



MACRO VISION ACADEMY, BURHANPUR

Sample Paper 2021-22

Office Use

Class: XI Mathematics

Time : 90 min

M.M.: 50

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

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

Studying in Class: _____ Appearing for class:- _____ Board: MP/CBSE/Other _____

GENERAL INSTRUCTIONS:

- The question paper has 50 questions in all. Each question carries 1 mark.
- All questions are compulsory.
- Section A contains 20 questions of Mathematics.
- Section B contains 10 questions of Physics.
- Section C contains 10 questions of Chemistry.
- Section D contains 5 questions of MAT (Mental Ability Test).
- Section E contains 5 questions of English.

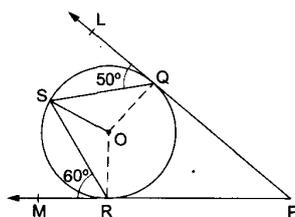
Mathematics (20)	Physics (10)	Chemistry (10)	MAT (05)	English (05)	OBTAINED (50)

Section A

Mathematics

- If $am \neq bl$, then the system of equations $ax + by = c$ and, $lx + my = n$
 - has a unique solution
 - has no solution
 - has infinitely many solutions
 - may or may not have a solution.
- The value of k if $(4 - k)x^2 + (2k + 4)x + 8k + 1 = 0$ is a perfect square is,
 - 0, 4
 - 0, 3
 - 0, 5
 - 0, 6
- How many two-digit numbers are divisible by 3?
 - 25
 - 30
 - 32
 - 36
- The points (a, a) $(-a, -a)$ and $(-\sqrt{3}a, \sqrt{3}a)$ form the vertices of
 - a scalene triangle
 - a right angled triangle
 - an isosceles right angled triangle
 - an equilateral triangle
- If θ lies in the first quadrant. Which one of the following expressions is independent of θ ?
 - $\sec(90^\circ - \theta) - \cot \theta \cdot \cos(90^\circ - \theta) \cdot \tan(90^\circ - \theta)$
 - $\frac{\cot(90^\circ - \theta)}{\cos^2 \theta} \cdot \frac{\sec \theta \cdot \cot^3 \theta}{\sin^2(90^\circ - \theta)}$
 - $\cos(90^\circ - \theta) \times \cos^2(90^\circ - \theta)$
 - None of these

6. In the given figure, O is the centre of a circle; PQL and PRM are the tangents at the points Q and R respectively and S is a point on the circle such that $\angle SQL = 50^\circ$ and $\angle SRM = 60^\circ$. Then, $\angle QSR = ?$



- (a) 40° (b) 50° (c) 60° (d) 70°
7. A chess board contains 64 equal squares and the area of each square is 6.25 cm^2 . A border round the board is 2 cm wide. Find the length of the side of chess board.
- (a) 36 cm (b) 24 cm (c) 16 cm (d) 32 cm
8. Mean of 35 observations is 75. The mean of first 18 observations is 70 and the mean of last 18 observations is 80. Find the 18th observation
- (a) 80 (b) 70 (c) 68 (d) 75
9. A missing helicopter is reported to have crashed some where in the rectangular region as shown

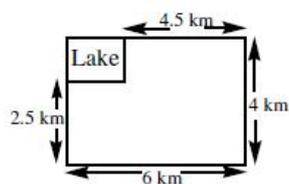


Fig (1)

The probability that it crashed inside the lake is

- (a) $\frac{1}{24}$ (b) $\frac{3}{32}$ (c) $\frac{1}{16}$ (d) $\frac{1}{2}$
10. The decimal expansion of the rational number $\frac{37}{2^2 \times 5}$ will terminate after
- (a) one decimal place (b) two decimal place
(c) three decimal place (d) four decimal place
11. The tops of two towers of heights x and y standing on a level ground subtends angles of 30° and 60° respectively at the centre of the line joining their feet. Then $x : y$ is
- (a) 1:2 (b) 2:1 (c) 1:3 (d) 3:1
12. Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2cm and height 16cm. The diameter of each sphere is
- (a) 2cm (b) 3cm (c) 4cm (d) 6cm
13. The radius (in cm) of the largest right circular cone that can be cut out from a cube of volume 74.088 cm^3 is
- (a) 2.1cm (b) 4.2cm (c) 8.4cm (d) 1.1cm

14. Quadrilateral ABCD is circumscribe to a circle. If $AB = 6\text{cm}$, $BC = 7\text{cm}$ and $CD = 4\text{cm}$ then the length of AD is
 (a) 6cm (b) 4cm (c) 3cm (d) 7cm
15. If $x = \sqrt{1 + \sqrt{1 + \sqrt{1 + \dots}}}$, then $x =$
 (a) $\frac{1 + \sqrt{5}}{2}$ (b) $\frac{1 + \sqrt{3}}{2}$ (c) $\frac{1 + \sqrt{5}}{4}$ (d) $\frac{1 + \sqrt{3}}{4}$
16. AOBC is a rectangle whose three vertices are $A(0,3)$, $O(0,0)$ and $B(5,0)$. The length of each of its diagonals is
 (a) 5 units (b) 3 units (c) 4 units (d) $\sqrt{34}$ units
17. The sum of first n terms of an AP is $(5n - n^2)$. The nth term of the AP is
 (a) $(5 - 2n)$ (b) $(6 - 2n)$ (c) $(2n - 5)$ (d) $(2n - 6)$
18. The shadow of a 5-m-long stick is 2 m long. At the same time the length of the shadow of a 12.5-m-high tree (in m) is
 (a) 3.0 (b) 3.5 (c) 4.5 (d) 5.0
19. $(\sec A + \tan A)(1 - \sin A) = ?$
 (a) $\sin A$ (b) $\cos A$ (c) $\sec A$ (d) $\operatorname{cosec} A$
20. For what value of k, the equation $kx^2 - 6x - 2 = 0$ has real root?
 (a) $k \leq \frac{-9}{2}$ (b) $k \geq \frac{-9}{2}$ (c) $k \leq -2$ (d) $k \geq -2$

Section B

Physics

Passage based questions

DIRECTIONS (Qs. 21 to 23): Read the passage(s) given below and answer the questions that follow.

Ohm's Law defines the relationships between (E) voltage, (I) current, and (R) resistance. One ohm is the resistance value through which one volt will maintain a current of one ampere. Current is that flows on a wire or conductor like water flowing down a river. Current flows from negative to positive on the surface of a conductor. Current is measured in (A) amperes or amps.

21. The unit of current is
 (a) ampere (b) watt (c) volt (d) coulomb
22. The potential difference required to pass a current 0.2 A in a wire of resistance 20 ohm is
 (a) 100 V (b) 4 V (c) .01 V (d) 40 V
23. Two resistances of 100 ohm and zero ohm are connected in parallel. The overall resistance will be
 (a) 100 ohm (b) 50 ohm (c) 25 ohm (d) zero ohm

Multiple Choice Questions (QN 24-26) In these question more than ONE correct choices are provided. Choose all correct choices.

24. Identify Correct relations:

- (a) $1\text{hp} = 746\text{watt}$ (b) $1\text{kWh} = 3.6 \times 10^6 \text{ joule}$
 (c) $1 \text{ watt} = 1 \text{ volt} \times 1 \text{ joule}$ (d) $1 \text{ ohm} = 1 \text{ volt} \times 1 \text{ ampere}$

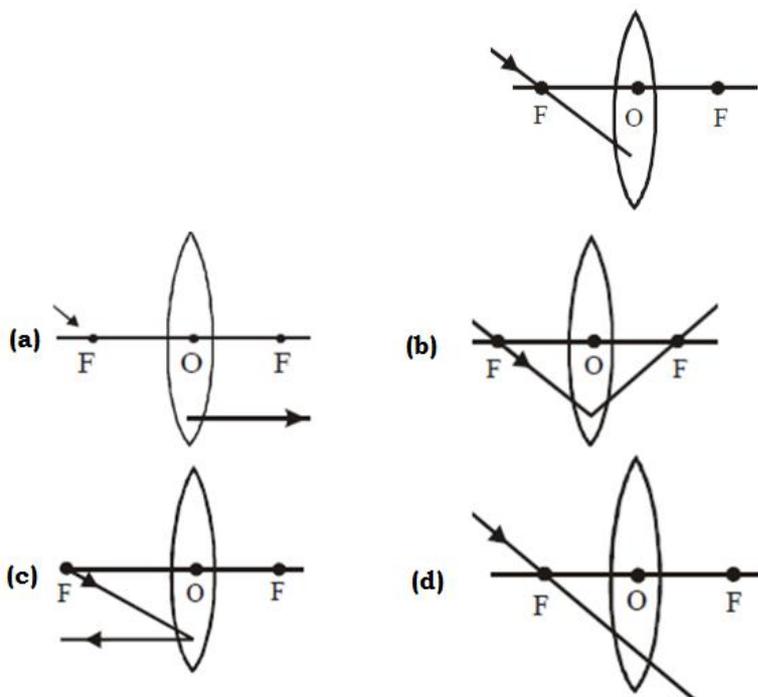
25. A good source of energy would be one

- (a) which would do a less amount of work per unit volume or mass,
 (b) be easily accessible,
 (c) be difficult to store and transport,
 (d) be economical.

26. Choose correct statement/s

- (a) A body has a uniform motion if it travels equal distances in equal intervals of time.
 (b) A body has a non-uniform motion if it travels unequal distances in equal intervals of time.
 (c) Distance travelled by a moving body in (one second) unit time is called speed.
 (d) Average speed is given by the arithmetic mean of initial speed and final speed for a given period of time.

27. Which of the following ray diagrams is correct for the ray of light incident on a lens shown in Fig?



28. When a ray of light passes from an optically rarer medium to a denser medium, it

- (a) goes undeviated (b) bends away from the normal
 (c) bends towards the normal (d) None of these

29. Power rating of an electric appliance indicates

- (a) The rate of consumption of electrical energy
 (b) Amount of heat evolved
 (c) Brightness of the light
 (d) Quality of the appliance

30. Consider the following statements :
- (a) Magnetic field produced by current in a straight wire has no poles.
- (b) The magnetic lines of force produced by a straight current carrying conductor are straight in nature.
- (c) To produce a strong magnetic field at its centre, we prefer a current carrying wire loop of larger radius.

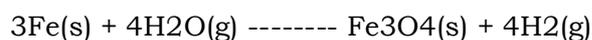
Which of these statement(s) is/are correct?

- (a) (b) and (c) (b) (b) only (c) (a) only (d) All are correct

Section C

Chemistry

31. Which of the following statements about the given reaction are correct?



- (i) Iron metal is getting oxidised
- (ii) Water is getting reduced
- (iii) Water is acting as reducing agent
- (iv) Water is acting as oxidising agent

- (a) (i), (ii) and (iii) (b) (iii) and (iv) (c) (i), (ii) and (iv) (d) (ii) and (iv)

32. Three beakers labelled as A, B and C each containing 25 mL of water were taken. A small amount of NaOH, anhydrous CuSO₄ and NaCl were added to the beakers A, B and C respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers A and B, whereas in case of beaker C, the temperature of the solution falls. Which one of the following statement(s) is (are) correct?

- (i) In beakers A and B, exothermic process has occurred.
- (ii) In beakers A and B, endothermic process has occurred.
- (iii) In beaker C exothermic process has occurred.
- (iv) In beaker C endothermic process has occurred.

- (a) (i) only (b) (ii) only (c) (i) and (iv) (d) (ii) and (iii)

DIRECTIONS (Qs. 33 to 35): Read the passage(s) given below and answer the questions that follow.

If chlorine is passed for a considerable time over solid **slaked lime**, the product formed is bleaching power.

Bleaching powder is represented as $\text{CaOCl}_2, \text{Ca}(\text{OH})_2 + \text{Cl}_2 \longrightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$. It has greater available chlorine than sodium hypochlorite, NaClO (liquid bleach). It contains about 36% of available chlorine. Bleaching powder deteriorates if left in contact with the air and smells of chlorine because of action of CO₂ in atmosphere.

It is widely used as a bleaching agent for bleaching clothes. It is used for disinfection of drinking water or swimming pool water. For use in outdoor swimming pools, CaOCl₂ can be used as a sanitizer in combination, with cyanuric acid stabilizer. Two stabilizer will reduce the loss of chlorine because of u.v. radiation.

33. How is bleaching powder prepared ?
- (a) Reaction of Cl_2 with $Ca(OH)_2$
 (b) Reaction of Cl_2 with CaO
 (c) Reaction of Ca with $HOCl$
 (d) Reaction of Ca with Cl_2 / H_2O
34. How much amount of available chlorine is present in bleaching powder?
- (a) 32% (b) 36% (c) 35% (d) 38%
35. Why bleaching powder smells of chlorine ?
- (a) by action of H_2O in atmosphere on bleaching powder
 (b) by action of O_2 in atmosphere on bleaching powder
 (c) by action of SO_2 in atmosphere on bleaching powder
 (d) by action of CO_2 in atmosphere on bleaching powder
36. The metal that reacts with cold water is -
- (a) mercury (b) sodium (c) zinc (d) tungsten
37. The only metal that is liquid at room temperature is -
- (a) mercury (b) sodium (c) zinc (d) tungsten
38. Which one of the following combination represents a metallic element
- (a) 2, 8, 7 (b) 2, 8, 8 (c) 2, 8, 4 (d) 2, 8, 2
39. The long form of periodic table is based on____.
- (a) Electronic configuration of the atom
 (b) Atomic weight of the atom
 (c) Physical property of an element
 (d) Electronegativity
40. Methane is a major constituent of
- (a) coal gas (b) water gas (c) petroleum (d) biogas

Section D

MAT

41. If A is the brother of B; B is the sister of C; C is the father of D then how is D related to A?
- (a) Brother (b) Sister (c) Nephew (d) Cannot be determined
42. What will come in place of question mark (?) in the following series?
 50, 67, 33, 84, 16 (?)
- (a) 101 (b) 109 (c) 107 (d) 103
43. Find out the wrong term in the series 3, 6, 10, 16, 21, 28
- (a) 16 (b) 10 (c) 15 (d) 28
44. K is 40 m South-West of L. If M is 40 m South-East of L, then M is in which direction of K?
- (a) East (b) West (c) North-East (d) South
45. In a certain code language STUDENT is written as TUTDNES. How will SOURCES be written in that code language?
- (a) SOURCES (b) SUORECS (c) SRUOCES (d) SOURSEC

Section E

English

Read the passage and answer the questions that follow-

1. I was one of a party who hired an up-river boat one summer, for a few days' trip. We had none of us ever seen the hired up-river boat before; and we did not know what it was when we did see it. We had written for a boat – a double sculling skiff; and when we went down with our bags to the yard, and gave our names, the man said, "Oh, yes; you're the party that wrote for a double sculling skiff. It's all right. Jim, fetch round THE PRIDE OF THE THAMES."

2. The boy went, and re-appeared five minutes afterwards, struggling with an antediluvian chunk of wood, that looked as though it had been recently dug out of somewhere, and dug out carelessly, so as to have been unnecessarily damaged in the process. My own idea, on first catching sight of the object, was that it was a Roman relic of some sort, – relic of WHAT I do not know, possibly of a coffin.

3. The neighbourhood of the upper Thames is rich in Roman relics, and my surmise seemed to me a very probable one; but our serious young man, who is a bit of a geologist, pooh-poohed my Roman relic theory, and said it was clear to the meanest intellect (in which category he seemed to be grieved that he could not conscientiously include mine) that the thing the boy had found was the fossil of a whale; and he pointed out to us various evidences proving that it must have belonged to the pre-glacial period.

4. To settle the dispute, we appealed to the boy. We told him not to be afraid, but to speak the plain truth: Was it the fossil of a pre-Adamite whale, or was it an early Roman coffin? The boy said it was THE PRIDE OF THE THAMES. We thought this a very humorous answer on the part of the boy at first, and somebody gave him twopence as a reward for his ready wit; but when he persisted in keeping up the joke, as we thought, too long, we got vexed with him. "Come, come, my lad!" said our captain sharply, "don't let us have any nonsense. You take your mother's washing-tub home again, and bring us a boat."

5. The boat-builder himself came up then, and assured us, on his word, as a practical man, that the thing really was a boat – was, in fact, THE boat, the "double sculling skiff" selected to take us on our trip down the river. We grumbled a good deal. We thought he might, at least, have had it whitewashed or tarred – had SOMETHING done to it to distinguish it from a bit of a wreck; but he could not see any fault in it.

6. He even seemed offended at our remarks. He said he had picked us out the best boat in all his stock, and he thought we might have been more grateful. He said it, THE PRIDE OF THE THAMES, had been in use, just as it now stood (or rather as it now hung together), for the last forty years, to his knowledge, and nobody had complained of it before, and he did not see why we should be the first to begin.

7. We argued no more. We fastened the so-called boat together with some pieces of string, got a bit of wall-paper and pasted over the shabbier places, said our prayers, and stepped on board. They charged us thirty-five shillings for the loan of the remnant for six days; and we could have bought the thing out-and-out for four-and- sixpence at any sale of drift-wood round the coast.

On the basis of your reading of the above passage, complete the following statements with the help of given options.

- 46.** The author and his friends were not happy with the boat they had got because
- (a) it was not the boat called The Pride of the Thames
 - (b) it was shaped like a whale fossil or a coffin
 - (c) it belonged to the Roman Era
 - (d) it was very weak and worn out
- 47.** The owner of the boat felt offended because the author and his companions
- (a) argued with him over the price he was charging
 - (b) had carried out repairs on the boat without his permission
 - (c) had suggested the boat was nothing better than a piece of wreck
 - (d) had refused to accept that the boar was a double sculling skiff
- 48.** “In which category he seemed to be grieved that he could not conscientiously include mine”. Which category is the author talking about here?
- (a) people of highest intellect
 - (b) people of very little intellect
 - (c) people who dealt in old relics
 - (d) people who were experts of fossil studies
- 49.** “We argued no more”. The author makes this comment because
- (a) they believed The pride of the Thames was indeed a double sculling skiff
 - (b) they realised that it was no use arguing with the boat owner
 - (c) the boat owner threatened that he would not rent out the boat to them
 - (d) the boat owner had agreed to carry out necessary repairs to the best
- 50.** Before starting out on their journey the author and his friends said a prayer. Which of the following do you think is the most probable reason for doing so?
- (a) they expected the river to be in high tide
 - (b) they would have to pay heavy damages if they lost the boat
 - (c) they were all very superstitious
 - (d) they were afraid that the boat will break up and sink in the river
