



Class: XII

SCIENCE STREAM

Marks:100

Date: 26/11/2022

Time: 2 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.

ENGLISH

1. Choose the correct usage of the word 'chimera'.
 - a) Susan's dream of becoming a movie star is just a chimera.
 - b) Political news would be dull were it not for the chimera of our elected officials.
 - c) The chimeric administration kept all the secretaries in a state of terror.
 - d) A teenager might show chimera disregard for the feelings of adults.
2. Choose the correctly spelt word.
 - a) scinstillate
 - b) scintallate
 - c) scintillate
 - d) scintilatte
3. Pick the word which is the synonym of 'epitome'.
 - a) dichotomy
 - b) exemplar
 - c) metronome
 - d) expansion
4. Which of the given words means - 'co-operation in producing effects'?
 - a) castigation
 - b) synergy
 - c) capitulation
 - d) castigate
5. The antonym of the word 'development' is _____.
 - a) retardation
 - b) retrogression
 - c) transgression
 - d) progress
6. Choose the part of the sentence which has an error. We lie all the time, despite the fact that it costs us considerably more mental effort to lie than to tell truth.
 - a) despite the fact
 - b) it costs us
 - c) to tell truth
 - d) considerably more mental effort
7. The term 'Epiphany' means :
 - a) A moment of sudden revelation or realization
 - b) A moment when people attain salvation
 - c) The satisfying moment achieved through empathy
 - d) The subtle and complex moment that confound human mind

PHYSICS

8. A solid metal cube of edge length 3cm is moving in positive y-direction at a constant speed of 9m/s. There is a uniform magnetic field of 0.2T in the positive z-direction. The potential difference between the two faces of the cube perpendicular to the x-axis, is

- a) 0.054mV b) 5.4mV c) 54mV d) 0.54Mv

9. A beam of electrons is used in a young double slit experiment. The slit width is When the velocity of electron is decreased, then

- a) no interference fringe is observed b) fringe width increases
c) fringe width decreases d) fringe width remains same

10. A disc is placed on a surface of a pond which has refractive index $5/3$. A source of light is placed 8m below the surface of the liquid. The minimum diameter of disc needed so that light is not coming out is

- a) 6m b) 12m c) 18m d) 24m

11. The voltage and current in an ac circuit are given by

$$V = 4 \sin (100\pi t - \pi/3)$$

$$I = 3 \sin (100\pi t + \pi/3)$$

- a) voltage leads the current by 120°
b) current leads the voltage by 120°
c) voltage leads the current by 60°
d) current leads the voltage by 60°

12. The full scale deflection of current of a galvanometer of resistance 1Ω is 5mA.

How will you convert it into a voltmeter of range 6V?

- a) By connecting a resistance of $1.199k\Omega$ in series with the galvanometer
b) By connecting a resistance of $1.199k\Omega$ in parallel with the galvanometer
c) By connecting a resistance of $1199k\Omega$ in series with the galvanometer
d) By connecting a resistance of $1199k\Omega$ in parallel with the galvanometer

13. A coil of 100 turns carries a current of 5mA and creates a magnetic flux of 10^{-5} weber. The inductance is

- a) 0.2 mH b) 2.0 mH c) 0.02 mH d) none of these

14. In a LCR circuit, capacitance is changed from C to 2C. For the resonant frequency to remain unchanged, the inductance should be changed from L to

- a) 4L b) 2L c) L/2 d) L/4

CHEMISTRY

15. What is the activation energy for a reaction, if it's rate doubles when the temperature is raised from 20°C to 35°C
- a) 342KJ/mol b) 269KJ/mol
c) 34.7 KJ/mol d) 15.1 KJ/mol
16. The CFSE for octahedral $[\text{CoCl}_6]^{4-}$ is 18000cm^{-1} . The CFSE for tetrahedral $[\text{CoCl}_4]^{2-}$ will be
- a) 18000cm^{-1} b) 16000cm^{-1}
c) 8000cm^{-1} d) 20000cm^{-1}
17. The basic character of transition metal monoxides follows the order
- a) $\text{VO} > \text{CrO} > \text{TiO} > \text{FeO}$ b) $\text{CrO} > \text{VO} > \text{FeO} > \text{TiO}$
c) $\text{TiO} > \text{FeO} > \text{VO} > \text{CrO}$ d) $\text{TiO} > \text{VO} > \text{CrO} > \text{FeO}$
18. The average osmotic pressure of human blood is 7.8bar at 37°C . What is the concentration of an aqueous solution of NaCl that could be used in blood stream?
- a) 0.15mol/L b) 0.30mol/L c) 0.60mol/L d) 0.45mol/L
19. One mole of ethyl acetate on treatment with excess of LiAlH_4 in dry ether and subsequent acidification produces

- a) 1 mole of acetic acid and 1 mole of ethyl alcohol
b) 1-mole ethyl alcohol and 1 mole methyl alcohol
c) 2 moles of ethyl alcohol
d) 1 mole of 2-butanol

20. Cyanohydrin of which of the following will yield lactic acid?

- a) HCHO b) CH_3COCH_3 c) $\text{CH}_3\text{CH}_2\text{CHO}$ d) CH_3CHO

21. For a reaction energy of activation is zero. What is the value of rate constant at 300 K if $K = 1.6 \times 10^6 \text{S}^{-1}$ at 280 K ($R = 8.31 \text{JK}^{-1} \text{mol}^{-1}$)
- a) $1.6 \times 10^6 \text{S}^{-1}$ b) $2.9 \times 10^8 \text{S}^{-1}$ c) $3.5 \times 10^7 \text{S}^{-1}$ d) $4.2 \times 10^6 \text{S}^{-1}$

GENERAL KNOWLEDGE

22. The third Vande Bharat Express train, which was recently inaugurated (in October 2022), runs between which cities?
- a) New Delhi and Gurugram b) Mumbai and Ahmadabad
c) Bengaluru and Mysore d) Mumbai and Indore
23. Which food product won the 'Most Popular GI' award of the Commerce and Industry Ministry?
- a) Hyderabad Haleem b) West Bengal Rasgulla
c) Ratlami Sev d) Bikaneri Bhujia
24. Which Indian chess player has recorded third consecutive win in his career against Magnus Carlsen?
- a) Gukesh D b) Praggnanandhaa R c) ViditGujrathi d) NihalSarin

25. What is the name of the initiative launched by the Environment Ministry to increase urban forest cover?
a) Nagar Van b) Green India c) Nature Mission d) Green Cities Mission

26. What does the Olympic flame symbolize?
a) zeal to play sports b) Challenge c) Continuity d) Integrity

IQ

27. Among P,Q,R,S,T and U, R is taller than only P and U. S is shorter than only T and Q. If each of them has a different height, who among them will be the third from top when they are arranged in descending order of their height?

a)R b)P c)S d)O

28. When a number is multiplied by 13, it becomes greater to 105 by an amount with which it is lesser to 105 by now. What is the number?

(a) 14 b) 15 c) 16 d) 17

29. You have accidentally left the plug out of the bath and are attempting to fill the bath with both taps full on. The hot tap takes three minutes to fill the bath and the cold tap two minutes and the water empties through the plug hole in six minutes. In how many minutes will the bath be filled?

a) 1 b) 3 c) 1.5 d) 5.

30. Which number logically follows this series?

7 9 5 11 4 15 12 7 13 8 11 ?

a) 10 b) 8 c) 9 d) 6

31. If 100 cats can catch 100 mice in 100 minutes, then how long will take for 7 cats to catch 7 mice?

a) $\frac{100}{7}$ min

b) 100min

c) $\frac{49}{100}$ min

d) 7 min

CRITICAL THINKING

32. Gestures are used for communication, but the same gestures may have different meanings in different cultures.

Proposed Inferences

(i) No two cultures use the same gestures

(ii) One gesture will never have the same meaning in two cultures

(iii) A person from one culture may misunderstand the gestures used by a person from another culture

A. Only 1

B. Only II

C. Only III

D. All the above

33. John started to spend 12 hours a day for Entrance test.

Proposed Inferences

- (i) John wish to achieve high in the entrance tests
- (ii) John is hardworking
- (iii) John is highly determined
- a) None of the above
- b) All the three
- c) Both i and ii
- d) Both i and iii

34. Read the given information and answer the following questions.

Statements: Government has got clearance to demolish some factories from court and construct a university in place of it. This step was welcomed by few, but many residents were against it and decided to protest against that decision.

Which of the following may not be the reason for the protest?

- I. During demolition pollution levels may increase in nearby premises.
- II. They are worried about losing their employment opportunity.
- III. They are worried that their children have to travel long distance to attend schools and colleges.
- a) Only I
- b) Only II
- c) Only III
- d) Both I and II

35. Many business offices are located in buildings having 2-8 floors. If a building has more than 3 floors, it has a lift. If the above statements are true, which of the following must be true?

- (a) 2nd floors do not have lifts
- (b) 7th floors have lifts
- (c) Only floors above the 3rd floors have lifts
- (d) All floors may be reached by lifts

36. Two statements I and II are given. Read both statements and decide which of the following options correctly depicts the relationship between these two statements.

I - The school bus with teachers and students couldn't reach the school on time.

II - A major accident took place on the road blocking the traffic.

- (a) If statement I is the cause, statement II could be its effect
- (b) Both statements I and II could be the effects of some common cause.
- (c) Both statements I and II are independent causes.
- (d) If statement II is the cause, statement I could be its effect

TIE-BREAKER

1. The word that means as 'Not having or showing foresight, spendthrift or thoughtless' :

- a) sanguine
- b) sycophant
- c) improvident
- d) servile

2. A plane Electromagnetic wave of frequency 25MHz travels in free space along the x direction. At a particular point in space and time, $E=6.3\text{V/m}$. What is magnetic field B at this point.

- a. $2.18 \times 10^{-8} \text{ kT}$.
- b. $2.18 \times 10^8 \text{ kT}$.
- c. $2.18 \times 10^{-8} \text{ jT}$.
- d. $2.18 \times 10^8 \text{ iT}$.

3. An organic compound 'X' with molecular formula C_3H_8O on reaction with copper at 573 K gives compound 'Y' which reduces Tollen's reagent. 'X' on reaction with sodium metal gives 'Z'. What is the major product of reaction of 'Z' with 2-chloro-2-methylpropane
- a) 2-Methyl propene
b) Methoxy propane
c) Propene
d) Propane
4. Born on July 24, 1802, this French novelist, who was the grandson of an African slave, is known for two classic works, both adapted to TV shows and movies multiple times. His most famous book follows a young man as he travels to Paris, and is titled after a group of friends he meets on the way known as "the three inseparables". The second is about Edmond Dantes who is imprisoned under false pretenses and escapes and searches for a treasure. Who was this iconic author?
- A. Jules Verne
B. Alexandre Dumas
C. Victor-Marie Hugo
D. Voltaire
5. Find out the wrong term in the series given below 23 43 125 487
- (a) 43
(b) 125
(c) 487
(d) None of these



BIOLOGY

1. A plant cell in telophase is observed by a student who collected the plant from a field. He tells his teacher that this cell is not showing formation of cell plate and thus there is variation of chromosome number as compared to normal cells. This would result in

- a. Polygeny
- b. Polyploidy
- c. Aneuploidy
- d. Somoclonal variation

2. The coding strand of a DNA molecule is 3' ATGCGAACT 5'. Choose the mRNA strand formed from this.

- a) 5' UACGCUUGA 3' b) 3' UACGCUUGA 5'
- c) 3' AUGCGAACU 5' d) 5' AUGCGAACU 3'

3. In a flower, if the megaspore mother cell forms megaspores without undergoing meiosis and if one of the megaspores develop into an embryo sac, its nuclei would be

- a) Haploid b) Diploid
- c) A few haploid and a few diploid d) With varying ploidy.

4. Which one of the following immune system components does not correctly match with its respective role?

- a) Interferons- Secreted by virus-infected cells and protect non infected cells from further viral infection.
- b) B- lymphocytes- produce antibodies in response to pathogens into blood to fight with them.
- c) Macrophages- mucus secreting cells that trap microbes entering in the body.
- d) IgA -present in colostrum in early days of lactation to protect infant from diseases.

5. Identify the pre-historic man (X) from the given statements and select the correct option regarding it.

I. It appeared around 1.5 million years ago.

II. Cranial capacity was about 900cc.

III. It had protruding jaws and erect posture.

IV. It had small canines and large molar teeth.

- a) X could be Homo habilis who was also the first tool maker and made tools using stones.
- b) X could be Neanderthal man that used skin as clothes to protect against harsh climatic conditions.
- c) X could be Australopithecus which was the earliest and showed bipedal locomotion.

d) X could be Homo erectus which was omnivorous and knew use of fire.

6. The process of translation of mRNA to proteins begins as soon as:

- a. The larger subunit of ribosome encounters mRNA.
- b. The small subunit of ribosome encounters mRNA
- c. Both the subunits join together to bind with Mrna
- d. The tRNA is activated and the larger subunit of ribosome encounters mRNA.

7. Natural selection where more individuals acquire specific character value other than the mean character value, leads to

- a. Stabilising change
- b. Directional change.
- c. Disruptive change
- d. Random change