Aakash
Medical | IIT-JEE | Foundations
(Divisions of Aakash Educational Services Limited)

Regd. Office **: Aakash Tower, 8, Pusa Road, New Delhi-110005 | Ph.: 011-47623456**

Questions & Answers

for

NTSE (Stage-I) 2019-20

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you open the question booklet.

1. Use blue/black ballpoint pen only. There is no negative marking.

2. Part I : MAT : 1 - 100 questions

   Part II : SAT : 1 - 100 questions

3. This test booklet contains 200 questions of one mark each. All the questions are compulsory.

4. Answer each question by darkening the one correct alternative among the four choices on the OMR SHEET with blue/black ballpoint pen.

   Example :

	Q. No.	Alternatives
Correct way :	1	① ② ● ④
	Q. No.	Alternatives
Wrong way :	1	⊗ ⊘ ③ ④

   Student must darkening the right oval only after ensuring correct answer on OMR Sheet.

5. Students are not allowed to scratch / alter / change out an answer once marked on OMR Sheet, by using white fluid / eraser / blade / tearing / wearing or in any other form.

6. Separate sheet has been provided for rough work in this test booklet.

7. Please handover the OMR Sheet to the invigilator before leaving the Examination Hall.

8. Darken completely the ovals of your answer on OMR Sheet in the time limit allotted for that particular paper.

9. Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR Sheet invalid.

10. Use of electronic gadgets, calculator, mobile etc, is strictly prohibited.

PART-I : MENTAL ABILITY TEST (MAT)

Directions (Q.01 - 10): Choose the odd letter group or odd numerical group

1. (a) FH   (b) IK
    (c) PN   (d) SU
Answer (c)

2. (a) ABD   (b) HIK
    (c) VWZ   (d) QRT
Answer (c)

3. (a) DE   (b) PQ
    (c) TU   (d) MO
Answer (d)

4. (a) VT   (b) MO
    (c) FG   (d) PR
Answer (c)

5. (a) ZWR   (b) XTP
    (c) MIE   (d) RNJ
Answer (a)

6. (a) 100   (b) 125
    (c) 169   (d) 121
Answer (b)

7. (a) 35   (b) 49
    (c) 50   (d) 63
Answer (c)

8. (a) 7   (b) 15
    (c) 31   (d) 57
Answer (b)

9. (a) 385   (b) 427
    (c) 671   (d) 264
Answer (b)

10. (a) 15   (b) 11
    (c) 17   (d) 13
Answer (a)

Directions (Q.11- 20): Find the odd word out.

11. (a) Ring   (b) Ornament
    (c) Necklace   (d) Bangle
Answer (b)

12. (a) Apple   (b) Orange
    (c) Carrot   (d) Guava
Answer (c)

13. (a) January   (b) February
    (c) April   (d) August
Answer (b)

14. (a) Carbon   (b) Copper
    (c) Silver   (d) Gold
Answer (a)

15. (a) Rose   (b) Lotus
    (c) Marigold   (d) Lily
Answer (b)

16. (a) Zebra   (b) Lion
    (c) Tiger   (d) Horse
Answer (d)

17. (a) Mother   (b) Father
    (c) Sister   (d) Sister in-law
Answer (d)

18. (a) Valley   (b) Sea
    (c) Tower   (d) Mountain
Answer (c)

19. (a) Again   (b) Before
    (c) Now   (d) After
Answer (a)

20. (a) Snake   (b) Lizard
    (c) Crocodile   (d) Whale
Answer (d)

Directions (Q.21-25): Find the odd numeral pair in each of the following questions.

21. (a) (43,6)   (b) (28,4)
    (c) (50,7)   (d) (36,5)
Answer (b)

22. (a) (3,4)   (b) (16,26)
    (c) (26,24)   (d) (27,22)
Answer (b)

23. (a) (13,21)   (b) (19,27)
    (c) (15,23)   (d) (16,24)
Answer (d)

24. (a) (34,43)   (b) (55,62)
    (c) (62,71)   (d) (83,92)
Answer (b)

25. (a) (62,37)   (b) (74,40)
    (c) (85,60)   (d) (103,78)

Answer (b)

Directions (Q.26-35) : Find out the alternative that should replace the question mark.

26. Ship : sea :: Camel : ?
    (a) Forest   (b) Land
    (c) Mountain   (d) Desert

Answer (d)

27. Oasis : Sand :: Island : ?
    (a) River   (b) Sea
    (c) Water   (d) Waves

Answer (b)

28. Tree : Forest :: Grass : ?
    (a) Lawn   (b) Field
    (c) Garden   (d) Farm

Answer (b)

29. Good : Bad :: Roof : ?
    (a) Window   (b) Floor
    (c) Walls   (d) Pillars

Answer (b)

30. Clock : Time :: Thermometer : ?
    (a) Heat   (b) Radiation
    (c) Energy   (d) Temperature

Answer (d)

31. 9 : 80 :: 7 : ?
    (a) 48   (b) 50
    (c) 78   (d) 82

Answer (a)

32. 3 : 243 :: 5 : ?
    (a) 425   (b) 465
    (c) 546   (d) 3125

Answer (d)

33. 16 : 56 :: 32 : ?
    (a) 96   (b) 112
    (c) 118   (d) 128

Answer (b)

34. 2 : 9 :: 6 : ?
    (a) 27   (b) 65
    (c) 222   (d) 210

Answer (a)

35. 5 : 35 :: 7 : ?
    (a) 77   (b) 55
    (c) 45   (d) 65

Answer (a)

Directions (Q.36 - 40) : Complete the series :

36. 3,7,15,27,43,63, _____ .
    (a) 86   (b) 87
    (c) 89   (d) 90

Answer (b)

37. 0,6,24,60,120, _____ .
    (a) 217   (b) 219
    (c) 220   (d) 210

Answer (d)

38. 10,15,30,45,90, _____ .
    (a) 135   (b) 110
    (c) 125   (d) 180

Answer (a)

39. CE, GI, KM, OQ, _____ .
    (a) TW   (b) TV
    (c) SU   (d) RT

Answer (c)

40. 3F, 6G,11I,18L, _____ .
    (a) 21O   (b) 25N
    (c) 27P   (d) 29Q

Answer (c)

Directions (Q.41-45): Arrange the items in the following questions in a meaningful order

41. A) College B) Child C) Salary D) School E) Employment
    (a) A,B,D,C,E   (b) B,D,A,E,C
    (c) D,A,C,E,B   (d) E,C,A,B,D

Answer (b)

42. A) Milky Way B) Sun C) Moon D) Earth E) Stars
    (a) D,C,B,E,A   (b) C,D,B,A,E
    (c) B,C,D,E,A   (d) A,D,C,B,E

Answer (a)

43. A) Elephant B) Cat C) Mosquito D) Tiger E) Whale
    (a) A,C,E,D,B   (b) B,C,A,D,C
    (c) C,B,D,A,E   (d) E,C,A,B,D

Answer (c)

44. A) Gold B) Iron C) Sand D) Platinum E) Diamond

    (a) B,D,C,E,A   (b) C,B,A,E,D

    (c) E,D,C,B,A   (d) D,E,A,C,B

Answer (b)

45. A) Banglow B) Flat C) Cottage D) House E) Palace

    (a) C,B,A,D,E   (b) C,B,D,A,E

    (c) E,D,A,B,C   (d) B,C,D,A,E

Answer (b)

Directions (Q. 46 - 48) : Find which one word can not be made from the letters of the given word.

46. TEACHERS

    (a) REACH   (b) CHAIR

    (c) CHEER   (d) SEARCH

Answer (b)

47. CONTEMPORARY

    (a) PARROT   (b) COMPANY

    (c) CARPENTER   (d) PRAYER

Answer (c)

48. INTERNATIONAL

    (a) ORIENTAL   (b) TERMINAL

    (c) LATTER   (d) RATIONALE

Answer (b)

Directions (Q. 49-52) : Choose the best alternative as the answer :

49. A newspaper always has

    (a) Advertisement   (b) News

    (c) Editor   (d) Date

Answer (b)

50. A train always has

    (a) Engine   (b) Rails

    (c) Driver   (d) Passenger

Answer (a)

51. A drama always has

    (a) Story   (b) Actors

    (c) Director   (d) Spectators

Answer (a)

52. A hill always has

    (a) Trees   (b) Animals

    (c) Water   (d) Height

Answer (d)

53. If 9 + 7 = 58; 3 + 11 = 124, What is the value of 13 + 5 ?

    (a) 38   (b) 174

    (c) 65   (d) 36

Answer (a)

54. If $7*1=64$; $3*9=144$, What is the value of $5*6$?

    (a) 22   (b) 121

    (c) 55   (d) 66

Answer (b)

55. If 3+9= 31; 15+12= 45; 18+9= 36 then 12+27= ?

    (a) 49   (b) 14

    (c) 94   (d) 72

Answer (c)

56. If $4 \times 8= 42$; $6 \times 4= 23$; $8 \times 6= 34$ then $2 \times 4= ?$

    (a) 25   (b) 21

    (c) 26   (d) 12

Answer (d)

57. A and B are brothers, C and D are sisters. A's son is D's brother. How is B related to C ?

    (a) Father   (b) Brother

    (c) Uncle   (d) Grand Father

Answer (c)

58. Deepak is the brother of Anil. Deepak is the son of Sunil. Bimal is Sunil's father. How is Anil related to Bimal ?

    (a) Son   (b) Grandson

    (c) Brother   (d) Grand Father

Answer (b)

59. E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E ?

    (a) Brother   (b) Uncle

    (c) Brother-in-law   (d) Father-in-law

Answer (c)

60. Manoj is the brother of Rabin, Rina is the sister of Atul. Rabin is the son of Rina. How is Manoj related to Rina ?

    (a) Son   (b) Brother

    (c) Nephew   (d) Father

Answer (a)

Directions (Q.61- 65): Out of the four figures (a), (b), (c) and (d) given in each problem, three are similar in a certain way. However, one figure is not like the other three. Choose the figure which is different from the rest
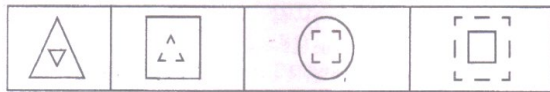
61.

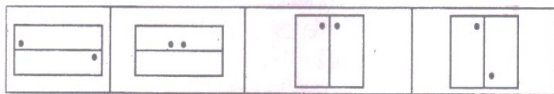   (a)   (b)   (c)   (d)

Answer (c)

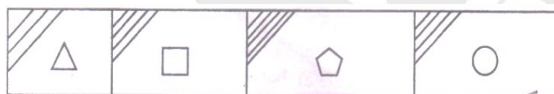**62.**

    (a)   (b)   (c)   (d)

Answer (a)

63.

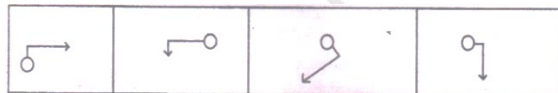
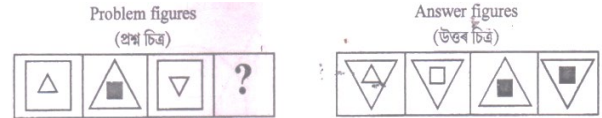   (a)   (b)   (c)   (d)

Answer (b)

64.

    (a)   (b)   (c)   (d)

Answer (d)

65.

    (a)   (b)   (c)   (d)

Answer (b)

Directions (Q.66-70): In each of the following questions, there are three problem figures followed by a question mark (?) for the fourth one. There exists relationship between the first two problems figures. A Similar relationship should exist between the third and fourth figure. Find the one from the answer figures that correctly replaces the questions mark.

66.
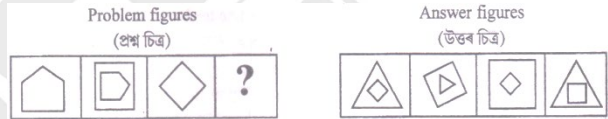

    (a)   (b)   (c)   (d)

Answer (d)

67.

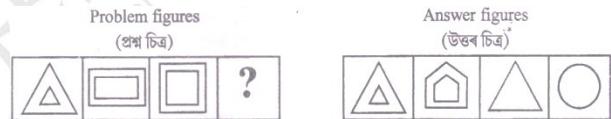

    (a)   (b)   (c)   (d)

Answer (a)

68.

    (a)   (b)   (c)   (d)

Answer (a)

69.

    (a)   (b)   (c)   (d)

Answer (b)

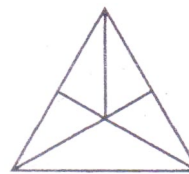**70.**

    (a)   (b)   (c)   (d)

Answer (c)

71. The number of triangles in the following figure is
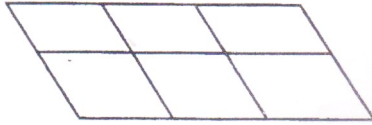

(a) 9   (b) 10
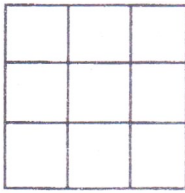
(c) 11   (d) 12

Answer (d)

72. The number of squares in the following figure is
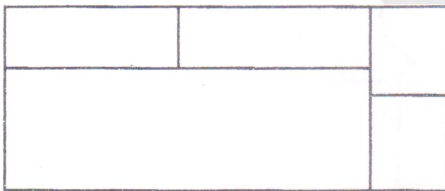

(a) 18

(b) 16

(c) 15

(d) 9

Answer (a)

73. The number of squares in the following figure is

(a) 10 (b) 9

(c) 14 (d) 11

Answer (c)
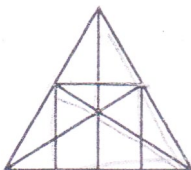
74. The number of rectangles in the following figure is
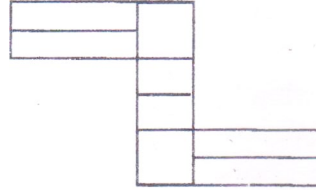

(a) 6

(b) 7

(c) 8

(d) 9

Answer (d)

75. The number of straight lines in the following figure is
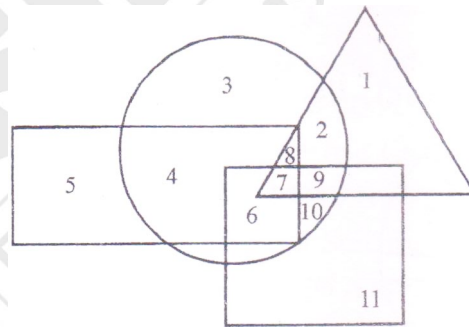

(a) 9

(b) 10

(c) 11

(d) 15

Answer (a)

76. The number of rectangles in the following figure is

(a) 17 (b) 18

(c) 19 (d) 20

Answer (b)

Directions (Q.77-80): In the following figure, rectangle, square, circle and triangle represent the regions of wheat, gram, maize and rice cultivation respectively. On the basis of the figure, answer the following questions.

77. Which area produces all the four commodities ?

(a) 7 (b) 8

(c) 9 (d) 2

Answer (a)

78. Which area is cultivated by wheat and maize Only ?

(a) 8 (b) 5

(c) 6 (d) 4

Answer (d)

79. Which area is cultivated by Rice only ?

(a) 5 (b) 1

(c) 2 (d) 11

Answer (b)

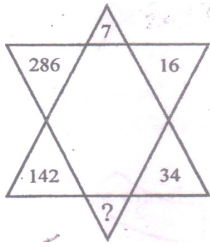80. Which area is cultivated by rice and maize only ?

(a) 9

(b) 8

(c) 2

(d) 7

Answer (c)

Directions (Q.81-86) : Find the missing number in each of the following questions :
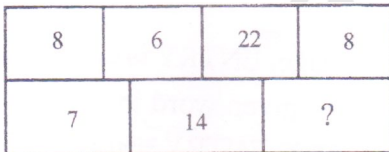
81.

(a) 72   (b) 70

(c) 68   (d) 66

Answer (b)

82.

(a) 14

(b) 13

(c) 15

(d) 16

Answer (c)

83.
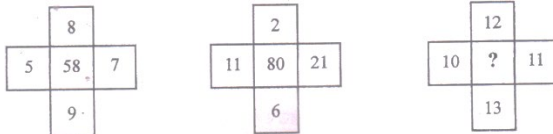
(a) 64

(b) 86

(c) 78

(d) 92

Answer (c)

84.
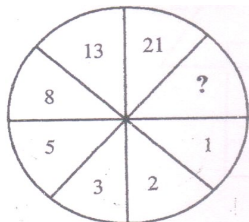
(a) 31   (b) 32

(c) 33   (d) 34

Answer (d)

85.
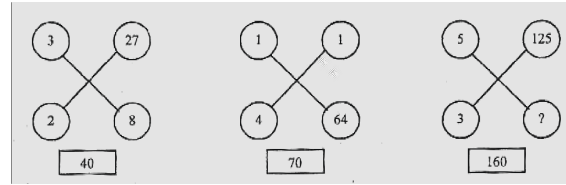
(a) 27   (b) 15

(c) 64   (d) 120

Answer (a)

86.
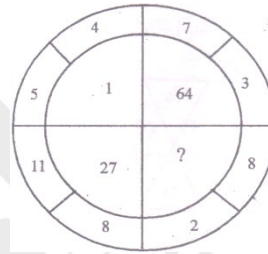
(a) 8   (b) 125

(c) 216   (d) 256

Answer (c)

Directions (Q.87-89): In a certain language, ENTRY is coded as 12345 and STEADY is coded as 931785, then state the correct code for the given word in each question

87. NEATNESS

(a) 25196577   (b) 21732199

(c) 21362199   (d) 21823698

Answer (b)

88. ARREST

(a) 744589   (b) 744193

(c) 166479   (d) 745194

Answer (b)

89. TENANT

(a) 312723   (b) 352123

(c) 351232   (d) 196247

Answer (a)

Directions (Q.90-94) : Study the following information carefully and answer the questions.

(i) B and E are good in Chemistry and Computer Science.

(ii) A and B are good in Computer Science and Physics.

(iii) A, D and C are good in Physics and History.

(iv) C and A are good in Physics and Mathematics.

(v) D and E are good in History and Chemistry.

90. Who is good in Physics, History and Chemistry ?

(a) A   (b) B

(c) D   (d) E

Answer (c)

91. Who is good in Physics, History and Mathematics but not in Computer Science ?

(a) A   (b) B

(c) C   (d) D

Answer (c)

92. Who is good in Computer Science, History and Chemistry ?

(a) A   (b) B

(c) C   (d) E

Answer (d)

93. Who is good in History, Physics, Computer Science and Mathematics ?

(a) A   (b) B

(c) C   (d) D

Answer (a)

94. Who is good in Physics, Chemistry and Computer Science ?

(a) A   (b) B

(c) D   (d) E

Answer (b)

95. Select from the given diagrams, the one that illustrates the relationship among the given three classes: Judge, Thief, Criminal.

(a)   (b)   (c)   (d)

Answer (c)

96. Which one of the following Venn diagrams best illustrates the three classes: Rhombus, Quadrilateral, Polygons ?

(a)   (b)   (c)   (d)

Answer (a)

97. Which of the following diagrams correctly represents Elephants, Wolves, Animals ?

(a)   (b)   (c)   (d)
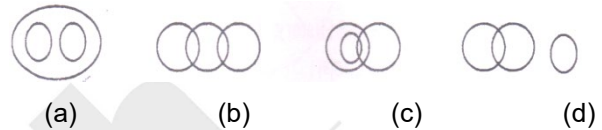
Answer (a)

Directions (Q.98-100) : Arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence.

98. (i) Page   (ii) Pagan   (iii) Palisade   (iv) Pageant (v) Palate

(a) 1,4,2,3,5   (b) 2,4,1,3,5

(c) 2,1,4,5,3   (d) 1,4,2,5,3

Answer (c)

99. (i) select (ii) seldom (iii) send (iv) selfish (v) seller

(a) 1,2,4,5,3   (b) 2,1,5,4,3

(c) 2,1,4,5,3   (d) 2,5,4,1,3

Answer (c)

100. (i) credential (ii) creed (iii) crease (iv) cremate (v) credible

(a) 1,2,3,4,5   (b) 1,5,3,4,2

(c) 5,1,2,3,4   (d) 3,1,5,2,4

Answer (d)

❑   ❑   ❑

PART-II : SCHOLASTIC APTITUDE TEST (SAT)

1. The branch of Geography in which the study of human activities associated with production, distribution, consumption and exchange of resources is done in spatial and temporal contexts is known as -

   (a) Agricultural Geography

   (b) Economic Geography

   (c) Industrial Geography

   (d) Transport Geography

Answer (b)

2. Transport is an example of

   (a) Primary Occupation

   (b) Secondary Occupation

   (c) Tertiary Occupation

   (d) Quaternary Occupation

Answer (c)

3. Who is considered as the Father of modern economic geography ?

   (a) C.F. Jones   (b) G. G. Darkenwald

   (c) George Chisholm   (d) Zimmermann

Answer (c)

4. Which of the following is a man made resource?

   (a) Rivers   (b) Irrigation canal

   (c) Mineral oil   (d) Forests

Answer (b)

5. IUCN was formed in the year

   (a) 1947   (b) 1948

   (c) 1949   (d) 1950

Answer (b)

6. Where is the headquarter of North East Frontier railway located?

   (a) Karimganj

   (b) Bongaigaon

   (c) Dhubri

   (d) Guwahati

Answer (d)

7. How many spheres are generally recognized by Earth Sciences ?

   (a) 3   (b) 4

   (c) 5   (d) 6

Answer (b)

8. What Percentage of the Earth's Land Surface is Desert ?

   (a) 25%   (b) 30%

   (c) 35%   (d) 40%

Answer (b)

9. The lakes, rivers, seas and oceans together constitute the Earth's

   (a) Lithosphere   (b) Hydrosphere

   (c) Atmosphere   (d) Biosphere

Answer (b)

10. Which ocean occupies the entire South Pole?

    (a) Pacific Ocean   (b) Atlantic Ocean

    (c) Indian Ocean   (d) Southern Ocean

Answer (d)

11. How many countries are there in the world ?

    (a) 196   (b) 197

    (c) 198   (d) 199

Answer (b)

12. How many districts are there in the state of Assam?

    (a) 31   (b) 32

    (c) 33   (d) 34

Answer (c)

13. Which is the longest National Highway in Assam?

    (a) NH 31   (b) NH 31 B

    (c) NH 36   (d) NH 37

Answer (a)

14. How many stages are there through which money has evolved ?

    (a) 3   (b) 4

    (c) 5   (d) 6

Answer (c)

15. The historic Jonbeel Mela is organised in

    (a) Golaghat   (b) Sibsagar

    (c) Morigaon   (d) Kamrup (Rural)

Answer (c)

16. The money that is recognised by the law of the land, as valid for payment of debt is known as

    (a) Commodity money (b) Token money

    (c) Dear Money   (d) Legal tender money

Answer (d)

17. In India, the first bank, Bank of Hindustan was established in the year

    (a) 1760   (b) 1770

    (c) 1780   (d) 1790

Answer (b)

18. The Reserve Bank of India was established in

    (a) 1925   (b) 1935

    (c) 1945   (d) 1955

Answer (b)

19. Who is the chairman of NITI Aayog?

    (a) Union Home Minister

    (b) Any Union Minister of Cabinet Rank

    (c) Lt. Governor of Delhi

    (d) Prime Minister

Answer (d)

20. In India, the government's financial year runs from

    (a) 1st January to 31st December

    (b) 1st March to 28th February

    (c) 1st July to 30th June

    (d) 1st April to 31st March

Answer (d)

21. Which of the following is not a key dimension of human development in the Human Development Index (HDI)

    (a) A long and healthy life

    (b) Being Knowledgeable

    (c) A decent standard of living

    (d) Political participation

Answer (d)

22. The first bank that was established in Assam was

    (a) Central Bank   (b) SIDBI

    (c) IDBI   (d) Guwahati Bank

Answer (c)

23. The 42nd amendment of the Constitution, by which, the words "Socialist", "secular" and "unity and integrity of the nation" were incorporated in the preamble, was enacted in

    (a) 1975   (b) 1976

    (c) 1977   (d) 1978

Answer (b)

24. How many principal organs are there in the United Nations ?

    (a) 4   (b) 5

    (c) 6   (d) 7

Answer (c)

25. How many member States are there in the United Nations ?

    (a) 192   (b) 193

    (c) 194   (d) 195

Answer (b)

26. 'The Protection of Human Rights' Bill received the assent of the President of India in

    (a) 1992   (b) 1993

    (c) 1994   (d) 1995

Answer (b)

27. When was the United Nations established ?

    (a) 1944   (b) 1945

    (c) 1946   (d) 1947

Answer (b)

28. Who was the Chairman of the drafting Committee of Indian Constitution ?

    (a) Dr. B.R Ambedkar (b) Jawaharlal Nehru

    (c) Rajendra Prasad (d) M. Madhab Rao

Answer (a)

29. The UN Charter, consists of a preamble and 19 chapters, which are divided into

    (a) 110 articles   (b) 111 articles

    (c) 112 articles   (d) 113 articles

Answer (b)

30. Which city was made the capital of the province, 'Eastern Bengal and Assam' ?

    (a) Jorhat   (b) Karimganj

    (c) Silchar   (d) Dhaka

Answer (d)

31. When was the Rowlatt Act passed by the Imperial Legislative Council ?

    (a) 1917   (b) 1918

    (c) 1919   (d) 1920

Answer (c)

32. The 'Chauri Chaura' incident occurred in

    (a) Uttar Pradesh   (b) Bengal

    (c) Bombay   (d) Madras

Answer (a)

33. The mantra 'Do or Die' was given by Mahatma Gandhi to launch the

    (a) Swadeshi movement

    (b) Non Cooperation movement

    (c) Civil Disobedience movement

    (d) Quit India movement

Answer (d)

34. Which Assamese submitted a memorandum to Moffat Mills in 1853 and ponted out that the Land revenue assessments were taking its toll on the Assamese people ?

    (a) Kandarpeswar Singha

    (b) Lakshmi Nath Bezbarua

    (c) Maniram Dewan

    (d) Anandaram Dhekial Phukan

Answer (d)

35. Where did the first organised peasants' movement of Assam take place ?

    (a) Rangia   (b) Lachima

    (c) Patharughat   (d) Phulaguri

Answer (d)

36. The 'Jnan Pradayini Sabha' was established by Anandaram Dhekiyal Phukan and Gunaviram Barua in

    (a) 1855   (b) 1856

    (c) 1857   (d) 1858

Answer (c)

37. Who wrote the famous Assamese dictionary "Hemkosh Abhidhan" ?

    (a) Hemchandra Goswami

    (b) Hemchandra Baruah

    (c) Lakshminath Bezbarua

    (d) Chandra Kumar Agarwala

Answer (b)

38. Who was the first president of Assam Pradesh Congress Committee ?

    (a) Nabin Chandra Agarwala

    (b) Kuladhar Chaliha

    (c) Bishnuram Medhi

    (d) Siddhinath Sarma

Answer (b)

39. Which martyr was hanged during the Quit India Movement for his involvement in train derailment at Borpathar, Assam ?

    (a) Kanaklata

    (b) Sankar Chandra Barua

    (c) Kushal Konwar

    (d) Mahendranath Hazarika

Answer (c)

40. Who was the founder of Indian National Congress ?

    (a) Mahatma Gandhi

    (b) Allan Octavian Hume

    (c) Jawaharlal Nehru

    (d) Subhash Chandra Bose

Answer (b)

41. Which of the following rational has terminating decimal expansion ?

    (a) $\frac{64}{455}$ (b) $\frac{13}{3125}$

    (c) $\frac{29}{343}$ (d) $\frac{77}{210}$

Answer (b)

42. $3.\overline{27}$ is

    (a) An integer   (b) A rational number

    (c) A natural number   (d) An irrational number

Answer (b)

43. If α and β are the zeros of the polynomial $f(x) = x^2 + px + q$, then a polynomial having $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ as its zeros is

(a) $x^2 + qx + p$ (b) $x^2 - px + q$

(c) $qx^2 + px + 1$ (d) $px^2 + qx + 1$

Answer (c)

44. If zeros of the polynomial $f(x) = x^3 - 3px^2 + qx - r$ are in A.P. then

(a) $2p^3 = pq - r$ (b) $2p^3 = pq + r$

(c) $p^3 = pq - r$ (d) $p^3 = pq + r$

Answer (a)

45. The value of K for which the system of equations $x + 2y - 3 = 0$ and $5x + ky + 7 = 0$ has no solution, is

(a) 10 (b) 6

(c) 3 (d) 1

Answer (a)

46. The value of $\sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots}}}$ is

(a) 4 (b) 3

(c) -2 (d) 3.5

Answer (b)

47. If $x = 1$ is a common root of the equations $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$, then $ab = ?$

(a) -3 (b) 3.5

(c) 6 (d) 3

Answer (d)

48. If $\frac{1}{x+2}, \frac{1}{x+3}, \frac{1}{x+5}$ are in A.P. then $x = ?$

(a) 5 (b) 3

(c) 1 (d) 2

Answer (c)

49. If the sum of 1st n terms of an A.P. is $3n^2 + n$ then its common difference is

(a) 6 (b) 4

(c) 14 (d) 10

Answer (a)

50. Sides of two similar triangles are in the ratio 4 : 9. Areas of these triangles are in the ratio -

(a) 2 : 3 (b) 4 : 9

(c) 81 : 16 (d) 16 : 81

Answer (d)

51. A vertical stick 20 m long casts a shadow 10 m long on the ground. At the same time, a tower casts a shadow 50 m long on the ground. The height of the tower is

(a) 100 m (b) 120 m

(c) 25 m (d) 200 m

Answer (a)

52. If the centroid of the triangle formed by the points (a,b), (b,c) and (c,a) is at the origin then $a^3 + b^3 + c^3 = ?$

(a) abc (b) 0

(c) a + b + c (d) 3abc

Answer (d)

53. The co-ordinates of the point P dividing the line segment joining the points A(1,3) and B(4,6) in the ratio 2 : 1 are

(a) (2,4) (b) (3,5)

(c) (4,2) (d) (5,3)

Answer (b)

54. If $\sin \theta + \sin^2 \theta = 1$, then
$\cos^{12} \theta + 3 \cos^{10} \theta + 3 \cos^8 \theta + \cos^6 \theta + 2 \cos^4 \theta + 2 \cos^2 \theta - 2 = ?$

(a) 1 (b) 2

(c) 3 (d) 0

Answer (a)

55. The value of $\sin^2 29^0 + \sin^2 61^0$ is

(a) $2\sin^2 29^0$ (b) $2\sin^2 61^0$

(c) 0 (d) 1

Answer (d)

56. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80^0 then $\angle POA$ is equal to

(a) 50^0 (b) 60^0

(c) 70^0 (d) 80^0

Answer (a)

57. The length of the diameter of a circle whose area and circumference are numerically equal, is

(a) $\frac{\pi}{2}$ (b) 2π

(c) 2 (d) 4

Answer (d)

58. The mean of first n natural number is 15. Then n = ?

(a) 15   (b) 30

(c) 14   (d) 29

Answer (d)

59. The median of first 10 prime number is

(a) 11   (b) 12

(c) 13   (d) 14

Answer (b)

60. Which of the following cannot be the probability of an event ?

(a) $\frac{2}{3}$ (b) -1.5

(c) 0.8   (d) 0.5

Answer (b)

61. In autotrophic organism energy requirement is fulfilled by-

(a) Photosynthesis   (b) Respiration

(c) Digestion   (d) Transpiration

Answer (a)

62. Which of the following maintains the opening and closing of stomatal pore ?

(a) Guard cell   (b) Chlorophyll

(c) Oxygen   (d) Rate of photosynthesis

Answer (a)

63. Which of the following method is used for vegetative propagation of sugarcane ?

(a) Grafting   (b) Artificial reproduction

(c) Budding   (d) Tissue culture

Answer (a)

64. Example of unisexual flower is -

(a) Hibiscus   (b) Mustard

(c) Papaya   (d) Rose

Answer (c)

65. The process by which the plant embryo develops into seedling under appropriate condition is known as-

(a) Germination   (b) Reproduction

(c) Fertilization   (d) Plantation

Answer (a)

66. In energy pyramid of terrestrial ecosystem, which of the following is present at the bottom of the pyramid ?

(a) Primary consumer   (b) Producer

(c) Top carnivores   (d) Secondary consumer

Answer (b)

67. Kulh in Himachal Pradesh is associated to -

(a) Water management

(b) Air Pollution Control

(c) Wildlife protection

(d) River Dams

Answer (a)

68. The technique that is used to grow ornamental plants from one parent is known as -

(a) Tissue culture   (b) Vegetative propagation

(c) Hybrid   (d) Budding

Answer (b)

69. In muscle cells the break down of pyruvate in absence of oxygen produces -

(a) Ethanol + CO_2 + Energy

(b) Lactic acid + Energy

(c) CO_2 + Water + Energy

(d) CO_2

Answer (b)

70. Pulmonary vein carries oxygen from -

(a) Left auricle to left ventricle

(b) Right ventricle to lung

(c) From lungs to left auricle

(d) Brain to left auricle

Answer (c)

71. The structure of kidney that collects the filtrate is known as -

(a) Bowman's capsule   (b) Capillaries

(c) Nephron   (d) Urinary bladder

Answer (a)

72. All the involuntary actions of human body is controlled by -

(a) Fore brain   (b) Hind brain

(c) Heart   (d) Tissue

Answer (b)

73. The less secretion of growth hormone from pituitary gland results -

    (a) Dwarfism   (b) Gigantism

    (c) Acromegaly   (d) Anaemia

Answer (a)

74. The life span of human egg is -

    (a) 24 hours   (b) 48 hours

    (c) 76 hours   (d) 90 hours

Answer (a)

75. The genotypic ratio of Mendel's monohybrid cross is -

    (a) 3:1   (b) 1:2:1

    (c) 9:3:3:1   (d) 2:1

Answer (b)

76. The study that deals with the relationship distance of organisms on the basis of their DNA structure is known as -

    (a) Molecular phylogeny

    (b) Fossil study

    (c) Embryology

    (d) Histology

Answer (a)

77. If a plane mirror is rotated by an angle 15^0 then the reflected light will be rotated by

    (a) 15^0 (b) 30^0

    (c) 45^0 (d) 7.5^0

Answer (b)

78. If an object is placed away from the centre of curvature of a concave mirror, then the image would be -

    (a) Magnefied, real, inverted

    (b) Climinished, real, erect

    (c) Diminished, virtual, erect

    (d) Dininished, real, inverted

Answer (d)

79. At total internal reflection the angle between the reflected ray and the incident ray is

    (a) Two Times the angle of incidence

    (b) Equal to the angle of incidence

    (c) Zero (0°)

    (d) 90°

Answer (a)

80. If an object is placed at the focus of a biconvex lens then the image will be formed

    (a) At focus on the otherside of the lens

    (b) At the centre of curvature

    (c) At infinity

    (d) In between focus and centre of curvature

Answer (c)

81. The correct sequence in the increasing order of frequency is

    (a) Violet, yellow, orange

    (b) Red, orange, violet

    (c) Blue, yellow, violet

    (d) Blue, red, orange

Answer (b)

82. A person can see distant object clearly but find it difficult to read a book. The person is suffering from -

    (a) Astigmatism   (b) Myopia

    (c) Hypermetropia   (d) Presbyopia

Answer (c)

83. If a conductor is folded 8 times then the resistance will be

    (a) 8 times   (b) 4 times

    (c) $\frac{1}{8}$ times   (d) $\frac{1}{64}$ times

Answer (d)

84. If R is the resistance, I is the current flowing and V is the potential difference across a conductor at constant temperature, than Ohm's law is

    (a) I = VR   (b) R = VI

    (c) V = IR   (d) V = I²R

Answer (c)

85. How much energy is Kilowatt hour is consumed in operating two 200 watt bulb for 10 hours per day in a month (30 days) ?

    (a) 60 KWH   (b) 6 KWH

    (c) 30 KWH   (d) 200 KWH

Answer (a)

86. Particles released from Uranium atom in the increasing order of their velocity.

    (a) Alpha, gamma, beta

    (b) Alpha, beta, gamma

    (c) Gamma, beta, alpha

    (d) Beta, gamma, alpha

Answer (b)

87. We can write on a black board because of the force called

(a) Viscous force   (b) Frictional force

(c) Gravitational force (d) Nuclear force

Answer (b)

88. The energy released by sun is due to

(a) Fission reaction

(b) Fusion reaction

(c) Both fission and fusion reaction

(d) Chemical reaction

Answer (c)

89. Which of the following are exothermic processes ?

(i)   Reaction of water with lime

(ii)   Dilution of an acid

(iii) Evaporation of water

(iv) Sublimation of Camphor

(a) (i) and (ii)   (b) (ii) and (iii)

(c) (i) and (iv)   (d) (iii) and (iv)

Answer (a)

90. Which of the following gases can be used for storage of fresh sample of an oil for a long time ?

(a) CO_2 or O_2 (b) N_2 or O_2

(c) CO_2 or He   (d) He or N_2

Answer (d)

91. An aqueous solution turns red litmus solution blue. Excess addition of which of the following will reverse the change ?

(a) Baking powder

(b) Lime

(c) Ammonium hydroxide solution

(d) Hydrochloric Acid

Answer (d)

92. Silver articles became black on exposure to air for longer time which may be due to the formation of -

(a) AgCN   (b) Ag_2O

(c) Ag_2S (d) Ag_2S and AgCN

Answer (c)

93. Which of the following four metals would be displaced from the solution of its salts by other three metals ?

(a) Mg   (b) Cu

(c) Zn   (d) Fe

Answer (a)

94. Which of the following is not required to find the pH of a solution ?

(a) pH paper

(b) Litmus paper

(c) Universal indicator

(d) Standard pH chart

Answer (a)

95. Soaps are –

(a) Calcium Salt of acids

(b) Magnesium salts of acids

(c) Sodium and potassium salts of long chain fatty acids

(d) Salts of bases

Answer (c)

96. The general formula of esters where R represents the alkyl group is -

(a) ROH

(b) RCOR

(c) RCOOH

(d) RCOOR

Answer (d)

97. Which of the following does not belong to the same homologus series ?

(a) CH_4 (b) C_2H_6

(c) C_3H_8 (d) C_3H_6

Answer (d)

98. Which of the following elements would lose an electron easily ?

(a) Mg   (b) Na

(c) Rb   (d) Ca

Answer (c)

99. Upto which element the law of octaves was found to be applicable ?

(a) O   (b) Ca

(c) Co   (d) K

Answer (b)

100. Where would your locate the element with electronic configuration 2,8 in the modern periodic table ?

(a) group 8   (b) group 2

(c) group 15   (d) group 18

Answer (d)

❑ ❑ ❑