



ALL KERALA BHAVAN'S SCHOLARSHIP EXAMINATION NOVEMBER 2023

Class: XI (Science/Maths)

Date: 28.11.2023

Marks: 100

Time: 1½ hrs

GENERAL INSTRUCTIONS:

Read the instructions carefully before answering

1. Please fill up your Roll No. and class in the box provided on the OMR sheet.
2. This question booklet contains 50 questions and 5 Tie Breaker questions. All questions including 'Tie Breaker Questions' are mandatory. Tie Breaker questions will be evaluated only in case of a Tie.
3. Each question carries 2 marks.
4. Each question has 4 answer choices a,b,c,d.
5. For each question, select the best/correct option and darken the bubble completely against the corresponding question in the OMR sheet provided.
6. Use a blue/black ball point pen to darken the bubble.
7. Darken only one bubble against each question.
8. There will be no negative marking.

Choose the correct answer from the options given.

1. "Suddenly the room filled with a deafening silence", is the best example of which figure of speech?
a. metaphor b. simile c. personification d. oxymoron
2. The group held some clandestine meetings to resolve the matter. Pick out the antonym of the underlined word from the options given.
a. secret b. covert c. sneaky d. public
3. Choose the correctly spelt word.
a. aggrandize b. aggrandize c. aggrandice d. aggradise
4. Choose the option that is the plural form of the given word.
Tableau
a. tableau b. tableaux c. tableauez d. tableaues
5. When David saw his grandson collecting coins like his daughter used to do, he knew he was a _____
a. dime a dozen b. chip off the old block c. blessing in disguise
d. devil's advocate
6. Find the best alternative for the underlined word.
The community is agog with speculation about the fate of the money collected.
a. annoyed b. worried c. depressed d. excited
7. Choose the correct answer from the options given.
_____ the better team, we lost the match.
a. Despite of being b. Despite c. Despite being d. Although
8. If I were a bird, I _____ the ocean. (Complete the sentence)
a. can cross b. will cross c. would cross d. would have crossed

9. The displacement (x) of an object along a straight line at instant (t) is given by $x = A + A_1t + A_2t^2$. Here A_1 , A_2 and A_3 are constants. The acceleration of the object is
 a. A_1 b. A_2 c. A_1A_2 d. $2A_2$
10. A boy can throw a stone up to a maximum height of 10 m. The maximum horizontal distance that he can throw the stone up to is
 a. $20\sqrt{2}$ m b. 10 m c. $10\sqrt{2}$ m d. 20 m
11. The KE of a body becomes four times its initial value. The new linear momentum will be
 a. same as the initial value b. twice its initial value
 c. four times its initial value d. eight times its initial value
12. If v_e is escape and v_o is orbital velocity of a satellite for orbit close to the earth's surface, then these are related by
 a. $v_o = \sqrt{2} v_e$ b. $v_o = v_e$ c. $v_e = \sqrt{2}v_o$ d. $v_e = \sqrt{2} v_o$
13. A capillary is dipped in water in a container which is kept in a stationary lift. Suddenly the lift starts falling freely. Then
 a. water level will remain unchanged
 b. water level will rise to the maximum available height of the capillary
 c. water level fall below its level outside
 d. water inside and outside the capillary will be at the same level
14. The acceleration due to gravity on the surface of a planet is one-fourth of the value on Earth. When a brass ball is brought to this planet, its
 a. mass is halved. b. mass becomes one-fourth
 c. weight is halved. d. weight becomes one-fourth.
15. A particle is acted upon by a force of constant magnitude, which is always perpendicular to the velocity of the particle. The force is called
 a. normal reaction b. frictional force
 c. centripetal force d. normal force
16. A firecracker following a parabolic path explodes in mid-air. The centre of mass of all fragments will follow a path
 a. along same parabola b. along vertical
 c. along circle d. along horizontal
17. To maintain a rotor at a uniform angular speed of 100 rads^{-1} , an engine needs to transmit a torque of 75 Nm. What is the power of the engine required?
 a. 7.5MW b. 7.5kW c. 75kW d. 75MW
18. In the following questions (18 & 19) a statement of assertion followed by a statement of a reason is given. Choose the correct answer out of the following choices.
 a. Both A and R are true and R is the correct explanation of A.
 b. Both A and R are true but R is not the correct explanation of A.
 c. A is true but R is false.
 d. A is false but R is true.
- Assertion (A): NF_3 and ClF_3 do not have similar shape.

Reason (R): The central atom in these two molecules have different electronegativities.

19. The first ionisation enthalpies of Na, Mg, Al and Si are in the order:
 a. $\text{Na} < \text{Mg} > \text{Al} < \text{Si}$
 b. $\text{Na} > \text{Mg} > \text{Al} > \text{Si}$
 c. $\text{Na} > \text{Mg} < \text{Al} < \text{Si}$
 d. $\text{Na} > \text{Mg} > \text{Al} < \text{Si}$
20. The correct thermodynamic conditions for the spontaneous reaction at all temperature is
 a. $\Delta H < 0$ and $\Delta S > 0$
 b. $\Delta H < 0$ and $\Delta S < 0$
 c. $\Delta H < 0$ and $\Delta S = 0$
 d. $\Delta H > 0$ and $\Delta S < 0$
21. A 0.66 kg ball is moving with a speed of 100 m/sec. The associated wavelength will be: ($h = 6.6 \times 10^{-34} \text{ J sec}$)
 a. $6.6 \times 10^{-32} \text{ m}$
 b. $6.6 \times 10^{-34} \text{ m}$
 c. $1 \times 10^{-35} \text{ m}$
 d. $1 \times 10^{-32} \text{ m}$
22. Highest covalent character is found in :
 a. CaF_2
 b. CaCl_2
 c. CaBr_2
 d. CaI_2
23. The geometry of the molecule with 25% s-character in hybrid orbital is :
 a. Linear
 b. Trigonal planar
 c. Tetrahedral
 d. Octahedral
24. The compound which contains all the four 1° , 2° , 3° , 4° carbon atoms is
 a. 2,3-dimethylpentane
 b. 2,2,4-trimethylpentane
 c. 3-chloro-2,3-dimethylpentane
 d. 3,3-dimethylpentane
25. Ionic radii vary in:
 i) Inverse proportion to the effective nuclear charge
 ii) Inverse proportion to the square of effective nuclear charge
 iii) Direct proportion to the screening effect
 iv) Direct proportion the square of screening effect
 a. (i) & (iii) b. (i) & (ii) c. (ii) & (iv) d. (iii) & (iv)
26. Match the following

i) Tetrahedral	a) sp
ii) Trigonal	b) sp^2
iii) Linear	c) sp^3
iv) Trigonal bipyramidal	d) sp^3d

- a. (i)-b, (ii)-a, (iii)-d, (iv)-c
 b. (i)-b, (ii)-d, (iii)-a, (iv)-c
 c. (i)-c, (ii)-b, (iii)-a, (iv)-d
 d. (i)-a, (ii)-b, (iii)-c, (iv)-d
27. Let S = set of points inside square, T = the set of points inside the triangle and C = the set of points inside the circle. If the triangle and circle intersect each other and are contained in a square, then which of the following is correct.
 a. $S \cap T \cap C = \emptyset$ b. $S \cup T \cup C = S$ c. $S \cup T \cup C = S$ d. $S \cup T = S \cap C$

28. If $\tan x = \frac{m}{m+1}$, $\tan y = \frac{1}{2m+1}$, then $x + y$ is equal to
 a. $\frac{\pi}{2}$ b. $\frac{\pi}{3}$ c. $\frac{\pi}{6}$ d. $\frac{\pi}{4}$
29. In drilling world's deepest hole it was found that the temperature T in degree Celsius, x km below the earth's surface was given by
 $T = 30 + 25(x - 3)$, $3 \leq x \leq 15$. At what depth will the temperature be between 155°C and 205°C ?
 a. $7 < x < 10$ b. $8 < x < 10$ c. $5 < x < 12$ d. $2 < x < 1$
30. The solution set of $x \in R: |x - 3| > 7$
 a. $[-4, 10]$ b. $(-4, 10]$ c. $(-4, 10)$ d. $x < -4, x > 10$
31. If $a + ib = \overline{9 - i} + \overline{6 + i^3} - \overline{9 + i^2}$ then the complex number $a + ib$ is
 a. $7 + 2i$ b. $-7 + 2i$ c. $7 - 2i$ d. $-7 - 2i$
32. The value of $\sin\left(\frac{\pi}{4} + x\right) - \cos\left(\frac{\pi}{4} - x\right)$ is
 a. $2\cos x$ b. $2\sin x$ c. 0 d. 1
33. The value of $(1 + i)(1 + i^2)(1 + i^3)(1 + i^4)$ is
 a. 2 b. 0 c. 1 d. i
34. There are 12 bulbs in a hall, each one of them can be switched independently. The number of ways in which the hall can be illuminated is
 a. 2^{12} b. $2^{12} - 1$ c. $2^{12} + 1$ d. 2^{13}
35. The third term of GP is 4, the product of first five terms is
 a. 4^3 b. 4^4 c. 4^5 d. 4^6
36. Who is the author of the book 'Dreams from my father'?
 a. Barack Obama b. Shashi Tharoor
 c. Helen Keller. d. Abdul Kalam
37. When is the 'International Day against Drug Abuse and Illicit Trafficking' observed?
 a. June 21 b. June 26 c. July 1 d. July 5
38. Who among the following has written the book "Cricket My Style"?
 a. Ravi Shastri b. Anil Kumble
 c. Rahul Dravid d. Kapil Dev.
39. 'We Love Reading' and 'National Library Week' are the initiatives of which state?
 a. Kerala b. Andhra Pradesh
 c. Odisha d. Chhattisgarh
40. Which state/UT inaugurated India's first Artificial Intelligence (AI) School?
 a. Telangana b. Kerala c. Karnataka d. Punjab
41. Mary had several cookies. After eating one she gave half the remainder to her sister. After eating another cookie, she gave half of what was left to her brother. Mary now had only five cookies left. How many cookies did she start with?
 a. 11 b. 22 c. 23 d. 46
42. EIV, H4S, K9P, N16M
 a. O25K b. R25J c. R36J d. O25I

43. An accurate clock shows 8 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?
 a. 144° b. 150° c. 168° d. 180°
44. A, B and C can do a piece of work in 40 days, 8 days and 16 days respectively. They all begin together. 'A' work continuously till it finished, 'C' takes leave for 1 day and 'B' leaves the work 2 days before its completion. In what time is the work finished?
 a. $6\frac{3}{17}$ day b. 6 days c. $5\frac{3}{17}$ d. 5 days
45. Which of the following set of letters complete the letter series, when sequentially placed at the gaps?
 _ ab _ b _ aba _ _ abab
 a. abbab b. abbaa c. abaab d. aaaba
46. Link the following statements by choosing the correct option from the following:
 Statement 1 Jogging is a form of exercising the body
 Statement 2 People who jog regularly in the morning will live long.
 a. Both the statements stand independent
 b. Statement 2 can be inferred from Statement 1
 c. Statement 1 can be inferred from Statement 2
 d. Both statements are dependent
47. In the question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken granted. You have to consider the statement and the following assumption and decided which of the assumption is implicit in the statement.
 Statement
 The government has decided to pay compensation of Rs. 5 lakh to the family members of those who are killed in railway accidents.
 Assumptions
 I. The government has sufficient funds to meet the expenses due to compensation.
 II. There may be deduction in incidents of railway accidents in near future.
 a. Only assumption I is implicit
 b. Only assumption II is implicit
 c. Neither I nor II is implicit
 d. Both I and II is implicit
48. Read the following information to answer the question that follows:
 Seven people A, B, C, D, E, F and G are planning to enjoy boating.
 There are only two boats and the following are
 i. A will go in the same boat in which E is to go.
 ii. F cannot go in the boat in which C is unless D is also accompanying.
 iii. Neither B nor C can be given the boat in which G is
 iv. The maximum number of persons in one boat can be four only

If E gets boat which of the following is the complete and accurate list of the people who must be sitting in other boat?

- a. F and E b. G and A c. D and A d. C, D and B

49. Direction: In the following questions, two statements are given and these statements are followed by two conclusions numbered 1 and 2. You have to take the given two statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts.

Statement 1 : Some actors are singers

Statement 2 : All the singers are dancers

Conclusion 1 : Some actors are dancers.

Conclusion 2 : No singer is an actor.

- Only Conclusion 1 follows.
- Only Conclusion 2 follows.
- Neither Conclusion 1 nor Conclusion 2 follows.
- Both Conclusion 1 & Conclusion 2 follow.

50. If + stands for =, = stands for +, - stands for *, ÷ stands for -, * stands for ÷. Which of the following is correct?

- $6=8+10*5$
- $9-6\div 2+3$
- $1+24*12-3$
- $25*5+5*1$

Tie - Breaker

51. The height of the point vertically above the earth's surface, at which acceleration due to gravity becomes 1% of its value at the earth's surface is

- 10R
- 8R
- 20R
- 9R

52. The empirical formula and vapour density of a compound are CH_2O and 30 respectively. What will be the molecular formula of the compound?

- $\text{C}_9\text{H}_{18}\text{O}_9$
- CH_2O
- $\text{C}_6\text{H}_{12}\text{O}_6$
- $\text{C}_2\text{H}_4\text{O}_2$

53. Out of 800 boys in a school, 224 played Cricket, 240 played Hockey and 336 played Basketball. Of the total, 64 played both Basketball and Hockey; 80 played Cricket and Basketball; 40 played Cricket and Hockey and 24 played all the three games. The number of boys who did not play any game is _____.

- 128
- 216
- 240
- 160

54. Which of the following statements are correct?

- The longest cantilever glass bridge in India is built at Wagamon in Idukki district
- The first forest museum in Kerala was established at Kulathuzha in Kollam district
- Tamil Nadu state recently introduced reservations for transgenders in the nursing field
- Jayanta Mahapatra is the first Indian poet to win a Sahitya Akademi award for English poetry.

55. Misappropriation of money is called

- larceny
- burglary
- fraud
- embezzlement