MACRO VISION ACADEMY, BURHANPUR
Sample Paper 2022-23

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).
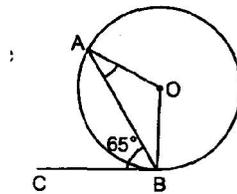- Section F contains 5 questions of English.

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

Section A
Mathematics

1. The H.C.F. of 26 and 91 is 13, then the L.C.M. of 26 and 91 is:

   (a) 26   (b) 182   (c) 91   (d) 26×91

2. The degree of the polynomial $\left(2x - x^3\right)\left(5 + x^2 + x^5\right)$ is:

   (a) 5   (b) 8   (c) 3   (d) 2

3. Graphically, the pair of equations

   6x – 3y +10 = 0

   2x – y + 9 = 0

   represents two lines which are:

   (a) intersecting at exactly one point   (b) intersecting at exactly two points

   (c) coincident   (d) parallel

4. If $\cos A = \dfrac{4}{5}$, the value of $\tan A$ is:

   (a) $\dfrac{3}{5}$ (b) $\dfrac{3}{4}$ (c) $\dfrac{4}{3}$ (d) $\dfrac{5}{3}$

5. The formula for mean of grouped data $\bar{x} = a + \dfrac{\sum f_i d_i}{\sum f_i}$, d_i is deviation of the assumed mean 'a' from:

(a) median   (b) frequency   (c) mean   (d) mid-point of the classes

6. Which of the following equations has the sum of its roots as 3?

(a) $2x^2 - 3x + 6 = 0$ (b) $-x^2 + 3x - 3 = 0$

(c) $\sqrt{2}x^2 - \dfrac{3}{\sqrt{2}}x + 1 = 0$ (d) $3x^2 - 3x + 3 = 0$

7. The 4th term from the end of the A.P. $-11, -8, -5,\ldots,49$ is:

(a) 37   (b) 40   (c) 43   (d) 58

8. In the given figure, BC is tangent to a circle with centre O. If $\angle ABC = 65°$, the measure of the angle AOB is:

(a) 65^0 (b) 115^0 (c) 130^0 (d) 150^0

9. Which of the following can be probability of an event:

(a) $2\dfrac{1}{3}$ (b) $1\dfrac{4}{7}$ (c) $-1\dfrac{1}{5}$ (d) 0.8

10. If the distance between the points *(2, –2)* and *(–1, x)* is 5. One of the values of x is:

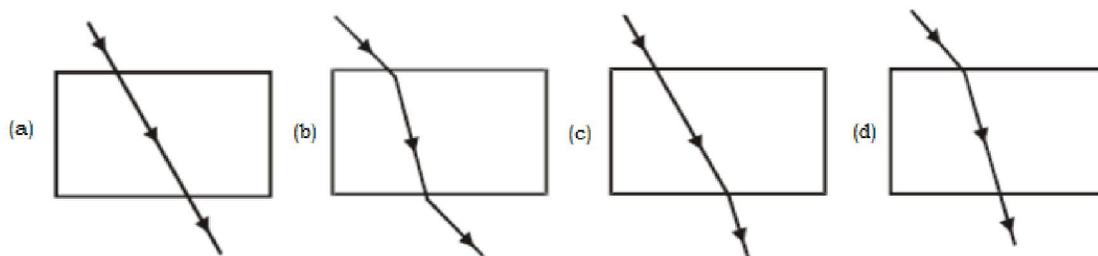(a) –2   (b) 2   (c) –1   (d) 1

Section B

Physics

DIRECTIONS (Qs. 11 to 13): Read the passage 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)

14. Identify Correct relations:

(i) 1hp = 476watt   (ii) 1kWh = 3.6×10^3 joule

(iii) 1 watt = 1 volt × 1 ampere   (iv) 1 ohm= 1 volt / 1 ampere

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

15. A good source of energy would be one

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

(ii) be easily accessible,

(iii) be difficult to store and transport,

(iv) be costly.

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

16. Choose correct statement/s

(i) A body has a uniform motion if it travels equal distances in equal intervals of time.

(ii) A body has a non-uniform motion if it travels unequal distances in equal intervals of time.

(iii) Distance travelled by a moving body in (one second) unit time is called acceleration.

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

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

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 (a) and (b)   (d) Neither (a) nor (b)

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. Consider the reaction

$$Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$$

The above reaction is an example of

(a) combination reaction   (b) double displacement reaction

(c) decomposition reaction   (d) simple displacement reaction

22. An oxidation reaction involves

(a) addition of hydrogen or removal of oxygen

(b) addition of oxygen or removal of hydrogen

(c) addition of oxygen only

(d) addition of hydrogen only

23. The colour of pH paper when put in distilled water changed to green. Now some common salt is added to water and Ph paper is tested in this solution. The colour of pH paper in this case is likely to be

(a) green   (b) yellow   (c) red   (d) blue

24. Washing soda has the formula

(a) $Na_2CO_3.7H_2O$ (b) $Na_2CO_3.10H_2O$ (c) $Na_2CO_3.H_2O$ (d) Na_2CO_3

25. With reference to the chemical element with atomic number 17, consider the following statements:

(i) It belongs to second period in the periodic table of chemical elements.

(ii) It forms anion with unit negative charge.

Which of the statement(s) given above is/are correct?

(a) (i) only   (b) (ii) only   (c) Both (i) and (ii)   (d) Neither (i) nor (ii)

26. Consider the following statements with regard to diamond and graphite:

(i) Diamond and graphite are isotopes of carbon.

(ii) C-C bond length in diamond is greater than that in graphite.

(iii) Graphite is less reactive than diamond.

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

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

27. Metallurgy involves
   (a) concentration of ore
   (b) reduction of ore
   (c) purification
   (d) all of these

28. A sulphide ore is concentrated by
   (a) washing with water
   (b) magnetic separation
   (c) leaching
   (d) froth floatation

29. The process of heating an ore in the absence of air below its meting point is called
   (a) calcination
   (b) roasting
   (c) smelting
   (d) ore dressing

30. In which of the following compounds, –OH is the functional group?
   (a) Butanal
   (b) Butanol
   (c) Butanone
   (d) Butanoic acid

Section D
Biology

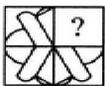31. Column I (Organisms)   Column II (Mode of Nutrition)
   (A) Yeast   (p) Holozoic
   (B) Tapeworm   (q) Autotrophic
   (C) Amoeba   (r) Carnivore
   (D) Snake   (s) Saprophytic
   (E) Green Plants   (t) Parasitic
   (a) A—(s); B—(t); C—(p); D—(r); E—(q)   (b) A—(s); B—(p); C—(t); D—(r); E—(q)
   (c) A—(s); B—(t); C—(p); D—(q); E—(r)   (d) A—(s); B—(p); C—(q); D—(t); E—(r)

32. On the basis of following features identify correct option.
   (I) It is the structural and functional unit of lungs.
   (II) It is thin walled, has a large surface area and is richly supplied with blood vessels.
   (a) Alveoli
   (b) Nephron
   (c) Neuron
   (d) Lymph

33. Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as
   (a) eutrophication
   (b) pollution
   (c) biomagnification
   (d) accumulation

34. In a Mendelian experiment tall plants bearing violet flowers were breed with short pea plants bearing white flowers. The progeny all bore violet flowers but almost half of them were short. The genetic make-up of the tall parent would have been
   (a) TtWw
   (b) TtWW
   (c) TTww
   (d) TTWW

35. Golgi apparatus is absent in
   (a) Liver cells
   (b) higher plants
   (c) Blue green algae
   (d) yeast

36. Fertilization in plants occurs in
   (a) embryo sac
   (b) pollen tube
   (c) stigma
   (d) style

37. The function of salivary amylase is to convert
   (a) Fats into fatty acids.
   (b) Proteins into amino acids.
   (c) Starch into lower sugar.
   (d) Sugar into starch

38. A feature of reproduction that is common to Amoeba, Spirogyra and Yeast is that
    (a) they reproduce asexually   (b) they are all unicellular
    (c) they reproduce only sexually   (d) they are all multicellular

39. In our country, vast tracts of forests are cleared and a single species of plant is cultivated.
    (a) this practice promotes   (b) biodiversity in the area
    (c) monoculture in the area   (d) growth of natural forest

40. Movement of food through oesophagus is due to
    (a) Lubrication by saliva   (b) Peristalsis
    (c) Gravitational Pull   (d) All of the above

Section E

MAT

41. 'X' is the wife of 'Y' and 'Y' is the brother of 'Z', 'Z' is the son of 'P'. How is 'P' related to 'X' ?
    (a) Sister   (b) Aunt   (c) Brother   (d) Father-in-law

42. Two cars start from the opposite places of a main road, 150 km apart. First car runs for 25 km and takes a right turn and then runs 15 km. It then turns left and then runs for another 25 km and then takes the direction back to reach the main road. In the mean time, due to minor break down the other car has run only 35 km along the main road. What would be the distance between two cars at this point?
    (a) 65 km   (b) 75 km   (c) 80 km   (d) 85 km

43. If South-East becomes North, North-East becomes West and so on. What will West become?
    (a) North-East   (b) North-West   (c) South-East   (d) South-West

44. Identify the figure that completes the pattern.

    (X)   (1)   (2)   (3)   (4)
    (a) 1   (b) 2   (c) 3   (d) 4

45. If 'DELHI' is coded as '73541' and 'CALCUTTA' as '82589662', how will 'CALICUT' be coded?
    (a) 5279431   (b) 5978213   (c) 8251896   (d) 8543691

Section F

English

Read the following passage and answer the questions by choosing the correct option.
(Q. 46 – Q. 50)

Koko

Did you know that humans aren't the only species that use language? Bees communicate by dancing. Whales talk to each other by singing. And some apes talk to humans by using American Sign Language.

Meet Koko: a female gorilla born at the San Francisco Zoo on July 4th, 1971. Koko learned sign language from her trainer, Dr. Penny Patterson. Patterson began teaching sign language to Koko in 1972, when Koko was one year old. Koko must have been a good student, because two years later she moved onto the Stanford University campus with Dr. Patterson. Koko

continued to learn on the campus until 1976. That's when she began living full-time with Patterson's group, the Gorilla Foundation. Patterson and Koko's relationship has blossomed ever since.

Dr. Patterson says that Koko has mastered sign language. She says that Koko knows over 1,000 words, and that Koko makes up new words. For example, Koko didn't know the sign for the ring, so she signed the words finger and bracelet. Dr. Patterson thinks that this shows meaningful and constructive use of language.

Not everyone agrees with Dr. Patterson. Some argue that apes like Koko do not understand the meaning of what they are doing. Skeptics say that these apes are just performing complex tricks. For example, if Koko points to an apple and signs red or apple, Dr. Patterson will give her an apple. They argue that Koko does not really know what the sign apple means. She only knows that that if she makes the right motion, one which Dr. Patterson has shown her, then she gets an apple. The debate is unresolved, but one thing is for certain: Koko is an extraordinary ape.

Sign language isn't the only unusual thing about Koko. She's also been a pet-owner. In 1983, at the age of 12, researchers said that Koko asked for a cat for Christmas. They gave Koko a stuffed cat. Koko was not happy. She did not play with it, and she continued to sign sad. So for her birthday in 1984, they let her pick a cat out of an abandoned liter. Koko picked a gray cat and named him "All Ball." Dr. Patterson said that Koko loved and nurtured All Ball as though he were a baby gorilla. Sadly, All Ball got out of Koko's cage and was hit by a car. Patterson reported that Koko signed "Bad, sad, bad" and "Frown, cry, frown, sad" when she broke the news to her.

It seems like Patterson and Koko have a good relationship, but not everyone agrees with it. Some critics believe that Patterson is humanizing the ape. They believe that apes should be left in the most natural state possible. Even Dr. Patterson struggles with these feelings. When asked if her findings could be duplicated by another group of scientists, she said, "We don't think that it would be ethical to do again." She went on to argue that animals should not be kept in such unnatural circumstances. Nonetheless, Koko lives in her foundation today.

As for the future, Dr. Patterson and the Gorilla Foundation would love to get Koko to an ape preserve in Maui, but they are having trouble securing the land. So unless you have a few million dollars to spare, Koko's going to be spending her time in Woodland, California with Dr. Patterson. Koko probably doesn't mind that. If she moved to Hawaii, she'd have to give up her Facebook page and Twitter feed, and she's got like 50 thousand "likes." Some may deny that she knows sign language, but nobody says that she doesn't know social networking.

46. Which best expresses the main idea of this article?

(a) Bees, whales, and apes like Koko, all use language to communicate.

(b) Koko uses sign language but some think it's just a trick.

(c) It is natural for gorillas and house cats to live together.

(d) If you want a lot of "likes" on Facebook, get a talking gorilla.

47.   Which best describes how the second paragraph is organized?

(a) Chronological order   (b) Cause and effect

(c) Compare and contrast   (d) Problem and solution

48.   Which best expresses the author's purpose in writing the second paragraph?

(a) The author is describing the environment in which Koko lives.

(b) The author is informing readers how Dr. Patterson developed her skills.

(c) The author is persuading readers that Koko should be freed.

(d) The author is telling readers about Koko and Dr. Patterson's background.

49.   Which happened last?

(a) Koko got a stuffed cat for Christmas.

(b) Koko lost 'All Ball'.

(c) Koko began living with the Gorilla Foundation.

(d) Dr. Patterson began teaching Koko to sign.

50.   Which statement would the author most likely agree with?

(a) Koko has mastered sign language without a doubt.

(b) Everybody likes how Dr. Patterson has raised Koko.

(c) Koko doesn't really know sign language.

(d) Some people are troubled by how Koko was raised.

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