 MACRO VISION ACADEMY BURHANPUR	Entrance Paper (2024-25)		For Office Use Only
	Class:	XI MATHS (SAMPLE PAPER-I)	
	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:-** _____

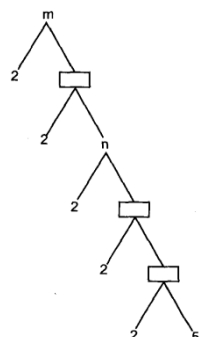
GENERAL INSTRUCTIONS:

- 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.

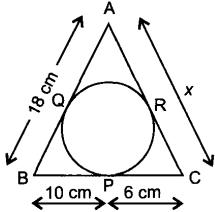
Mathematics	Physics	Chemistry	Biology	English	OBTAINED MARKS
(25)	(15)	(15)	(10)	(10)	(75)

Section-A

Mathematics

Q.N	Questions	Answers
1.	In the adjoining factor tree, find the value of m & n. <div style="text-align: center; margin: 10px 0;">  </div>	
2.	The zeroes of $f(x) = x^2 - 2x$ are _____	
3.	The HCF and LCM of two numbers are 9 and 90 respectively. If one number is 18, find the other.	

4.	Two cubes each of volume 8 cm^3 are joined end to end, then what is the surface area of resulting cuboid.	
5.	Find the area of the shaded region in figure, if radii of the two concentric circles with centre O are 7cm and 14 cm respectively and $\angle AOC = 40^\circ$.	
6.	The mean and median of a data are 14 and 15 respectively. The value of mode is _____	
7.	The nature of roots of the quadratic equation $2x^2 - 4x + 3 = 0$ are	
8.	If $x = -\frac{1}{2}$, is a solution of the quadratic equation $3x^2 + 2kx - 3 = 0$, The value of k is	
9.	If the 8 th term of an A.P. is 31 and 15 th term is 16 more than 11 th term, find the A.P.	
10.	Two concentric circles are of radii 5 cm and 3 cm. The length of the chord of larger circle (in cm) which touches the smaller circle is _____	
11.	If the height and length of the shadow of a man are equal, then the angle of elevation of the sun is _____	
12.	A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number of blue marbles.	
13.	In the AP 2, x , 26, the value of x is _____	
14.	Find the area of a sector of a circle with radius 6 cm if angle of the sector is 60° .	
15.	If $\operatorname{cosec} \theta = \frac{13}{12}$, find the value of $\cot \theta + \tan \theta$.	
16.	The value of $4(\sin^4 30^\circ + \cos^4 60^\circ) - 3(\cos^2 45^\circ - \sin^2 90^\circ)$ is _____	

17.	<p>An electric pole is 10 m high. A steel wire tied to top of the pole is affixed at a point on the ground to keep the pole up right. If the wire makes an angle of 45° with the horizontal through the foot of the pole, the length of the wire is _____ $[Use \sqrt{2} = 1.414]$</p>	
18.	<p>In Fig. all three sides of a triangle touch the circle. Find the value of x.</p> 	
19.	<p>On a playground, Parth, Qasim and Ragini are standing at the points $P(2, 4)$, $Q(8, 6)$ and $R(8, 9)$ respectively. Sameer is standing exactly halfway between Parth and Qasim on the line joining Parth and Qasim. What is the shortest distance, in units, between Sameer and Ragini?</p>	
20.	<p>When a marble is dropped from an initial height, d metres, with an initial speed, v m/s, the height of the marble at time t is represented by $h(t) = vt - 2t^2 + d$. A marble is dropped from a height of 48 m with an initial speed, 10 m/s. How long does it take for the marble to hit the ground?</p>	
21.	<p>Assertion (A): If $a+b+c=0$, then the centroid of the triangle whose vertices are $P(a,b)$, $Q(b,c)$ and $R(c,a)$ is at the origin.</p> <p>Reason (R): The coordinates of the centroid of triangle whose vertices are $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ are $\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3} \right)$.</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>	

22.	<p>Assertion (A): If $a - b + c = 0$, then $ax^2 + bx + c = 0$ has real roots.</p> <p>Reason (R): Roots of $x^2 - x + 1 = 0$ are no real.</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>	
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Case study (Q.23 – Q.25)

Based on the given information, answer the following questions.

Due to ongoing Corona virus outbreak, Wellness Medical store has started selling masks of decent quality. The store is selling two types of masks currently type A and type B.



The cost of type A mask is Rs. 15 and of type B mask is Rs. 20. In the month of April, 2020, the store sold 100 masks for total sales of Rs. 1650.

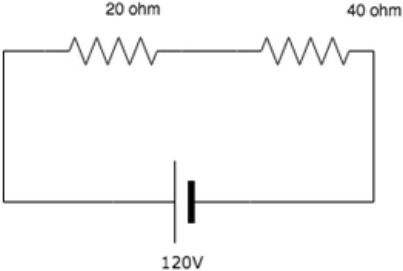
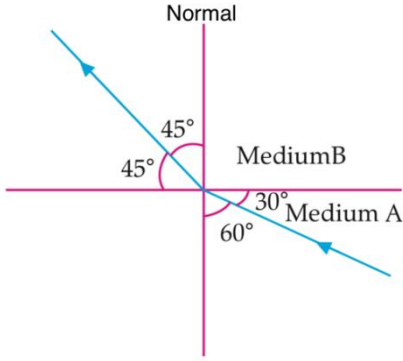
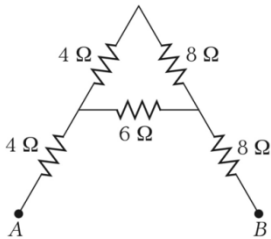


23.	If number of mask of type A be x and number of mask of type B be y then write pair of linear equations in two variables to represent this situation.	
24.	If the store had sold 50 masks of each type, what would be its sales in the month of April?	
25.	How many masks of each type were sold in the month of April?	

Section-B

Physics

26.	Combining the five resistances each of value $1/5$ ohm in series will give equivalent resistance _____ ohm	
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27.	Parallel rays of light entering a convex lens always converge at _____	
28.	You are given three bulbs of 25 W, 40 W and 60 W rated at same voltage. Which of them has lowest resistance?	
29.	What is the ideal resistance of an ammeter?	
30.	<p>For the circuit shown in given figure, determine the value of current.</p> 	
31.	Write the name of the phenomenon behind bluish colour of sky.	
32.	The power of a convex lens of focal length 50 cm is _____	
33.	A.C. used in our domestic consumption has a frequency _____ Hz	
34.	<p>Figure shows a ray of light as it travels from medium A to medium B. What is the Refractive index of the medium B relative to medium A.</p> 	
35.	At which angle the force acting on a moving charge Q in the magnetic field B is maximum?	
36.	<p>The equivalent resistance between A and B for the mesh shown in the figure is</p> 	

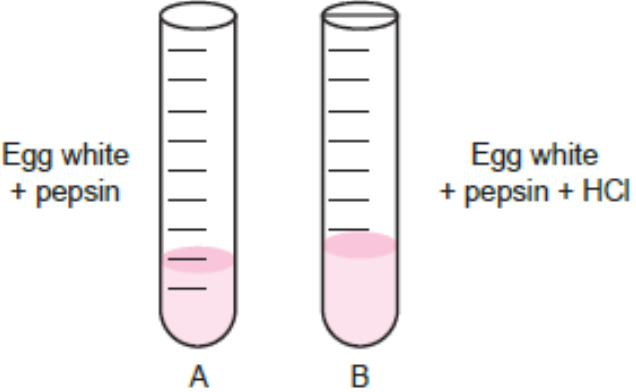
37.	<p>Assertion: The magnetic field produced by a current carrying solenoid is independent of its length and cross sectional area.</p> <p>Reason: The magnetic field inside the solenoid is uniform.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <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>Case study (Q.38 – Q.40)</p> <p>Based on the given information, answer the following questions.</p> <p>The Earth's atmosphere is a heterogeneous mixture of minute particles. These particles include smoke, tiny water droplets, suspended particles of dust and molecules of air.</p> <p>When a beam of light strikes such fine particles, the path of the beam becomes visible. The light reaches us after being reflected diffusely by these particles. The phenomenon of scattering of light by the colloidal particle is known as Tyndall effect.</p> <p>Tyndall effect can also be observed when sunlight passes through a canopy of dense forest. The colour of the scattered particle's light depend upon size of scattering particles.</p>		
38.	The phenomenon of scattering of light by colloidal particles is called	
39.	which colour of white light has highest wavelength ?	
40.	Which colour of white light is least scattered by fine particles?	
<p>Section-C Chemistry</p>		
<p>Give one word for the following:</p>		
41.	Air holes of a gas burner have to be adjusted when the heated vessels get blackened by the flame. Give reason.	
42.	A metal M does not liberate hydrogen from acids but reacts with oxygen to give a black coloured product. Identify M and the black coloured product.	
43.	Iron articles become reddish brown on prolonged exposure to air. This is due to the formation of _____	
44.	Amongst the metals sodium, calcium, aluminium, copper and magnesium, name the metal: Which reacts vigorously with cold water.	

45.	What is the common name of calcium oxide?	
46.	Hydrogen burns with a _____ sound.	
47.	Identify the reducing agent in the following reaction: $Fe + CuSO_4 \rightarrow Cu + FeSO_4$	
48.	What is the colour change of phenolphthalein in base?	
<p>Case study (Q.49 – Q.51) Based on the given information, answer the following questions.</p>		
<p>Hydrocarbons are the compounds containing carbon and hydrogen. There are two types of hydrocarbons. Saturated hydrocarbon which contains only carbon-carbon single covalent bonds. Unsaturated hydrocarbon which contains carbon-carbon double bond or carbon-carbon triple bond which can be identify by the use of bromine water.</p>		
49.	Write general formula of alkynes?	
50.	Name the reagent used to test unsaturation in alkene.	
51.	Which type of hydrocarbons shows addition reactions.	
52.	A white powdery substance X having strong smell of chlorine is used for disinfecting water. Name the substance X.	
53.	Write the formula of the salt formed by the reaction of Carbonic acid and Sodium hydroxide.	
54.	Consider the following statements- (i) Hydrogen gas can be collected over water. (ii) Silver when reacts with acid produces hydrogen gas. Which of these statement(s) is/are correct (a) (i) only (b) (ii) only (c) Both (i) and (ii) (d) Neither (i) nor (ii)	
55.	Complete the equation: $2HgS(s) + 3O_2(g) \xrightarrow{\text{Roasting}} \dots\dots\dots + 2SO_2(g) \uparrow$	

Section-D

Biology

<p>Case study (Q.56 – Q.58) Based on the given information, answer the following questions.</p> <p>The food that we eat gets broken down into simpler compounds for absorption. There are various enzymes and hormones secreted by various glands and cells of the digestive system, which facilitate the digestion of food. The undigested food is expelled out of the body through the anus. The main organs of the digestive system include the mouth, pharynx, oesophagus, stomach, small and large intestine, rectum and anus. There are various types of digestive glands present, e.g. salivary glands, pancreas, liver, etc.</p>		
56.	Which gland produces (i) Bile juice (ii) Trypsin:	

57.	Name the biological catalyst which bring about chemical digestion of food	
58.	Name the enzymes present in gastric juice are	
Answer the following questions		
59.	A blue colour the flower plant denoted by BB is cross breed with that of white colour flower plant denoted by bb. State the expected ratio of the genotypes BB and Bb in the F2 progeny	
60.	A plant that has lost the capacity to produce seed. Name a process using which it can reproduce?	
61.	A squirrel is in a scary situation. Its body has to prepare for either fighting or running away. The immediate changes that take place in its body so that the squirrel is able to either fight or run. Name the hormone responsible for all such changes.	
62.	Name male and female sex organ of flower.	
63.	A student sets up an experiment to study the role of enzymes in digestion of food.  In which test tube, the digestion of protein will occur?	
64.	Assertion (A): The concentration of harmful chemicals is least in human beings. Reason (R): Man is at the apex of the food chain. (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.	

65.	<p>Assertion (A): A receptor is a specialized group of cells in a sense organ that perceive a particular type of stimulus.</p> <p>Reason (R): Different sense organs have different receptors for detecting stimuli.</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 English</p>		
<p>Read the following passage and answer the following.</p>		
<p>1. When a person is called 'great there is always a reason behind it. The deeds of that person make him great or hateful. Everybody is aware of the fact that Alexander is called 'Alexander the Great'. He is known by this adjective because he was not only a great conqueror but also a nice human being. Alexander set the clearest example of his regard for women when he defeated the Persian forces. The Persian King Darius III fled for his life. He departed in such a haste that the royal entourage, including his family, was left behind.</p> <p>2. After his great victory, Alexander was astounded to see the quarters that were left behind by the defeated Persian king. There were huge piles of gold and silver. Even daily implements were made of gold. There was a magnificent bathtub and luxurious beds. King Darius' family including his elderly mother, the queen, and his two daughters were there as well.</p> <p>3. Alexander could have done the worst to these women and no one would have blinked an eye. Naturally, the women were in the deepest depths of terror and despair. But Alexander was an honourable man. He immediately had the message conveyed to the women that Darius had escaped; that he, Alexander, would not harm them; and that they would continue to receive the same treatment and protection that they had under their own king. He made every effort to lighten their sense of anxiety and humiliation of being taken prisoners. He gave them an allowance bigger than the allowance they had before.</p> <p>4. The old queen mother was so grateful for Alexander's kind treatment that she grew to love and respect him with all her heart. When the Persian king heard of the consideration that Alexander had shown to his family. he is said to have proclaimed, 'No one deserves to inherit my throne more than Alexander.'</p>		
<p>Answer the following questions:</p>		
66.	<p>What surprised Alexander on achieving a great victory over Persian King?</p> <p>(a) Huge piles of gold and silver</p> <p>(b) Love and respect given to him</p> <p>(c) His royal entourage</p> <p>(d) None of these</p>	

67.	<p>What is the correct order of the information given below:</p> <p>i. There was a magnificent bathtub and luxurious beds. ii. Alexander was an honourable man. iii. Alexander was a great conqueror and a nice human being. iv. The old queen mother was grateful for Alexander's kind treatment.</p> <p>(a) iii, ii, i, iv (b) ii, iii, i, iv (c) iii, i, ii, iv (d) iv, ii, i, iii</p>	
68.	<p>What qualities made Alexander known by the adjective 'Alexander the Great'?</p> <p>(a) A great conqueror (b) A nice human being (c) Regard for women (d) All of these</p>	
<p>Read the passage given below and fill in the blanks by choosing the most appropriate word/phrases from the given options.</p>		
<p>Houses are buildings that people can live, eat and sleep in. They(69)... you from dangers and bad weather. Most houses show the lifestyles, traditions and cultures of the people who live in them. Homes and houses have different(70)... and sizes . They are built of different materials that depending on the climate of the area you live in. Long ago, people(71)... homes with whatever building materials that they had.</p>		
69.	(a) analyze (b) stick (c) work (d) protect	
70.	(a) calls (b) perspectives (c) windows (d) shapes	
71.	(a) built (b) build (c) are building (d) have built	
72.	<p>Find out the alternative which will replace the question mark.</p> <p>Flow : River :: Stagnant : ?</p> <p>(a) Rain (b) Stream (c) Pool (d) Canal</p>	
73.	<p>Q: Unscramble the word to create a meaningful word: "REAB"</p>	
74.	<p>The people decided P: they were going Q: how much R: to spend S: on the construction of the school building The correct sequence should be _____.</p> <p>(a) Q P R S (b) P Q R S (c) P R Q S (d) S Q P R</p>	
75.	<p>Select the most appropriate meaning of the given phrase/idiom.</p> <p><i>'Leave no stone unturned.'</i></p> <p>(a) Try everything possible (b) Leave the path halfway (c) Not make enough efforts (d) Turn everything upside down</p>	
