SCIENCE

1. A motor car is going due north at a speed of 50 km/h. It makes a 90° left turn without changing the speed. The change in the velocity of the car is about....
a) 50 km/h towards west
b) 70 km/h towards south-west
c) 70 km/h towards north-west
d) zero

2. A 60 kg man pushes a 40 kg man by a force of 60 N. The 40 kg man has pushed the other man with a force of....
a) 40 N
b) 0
c) 60 N
d) 20 N.

3. A person says that he measured the acceleration of a particle to be nonzero while no force was acting on the particle.
a) He is a liar.
b) His clock might have run slow.
c) His meter scale might have been longer than the standard.
d) He might have used non inertial frame.

4. If a glass prism is dipped in water, its dispersive power....
a) increases
b) decreases
c) does not change
d) may increase or decrease depending on whether the angle of the prism is less than or greater than 60°.

5. The open-circuit P.D across the terminals of a cell balances on 150 cm of a potentiometer wire. When the cell is shunted by a 4.9 Ω resistor, the balancing length reduces to 147 cm.
The internal resistance of the cell is.
a) 0.01 Ω
b) 0.05 Ω
c) 0.1 Ω
d) 1 Ω

6. One farad is equivalent to....
a) $1\,c^2/J$
b) 1 J/C
c) $1\,J/C^2$
d) 1 V/C

7. If the numerical aperture of a microscope is increased, then its....
a) resolving power decreases.
b) limit of resolution decreases.
c) resolving power remains constant.
d) limit of resolution increases.

8. If for a liquid in a vessel, the force of cohesion is more than the force of adhesion.
a) The liquid does not wet the solid.
b) The liquid wets the solid.
c) The surface of the liquid is plane.
d) The angle of contact is zero.

9. Age of fossil may be found out by determining the ratio of two isotopes of carbon. The isotopes are-
a) C-12 and C-13
b) C-12 and Carbon block
c) C-12 and C14
d) C-13 and C-14

10. Tetra Ethyl Lead (TEL) is:
a) A catalyst in the combustion of fossil fuels.
b) An anti-oxidant.
c) An anti-knocking compound.
d) A reducing agent.

11. The catalyst used in the production of ammonia by the Haber's process is :
a) Nickel
b) Iron
c) Platinum
d) Molybdenum

12. Iron nails are dipped into blue copper sulphate solution. After some time iron nails are....
a) dissolved and blue colour is discharged .
b) dissolved but blue colour is not discharged.
c) not dissolved and blue colour is not discharged .
d) not dissolved but blue colour is discharged.

13. The molecular formula of the compound whose emiprical formula is CH₂OH and molecular weight is 60 is:
a) C_2H_4O
b) $C_2H_4O_2$
c) CH_4O
d) CH_4O_2

14. A milkman puts banana leaf in the milk jar, because banana leaf-
a) gives a fresh flavour to the milk.
b) makes the milk acidic and resistant to yeast.
c) makes the milk basic and resistant to yeast.
d) increases the whiteness of the milk.

15. Which of the following is chemical formula of urea:
a) NH_4Cl
b) NH_2CONH_3
c) NH_2CONH_2
d) NH_3

16. Trinitro Toluene (TNT) is a/an....
a) Pesticide
b) Insecticide

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c) Explosive   d) Germicide

17. Why are pregnant women recommended substantial intake of green leafy vegetables in their diet, especially in the 1st trimester?
a) They are a rich source of chlorophyll.
b) They are a rich source of lecithin.
c) They are a rich source of folic acid which is required for DNA synthesis.
d) They are a rich source of essential fatty acids required for cell anabolism.

18. Sandalwood tree is considered a....
a) Total root parasite
b) Total stem parasite
c) Stem parasite
d) Partial root parasite

19. Mendel's principles of inheritance are based on:
a) Vegetative reproduction
c) Sexual reproduction
b) Asexual reproduction
d) All of the above

20. Which micro-organism causes hepatitis B ?
a) Virus
c) Bacteria
b) Protozoa
d) None of the above

21. Consider the following:
1. Camphor   **2.** Chicory
In the above codes which of the following is/are plant product ?
a) Only 1 and 2   b) Only 3

c) Only 1 and 3   d) 1, 2 and 3.

22. The stigma is always found rough and oily in....
a) water pollinated flowers.
b) insect pollinated flowers.
c) air pollinated flowers.
d) almost all types of flower.

23. Which one of the following plants has capacity of nitrogen fixation?
a) Paddy and wheat
b) Maize and sugar
c) Gram and other pulse group
d) Jute and paddy

24. The food material of the plants is transported to their various organs by-
a) Xylem   b) Cortex
c) Phloem   d) Pith

25. Assertion (A): Liver of the human body plays a significant role in the digestion of fat.
Reason (R): Liver produces two significant fat digestive enzymes.
Code:
a) Both A and B are true and A is correctly explained by R
b) Both A and B are true but A is not correctly explained by R
c) A is true but R is false
d) A is false but R is true

MATHEMATICS

26. Which of the following set is a finite set

a) $A = \{x : x \in z \text{ and } x^2 - x - 12 = 0\}$

b) $B = \{x : x \in N \text{ and } x^2 \text{ is odd}\}$

c) $C = \{x : x \in R \text{ and } x - 10 < x < 10\}$

d) None of these

27. Point $(-2, 5)$ **relative to the circle** $x^2 + y^2 + 7x - 3y + 4 = 0$ **is**

a) exterior point
b) interior point but not center
c) boundary point
d) Centre

28. Find the equation of the hyperbola, the length of whose latusrectum is 6 and ecocentrism is $\dfrac{2}{\sqrt{3}}$

a) $\dfrac{x^2}{6} - \dfrac{y^2}{18} = 1$

b) $\dfrac{x^2}{29} - \dfrac{y^2}{9} = 1$

c) $\dfrac{x^2}{12} - \dfrac{y^2}{6} = 1$

d) None of these

29. If $A = \{1, 2, 3\}, \ B = \{3, 4, 7\}, C = \{3, 7\}$ **then** $n\big[(A - B) \times (A - C)\big]$

a) 2   b) 4
c) 6   d) 9

30. What is the value of radian measure corresponding to 72°

a) $\dfrac{2}{5}\pi$ b) $\dfrac{3}{4}\pi$

c) $\dfrac{2}{7}\pi$　　　　　　　d) $\dfrac{3}{7}\pi$

31. Which among the following is true.

　I. The value of $\sin x$ repeat after the interval of 2π

　II. The value of $\cot x$ repeat after the interval of π

　III. The minimum value of $\left|\cos ec\, x\right|$ is 0

　a) only I is true　　b) Only II is true

　c) only III is true

　d) Any two of them is true.

32. The polar form of complex number $\left(i^{23}\right)^7$ is

　a) $\cos\dfrac{\pi}{3}+i\sin\dfrac{\pi}{3}$ b)　$\cos\dfrac{\pi}{3}-i\sin\dfrac{\pi}{3}$

　c) $\cos\dfrac{\pi}{2}+i\sin\dfrac{\pi}{2}$ d)　$\cos\dfrac{\pi}{2}-i\sin\dfrac{\pi}{2}$

33. If α and β are the roots of the equation $x^2+7x+10=0,$ then $\alpha^3+\beta^3=?$ is equal to

　a) 140　　　　　　　b) 657

　c) 13　　　　　　　d) 458

34. Number of ways in which 12 different pearls of two colours can be set alternately on a necklace, there being 6 pearls of each colour.

　a) $6\times11!$　　　　　b) $11!$

　c) $3\times(5!)^2$　　　　d) $12!$

35. The coefficient of x⁻³ in the expansion of $\left(x+\dfrac{2}{x^2}\right)^{16}$ is

　a) $5C_3\times2^3$　　　b) $^{20}C_6\times2^6$

　c) $^{16}C_6\times2^6$　　　d) None of these

36. If P p,q,r are in GP then what will be the value of $\dfrac{p-q}{q-r}$

　a) pq　　　　　　b) qr

　c) $\dfrac{p}{q}or\dfrac{q}{r}$　　　d) None of these

37. Slope of non-vertical line passing through the points (x₁, y₁) and (x₂, y₂) is given by:

　a) $m=\dfrac{y_2-y_1}{x_2-x_1}$　b) $m=\dfrac{x^2+x_1}{y_2+y_1}$

　c) $m=\dfrac{x_2+x_1}{y_2+y_1}$　d) $m=\dfrac{y_2+y_1}{x_2+x_1}$

38. Point $(-3,1,2)$ lies in

　a) Octant I　　　b) Octant II

　c) Octant III　　d) Octant IV

39. The derivative of $f(x)=12$ at $x=0$ and at $x=4$　are

　a) negative　　　b) zero

　c) positive　　　d) not defined

40. The false statement in the following is

　a) $p\wedge(\sim p)$ is contradiction

　b) $(p=q)o(\sim q=\sim p)$ is a contradiction

　c) $\sim(\sim p)op$ is a tautology

　d) $p\vee(\sim p)0$ is a tautology

41. If we measure the intelligence of a group of people, then which of the following central tendency is best suited

　a) Arithmetic mean

　b) Geometric mean

　c) Median

　d) Mode

42. Let $U=\{1,2,3,5,7,11,13\}$ and $A=\{2,3,5\}$ then A'　is

　a) $\{1,5,7,13\}$　　　b) $\{5,7,11,13\}$

　c) $\{1,7,11,13\}$　　　d) $\{1,5,11,13\}$

43. $f(x)=\dfrac{2x+5}{3x+2}$ then $f^{-1}(x)=?$

　a) $\dfrac{5-2x}{4-3y}$　　　b) $\dfrac{5-2x}{3x-2}$

　c) $\dfrac{x^2+5}{2+3x}$　　　d) None of these

44. The number of roots of equation $\tan^{-1}x+\tan^{-1}2x=\dfrac{\pi}{3}$ is

　a) 0　　　　　　b) 1

　c) 2　　　　　　d) infinite

45. If $A\le\sin^{-1}x+\cos^{-1}x+\tan^{-1}x\le B,$ then

　a) $A=-\pi,B=\pi$　　b) $A=\dfrac{\pi}{4},B=\dfrac{3\pi}{4}$

　c) $A=0,B=\dfrac{\pi}{2}$　　d) $A=0,B=\pi$

46. The matrix product $\begin{bmatrix}a\\b\\c\end{bmatrix}\times[xyz]\times\begin{bmatrix}p\\q\\r\end{bmatrix}$ equals:

a) $\dfrac{pqr - abc}{xyz}$ b) $\dfrac{xyz \cdot pqr}{abc}$

c) $\dfrac{pqr \cdot abc}{xyz}$ d) None of these

47. If the area of a triangle ABC, with vertices A (1, 3), B(0, 0) and C(k, 0) is 3 sq. units, then the value of k is

a) 2   b) 3

c) 4   d) 5

48. If $y = \tan^{-1}(x^2)$, then the value of $\dfrac{dy}{dx}$ is equal to:

a) $\dfrac{2x}{1+x^2}$ b) $\dfrac{2x}{\sqrt{1+4x}}$

c) $\dfrac{-2x}{1+x^4}$ d) $\dfrac{-2x}{\sqrt{1+x^2}}$

49. If $f(x) = x^2 + \cos x + 7$, **then**

a) f(x) is continuous at all points

b) f(x) is discontinuous at $x = \pi$

c) It is discontinuous at $x = \dfrac{\pi}{2}$

d) None of the above

50. The maximum area of rectangle inscribed in a circle of diameter R is

a) R^2 b) $\dfrac{R^2}{2}$

c) $\dfrac{R^2}{4}$ d) $\dfrac{R^2}{8}$

ENGLISH

Directions (Qns 51-52): In each of the following questions there is an expression followed by four options. Find out the option which can effectively substitute the given expression.

51. A large dark grey cloud that brings rain or snow.
a) Nimbus   b) Blizzard
c) Hail   d) Fog

52. A large pillar made from one stone.
a) Monolith   b) Monument
c) Statue   d) Bulwark

Directions (Qns. 53-54): Rearrange the following five sentences A, B, C, D and E in the proper sequence and answer the questions given below them.

A. The shrill scream of a man in agony was audible inspite of the clang of the machinery.

B. The alarm started ringing immediately indicating that an accident and happened.

C. The messaqe would reach the factory dispensary also at the same time.

D. The ambulance van reached the door even before the machines had fully stopped.

E. Ten minutes after the event everything was the same again.

53. Which of the above sentences would come second in the paragraph?
a) C   b) D
c) B   d) A

54. Which of the sentences would come last (fifth) in the paragraph?
a) A   b) E
c) C   d) B

Directions (Qns. 55-56): Read each of the following sentences to find out if there is any error in it. The error, if any, will be in one part of it. The number of that part is the answer. If there is no error your answer is (d), i.e. 'No error'.

55. The money-lender told (a)/ that he would like help us (b/ in our efforts. (c)/No error (d)

56. An immediate action has awaited (a)/ in order to complete (b)/ our work in time. (c)/ No error (d)

Directions (Qns57-58): In the following questions choose the word which is most nearly the same in meaning as the word or group of words given in bold.

57. Garnish
a) Paint   b) Garner
c) Adorn   d) Abuse

58. Garrulous
a) Credulity   b) Sensitive
c) Loquaciousness   d) Speciousness.

Directions (Qns59-60): In the following questions choose the word which is most opposite in meaning to the word given in bold.

59. Dazzling
a) Glaring   b) Unscrupulous
c) Unnoticeable   d) Unexposable

60. Vanity
a) Pride   b) Humanity
c) Conceit   d) Ostentation

Directions (Qns61-63): In each of the following questions there is a sentence with a blank space followed by four options. Choose the option which can fill up the blank most effectively.

61. When Varun left the cocktail party he was as --------as a Judge.
    a) sober   b) drunk
    c) brave   d) wise

62. We had to pay more taxi fare because the driver brought us by a------- route.
    a) circular   b) circumscribed
    c) longest   d) circuitous

63. Rama was so badly injured that he needed--------care in the hospital.
    a) extensive   b) little
    c) intensive   d) deep

Directions (Qns. 64-66): Read the following passage carefully and answer the questions given below it on the basis of what is said or implied in the passage.

I also do not believe that students as such should take direct part in politics. For youth outside the colleges and schools, it is different. But so long as students are studying in universities and colleges and schools, they should not take an active part or associate with any political organisation. They may study peacefully and quietly and after they have completed their studies, they will be free to associate themselves with any political party or political organisation. I would humbly appeal that language should serve as a cementing force. Language is to unite: it is not to disunite. Language has to integrate and not to disintegrate, and therefore, we have to keep the question of unity first and foremost in our minds. I would, without taking much time say that we should always have the vision of a united India. In their mind's eye, they should carry an image of the whole country, a map which has internal dividing lines but only the frontiers of this vast and varied and yet united land.

64. What should language do?
    a) Unite the people
    b) Distinguish different groups
    c) Disintegrate society
    d) None of these

65. The main idea of the passage is
    a) India should remain unite land.
    b) Tudents should not take part in politics.
    c) Language disintegrates.
    d) The methods to maintain unity in the country.

66. The attitude of the writer is that of a
    a) Politician   b) Nationalist
    c) Democrat   d) Socialist

67. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No improvement'.
    After walking a few steps in the forest, our guide sensing some sort of movement in the foliage behind us.
    a) was sensed   b) had been senses
    c) no improvement d) sensed

68. Select the most appropriate meaning of the given idiom/phrase.
    The sword of Damocles.
    a) Strict rules and regulations
    b) An ill omen of death
    c) A constant threat
    d) Threat of physical harm.

69. In the following question, a sentence has been given in Active/Passive Voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active Voice.
    Scientists generally believe that small islands would sink.
    a) Small islands will sink is generally believed by scientists.
    b) There is a general belief that small islands would sink.
    c) Small islands are believed to sink by scientists.
    d) It is generally believed by scientists that small islands would sink.

70. Directions:
    In the following question, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.
    A person who delays or puts things off like work, chores, or other actions.
    a) Diligent   b) Procrastinator
    c) Persevere   d) Assiduous

71. Select the INCORRECTLY spelt word.
    a) Actually   b) Parallel
    c) Persuit   d) Opinion

72. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.
    A. When the secretary informed them that he would not be back soon, they left.
    B. They seemed very agitated and wanted to meet him.
    C. Some ladies gathered outside the Association President's office.
    D. They waited for two hours
    a) CDBA   b) CADB
    c) CDAB   d) CBDA

73. **In the following question a sentence is given in Direct/Indirect speech. Out of the four alternatives choose the one which best expresses the sentence in Indirect Direct Speech.**
He said, 'My God!I am ruined .
    a) He exclaimed sadly that he ruined.
    b) He exclaimed that he was ruined.
    c) He exclaimed sadly that he was ruined.
    d) He exclaimed sadly that he had been ruined.

74. **Direction: Choose the word which best expresses nearly the same meaning of the given word ONEROUS**
    a) Awesome   b) Effortless
    c) Difficult   d) Easy

75. **Select the INCORRECTLY spelt word.**
    a) Advisory   b) Secretry
    b) Greenery   d) Truly

GENERAL AWARNESS

76. **Who was the first Indian to be honoured with Ramon Magsaysay Award?**
    a) M.S. Swaminathan
    b) Acharya Vinoba Bhave
    c) C.V Raman
    d) Jawahar Lal Nehru

77. **When was the 'Operation Flood' programme started?**
    a) 1951   b) 1955
    c) 1970   d) 1985

78. **Who was the inventor of Steam Engine?**
    a) Edison   b) Henry Ford
    c) Newton   d) James Watt

79. **What is the main source of irrigation in Punjab and Haryana?**
    a) Pond   b) Lake
    c) Well   d) Rain

80. **'Deccan Trap' in Western India is mainly formed from-**
    a) Volcanic rocks like Basalt, Lava flow etc.
    b) Plutonic rocks like Granite, Graebo, Dariorite etc . .
    c) Metamorphic rocks like Slate, Marble etc.
    d) Fragmentary rocks like Sand, Pebbles etc.

81. **On the bank of which river is Budapest located?**
    a) Tigris   c) Nile.
    b) Hudson   d) Danube

82. **How many moons does Jupiter have?.**
    a) 10   b) 9
    c) 19   d) 14

83. **Which is the capital of Peru?**
    a) Lima   b) Basra
    c) Georgetown d) Adan

84. **Which range constitutes the western boundary of Indian subcontinent?**
    a) Krithar   b) Hindukush .
    c) Satpura .   d) Aravalli

85. **Who had constructed the 'Kriti Pillar' at Chittor?**
    a) Rana Raj Singh   b) Man Singh .
    c) Rana Pratap   d) Rana Kumbha

86. **By Which Constitutional Amendment has the right to property been scrapped as a Fundamental Right?**
    a) 42nd   b) 24th
    c) 44th   d) 45th

87. **Who discovered blood circulation?**
    a) Alexander Flemming
    b) William Harvey
    c) Louis Pasteur
    d) S.A. Walksman

88. **Who was the first lady Chief Minister in Independent India?**
    a) Jayalalitha   b) Padmaja Naidu
    c) Sucheta Kripalani   d) Vijayalakhsmi Pandit

89. **Which State in India is the largest producer of tea?**
    a) West Bengal   b) Kerala Assam
    c) Assam   d) Tamil Nadu

90. **Where is Manas Wildlife Sanctuary located?**
    a) West Bengal   b) Kerala
    c) Assam   d) Karnataka

91. **If GIVE = 43 and OR = 33, then TAKE will be equal to:**
    a) 38   b) 37
    c) 36   d) 34
    e) None of these

92. **Bittu cuts a cake into two halves and cuts one half into smaller pieces of equal size. Each of the small pieces is twenty grams in weight. If she has seven pieces of the cake in all with her, how heavy was the Original cake?**
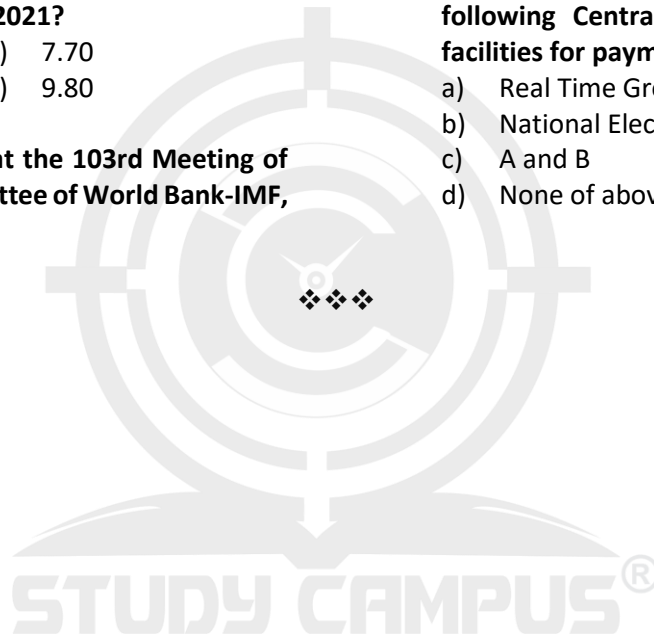   a) 240 grams   b) 120 grams
    c) 280 grams   d) 140 grams
    e) None of these

93. **If red is called yellow, yellow is called orange, orange is called white and white is called pink, then what is the colour of water?**
    a) pink   b) yellow
    c) white   d) red

94· **Dev started walking towards South and after walking 15 metres turned to his right and walked**

another 15 metres, then he turned to his left and stopped. In which direction is he from the starting point?
a) North-East   b) South-West
c) South-East   d) North-West
e) None of these

95. In April 2021, which High Court held that a child born to a couple in a live-in relationship will be treated as a child born to a married couple for the purpose of the Juvenile Justice Act and Adoption Guidelines?
a) Chhattisgarh High Court
b) Andhra Pradesh High Court
c) Kerala High Court
d) Gujarat High Court
e) Himachal Pradesh High Court

96. The cumulative number of COVID19 vaccine doses administered in the country crossed how many crores on 10 April 2021?
a) 6.50   b) 7.70
c) 8.10   d) 9.80
e) 10.30

97. Who represented India at the 103rd Meeting of the Development Committee of World Bank-IMF, held on virtual mode?
a) Piyush Goyal
b) Harsh Vardhan
c) Nirmala sitharaman
d) Nitin Gadkari

98. PM Modi recently released the Hindi translation of the book 'Odisha ltihaas' Who is the author of this book?
a) Biswanath Das
b) Biren Mitra
c) Nilamani Routray
d) Harekrushna Mahtab

99. The Government has approved financial assistance of how many rupees each in respect of death cases of journalists due to Covid-19?
a) 4 lakh   b) 5 lakh
c) 6 lakh   d) 7 lakh
e) 8 lakh

100. The RBI has decided to open up which of the following Centralized Payment Systems (CPS) facilities for payment system operators?
a) Real Time Gross Settlement
b) National Electronic Fund Transfer
c) A and B
d) None of above

❖❖❖

ANSWER KEY

1. b)	21. a)	41. d)	61. b)	81. d)
2. c)	22. b)	42. c)	62. d)	82. c)
3 d)	23. c)	43. b)	63. c)	83. a)
.4. b)	24. c)	44. a)	64. a)	84. b)
5. c)	25 c)	45. c)	65. b)	85. d)
6. a)	26. a)	46. c)	66. d)	86. c)
7. b)	27. a)	47. a)	67. d)	87. c)
8. a)	28. b)	48. c)	68. c)	88. b)
9. c)	29. b)	49. a)	69. d)	89. c)
10. c)	30. a)	50. b)	70. b)	90. c)
11. d)	31. d)	51. a)	71. c)	91. b)
12. a)	32. b)	52. a)	72. d)	92. a)
13. b)	33. c)	53. c)	73. c)	93. e)
14. c)	34. c)	54. b)	74. c)	94. b)
15. c)	35. d)	55. b)	75. b)	95. c)
16. c)	36. c)	56. a)	76. a)	96. d)
17. d)	37. a)	57. c)	77. c)	97. c)
18. a)	38. b)	58. c)	78. d)	98. a)
19. d)	39. b)	59. c)	79. b)	99. d)
20. a)	40. b)	60. b)	80. a)	100. b)