 MACRO VISION ACADEMY	Entrance Paper (2024-25)		For Office Use Only
	Class:	XI MATHS (SAMPLE PAPER-II)	
	Time:	02:30 Hrs.	
	M.M:	75	

Personal Information

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

City:- _____ **Mobile No:-** _____ **Exam Date:-** / / 2024

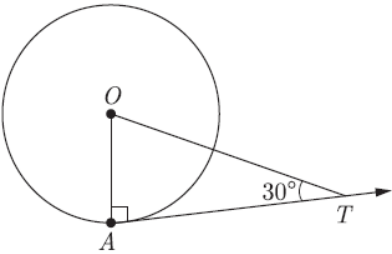
Studying in Class:- _____ **Appearing for class:-** _____ **Board:-** _____


GENERAL INSTRUCTIONS:

- All questions are compulsory.
- Section A contains 25 questions (from 1-25) of Mathematics.
- Section B contains 15 questions (from 26-40) of Physics.
- Section C contains 15 questions (from 41-55) of Chemistry.
- Section D contains 10 questions (from 56-65) of Biology.
- Section E contains 10 questions (from 66-75) of English.

Mathematics (25)	Physics (15)	Chemistry (15)	Biology (10)	English (10)	OBTAINED MARKS (75)

Section-A Mathematics		
Q.N	Questions	Answers
1.	Given that $HCF(306, 657) = 9$, find $LCM(306, 657)$.	22338
2.	For what value of k , -3 is a zero of the polynomial $x^2 + 11x + k$?	$k = 24$
3.	Write whether rational number $\frac{7}{75}$ will have terminating decimal expansion or a non-terminating decimal.	non-terminating decimal
4.	Two cones have their heights in the ratio 1:3 and radii in the ratio 3:1. The ratio of their volumes is _____	3:1
5.	The short and long hands of a clock are 4cm and 6cm long respectively. Find the sum of distances travelled by their tips in 2 days. (Take $\pi = 22/7$)	$\frac{13376}{7} \text{ cm}$ OR 1910.857 cm

6.	The mean of first n odd natural number is	n
7.	The sum of the squares of two consecutive natural numbers is 313. Then the numbers are _____	12, 13
8.	The value of k for which the roots of the equations $3x^2 - 10x + k = 0$ are reciprocal of each other is _____	$k = 3$
9.	Which term of the sequence $-1, 3, 7, 11, \dots$ is 95?	$n = 25$
10.	If angle between two radii of a circle is 130° , the angle between the tangents at the ends of radii is _____	50°
11.	A kite is flying at a height of 75 metres from the ground level, attached to a string inclined at 60° to the horizontal. Find the length of the string to the nearest metre. Use $\sqrt{3} = 1.73$.	$50\sqrt{3} m = 86.5 m$
12.	An urn contains 10 red and 8 white balls. One ball is drawn at random. Find the probability that the ball drawn is white.	$\frac{4}{9}$
13.	The seventeenth term of an AP exceeds its 10^{th} term by 7. Then the common difference is _____	1
14.	A wheel has diameter 84 cm. Find how many complete revolutions must it take to cover 792 meters. $\left(\pi = \frac{22}{7}\right)$	300
15.	Find the value of $4(\sin^4 30^\circ + \cos^2 60^\circ) - 3(\cos^2 45^\circ - \sin^2 90^\circ) - \sin^2 60^\circ$	$\frac{5}{4}$
16.	If $\sin(A+B) = 1$ and $\cos(A-B) = 1, 0^\circ \leq A+B \leq 90^\circ, A \geq B$ find A and B	$A = 45^\circ, B = 45^\circ$
17.	If the shadow of a tower is 30 m long, when the Sun's elevation is 30° . What is the length of the shadow, when Sun's elevation is 60° ?	10 m
18.	In given figure, if AT is a tangent to the circle with centre O , such that $OT = 4$ cm and $\angle OTA = 30^\circ$, then the length of AT is _____ 	$2\sqrt{3} cm$

19.	On a coordinate grid , the location of a bank is $(-4 , 8)$ and the location of a post office is $(2 , 0)$. The scale used is 1 units = 50 m. What is the shortest possible distance between the bank and the post office ?	10 units OR 500 m
20.	Ayush used the quadratic formula to solve a quadratic equation in y to get: $y = \frac{7 \pm \sqrt{169}}{10}$ Write a quadratic equation Ayush could have been solving.	$5y^2 - 7y - 6 = 0$
21.	Assertion (A): If origin is the centroid of triangle whose vertices are $P(a,b), Q(b,c)$ and $R(c,a)$ then $a^3 + b^3 + c^3 = 3abc$ Reason (R): If $a+b+c=0$ then $a^3 + b^3 + c^3 = 3abc$. (a) Both assertion and reason are correct and reason is correct explanation of the assertion. (b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion. (c) Assertion is correct, but reason is incorrect. (d) Assertion is incorrect, but reason is correct.	(a) If both assertion and reason are correct and reason is correct explanation of the assertion.
22.	Assertion (A): $(2x - 1)^2 - 4x^2 + 5 = 0$ is not a quadratic equation. Reason (R): An equation of the form $ax^2 + bx + c = 0$, $a \neq 0$, where $a, b, c \in \mathbb{R}$ is called a quadratic equation. (a) Both assertion and reason are correct and reason is correct explanation of the assertion. (b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion. (c) Assertion is correct, but reason is incorrect. (d) Assertion is incorrect, but reason is correct.	(d) Assertion is incorrect, but reason is correct
<p>Case study (Q.23 – Q.25)</p> <p>Mr. RK Agrawal is owner of a famous amusement park in Delhi. The ticket charge for the park is Rs 150 for children and Rs 400 for adult.</p>  <p>Generally he does not go to park and it is managed by team of staff. One day Mr. Agrawal</p>		

	decided to random check the park and went there. When he checked the cash counter, he found that 480 tickets were sold and Rs 134500 was collected.	
23.	Let the number of children visited be x and the number of adults visited be y . Which of the following is the correct system of equations that model the problem? (a) $x + y = 480$ and $3x + 8y = 2690$ (b) $x + 2y = 480$ and $3x + 4y = 2690$ (c) $x + y = 480$ and $3x + 4y = 2690$ (d) $x + 2y = 480$ and $3x + 8y = 2690$	(a) $x + y = 480$ and $3x + 8y = 2690$
24.	How many children visited the park?	230
25.	How many adults visited the park?	250
Section-B		
Physics		
26.	If current through a resistance is doubled then how many times heat produce in resistance will change?	4 times
27.	What will be the equivalent resistance when four resistors each of 10Ω connected in series combination?	40Ω
28.	What is the SI unit of Power of Lens?	Dioptre
29.	The work done to move a unit coulomb charge from infinity to any point is known as _____	Electric Potential
30.	Light enters from water to glass having refractive index of water and glass are $\frac{4}{3}$ and $\frac{3}{2}$ respectively. If the speed of light in glass is $2 \times 10^8 \text{m/s}$ then what will be the speed of light in water?	$2.25 \times 10^8 \text{m/s}$
31.	An electric bulb is rated 220 V and 100 W. When it is operated on 110 V, the power consumed will be :	25 W
32.	Write the formula of electric power in terms of Current (I) and Resistance (R)	I^2R
33.	A person is unable to see objects beyond 5 m . Name the defect of vision he has____	Myopia
34.	What is the direction of magnetic field lines in the interior of bar magnet?	South pole to north pole
35.	What is the nature of force between two like poles of magnets?	Repulsive force
36.	The magnetic effect of current was discovered by____	Oersted
37.	Assertion: Refractive index has no units. Reason: The refractive index is a ratio of two similar quantities. (a) Both assertion and reason are correct and reason is	(a) Both assertion and reason are correct and reason is correct explanation of the assertion.

correct explanation of the assertion. (b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion. (c) Assertion is correct, but reason is incorrect. (d) Assertion is incorrect, but reason is correct.	
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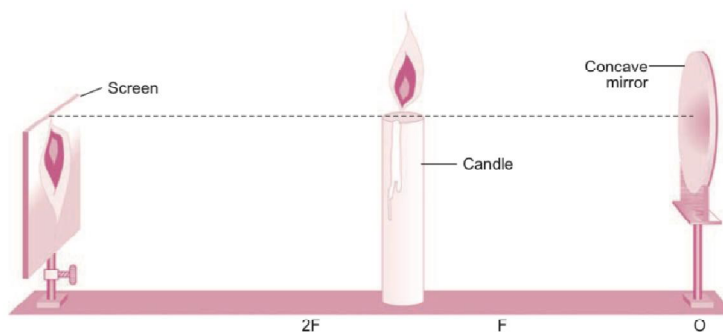
Case Based Questions (38 to 40)

We know that the characteristics of image formed by a concave mirror depend on the position of the object with respect to the mirror.

When an object is placed between F and infinity, the image formed is real and inverted. But when the object is placed between F and mirror it cannot be obtained on the screen. The image formed in this case is virtual, erect and magnified. Such image may be seen by looking in the mirror directly.

When the object is moved from focus towards infinity, the image moves from infinity towards focus and its size decreases.

When object is placed at 2F image of the same size is formed at 2F, itself.



38.	If an object is placed at 20 cm in front of a concave mirror of focal length 10 cm, the image distance will be_____	20 cm or - 20 cm
39.	The minimum distance between the object and its real image for concave mirror is	Zero
40.	An object is placed at the centre of curvature of a concave mirror. The distance between its image and the pole in terms of focal length (f) is	2f

Section-C

Chemistry

Give one word for the following:

41.	How many isomers are possible for C_4H_{10} ?	Two
42.	Generally, metals react with acids to give salt and hydrogen gas. What happened when Silver reacts with an acid.	No reaction
43.	Amongst the metals Sodium, Calcium, Aluminium, and	Aluminium

	Copper, name the metal which reacts with steam only.	
44.	Write functional groups present in the family of (i) alcohols (ii) aldehydes?	(i) -OH (ii)-CHO
45.	Complete the reaction: $\text{ZnCO}_3(\text{s}) \xrightarrow{\text{Heating}} \dots\dots\dots + \text{CO}_2(\text{g}) \uparrow$	ZnO
46.	Write the formula of product formed when Calcium hydroxide reacts with chlorine.	Bleaching powder /CaOCl ₂
47.	Write the formula of product formed when Sodium Hydroxide reacts with Zinc metal.	Sodium zincate /Na ₂ ZnO ₂
48.	An element X forms an oxide X ₂ O ₃ . What is the valency of X?	3
<p>Case study (Q.49 – Q.51) Based on the given information, answer the following questions.</p>		
<p>When an element exists in two or more forms without changing its state and has different physical properties but the same chemical properties, the different forms are known as allotropic forms or allotropes of that element, and the phenomenon is called allotropy. Pure carbon exists in both crystalline and amorphous form. Crystalline: Diamond, graphite. Amorphous: Charcoal, coal, coke, carbon black.</p>		
49.	Name the allotrope of carbon is used for manufacture of fullerenes.	graphite
50.	Which gas will produce when graphite and diamond burn in air?	CO ₂
51.	Is Graphite a good conductor of electricity?	yes
52.	A metal M forms an oxide having the formula M ₂ O ₃ . It reacts with both dilute hydrochloric acid and dilute sodium hydroxide solution. Identify the metal.	Aluminium
53.	Write the name and formula of one salt which contains: ten molecules of water of crystallization.	Na ₂ CO ₃ .10H ₂ O/Sodium Carbonate
54.	An organic compound 'A' is constituent of anti-freeze and has the molecular formula C ₂ H ₆ O. Upon reaction with alkaline KMnO ₄ , the compound 'A' is oxidised to another compound 'B' with the formula C ₂ H ₄ O ₂ Identify the compounds 'A' and 'B'.	A-C ₂ H ₅ OH, B-CH ₃ COOH
55.	Select the answer to these items using the code given below: Assertion: At room temperature, the evaporation of a liquid takes place at constant rate.	(c) Assertion is correct, but reason is incorrect.

	<p>Reason: During evaporation of a liquid, the temperature of the liquid remains unaffected.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	
<p>Section-D</p> <p>Biology</p>		
<p>Read the following passage carefully and answer the questions given below:</p>		
	<p>The force exerted by the blood against the wall of a vessel is called blood pressure. This pressure is much greater in arteries than in veins. The pressure of blood inside the artery during ventricular systole (contraction) is called systolic pressure and pressure in the artery during ventricular diastole (relaxation) is called diastolic pressure.</p>	
56.	Name the blood vessel which originate from heart and carries blood to body tissue	Aorta
57.	What is normal systolic and diastolic blood pressure.	120/80
58.	Name the instrument use to measure blood pressure.	Sphygmomanometer
<p>Answer the following questions</p>		
59.	The flow of liquid from higher concentration to lower concentration through a permeable membrane is known as _____	Osmosis
60.	Name the method of asexual reproduction in plants in which callus is produced.	Tissue culturing
61.	Name the process in which harmful chemical substance like pesticide get accumulated in the body of organism at different trophic levels of food chain.	Biomagnification
62.	Name the process through which fertilized mammalian egg(embryo) get embedded into the inner thick wall of the uterus.	Implantation
63.	The green plants in a terrestrial ecosystem capture - _____ percent of the energy of sunlight that falls on their leaves and convert it into food.	1%
<p>Assertion and reason based questions:</p> <p>Directions:</p> <p>The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p>		

	<p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	
64.	<p>Assertion (A) : Lungs always contain a residual volume of air.</p> <p>Reason (R) : It provides sufficient time for oxygen to be absorbed and for carbon dioxide to be released.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	<p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p>
65.	<p>Assertion (A) : Thyroid hormones of thyroid gland control the metabolism of carbohydrates, proteins and fats.</p> <p>Reason (R) : Thyroid gland secretes a proteinaceous hormone called insulin which regulates the metabolism.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	<p>(c) Assertion is correct, but reason is incorrect.</p>
<p>Section-E</p> <p>English</p>		
<p>Read the following passage and answer the following.</p>		
<p>Happiness is like the sun; it is often hidden by the clouds of thoughts, worries and desires. We have to scatter and dissolve them to experience happiness. You don't have to create happiness. All you have to do is calm your mind, because when there is a quiet mind and inner peace, there is happiness. Happiness is not something far away and unattainable. Happiness does not depend on circumstances, objects or events. It is an inseparable part of our consciousness, of our essence, but hidden and covered from sight by our thoughts, desires and worries. The mind is always in a constant race from one thought to another, from one worry to another. It constantly moves from one object or task to another, never standing still. This restlessness hides the happiness that is within you. It is like a choppy sea that hides the bottom. When the sea gets calm, you can see the bottom. In the same way, when the mind gets quiet, you sense the happiness that is within you.</p>		

	<p>You cannot see a treasure at the bottom of a stormy and muddy lake although it is there. However, when the wind stops, the water becomes still and mud sinks, you can see the treasure. The treasure is there, whether you see it or not. So is happiness. It is always here, only hidden by thoughts, desires and worries.</p> <p>You can experience more and more happiness in your life. Only your thoughts stand in your way of experiencing it. Next time you feel happy, stop for a moment and watch the state of your mind. You will be surprised to discover that it is calm, and there are almost no thoughts in your mind. Since the mind is not accustomed to stay in this peaceful state for long, it soon becomes active again, and the sense of happiness disappears.</p>	
	Answer the following questions:	
66.	<p>What is common between happiness and the sun?</p> <p>(a) It is often visible by the clouds of thoughts, happiness and desires.</p> <p>(b) It is often hidden by the clouds of thoughts, worries and desires.</p> <p>(c) It is often unknown by the clouds of thoughts, sorrows and desires.</p> <p>(d) None of these</p>	(b) It is often hidden by the clouds of thoughts, worries and desires.
67.	<p>How does the restlessness of our mind come in the way of our happiness?</p> <p>(a) It reveals the happiness that is within you.</p> <p>(b) It expands the happiness that is within you.</p> <p>(c) It hides the happiness that is within you.</p> <p>(d) None of these</p>	(c) It hides the happiness that is within you.
68.	<p>The word 'hidden' in para 2 is not an antonym of</p> <p>(a) transparent (b) evident</p> <p>(c) opaque (d) visible</p>	(c) opaque
	<p>Read the passage given below and fill in the blanks by choosing the most appropriate word/phrases from the given options.</p> <p>Pablo Picasso was born in Malaga, Spain in 1881. His father was a drawing teacher, and Pablo became his father's pupil. At the age of 13, he ...(69)... his first exhibition. His family moved to Barcelona in 1895 where Pablo joined an art academy.(70).... a young man, he took interest in masterpieces of famous artists like El Greco and de Goya. In 1901, a close friend of Picasso shot himself, which had a great impact on Pablo. He was very sad and began painting his pictures in grey and blue tones instead of bright, ...(71)... colours. This part of his career is called his Blue Period.</p>	
69.	(a) talked (b) held (c) delivered (d) gave away	(b) held
70.	(a) during (b) as (c) for (d) like	(b) As
71.	(a) vague (b) dull (c) vivid (d) special	(c) vivid

72.	<p>Directions: In the following questions, some parts of the sentence have been jumbled up. You are required to rearrange these parts which are labelled P, Q, R and S to produce the correct sentence. Choose the option with proper sequence.</p> <p>When I look back on my life _____</p> <p>(P) I find it hard to believe (Q) which has been eventful (R) despite what cynics say (S) that it is an illusion</p> <p>(a) PSQR (b) PQSR (c) QRSP (d) QPSR</p>	(a) PSQR
73.	<p>Choose the group of words that shows the same relationship as</p> <p>Play: Win: Lose</p> <p>(a) Accident: Death: Survive (b) Examination: Success: Determination (c) Read: Book: Magazine (d) Music: Dance: Art</p>	(a) Accident: Death: Survive
74.	What is the jumbled word of 'MYRA'?	ARMY
75.	<p>Select the most appropriate meaning of the given phrase/idiom.</p> <p><i>'Hanging by a thread.'</i></p> <p>(a) In a sorry or humble state (b) Be extremely weak (c) Unable to act as desired (d) Be in a dangerous situation</p>	(d) Be in a dangerous situation

Rough Work