MACRO VISION ACADEMY, BURHANPUR

Sample Paper 2021-22

Class: XI Biology   **Time : 90min**   **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 10 questions of Mathematics.
- Section B contains 10 questions of Physics.
- Section C contains 10 questions of Chemistry.
- Section D contains 10 questions of Biology.
- Section E contains 5 questions of MAT (Mental Ability Test).
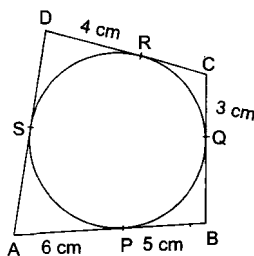- Section F contains 5 questions of English.

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

Section A

Mathematics

1. The zeros of the polynomial $x^2 - \sqrt{2}x - 12$ are

   (a) $\sqrt{2}, -\sqrt{2}$ (b) $3\sqrt{2}, -2\sqrt{2}$ (c) $-3\sqrt{2}, 2\sqrt{2}$ (d) $3\sqrt{2}, 2\sqrt{2}$

2. The pair of equation $x = 4$ and $y = 3$ graphically represents lines which are

   (a) Parallel   (b) Intersecting at (3, 4)

   (c) Coincident   (d) Intersecting at (4, 3)

3. If the equation $x^2 - 2x(1+3k)+7(3+2k)=0$ has equal roots, then k = ?

   (a) $2\ or\ \dfrac{10}{9}$ (b) $-2\ or\ \dfrac{10}{9}$ (c) $2\ or\ \dfrac{-10}{9}$ (d) $-2\ or\ \dfrac{-10}{9}$

4. Which is 20th term from the end of the AP 3, 8, 13, ..., 253?

   (a) 163   (b) 158   (c) 153   (d) 148

5. Two of the vertices of a ∆ABC are given by A(6, 4) and B(–2, 2) and its centroid is G(3, 4).   Find the coordinates of the third vertex C of the ∆ABC.

   (a) (2, 3)   (b) (4, 6)   (c) (4, 3)   (d) (5, 6)

6. If $\sin(x+y)=1$ and $\cos(x-y)=\dfrac{\sqrt{3}}{2}$, then the value of x and y,

   (a) $30°, 60°$ (b) $30°, 45°$ (c) $60°, 30°$ (d) None of these

7. In the given figure, Quad. ABCD is circumscribed, touching the circle at P, Q, R and S. If AP = 6 cm, BP = 5 cm, CQ = 3 cm and DR = 4 cm then perimeter of Quad. ABCD is

(a) 36cm   (b) 27cm   (c) 18cm   (d) 32cm

8. The sum of the lengths of all the edges of a cube is 6 cm. Then what is the volume of the cube in cubic centimetre?

(a) $\dfrac{1}{36}$ (b) $\dfrac{1}{12}$ (c) $\dfrac{1}{8}$ (d) $\dfrac{1}{4}$

9. The median and mode in a frequency distribution are 26 and 29 respectively. The mean is

(a) 27.5   (b) 24.5   (c) 28.4   (d) 25.8

10. A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is

(a) $\dfrac{1}{26}$ (b) $\dfrac{4}{13}$ (c) $\dfrac{1}{13}$ (d) $\dfrac{1}{52}$

Section B
Physics

Passage based questions

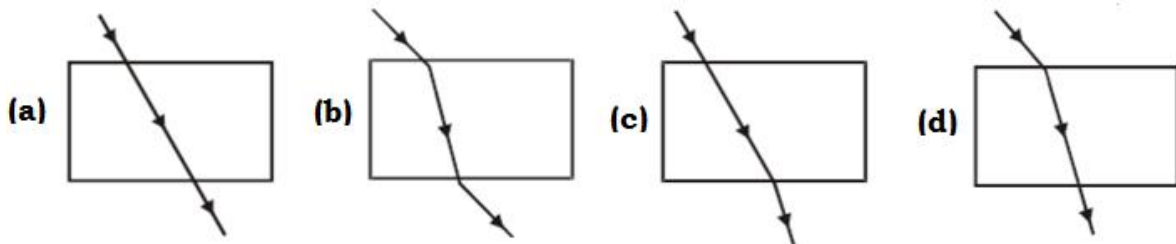**DIRECTIONS (Qs. 11 to 13): Read the passage(s) given below and answer the questions that follow.**

The term "Conventional" means "not unusual or extreme or ordinary." Conventional energy sources are the traditional sources of energy like coal and petroleum. In terms of being "usual", however, the impact on society by these sources is something extra-ordinary and has actually been quite serious. Conventional energy sources are finite. They will not last for ever. What if all the petroleum reserves in the world come to an end? What if all the coal gets exhausted? It takes hundreds of years for a coal bed to get formed. It takes less than a month for the same to get extracted for use. Excessive use of these sources of energy results in global warming. Statistics tell that the average daily temperature of earth and the rainfall pattern has changed drastically. Ocean temperatures have increased. Number of days of rain, an important parameter in monsoon countries, has come down. Burning of coal produces harmful chemical emissions - Sulphur, Nitrogen Oxide and Mercury. All of these are known to have disastrous environmental and health effects on this fragile earth. Another form of pollution caused by the conventional sources is the "thermal pollution" or letting out of heat into the environment.

11. What is the meaning of word conventional?

(a) Not unusual   (b) Not extreme

(c) Ordinary   (d) All of these

12. What are the conventional sources of energy?

(a) Traditional sources of energy

(b) Coal and petroleum

(c) Nuclear energy

(d) Both (1) and (2)

13. Give two examples of conventional sources of energy.

(a) Coal and petroleum

(b) Uranium and plutonium

(c) Both (1) and (2)

(d) Neither (1) nor (2)

Multiple Choice Questions (QN 14-16) In these question more than ONE correct choices are provided. Choose all correct choices.

14. Identify Correct relations:

(a) 1hp = 476watt

(b) 1kWh = 3.6×10^3 joule

(c) 1 watt = 1 volt × 1 ampere

(d) 1 ohm= 1 volt / 1 ampere

15. A good source of energy would be one

(a) which would do a large amount of work per unit volume or mass,

(b) be easily accessible,

(c) be difficult to store and transport,

(d) be costly.

16. 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 acceleration.

(d) Average speed is given by the arithmetic mean of initial speed and final speed for a given period of time.

17. The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as 1, 2, 3 and 4 in the figure. Which one of them is correct?

18. When a ray of light passes along the normal on glass slab, it

(a) goes undeviated

(b) bends away from the normal

(c) bends towards the normal

(d) None of these

19. An electric generator is a device

(a) that works on the principle described by Faraday's law of electromagnetic induction

(b) that converts mechanical energy to electrical energy

(c) Both (1) and (2)

(d) Neither (1) nor (2)

20. The region surrounding a magnet, in which the force of the magnet can be detected is said to have

(a) magnetic field

(b) electric field

(c) magnetic poles

(d) None of these

Section C
Chemistry

21. Which of the following is a displacement reaction?

(a) $MgCO_3 \rightarrow MgO + CO_2$

(b) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

(c) $2H_2 + O_2 \rightarrow 2H_2O$

(d) $2Pb(NO_3)_2 \xrightarrow{Heat} 2PbO + 4NO_2 + O_2$

22. Which of the following are exothermic processes?

(i) Reaction of water with quick lime

(ii) Dilution of an acid

(iii) Evaporation of water

(iv) Sublimation of camphor (crystals)

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

23. 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 solution 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) (iv), (ii) and (iii)

24. The ability of metals to be drawn into thin wires is known as

(a) ductility   (b) malleability   (c) sonority   (d) conductivity

25. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?

(i) Good thermal conductivity

(ii) Good electrical conductivity

(iii) Ductility

(iv) High melting point

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

26. Due to its semiconductor properties the non-metal used in computer, T.V. etc. is

   (a) Carbon   (b) Silicon   (c) Bromine   (d) Fluorine

27. According to Mendeleev's Periodic Law, the elements were arranged in the periodic table in the order of

   (a) Increasing atomic number   (b) Decreasing atomic number

   (c) Increasing atomic masses   (d) Decreasing atomic masses

28. Carbon exists in the atmosphere in the form of

   (a) carbon monoxide only   (b) carbon monoxide in traces and carbon dioxide

   (c) carbon dioxide only   (d) coal

29. On moving from left to right in a period in the periodic table, the size of the atom

   (a) increases   (b) decreases

   (c) does not change appreciably   (d) first decreases and then increases.

30. The valence shell of element A contains 3 electrons while the valence shell of element B contains 6 electrons. If A combines with B, the probable chemical formula of the compound is

   (a) AB_2 (b) A_2B (c) A_2B_3 (d) A_3B_2

Section D
Biology
Read the paragraph below and answer the following MCQs (Q31 & Q32)

Cell body is the main art of a nerve cell. A large nucleus is present in the middle of the cell body. It also contains cytoplasm. Dendron are hair-like parts arises from the cell body. Various branches come out of the Dendron and these are called dendrites. Each neuron has a long, thick and cylindrical part, which is called axon. The nerve endings attached to the lateral braches of the axon, known as synapse. Dendrites receive impulses and axon takes away from the cell body.

31. **What is the main part of nerve cell?**

   (a) Nucleus   (b) Cell body   (c) Cytoplasm   (d) Dendrites

32. **Name the hair-like part arising from the cell body.**

   (a) Dendron   (b) Axon   (c) Synapse   (d) None of these

33. **In which group of the organisms the food material is broken down outside the body?**

   (a) Mushroom, green plants, amoeba   (b) Yeast, mushroom, bread mould

   (c) Paramecium, amoeba, cuscuta   (d) Cuscuta, lice, tapeworm

34. **Choose the correct statement that describes arteries:**

   (a) They have thick elastic walls, blood flows under high pressure; collect blood from different organs and bring it back to the heart

   (b) They have thin walls with valves inside, blood flows under low pressure and carry blood away from the heart to various organs of the body

   (c) They have thick elastic walls, blood flows under low pressure; carry blood from the heart to various organs of the body

   (d) They have thick elastic walls without valves inside. The Blood flows under high pressure and carry blood away from the heart to different parts of the body

35. **Assertion**: Respiration in living beings is called exothermic reaction.

    Reason: Respiration in living beings involves with absorption of heat energy.

    (a) Both A and R are true and R is correct explanation of the assertion.

    (b) Both A and R are true but R is not the correct explanation of the assertion.

    (c) A is true but R is false.

    (d) A is false but R is true.

36. The mature embryo of dicotyledonous seed has two cotyledons, the radicle and the plumule. Which one of these tissue is not produced from the embryonic mass

    (a) plumule   (b) hypocotyls   (c) root tip   (d) cotyledons

37. A trait in an organism is influenced by

    (a) paternal DNA only

    (b) maternal DNA only

    (c) both maternal and paternal DNA

    (d) neither by paternal nor by maternal DNA

38. Match coloumn I with coloumn II and select the correct option from the options given below.

	COLOUMN I		COLOUMN II
1	Auxin	i	Fruit ripening
2	Cytokinin	ii	Phototrophism
3	Gibberlin	iii	Stimulation of cell division
4	Abscisic acid	iv	Stem elongation in rosette plant
5	Ethylene	v	Closing of stomata

    (a) 1-(iii), 2-(i), 3-(ii), 4-(iv), 5-(v)   (b) 1-(iii), 2-(v), 3-(ii), 4-(i), 5-(iv)

    (c) 1-(v), 2-(iii), 3-(ii), 4-(iv), 5-(i)   (d) 1-(ii), 2-(iii), 3-(iv), 4-(v), 5-(i)

39. Co-ordination is achieved through nervous system as well as circulatory system by respective agents like

    (a) Neurotransmitters and proteins

    (b) Neurotransmitters and hormones

    (c) Neurotransmitters and sugars

    (d) Sugars and hormones

40. Offspring formed by asexual method of reproduction have greater similarity among themselves because

    (i) asexual reproduction involves only one parent

    (ii) asexual reproduction does not involve gametes

    (iii) asexual reproduction occurs before sexual reproduction

    (iv) asexual reproduction occurs after sexual reproduction

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

41. Pointing to a photograph, Bajpai said, "He is the son of the only daughter of the father of my brother." How is Bajpai related to the man in the photograph?

(a) Nephew   (b) Brother   (c) Father   (d) Maternal Uncle

42. What will come in place of question mark (?) in the following series?

7, 13, 25, 49, 97, ?

(a) 173   (b) 195   (c) 183   (d) 193

43. Find out the wrong term in the series 7, 28, 63, 124, 215

(a) 28   (b) 215   (c) 7   (d) 63

44. A man walks 5 km toward south and then turns to the right. After walking 3 km he turns to the left and walks 4 km. Then he goes back 10 km straight. Now in which direction is he from the starting place?

(a) South-East   (b) North-West   (c) South   (d) West

45. If train is called bus, bus is called tractor, tractor is called car, car is called scooter, scooter is called bicycle, bicycle is called moped, which is used to plough a field?

(a) Train   (b) Bus   (c) Tractor   (d) Car

Section F

English

Read the passage given below and answer the questions that follow by choosing the answers from given options.

The death of Dr Christiaan Barnard, the famous transplant surgeon, has occurred at a time when many of his modern counterparts are facing difficulties. Many of the early problems, such as tissue rejection, have, to a great extent, now been solved, thanks to the introduction of new drugs. However, there remains a major problem. The people in need of transplant surgery far outnumber the available organs.

The shortage of organ donors has caused several doctors to call for urgent improvements to be made to the system by which organs are donated. Many countries, such as Britain, have huge waiting lists of people whose lives could be saved by being given a kidney, lung, heart, or liver transplant. Sadly, many of them die before they reach the top of those lists.

Under the present British scheme, people are asked to carry donor cards, and/or put their names on the national donor register. Thus, if they lose their lives suddenly, for example, in a traffic accident, they have given permission in advance of their deaths for their organs to be used. If they have not done so, surgeons are faced with the task of asking the distraught next-of-kin for permission to use the organs of the deceased. Of course, often the relatives are too upset even to think of such a thing until it is too late. Organ transplants have to take place quite soon after the death of the donor.

Dying and donating organs is not something most of us like to think about, and only about 14% of people have registered. Now, it has been suggested that, instead of the present register, there should be a register of people who wish to opt out of having their organs removed for transplant surgery.

Increasing the number of donors is made more difficult because it is such an emotive issue. Just recently, an article in the Journal of the American Medical Association showed that half of the families in the United States refused, when asked for permission to use the organs of their loved ones.

46. Contemporary doctors face difficulties in transplant surgery because

(a) tissue rejection has not been solved

(b) expert doctors like Christian Barnard are not at hand to give advice

(c) people needing transplant outnumber donors

(d) introduction of new drugs has led to harmful side effects.

47. Patients often meet an unfortunate end because of............

(a) shortage of donors   (b) tissue mis-match

(c) lack of good doctors   (d) lack of funds

48. Carrying donor cards is helpful in........................

(a) asking people to donate organs   (b) preventing accidental deaths

(c) locating relatives of donors   (d) locating donors quickly after death

49. Many do not want to donate organs because ....

(a) they are selfish   (b) they cannot reach the hospital in time

(c) they are ignorant   (d) of emotional reasons

50. The word 'distraught' in the third paragraph means..............

(a) upset   (b) angry   (c) selfish   (d) happy

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