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

Personal Information

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

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

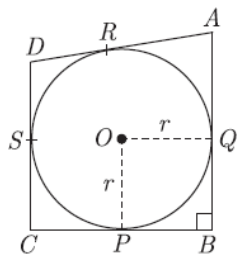Studying in Class:- _____ Appearing for class:-_____ Board:- _____

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)

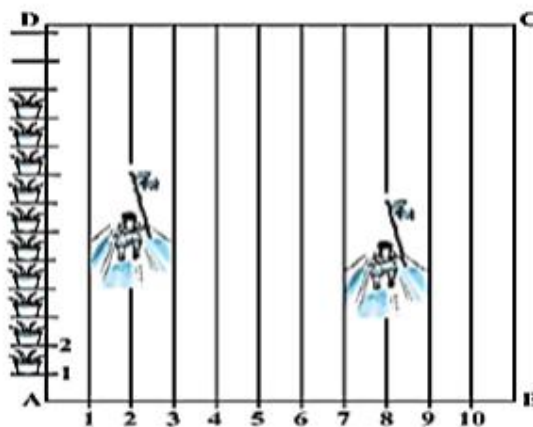| **Section-A**		
Mathematics		
Q.N	**Questions**	**Answers**
1.	The LCM of smallest two digit composite number and smallest composite number is _____.	20
2.	Write the quadratic polynomial, the sum of whose zeroes is -5 and their product is 6.	$k\left(x^2 + 5x + 6\right)$
3.	The HCF of $3^3 \times 5$ and $3^2 \times 5^2$ is _____.	$3^2 \times 5^1$ **OR** 45
4.	From a solid circular cylinder with height 10 cm and radius of the base 6 cm, a right circular cone of the same height and same base is removed, then find the volume of remaining solid?	240π

5.	The short hand and the long hand of a clock are 8 cm and 12 cm long respectively, find the sum of the distance travelled by them in 60 hours .(Take π = 22/7)	$\dfrac{33440}{7}\,cm$
6.	If $\sum f_i = 15, \sum f_i x_i = 3p + 36$ and mean of the distribution is 3, then the value of p is _____.	3
7.	The value of x of the quadratic equation $\dfrac{1}{x} - \dfrac{1}{x-2} = 3, x \neq 0, 2$ is_____	$x = \dfrac{3 \pm \sqrt{3}}{3}$
8.	If the quadratic equation $x^2 + 2\sqrt{2k}x + 18 = 0$ has equal roots, then the values of k are _____.	9
9.	The value of k for which $k^2 + 4k + 8,\ 2k^2 + 3k + 6,\ 3k^2 + 4k + 4$ are three consecutive terms of an AP, is _____.	k = 0
10.	A chord of a circle of radius 10 cm, subtends a right angle at its centre. Then the length of the chord is _____.	$10\sqrt{2}\,cm$
11.	The top of two poles of height 20 m and 14 m are connected by a wire. If the wire makes an angle of $30°$ with the horizontal, then the length of the wire is_____.	12 m
12.	A die is thrown once. Then the probability of getting "at most 2" is_____.	$\dfrac{1}{3}$
13.	Which term of the AP : 3, 15, 27, 39, ... will be 120 more than its 21st term?	31
14.	If the perimeter of a semi-circular protractor is 36 cm. Then the diameter of protractor is _____ $\left(Use\,\pi = \dfrac{22}{7}\right)$.	14 cm
15.	The value of $\sin 30° \cos 60° + \cos 30° \sin 60°$ is_____.	1
16.	If $\tan(3x + 30°) = 1$ then the value of x is _____.	5
17.	From the top of light house, 40 m above the water, the angle of depression of a small boat is $60°$. The distance of boat from the base of the light house is_____.	$\dfrac{40}{\sqrt{3}}\,m$ **OR** $\dfrac{40\sqrt{3}}{3}\,m$

18.	In figure, a circle with centre O is inscribed in a quadrilateral $ABCD$ such that, it touches the sides BC, AB, AD and CD at points P,Q,R and S respectively. If $AB = 29cm, AD = 23cm, \angle B = 90°$ and $DS = 5$ cm, then the radius of the circle (in cm) is _____.	11 cm
19.	A line intersects the y-axis and x-axis at the points P and Q respectively. If $(2,-5)$ is the midpoint of PQ, then coordinates of P and Q are respectively_____.	(4, 0) and (0, −10)
20.	One of the solution of the quadratic equation $z^2 - kz - 28 = 0$ is -7 where k is a constant, then the value of k is_____.	−3
21.	**Assertion (A):** Sum of first n terms in an A.P. is given by the formula: $S_n = 2n\left[2a + (n-1)d\right]$. **Reason (R):** Sum of first 15 terms of 2 , 5 , 8 ... is 345. (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.
22.	**Assertion (A):** Two identical solid cubes of side 5 cm are joined end to end. The total surface area of the resulting cuboid is 300 cm^2. **Reason (R):** Total surface area of a cuboid is $2(lb + bh + lh)$. (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.

Case study (Q.23 – Q.25)

Based on the given information, answer the following questions.

To conduct Sports Day activities in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1 m each. 100 flower pots have been placed at a distance of 1 m from each other along AD, as shown in Fig. Sarika runs $\frac{1}{4}th$ the distance AD on the 2nd line and posts a green flag. Priya runs $\frac{1}{5}th$ the distance AD on the eighth line and posts a red flag.
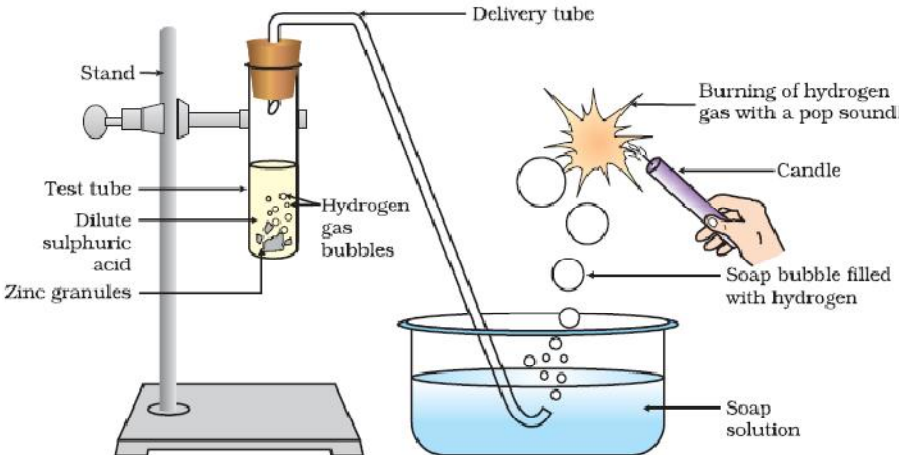

23.	The co-ordinates of Green Flag is _____.	2, 25
24.	The distance between the green flag and the red flag is_____.	$\sqrt{61}\,units$ OR 7.81 units
25.	If Monika wants to post a blue flag adjacently in between these two flags. Then the coordinates of blue flag is_____.	$\left(5,\frac{45}{2}\right)$ OR $(5,22.5)$

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Section-B
Physics

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26.	The eye defect short-sightedness can be corrected by using _____ lens.	Concave lens or Diverging lens
27.	The blue colour of the sky is due to the phenomenon of _____ .	Scattering of Light
28.	Two lenses of power +3D and -1D are placed in contact. The focal length of the combined lens is	+ 50 cm or 0.5 m
29.	A lens of focal length 12 cm forms an erect image, three times the size of the object. The distance between the object and image is _____ .	16 cm

30.	Write the SI unit of magnetic field strength.	Tesla (T)
31.	If current flows from north to south in a conductor placed over magnetic compass then in which direction north pole of magnetic compass will point?	East
32.	How much heat will an electric instrument of 12W produce in one minute if its is connected to a battery of 12V?	720 Joule
33.	A piece of aluminium of finite length is drawn or stretched such that to reduce its diameter to one fourth its original value, how many times its resistance will change?	256 times
34.	A wire of resistance 20 Ω is cut into 4 equal parts. These parts are then connected in series. The equivalent resistance of combination will be _____ .	20 ohm or 20 Ω
35.	Resistors R_1 = 10 Ω , R_2 = 40 Ω , R_3 = 30 Ω, R_4 = 20 Ω, R_5 = 60 Ω and a 12 volt battery is connected as shown. Calculate the total current flowing in the circuit.	2/3 A or 0.67 A
36.	A piece of wire of resistance 4Ω is bent through 180° at its mid point and the two halves are twisted together, then equivalent resistance will be _____ .	1 ohm or 1 Ω
37.	**Assertion:** Magnetic field lines show the direction (at every point) along which a small magnetic needle aligns (at the point). **Reason:** Magnetic field lines certainly represent the direction of magnetic field, but not the direction of force, this is because force is always perpendicular to magnetic field B. (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.	(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.

	Case study (Q.38 – Q.40)	
	Based on the given information, answer the following questions.	
	When a beam of light is incident from are homogeneous medium on a shiny surface of other medium, a part of it is returned back into the same medium. The return of light into the some medium after streaking a surface is called reflection. The law of reflection are following. Let us recall these laws: (a) The angle of incidence is equal to the angle of reflation, and (b) The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane. These laws of reflection are applicable to all types of reflecting surfaces including spherical surfaces. You are familiar with the formation of image by a plane mirror. What are the properties of the image? Image formed by a plane mirror is always virtual and erect. The size of the image is equal to that of the object. The image formed is as far behind the mirror as the object is in front of it. Further, the image is laterally inverted.	
38.	What is magnification produced by the plane mirror if the size of object is 24 cm?	+1
39.	If the angle of incidence of light on mirror is 30°. The value of angle of reflection is ____ .	30^0
40.	The phenomenon of bouncing back of a ray of light after striking to a surface is called _____.	Reflection of light
	Section-C **Chemistry**	
	Give one word for the following:	
41.	Balance the following equation? $Fe + Cl_2 \rightarrow FeCl_3$	$2Fe + 3Cl_2 \rightarrow 2FeCl_3$
42.	When electricity is passed through an aqueous solution of Sodium chloride (called brine): $NaCI\ (aq) \xrightarrow{electricity} NaOH\ (aq) + X + Y$ Identify X and Y.	$X = Cl_2$ $Y = H_2$
43.	Write the correct order of increasing chemical reactivity of Fe, Mg, K, Zn metals.	Fe < Zn < Mg < K
44.	Write chemical formula of baking soda.	$NaHCO_3$
45.	Name the functional group present in each of the following compounds: (i) HCOOH (ii) C_2H_5CHO	(i) Carboxylic acid (ii) Aldehyde

46.	Write the IUPAC name of $$CH_3 - \underset{\underset{Br}{\mid}}{CH} - CH_2 - \underset{\underset{}{\overset{\overset{O}{\parallel}}{C}}} - OH \text{ is}$$	3-Bromobutanoic acid OR 3-Bromobutan-1-oic acid
47.	**Assertion (A):** In electrolysis of water the volume of hydrogen liberated is twice the volume of oxygen formed. **Reason (R):** It is because water has hydrogen and oxygen in the ratio of 1:2. (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.	(c) Assertion is correct, but reason is incorrect.
48.	**Assertion (A):** Many factories waste are acidic in nature **Reason (R):** Generally, bases are added to all factory wastes before discharging into the water bodies (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.	(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.
	Case study (Q.49 – Q.51) **Based on the given information, answer the following questions.** Carefully observe diagram given below which shows how hydrogen is prepared in laboratory and answers the questions that follows: 	

49.	Write the type of chemical reaction occurs?	Displacement Reaction
50.	Write the balanced chemical equation for process.	$Mg + 2HCl \rightarrow MgCl_2 + H_2$
51.	Name the gas evolved in the above process which burns with pop sound.	H_2
52.	Observe the following table of some metals and non-metals Which pair is/are most correct in the tables given above? (a) P and X (b) R and Y (c) Q and Z (d) Q and Y	(c) Q and Z
53.	On placing a zinc rod in a test tube containing blue copper sulphate solution, what colour change of solution will you observed.	Solution changes from blue to colourless
54.	Arrange the following compounds whose aqueous solution will have the highest pH to lowest pH. $NaCl$, Na_2CO_3, NH_4Cl, $NaHCO_3$	$Na_2CO_3 > NaHCO_3 > NaCl > NH_4Cl$
55.	Match Column-I with Column-Il and select the correct answer using the codes given below the columns:	A—(s), B—(p), C—(q), D—(r)

For question 52, the tables are:

Metals	Symbol	Hardness	Malleability	Conductivity
P	Au	Very Hard	Less	High
Q	Ag	Hard	Most	High
R	K	Soft	Very High	Less

Non-Metals	Symbol	Hardness	Malleability	Conductivity
X	S	Hard	No	Low
Y	I	Soft	Most	High
Z	C	Soft/Hard	No	Yes/No

For question 55, the columns are:

Column I (Chemical compound)	Column II (Formula)
(A) Ferric sulphate	(p) $FeSO_4$
(B) Ferrous sulphate	(q) $NaHCO_3$
(C) Sodium bicarbonate	(r) Na_2CO_3
(D) Sodium carbonate	(s) $Fe_2(SO_4)_3$

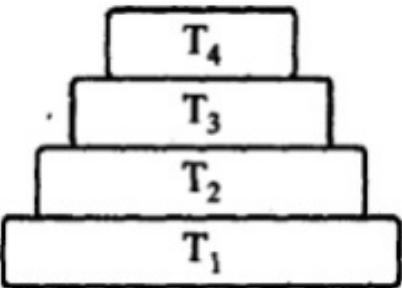|	**Section-D**	
	Biology	
	Case study (Q.56 – Q.58)	
	Based on the given information, answer the following questions.	
	Human brain is the control centre of the body. It is made up of nervous tissue. The brain and spinal cord constitute the central nervous system. They receive information from all parts of the body and integrate it. The brain allows us to think and take action based on that thinking.	
56.	Which part of brain controls posture and balance of the body?	Cerebellum
57.	Neeraj is very creative and innovative. Which part of his brain, do you think is responsible for this.	Forebrain
58.	Reflex action is controlled by which part of nervous system?	Spinal cord
	Answer the following questions	
59.	A mendelian experiment consisted of crossing tall pea plants bearing red flowers, with short pea plants, bearing white flowers. All plants of F_1 generation consists of tall with red flowers. Then the genetic make up of the tall parents can be defined as:	TT
60.	In the given figure, the various trophic levels are shown in a pyramid. At which trophic level is minimum energy available?	T_4
61.	Which tissue transports soluble products of photosynthesis?	Phloem
62.	Where does fertilization takes place in human female?	Fallopian tube
63.	In Human beings the process of digestion of food begins in _____	Mouth

64.	**Assertion (A):** Blood pressure is arterial blood pressure. **Reason (R):** It is measured by sphygmomanometer. (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.	(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.
65.	**Assertion (A):** A bisexual flower produces ova as well as the pollen. **Reason (R):** Ova and pollen are produced in the carpel. (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.	(c) Assertion is correct, but reason is incorrect.

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Section-D

English

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	Read the following passage and answer the following.	
	As far as industrial pollution is concerned, while a commendable job has been done by the department of environment in making environmental impact assessment studies and ensuring that new big industries have built-in systems for pollution abatement and control, the problem of controlling pollution caused by small new units and existing plants had so far eluded solution. The 1986 Act has undoubtedly given greater legal powers to State Pollution Boards and other concerned authorities to penalise offenders. However, it must be recognised that punitive action alone will not suffice. If we are really serious about controlling industrial pollution, the carrot must be used along with the sick.	
	Answer the following questions:	
66.	The problem of controlling industrial pollution remains unsolved because (a) offenders are not punished (b) state pollution boards and other concerned authorities haven't got sufficient legal powers to deal with the offenders (c) the industrialist are not cooperating with the government (d) the problem has not been dealt with in a comprehensive manner	(d) the problem has not been dealt with in a comprehensive manner

67.	The author feels that the 1986 Act (a) gives more legal powers to State Pollution Boards and other concerned authorities (b) is not of much help in controlling industrial pollution (c) deters offenders (d) is of immense help in controlling industrial pollution	(a) gives more legal powers to State Pollution Boards and other concerned authorities
68.	Industrial pollution can be controlled only when (a) the policy of reward and punishment is introduced (b) no small units are allowed to come (c) existing plants without pollution abatements and control systems are closed down (d) state pollution boards and other concerned authorities are given more legal powers to deal with the offenders	(d) state pollution boards and other concerned authorities are given more legal powers to deal with the offenders
	Read the passage given below and fill in the blanks by choosing the most appropriate word/phrases from the given options. In a very short period of time the internet has had a ___(69)___ impact on the way we live. Since the internet was made ___(70)___, it has lowered the ___(71)___ to creative expression.	
69.	(a) profound (b) intricate (c) pernicious (d) harmful	(a) profound
70.	(a) radical (b) unavoidable (c) operational (d) provisional	(c) operational
71.	(a) encroachment (b) barriers (c) discrimination (d) tendency	(b) barriers
72.	Find out the alternative which will replace the question mark. Stethoscope: Heartbeat:: ? : Temperature (a) Scale (b) Thermometer (c) Heat (d) Mercury	(b) Thermometer
73.	Unscramble the word to create a meaningful word: "MAPL"	LAMP
74.	Arrange the sentences in the correct order to form a meaningful sequence. *Rahul was successful* P: by the cruelty and horrors of war Q: he was so disgusted R: in his military operations S: and alone among conquerors that he renounced it. (a) PQRS (b) QPSR (c) RSQP (d) SRQP	(c) RSQP

75.	Select the most appropriate meaning of the given phrase / idiom. *Green thumb* (a) To have talent in gardening (b) To have talent in painting (c) To be envious (d) To be angry	(a) To have talent in gardening

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Rough Work