 MACRO VISION ACADEMY BURHANPUR	Sample Paper-I (2026-27)		For Office Use Only
	Class:	XI Mathematics	
	Time:	03:00 Hrs.	
	M.M:	80	

Personal Information

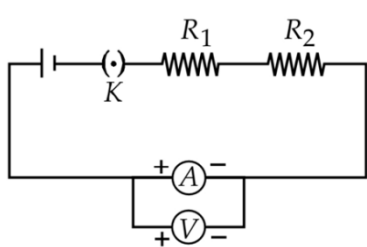
Student's Name:- _____ **Father's Name:-** _____

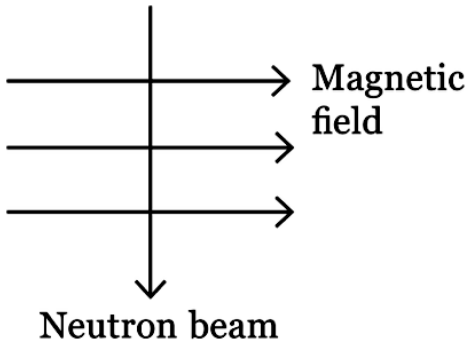
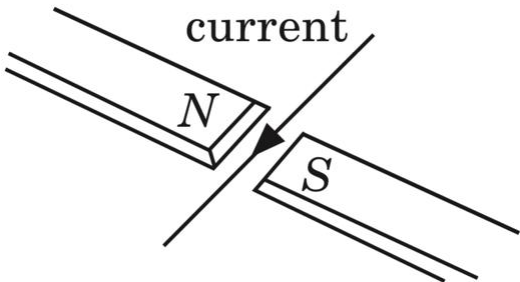
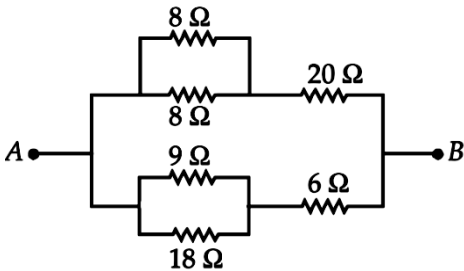
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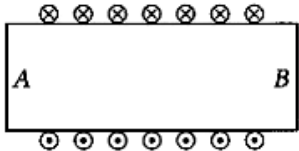
Studying in Class:- _____ **Appearing for class:-** _____ **Board:-** _____

Present School Name:- _____ **Category :-** _____

Physics (20)	Chemistry (15)	Mathematics (25)	English (10)	MAT (10)	Total (80)	Remark

	Physics (20)	M.M
	Choose the correct answer. (Q. 1 to 4)	
1.	<p>A lens has a power of +0.5D. It is</p> <p>(a) A concave lens of local length 5 m</p> <p>(b) A convex lens of focal length 5 m</p> <p>(c) A convex lens of focal length 2 m</p> <p>(d) A concave lens of focal length 2 m</p>	1
2.	<p>To determine the equivalent resistance of a series combination of two resistors R_1 and R_2, a student arrange the following set up.</p> <div style="text-align: center;">  </div> <p>Which one of the following statements will be true for this circuit? It gives</p> <p>(a) incorrect reading for current I as well as potential difference V</p> <p>(b) correct reading for current I but incorrect reading for potential difference V</p> <p>(c) correct reading for potential difference V but incorrect reading for current I</p> <p>(d) correct reading for both I and V.</p>	1
3.	<p>Which of the following properties of a proton can change while it moves freely in a magnetic field?</p> <p>(a) Mass (b) Speed (c) Momentum (d) Kinetic energy</p>	1

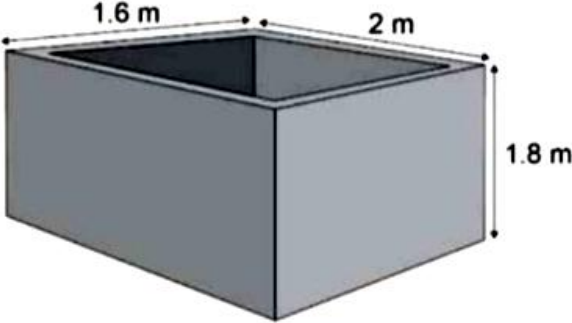
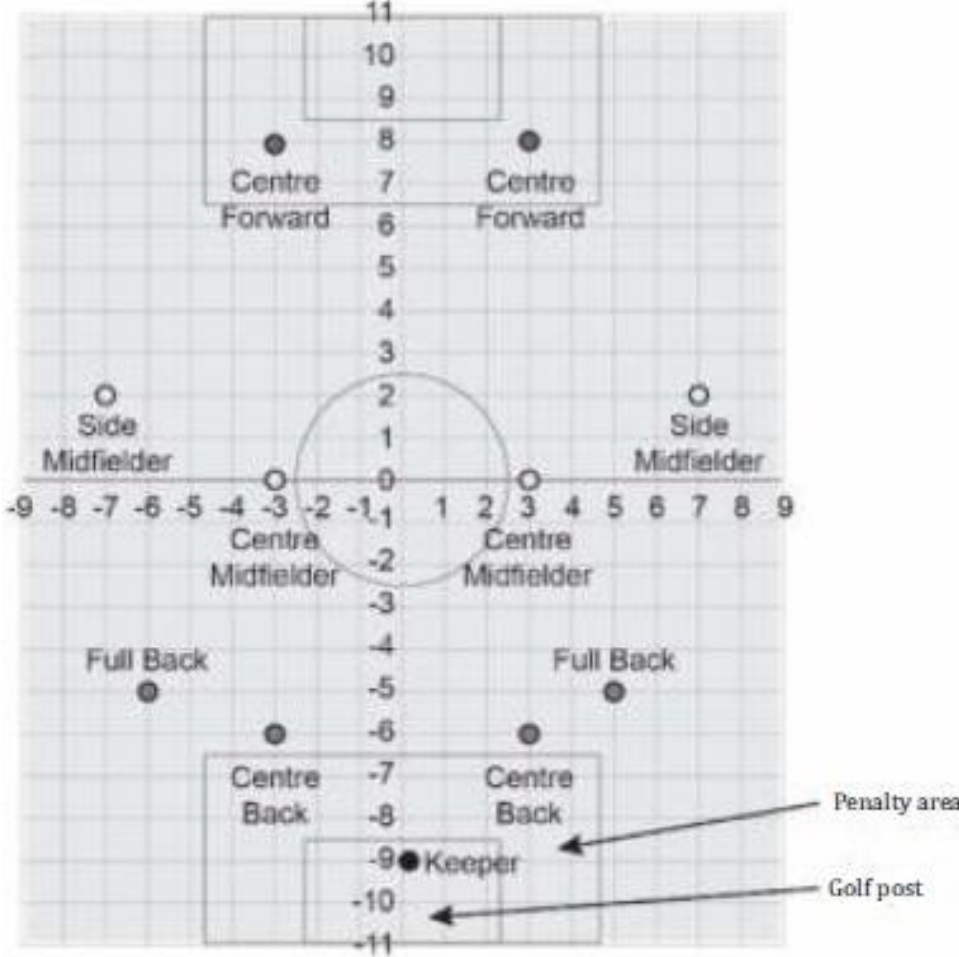
4.	<p>When white light enters a prism, it gets split into its constituent colours. This is due to</p> <p>(a) different refractive index for different wavelength of each colour</p> <p>(b) each colours has same velocity in the prism.</p> <p>(c) prism material have high density.</p> <p>(d) Scattering of light</p>	1
	Fill in the blank. (Q. 5 to 11)	
5.	The screen on which the image is formed by the lens system of the human eye is called _____.	1
6.	A transparent material bound by two surfaces, of which one or both surfaces are spherical, forms a _____.	1
7.	Two immiscible transparent liquids A and B have 1.2 and 1.5 as their refractive indices (with respect to air). The refractive index of B with respect to A is _____.	1
8.	For a normal eye, the range of vision is from _____.	1
9.	<p>An neutron beam enters a magnetic field at right angles to it as shown in the figure. Due to magnetic field, neutron beam will deflect _____.</p> 	1
10.	<p>A horizontal wire carrying a current as shown in figure below between magnetic poles N and S. The direction of the force on the wire due to the magnet is _____.</p> 	1
11.	<p>The equivalent resistance between A and B for the circuit shown in the figure is _____.</p> 	1

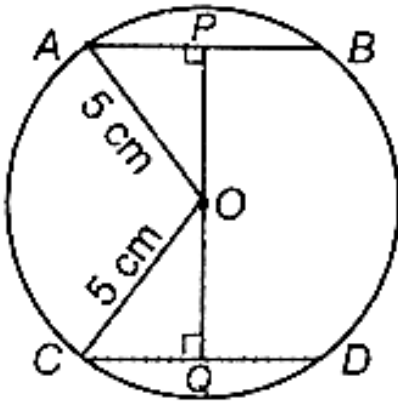
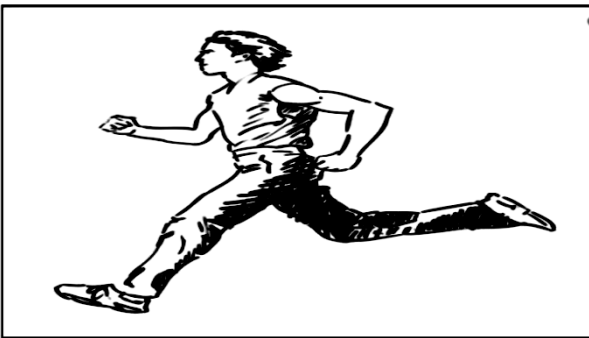
	Do as directed (Q. 12 to 14)	
12.	<p>Diagram shows the lengthwise section of a current carrying solenoid.</p> <p>(A) Indicates current entering into the page, (B) Indicates current emerging out of the page.</p>  <p>Decide which end of the solenoid A or B, will behave as North pole. Also, draw field lines inside the solenoid.</p>	1
13.	Draw the ray diagram of image formation by concave mirror when object is placed between focus and centre of curvature.	1
14.	A ray of light travels from medium A to medium B. If the Refractive index of the medium B relative to medium A is less than 1. Then draw the ray diagram of propagation of light obliquely from medium A to medium B.	1
	<p>Question Based on Reason & Assertion. (Q. 15 to 17)</p> <p>(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A) (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.</p>	
15.	<p>Assertion (A): Light does not travel in the same direction in all the media. Reason (R): The speed of light does not change as it enters from one transparent medium to another.</p>	1
16.	<p>Assertion (A): Magnetic field interacts with a moving charge only. Reason (R): Moving charge produces a magnetic field.</p>	1
17.	<p>Assertion (A): The scattering of longer wavelengths of light increases as the size of the particles increases. Reason (R): Large particles scatter lights of all wavelengths equally well.</p>	1
	<p>Case Study: (Q. 18 to 20) The heating effect of current is obtained by transformation of electrical energy in heat energy. Just as mechanical energy used to overcome friction is converted into heat, in the same way, electrical energy is converted into heat energy when an electric current flows through a resistance wire. The heat produced in a conductor, when a current flows through it is found to depend directly on (a) strength of current (b) resistance of the conductor (c) time or which the current flows.</p> <p>The mathematical expression is given by $H = I^2Rt.$ </p> <p>The electrical fuse, electrical heater, electric iron, electric geyser etc. all are based on the heating effect of current.</p>	

18.	When the current is doubled in a heating device and time is halved, the heat energy produced is _____.	1																		
19.	A fuse wire melts at 5 A. It is desired that the fuse wire of same material melt at 10 A. The new radius of the wire should be _____.	1																		
20.	When a current of 0.5 A passes through a conductor for 5 minutes and the resistance of conductor is 10 Ω , the amount of heat produced in joule is _____.	1																		
Chemistry (15)																				
21.	Which of the following is an example of simple displacement- (a) The electrolysis of water. (b) The burning of methane. (c) The reaction of a metal with an acid. (d) The reaction of two salts solution to form a precipitate.	1																		
22.	Which of the following turn phenolphthalein pink- (a) $NaOH$ (b) $HCl(aq)$ (c) CH_3COOH (d) H_2O	1																		
23.	While studying the saponification reaction, what do you observe when you mix an equal amount of colourless vegetable oil and 20% aqueous solution of NaOH. In breaker- (a) The colour of mixture has become dark brown. (b) A brisk effervesce is taking place in the beaker. (c) The outer surface of the beaker has become hot. (d) The outer surface of the beaker has become cold.	1																		
Case Study: (Q. 24 to 26) (A) The melting point and boiling points of some ionic compound are given below- <table border="1" data-bbox="411 1279 1195 1583" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Compound</th><th>Melting Point (K)</th><th>Boiling Point (K)</th></tr> </thead> <tbody> <tr> <td>NaCl</td><td>1074</td><td>1686</td></tr> <tr> <td>LiCl</td><td>887</td><td>1600</td></tr> <tr> <td>CaCl₂</td><td>1045</td><td>1900</td></tr> <tr> <td>CaO</td><td>2850</td><td>3120</td></tr> <tr> <td>MgCl₂</td><td>981</td><td>1685</td></tr> </tbody> </table> <p>These compound are termed ionic because they are formed by the transfer of electrons from a metal to a non-metal. The electron transfer in such compound is controlled by the electronic configuration of the elements involved. Every element tends to attain a completely filled valence shell of its nearest noble gas or stable octet.</p>			Compound	Melting Point (K)	Boiling Point (K)	NaCl	1074	1686	LiCl	887	1600	CaCl ₂	1045	1900	CaO	2850	3120	MgCl ₂	981	1685
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MgCl ₂	981	1685																		
24.	The electronic configuration of magnesium in $MgCl_2$ is- (a) 2, 8, 2 (b) 2, 8, 1 (c) 2, 8 (d) 2, 7	1																		
25.	The Highest interionic attraction force among the followings- (a) $CaCl_2$ (b) $LiCl$ (c) $NaCl$ (d) CaO	1																		

26.	Anand took four colourless solutions P, Q, R and S, and performed the following test. What is the definite conclusion that Anand can reach for solution P and R?	1																									
	<table><tr><td></td><td>Solution P</td><td>Solution Q</td><td>Solution R</td><td>Solution S</td></tr><tr><td>With methyl orange</td><td>No change in colour</td><td>Turns red</td><td>No change in colour</td><td>No change in colour</td></tr><tr><td>With phenolphthalein</td><td>No change in colour</td><td>No change in colour</td><td>No change in colour</td><td>Turns pink</td></tr><tr><td>With red litmus</td><td>No change in colour</td><td>No change in colour</td><td>No change in colour</td><td>Turns litmus blue</td></tr><tr><td>With blue litmus</td><td>No change in colour</td><td>Turns litmus red</td><td>No change in colour</td><td>No change in colour</td></tr></table> <p>(a) Both P and R are acidic salt solutions. (b) Both P and R are basic salt solutions. (c) Both P and R are amphoteric salt solutions. (d) Both P and R are neutral salt solutions.</p>		Solution P	Solution Q	Solution R	Solution S	With methyl orange	No change in colour	Turns red	No change in colour	No change in colour	With phenolphthalein	No change in colour	No change in colour	No change in colour	Turns pink	With red litmus	No change in colour	No change in colour	No change in colour	Turns litmus blue	With blue litmus	No change in colour	Turns litmus red	No change in colour	No change in colour	
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	Fill in the blank. (Q. 27 to 32)																										
27.	When sodium hydrogen carbonate is added to ethanoic acid. $NaHCO_3 + \text{_____} \rightarrow CH_3COONa + H_2O + \text{_____}$	1																									
28.	A chemical compound 'X' is used in the soap and glass industry. It is prepared by brine. Write its chemical formula of X _____.	1																									
29.	$(CH_3)C=C(CH_3)+H_2 \xrightarrow{Ni} (CH_3)_2-CH-CH(CH_3)$ _____ is the role of metal written on arrow's in the given chemical reaction.	1																									
30.	Write the type of reaction involved in following reaction _____. $Zn \longrightarrow Zn^{+2} + 2e^{-}$	1																									
31.	Write the formula of 2, 3 dimethyl pentane _____.	1																									
32.	Name the 3:1 composition of conc. HCl and conc. HNO ₃ is _____.	1																									
	Question Based on Reason & Assertion. (Q. 33 to 35) <p>(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A) (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.</p>																										
33.	Assertion (A): Hydrogen gas is not evolved when a metal reacts with nitric acid. Reason (R): Nitric acid is a strong oxidising agent.	1																									
34.	Assertion (A): Copper sulphate crystals are wet because it contains water of crystallisation Reason (R): Water of crystallisation is the fixed number of molecules of water present in the formula unit of salt.	1																									

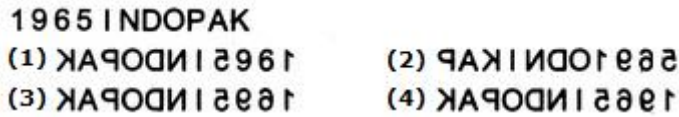
35.	Assertion (A): Mg is less reactive than Na. Reason (R): Sodium reacts more vigorously with oxygen than magnesium.	1
Mathematics (25)		
Choose the correct answer. (Q. 36 to 40)		
36.	The roots of the quadratic equation $x + \frac{1}{x} = 3, x \neq 0$, are (a) $3 + \sqrt{5}, 3 - \sqrt{5}$ (b) $2 + \sqrt{5}, 2 - \sqrt{5}$ (c) $\frac{3 + \sqrt{5}}{2}, \frac{3 - \sqrt{5}}{2}$ (d) $\frac{3 + \sqrt{3}}{2}, \frac{3 - \sqrt{3}}{2}$	1
37.	One equation of a pair of dependent linear equations is $-5x + 7y = 2$. The second equation can be (a) $10x + 14y + 4 = 0$ (b) $-10x - 14y + 4 = 0$ (c) $-10x + 14y + 4 = 0$ (d) $10x - 14y = -4$	1
38.	If $\sec A + \tan A = x$, then $\tan A =$ (a) $\frac{x^2 - 1}{x}$ (b) $\frac{x^2 - 1}{2x}$ (c) $\frac{x^2 + 1}{x}$ (d) $\frac{x^2 + 1}{2x}$	1
39.	If the shadow of a pole h metres high is $\sqrt{3}h$ metres long, then the angle of elevation of the sun is (a) 30° (b) 45° (c) 60° (d) 90°	1
40.	The largest number which divides 70 and 125, leaving remainders 5 and 8, respectively, is (a) 13 (b) 65 (c) 875 (d) 1750	1
Fill in the blank. (Q. 41 to 47)		
41.	If a and b are two irrational numbers, then an irrational number _____ always lies between them.	1
42.	If α and β are the zeros of the quadratic polynomial $ax^2 + bx + c$, then the quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ is _____.	1
43.	In a $\triangle ABC$, D and E are the points on the sides AB and AC respectively such that $DE \parallel BC$. If AD = 6cm, DB = 9 cm and AE = 8cm, then AC = _____.	1
44.	From an external point P, tangents PA and PB are drawn to a circle with centre O. If $\angle PAB = 50^\circ$, then $\angle AOB =$ _____.	1
45.	The wheel of a motorcycle is of radius 35 cm. The number of revolutions per minute that the wheel must make to keep a speed of 66km/h is _____.	1
46.	The mean and median of a distribution are 14 and 15 respectively. The value of mode is _____.	1
47.	If the roots of the quadratic equation $px^2 + 4x + 1 = 0$ are real, then p will be _____.	1

	<p>Do as directed (Q. 48 to 51): An open water tank walls are of thickness 10 cm.</p> 	
48.	What is the outer surface area of its walls?	1
49.	<p>Which of the following gives the capacity (in litre) of the tank?</p> <p>(a) $1.8 \times 1.4 \times 1.7$ (b) $1.9 \times 1.5 \times 1.7$ (c) $2 \times 1.6 \times 1.8$ (d) $2.1 \times 1.7 \times 1.9$</p>	1
	<p>Ronit is the captain of his school football team. He has decided to use a 4-4-2-1 formation in the next match. The figure below shows the position of the players in a 4-4-2-1 formation on a coordinate grid.</p>  <p>One square box represents 1 square unit.</p>	
50.	<p>Which of the following coordinates represents the position of the goalkeeper?</p> <p>(a) (9, -9) (b) (0, 9) (c) (-9, 0) (d) (0, -9)</p>	1
51.	<p>What is the distance between the two centre forward positions in Ronit's plan?</p> <p>(a) 3 units (b) 6 units (c) $5\sqrt{2}$ units (d) 16 units</p>	1

	Subjective Type Questions (Q. 52 to 56)	
52.	A fox and an eagle lived at the top of a cliff of height 6 m, whose base was at a distance of 10 m from a point A on the ground. The fox descends the cliff and went straight to the point A. The eagle flew vertically up to a height x metres and then flew in a straight line to a point A, the distance traveled by each being the same. Find the value of x .	1
53.	Two numbers are in the ratio 5 : 6. If 8 is subtracted from each of the numbers, the ratio becomes 4 : 5. Find the numbers.	1
54.	Determine an acute angle θ , if $\frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$	1
55.	If the diameter of the cross-section of a wire is decreased by 5%, how much percent will the length be increased so that the volume remains the same?	1
56.	<p>In Fig, O is the centre of the circle with radius 5 cm, given $AB \parallel CD$ and $AB = 6$ cm. Find OP.</p> 	1
<p>Case Study (Q. 57 to 60) Your friend Veer wants to participate in a 200m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds.</p>  <p>Based on above condition solve the following questions.</p>		
57.	What is the minimum number of days he needs to practice till his goal is achieved?	1
58.	The value of x , for which $2x$, $x + 10$, $3x + 2$ are three consecutive terms of an AP.	1
59.	Check whether 25 is the term in AP 1, 5, 9 or not.	1
60.	If n th term of an AP is given by $a_n = 2n + 3$ then find the common difference of an AP.	1

	English (10)	
	<p>Read the passage carefully and answer the multiple choice questions that follow.</p> <p>In the early 20th century, the concept of “planned obsolescence” began to influence the world of industrial design and manufacturing. Coined during the Great Depression, this term referred to a deliberate strategy where companies designed products with limited useful life, ensuring that they would need to be replaced within a certain period. This approach was first widely implemented in the automotive industry, where car manufacturers began changing models annually to encourage customers to upgrade more frequently—even if their existing vehicles were fully functional.</p> <p>Over time, this strategy was adopted by a wide range of industries, from consumer electronics to fashion, fueling a culture of constant consumption. While this practice significantly boosted economic growth and innovation, it also introduced a troubling consequence: an unsustainable cycle of production and disposal. Modern devices such as smartphones, laptops, and home appliances are often difficult or expensive to repair, nudging consumers toward buying new rather than fixing the old.</p> <p>Environmental experts argue that planned obsolescence is a major contributor to the growing crisis of electronic waste, or e-waste. According to recent studies, millions of tonnes of electronics are discarded annually, with a large portion ending up in landfills or being improperly recycled. This leads to the release of toxic substances such as mercury, lead, and cadmium, which pose serious risks to both human health and the environment.</p> <p>The ethics of planned obsolescence have come under increasing scrutiny. Consumer advocacy groups and environmental organizations have criticized companies for prioritizing profits over sustainability and long-term customer interests. In response, several governments—particularly in Europe—are introducing “Right to Repair” laws. These laws aim to empower consumers by ensuring access to affordable spare parts, repair manuals, and services, thereby extending the lifespan of products.</p> <p>As the global community becomes more aware of climate change and resource scarcity, the pressure is mounting on corporations to adopt circular economy models. These models emphasize product longevity, reusability, and recycling as core design principles. Although implementing such systems presents challenges, they may ultimately lead to more responsible and sustainable production in the long run.</p>	
61.	<p>Assertion (A): Planned obsolescence can be seen as an economic strategy that increases market demand.</p> <p>Reason (R): Products made to last longer often result in reduced sales and stagnant revenue growth.</p> <p>(a) Both A and R are true, and R is the correct explanation of A</p> <p>(b) Both A and R are true, but R is not the correct explanation of A</p> <p>(c) A is true, but R is false</p> <p>(d) A is false, but R is true</p>	1

62.	True/False with Inference Statement: The passage implies that planned obsolescence is no longer a common practice due to environmental regulations. (a) True, because governments have banned it completely (b) True, because companies voluntarily adopted sustainability (c) False, because planned obsolescence is still widely practiced despite emerging regulations (d) False, because planned obsolescence has never existed in modern manufacturing	1
63.	Choose the most appropriate analogy based on the information in the passage: Planned obsolescence : E-waste :: (a) Overfishing : Marine population recovery (b) Fast fashion : Textile innovation (c) Disposable plastics : Environmental degradation (d) Renewable energy : Pollution	1
64.	What can be inferred about the "Right to Repair" laws based on the passage? (a) They are intended to punish manufacturers through heavy taxation (b) They aim to shift consumer behavior by banning low-quality imports (c) They seek to empower consumers and reduce unnecessary product disposal (d) They focus solely on recycling old electronic gadgets into new ones	1
	Fill in the blanks. (Q. 65 to 67)	
65.	Neither the captain nor the players _____ aware of the penalty imposed. (<i>was / were / have been</i>)	1
66.	If she _____ harder, she could have qualified for the nationals. (<i>practised / had practised / practises</i>)	1
67.	Seldom _____ such generosity in today's world. (<i>we see / do we see / we had seen</i>)	1
68.	You are Ananya/Ankit, a student of Class 12, DAV Public School, Chandigarh. You believe that India's education system needs urgent reforms to focus on practical learning rather than rote memorization. Write an article in minimum 100-150 words.	3
	MAT (10)	
	Solve the question based on general intelligence. (Q. 69 to 78)	
69.	X is the son of Y. Y is the daughter of Z. How is X related to Z? (a) Father (b) Son (c) Grandson (d) Brother	1
70.	M is the mother of N. N is the brother of O. P is the father of M. How is P related to O? (a) Grandfather (b) Uncle (c) Father (d) Brother	1
71.	If CAR is written as DBS, then how is BUS written? (a) CVT (b) BVT (c) CWT (d) CUT	1

72.	If TEA = 26, then what is MILK? (a) 48 (b) 45 (c) 50 (d) 51	1
73.	A man walks 12 m East, then 5 m North, then 12 m West. How far is he from the starting point? (a) 5 m North (b) 12 m North (c) 24 m North (d) Back to start	1
74.	A person starts facing South. He turns left, then left again, then right. Which direction is he facing now? (a) North (b) South (c) East (d) West	1
75.	4, 9, 16, 25, ____ (a) 32 (b) 34 (c) 36 (d) 49	1
76.	1, 1, 2, 3, 5, 8, ____ (a) 11 (b) 12 (c) 13 (d) 15	1
77.	Choose the alternative which is closely resembles the mirror image of the given combination.  (a) 1 (b) 2 (c) 3 (d) 4	1
78.	The more you take from me, the more I leave behind. What am I? (a) Time (b) Steps (c) Memories (d) Shadows	1
