploration
5. A model performs very well on training data but poorly on unseen data. This is most likely a case of:
 - A. Underfitting
 - B. Overfitting
 - C. Perfect generalisation
 - D. Data cleaning

Section B – Assertion and Reasoning (5 × 1 = 5 marks)

Choose the correct option for each question:

- A. Both Assertion (A) and Reason (R) are true, and R correctly explains A.
 - B. Both A and R are true, but R does not correctly explain A.
 - C. A is true, but R is false.
 - D. A is false, but R is true.
1. Assertion (A): Active listening is an important communication skill.
Reason (R): It helps a listener understand the speaker's message and respond thoughtfully.
 2. Assertion (A): A to-do list can support effective self-management.
Reason (R): It helps organise tasks and track progress towards goals.
 3. Assertion (A): ICT tools can support collaboration in learning.
Reason (R): Shared online documents can allow multiple users to contribute to the same work.
 4. Assertion (A): Data exploration is useful before training an AI model.
Reason (R): It can reveal patterns, missing values, and possible problems in the dataset.
 5. Assertion (A): Accuracy alone is always sufficient to evaluate every AI classification model.
Reason (R): Precision, recall, and the confusion matrix can provide additional information about model performance.

Section C – Competency-Based Questions (5 × 2 = 10 marks)

1. A team is preparing a presentation, but members keep misunderstanding each other's instructions. Identify two communication practices that could help the team work more effectively.
2. A student has three assignments and a practical activity to complete in one week. Suggest two self-management strategies to help the student complete the work on time.
3. Your class is creating a shared report using an online document. State two safe and responsible ICT practices the class should follow.
4. A school wants to develop an AI solution to identify students who may need extra academic support. Write two questions that should be considered during Problem Scoping before collecting data.
5. An AI model predicts whether an email is spam. Out of 100 emails, it correctly identifies 40 of 50 spam emails and incorrectly labels 10 genuine emails as spam. Explain why the school should examine more than overall accuracy before using the model.

Section D – Case-Based Studies (5 × 4 = 20 marks)

Case Study 1: Communication Skills

Riya is the coordinator of a group assignment. She gives instructions quickly without checking whether everyone understands. Two students complete the wrong task, and the group misses an internal deadline.

1. Identify one communication barrier shown in the case.
2. Suggest two ways Riya can improve communication with the group.
3. Why is feedback important in this situation?

Case Study 2: Management Skills

Aman wants to improve his performance in AI. He studies without a plan, checks social media frequently, and begins assignments just before the deadline. He feels stressed and leaves some work incomplete.

1. Identify two self-management problems in Aman's routine.
2. Suggest two practical actions Aman can take to manage his time better.

3. How can setting a SMART goal help him?

Case Study 3: ICT Skills

A group of students uses online tools to prepare a project report. One student shares the document publicly, another uses a weak password, and a third copies information from a website without acknowledging the source.

1. Identify two digital safety or responsible-use issues in the case.
2. Suggest one way to protect the shared document.
3. Why should students acknowledge the sources of information they use?

Case Study 4: AI Project Cycle and Modelling

A school wants to build an AI model to estimate whether students may need additional help in mathematics. The team first speaks with teachers to understand the problem, then collects relevant historical data. It notices that some records are incomplete and that the data includes students from only one section.

1. Name the AI Project Cycle stage in which the team clarifies the problem and stakeholders.
2. Why should the team check and prepare the data before modelling?
3. State one possible bias or limitation in the dataset.
4. Why should personal student information be handled carefully?

Case Study 5: Evaluating Models

Two models are tested to identify a rare but important condition. Model A has 96% accuracy but misses many actual positive cases. Model B has 91% accuracy and identifies more of the actual positive cases, although it produces some false alarms.

1. Which model may have higher recall? Give a reason.
2. What does a false negative mean in this context?
3. Name one tool or measure that can help evaluate the models beyond accuracy.
4. Why should the team consider the real-world impact of errors before selecting a model?

Submission Checklist

- ☐ All 20 questions/sets attempted.
- ☐ Answers are numbered correctly and written neatly.
- ☐ Examples and explanations are included where required.
- ☐ Work is submitted on or before the date announced by the teacher.

Think • Practise • Apply • Create