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Answers & Solutions

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	⊗ ⊕ ⊖ 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

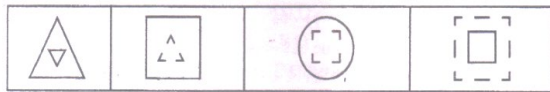
61.



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

Answer (c)

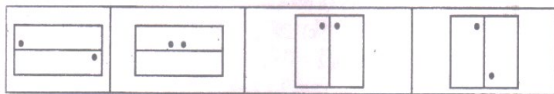
62.



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

Answer (a)

63.



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

Answer (b)

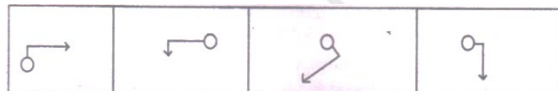
64.



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

Answer (d)

65.

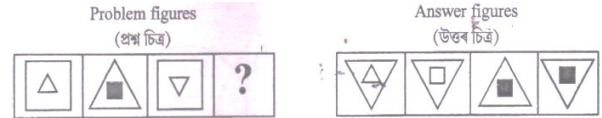


(a) (b) (c) (d)

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 problem 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)

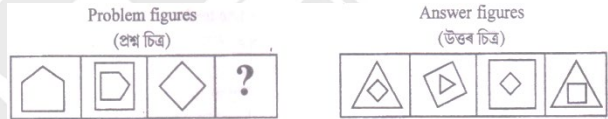
67.



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

Answer (a)

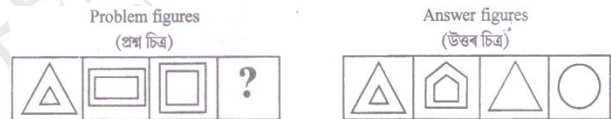
68.



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

Answer (a)

69.



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

Answer (b)

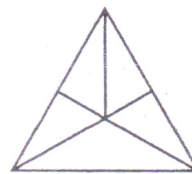
70.



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

Answer (c)

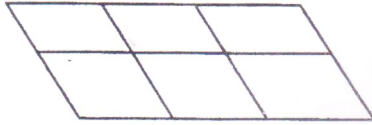
71. The number of triangles in the following figure is



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

Answer (d)

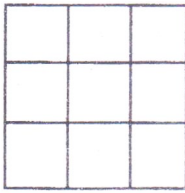
72. The number of squares in the following figure is



- (a) 18
- (b) 16
- (c) 15
- (d) 9

Answer (a)

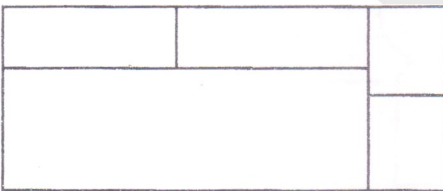
73. The number of squares in the following figure is



- (a) 10
- (b) 9
- (c) 14
- (d) 11

Answer (c)

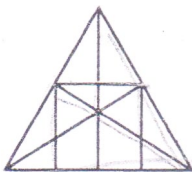
74. The number of rectangles in the following figure is



- (a) 6
- (b) 7
- (c) 8
- (d) 9

Answer (d)

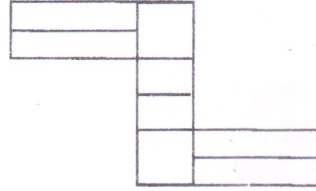
75. The number of straight lines in the following figure is



- (a) 9
- (b) 10
- (c) 11
- (d) 15

Answer (a)

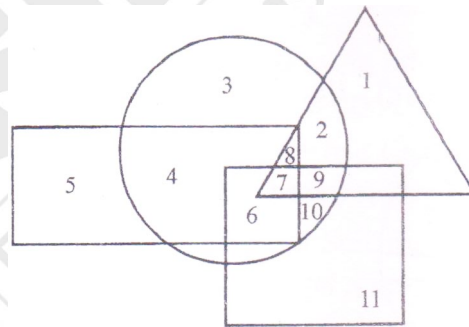
76. The number of rectangles in the following figure is



- (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)

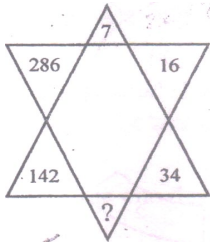
80. Which area is cultivated by rice and maize only ?

- (a) 9
- (b) 8
- (c) 2
- (d) 7

Answer (c)

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

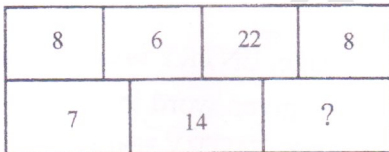
81.



- (a) 72 (b) 70
(c) 68 (d) 66

Answer (b)

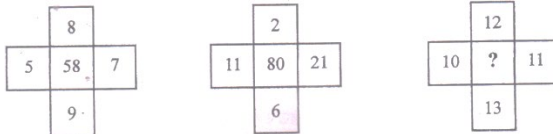
82.



- (a) 14
(b) 13
(c) 15
(d) 16

Answer (c)

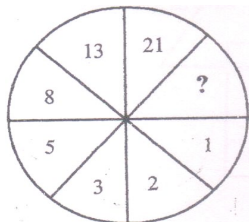
83.



- (a) 64
(b) 86
(c) 78
(d) 92

Answer (c)

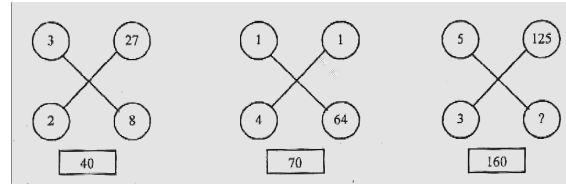
84.



- (a) 31 (b) 32
(c) 33 (d) 34

Answer (d)

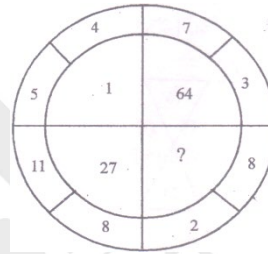
85.



- (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.



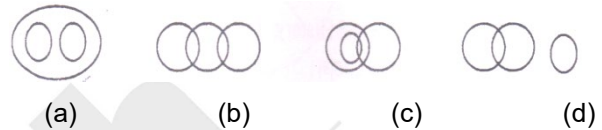
Answer (c)

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



Answer (a)

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



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)

Sol. Economic Geography deals with the study of human activities.

2. Transport is an example of

- (a) Primary Occupation
- (b) Secondary Occupation
- (c) Tertiary Occupation
- (d) Quaternary Occupation

Answer (c)

Sol. Transport is an example of Tertiary Occupation

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)

Sol. George Chisholm is considered as the Father of Modern Economic Theory.

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

- (a) Rivers
- (b) Irrigation canal
- (c) Mineral oil
- (d) Forests

Answer (b)

Sol. Irrigation canal is a man made resource.

5. IUCN was formed in the year

- (a) 1947
- (b) 1948
- (c) 1949
- (d) 1950

Answer (b)

Sol. International Union for Conservation of Nature founded in October, 1948 in Fontainebleau, France.

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

- (a) Karimganj
- (b) Bongaigaon
- (c) Dhubri
- (d) Guwahati

Answer (d)

Sol. the headquarter of North East Frontier railway located in Maligaon, Guwahati.

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

- (a) 3
- (b) 4
- (c) 5
- (d) 6

Answer (b)

Sol. 4 spheres are generally recognized by Earth surface.

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

- (a) 25%
- (b) 30%
- (c) 35%
- (d) 40%

Answer (b)

Sol. But actually the correct answer is 33%

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

- (a) Lithosphere
- (b) Hydrosphere
- (c) Atmosphere
- (d) Biosphere

Answer (b)

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

10. Which ocean occupies the entire South Pole?

- (a) Pacific Ocean
- (b) Atlantic Ocean
- (c) Indian Ocean
- (d) Southern Ocean

Answer (d)

Sol. Southern ocean occupies the entire South Pole.

11. How many countries are there in the world ?

- (a) 196
- (b) 197
- (c) 198
- (d) 199

Answer (b)

Sol. 195 countries + Taiwan and The Cook islands.

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

- (a) 31 (b) 32
(c) 33 (d) 34

Answer (c)

Sol. 33 districts are there in Assam

13. Which is the longest National Highway in Assam?

- (a) NH 31 (b) NH 31 B
(c) NH 36 (d) NH 37

Answer (a)

Sol. The length of NH31 is 968 km.

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

- (a) 3 (b) 4
(c) 5 (d) 6

Answer (c)

Sol. Five stages are commodity money (goods), Metallic money (Coins), Paper money (Bank Notes), credit money and Plastic money (ATM Card).

15. The historic Jonbeel Mela is organised in

- (a) Golaghat (b) Sibsagar
(c) Morigaon (d) Kamrup (Rural)

Answer (c)

Sol. Jonbeel Mela is organised in Jagiraod in Morigaon dist. of Assam.

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)

Sol. Money that is recognised by the law of the land, as valid for payment of debt is known as Legal tender money.

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

- (a) 1760 (b) 1770
(c) 1780 (d) 1790

Answer (b)

Sol. Bank of Hindustan was established in the year In 1770.

18. The Reserve Bank of India was established in

- (a) 1925 (b) 1935
(c) 1945 (d) 1955

Answer (b)

Sol. Reserve Bank of India was established i on April 1, 1935 in accordance with the Provision of the RBI ACT, 1934.

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)

Sol. Prime Minister is the chairman of NITI Aayog.

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)

Sol. 1st April to 31st March is considered as the Financial Year.

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)

Sol. Political participation is not a key dimension of human development in the Human Development Index (HDI)

22. The first bank that was established in Assam was

- (a) Central Bank (b) SIDBI
(c) IDBI (d) Guwahati Bank

Answer (c)

Sol. But the correct answer should be Pragjyotish Gaonila Bank, 1976.

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)

Sol. "Socialist", "secular" and "unity were incorporated in 1976.

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

- (a) 4 (b) 5
(c) 6 (d) 7

Answer (c)

Sol. 6 organs are there in the United Nations.

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

- (a) 192 (b) 193
(c) 194 (d) 195

Answer (b)

Sol. 193 States are there in the United Nations

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)

Sol. In 1993, 'The Protection of Human Rights' Bill received the assent of the President of India

27. When was the United Nations established ?

- (a) 1944 (b) 1945
(c) 1946 (d) 1947

Answer (b)

Sol. On 24th October 1945, UNO was formed in San Francisco, California, USA.

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)

Sol. Dr. B.R Ambedkar was the chairman of the drafting Committee.

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)

Sol. The UN Charter, consists of a preamble and 19 chapters, which are divided into 111 articles.

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

- (a) Jorhat (b) Karimganj
(c) Silchar (d) Dhaka

Answer (d)

Sol. Dhaka was made the capital of the province, 'Eastern Bengal and Assam' after the partition of Bengal 1905.

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

- (a) 1917 (b) 1918
(c) 1919 (d) 1920

Answer (c)

Sol. Rowlatt Act passed in 1919.

32. The 'Chauri Chaura' incident occurred in

- (a) Uttar Pradesh (b) Bengal
(c) Bombay (d) Madras

Answer (a)

Sol. The 'Chauri Chaura' incidence took place in Gorakhpur dist of UP.

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)

Sol. In 1942, during Quit India movement, Gandhiji used this slogan.

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)

Sol. Anandaram Dhekial Phukan submitted a memorandum to Moffat Mills in 1853.

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

- (a) Rangia (b) Lachima
(c) Patharughat (d) Phulaguri

Answer (d)

Sol. In Phulaguri or Phulguri the first peasant movement took place in Assam.

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)

Sol. The 'Jnan Pradayini sabha' was established in 1857 after the Revolt of 1857.

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

- (a) Hemchandra Goswami
(b) Hemchandra Baruah
(c) Lakshminath Bezbarua
(d) Chandra Kumar Agarwala

Answer (b)

Sol. Hemchandra Barua wrote the famous Assamese dictionary "Hemkosh abhidhan" .

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)

Sol. Kuladhar Chaliha was the first president of Assam Pradesh Congress Committee

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)

Sol. Kushal Konwar was the Martyr who was hanged for being involved in train derailment at Borpathar, Assam during the Quit India movement.

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)

Sol. 1885, Indian National Congress was formed by Allan Octavian Hume at Bombay.

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)

Sol. $\therefore \frac{13}{3125} = 0.00416$

Therefore $\frac{13}{3125}$ is a terminating decimal.

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

- (a) An integer (b) A rational number
(c) A natural number (d) An irrational number

Answer (b)

Sol. $3.\overline{27} = 3.2727272727$

Repeating but non terminating

Therefore it is a rational number.

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)

Sol. $\alpha+\beta = -p, \alpha\beta = q$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha+\beta}{\alpha\beta} = \frac{-p}{q}$$

$$\frac{1}{\alpha} \times \frac{1}{\beta} = \frac{1}{\alpha\beta} = \frac{1}{q}$$

Polynomial having roots $(\frac{1}{\alpha} \& \frac{1}{\beta})$

$$K [x^2 - (\frac{1}{\alpha} + \frac{1}{\beta})x + \frac{1}{\alpha\beta}]$$

$$=k \left[x^2 + \frac{px}{q} + \frac{1}{q} \right]$$

$$=k \left[\frac{qx^2+px+1}{q} \right]$$

Therefore the required polynomial is
 $qx^2+px+1=0$

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)

Sol. Let zeros of $f(x)=x^3-3px^2+qx-r=0$, be a,b and c

$$a + b + c = 3p \text{ ----- (i)}$$

$$abc = r \text{ ----- (ii)}$$

a, b, c are in AP

$$\text{Hence } 2b = a+c \text{ ----- (iii)}$$

$$\text{From (i) \& (iii) } b + 2b = 3p$$

$$3b = 3p$$

$$b = p$$

$$\text{Now, } p^3 - 3p.p^2 + qp - r = 0$$

$$p^3 - 3p^3 + pq - r = 0$$

$$-2p^3 + pq - r = 0$$

$$2p^3 - pq + r = 0$$

So, 0 is correct.

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)

Sol. $X + 2y - 3 = 0$ and $5x + ky + 7 = 0$

Since the given equations have no solution

$$\text{Therefore } \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

$$\frac{1}{5} = \frac{2}{k} \neq \frac{-3}{7}$$

$$K=10 \& K \neq \frac{-14}{3}$$

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

- (a) 4 (b) 3
 (c) -2 (d) 3.5

Answer (b)

Sol. $y = \sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$

$$y = \sqrt{6 + y}$$

$$y^2 - y - 6 = 0$$

$$(y+2)(y-3) = 0$$

$$Y = \{-2, 3\}$$

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)

Sol. $ax^2 + ax + 3 = 0$ & $x^2 + x + b = 0$

Since, $x=1$ is common roots

Therefore

$$a+a+3=0 \quad \& \quad 1+1+b=0$$

$$a = -\frac{3}{2} \quad \quad \quad b = -2$$

Hence $ab = 3$

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)

Sol. $\frac{1}{x+2}, \frac{1}{x+3}, \frac{1}{x+5}$ ----- AP

$$\frac{2}{x+3} = \frac{1}{x+2} + \frac{1}{x+5} \text{ ----- (i)}$$

After solving equation (i)

$$X = 1$$

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)

Sol. $S_n = 3n^2 + n$

$$\therefore T_n = S_n - S_{n-1}$$

$$\therefore T_n = 6n - 2$$

& $d = T_2 - T_1$

$$d = 10 - 4 = 6$$

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)

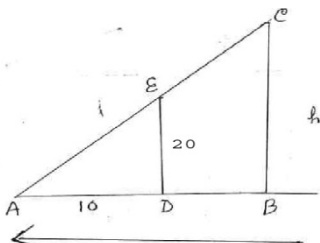
Sol. $AB : DE = 4 : 9$

$$\frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle DEF)} = \left(\frac{AB}{DE}\right)^2 = \frac{16}{81}$$

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)



Sol.

In $\triangle ABC$ & $\triangle ADE$

$$\frac{20}{10} = \frac{h}{50}$$

$$H=100$$

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)

Sol. $a + b + c = 0$ (because centroid is origin)

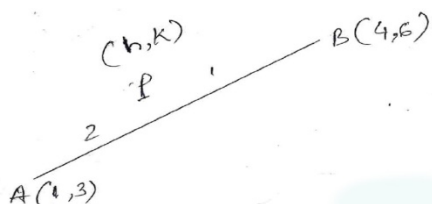
$$a^3 + b^3 + c^3 = 3abc$$

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)

Sol.



$$H = \frac{2 \times 4 + 1 \times 1}{2 + 1} = \frac{9}{3} = 3$$

$$K = \frac{2 \times 6 + 1 \times 3}{2 + 1} = \frac{15}{3}$$

$$= 5$$

$$(h,k) = (3,5)$$

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)

Sol. $\sin \theta = 1 - \sin^2 \theta$

$$\sin \theta = \cos^2 \theta$$

$$\cos^{12} \theta + 3 \cos^{10} \theta + 3 \cos^8 \theta + \cos^6 \theta + 2 \cos^4 \theta + 2 \cos^2 \theta - 2$$

$$\sin^6 \theta + 3(\sin^5 \theta + \sin^4 \theta) + \cos^6 \theta + 2(\sin^2 \theta + \cos^2 \theta)$$

$$\sin^6 \theta + \cos^6 \theta + 2 - 2 + 3 \sin^4 \theta (1 + \sin \theta)$$

$$\sin^6 \theta + \cos^6 \theta + 3(\sin^2 \theta)(\sin^2 \theta)(1 + \cos^2 \theta)$$

$$\sin^6 \theta + \cos^6 \theta + 3 \sin^2 \theta (1 - \cos^2 \theta)(1 + \cos^2 \theta)$$

$$1 - 3 \sin^2 \theta \cdot \cos^2 \theta + 3 \sin^2 \theta (1 - \cos^2 \theta)$$

$$1 - 3 \sin^2 \theta \cdot \cos^2 \theta + 3 \sin^2 \theta (1 - \sin^2 \theta)$$

$$1 - 3 \sin^2 \theta \cdot \cos^2 \theta + 3 \sin^2 \theta \cdot \cos^2 \theta$$

$$\Rightarrow 1 + 0 = 1$$

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

- (a) $2 \sin^2 29^\circ$ (b) $2 \sin^2 61^\circ$
(c) 0 (d) 1

Answer (d)

Sol. $\sin^2 29^\circ + \sin^2 61^\circ$

$$\sin^2 29^\circ + \sin^2 (90^\circ - 29^\circ)$$

$$\sin^2 29^\circ + \cos^2 29^\circ$$

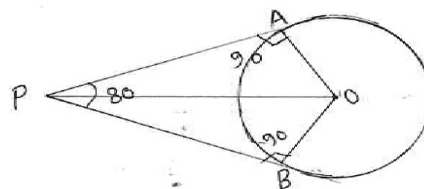
$$= 1$$

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° then $\angle POA$ is equal to

- (a) 50° (b) 60°
(c) 70° (d) 80°

Answer (a)

Sol.



$$\therefore \angle BOA = 100$$

$$\therefore \angle POA = 50$$

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)

Sol. $\pi r^2 = \pi r$

$$r = 2$$

$$2r = 4$$

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

- (a) 15 (b) 30
 (c) 14 (d) 29

Answer (d)

Sol. $\frac{\Sigma n}{n} = 15$

$$\frac{n(n+1)}{n \times 2} = 15$$

$$N = 29$$

59. The median of first 10 prime number is

- (a) 11 (b) 12
 (c) 13 (d) 14

Answer (b)

Sol. 2,3,5,7,11,13,17,19,23,29

$$M = \left\{ \left(\frac{10}{2} \right)^{\text{th term}} + \left(\frac{n}{2} + 1 \right)^{\text{th term}} \right\} \div 2$$

$$\Rightarrow \frac{11+13}{2} = \frac{24}{2}$$

$$m = 12$$

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)

Sol. Probability can never be negative.

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 + CO₂ + Energy
 (b) Lactic acid + Energy
 (c) CO₂ + Water + Energy
 (d) CO₂

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)

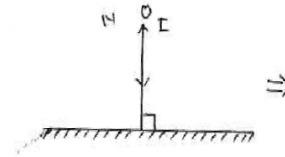
76. The study that deals with the relationship distance of organisms on the basis of their DNA structure is known as -
 (a) Molecular phylogeny
 (b) Fossil study
 (c) Embryology
 (d) Histology

Answer (a)

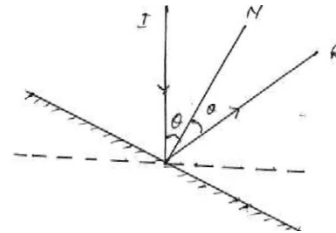
77. If a plane mirror is rotated by an angle 15° then the reflected light will be rotated by
 (a) 15° (b) 30°
 (c) 45° (d) 7.5°

Answer (b)

- Sol.** If the plane mirror rotated by θ , the reflected ray for fixed incidence ray rotated by angle 2θ .



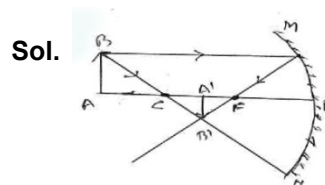
Here the angle of incidence is 0° and angle of reflection also 0° .



When the plane mirror rotated by θ , Here the reflected ray rotated by angle 2θ .

78. If an object is placed away from the centre of curvature of a concave mirror, then the image would be -
 (a) Magnified, real, inverted
 (b) Diminished, real, erect
 (c) Diminished, virtual, erect
 (d) Diminished, real, inverted

Answer (d)



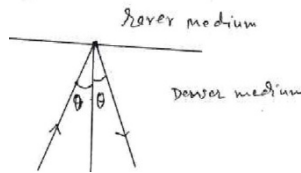
$$A'B' < AB$$

& real, and inverted.

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)

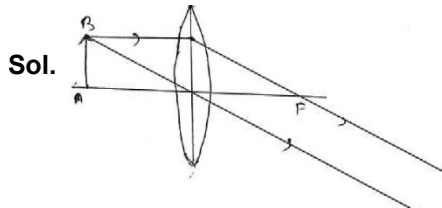
Sol.



In total internal reflection, the between incidence ray and reflected ray = 2θ , where θ is the incidence angle.

80. If an object is placed at the focus of a biconvex lens then the image will be formed
- At focus on the otherside of the lens
 - At the centre of curvature
 - At infinity
 - In between focus and centre of curvature

Answer (c)



Sol.

Object placed at focus, image is at infinity.

81. The correct sequence in the increasing order of frequency is
- Violet, yellow, orange
 - Red, orange, violet
 - Blue, yellow, violet
 - Blue, red, orange

Answer (b)

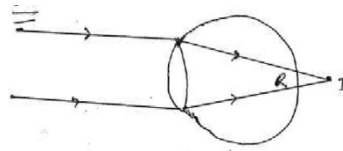
Sol. According to "VIBGYOR"

Frequency (n)
 Violet V ----> n_1
 Indigo I ----> n_2
 Blue B ----> n_3
 Green G ----> n_4
 Yellow Y ----> n_5
 Orange O ----> n_6
 Red R ----> n_7
 $n_7 < n_6 < n_5 < n_4 < n_3 < n_2 < n_1$

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

Answer (c)

Sol. It is the far sightedness this type of suffering eye, can see, distinct object but difficult to see the close object.

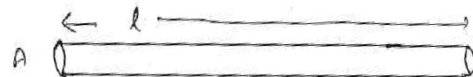


Parallel ray do not focused on retina, it focused behind the retina.

83. If a conductor is folded 8 times then the resistance will be
- 8 times
 - 4 times
 - $\frac{1}{8}$ times
 - $\frac{1}{64}$ times

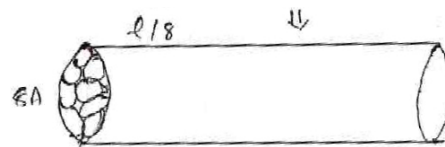
Answer (d)

Sol. A long conductor having length l and cross sectional area A .



The resistance $R = \rho \frac{l}{A}$ - (i)

Again it is folded 8 times length becomes $\frac{l}{8}$ and area becomes $8A$.

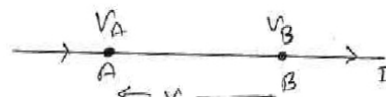


$$\begin{aligned} \text{New resistance } R' &= \rho \frac{\frac{l}{8}}{8A} \\ &= \rho \frac{l}{A} \left(\frac{1}{64} \right) \\ &= \frac{R}{64} \end{aligned}$$

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
- $I = VR$
 - $R = VI$
 - $V = IR$
 - $V = I^2R$

Answer (c)

Sol. At const. temp. the potential difference between two points of conductor is directly proportional to current passing through itself.



$$\begin{aligned} (V_A - V_B) &= I \\ V &= I \\ \text{OR } V &= IR \end{aligned}$$

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)

Sol. Total hr. = 10 x 30 = 300

Total watt per hr. = 200 x 300
= 60 KWH

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)

Sol. $V_{\alpha} < V_{\beta} < V_{\gamma}$

Alpha and Beta are particle where gamma is energy.

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)

Sol. Friction takes an important roll to write on black board. Due to friction the electromagnetic force arises between the board and chalk.

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)

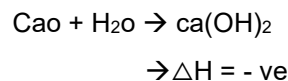
Sol. In Solar reaction, hydrogen breaks into He, this process is fission and energy releases. At High temp. He fused and forms hydrogen, again large energy releases.

89. Which of the following are exothermic processes ?

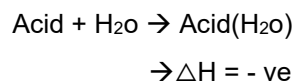
- (i) Reaction of water with lime
(ii) Dilution of an acid
(iii) Evaporation of water
(iv) Sublimation of Camphor
(a) (i) and (ii) (b) (ii) and (iii)
(c) (i) and (iv) (d) (iii) and (iv)

Answer (a)

Sol. (i) Reaction of water with lime



(ii) Dilution of an acid



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

- (a) CO₂ or O₂ (b) N₂ or O₂
(c) CO₂ or He (d) He or N₂

Answer (d)

Sol. He or N₂

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)

Sol. Turns red litmus

Solution blue \rightarrow Hydrochloric Acid

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

- (a) AgCN (b) Ag₂O
(c) Ag₂S (d) Ag₂S and AgCN

Answer (c)

Sol. Silver article become black on exposure to air for longer time.

Therefore silver Sulphide is formed.

Hence, colour is black.

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)

Sol. Mg

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)

Sol. pH Paper

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)

Sol. Sodium and potassium salts of long chain fatty acids

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

- (a) ROH
(b) RCOR
(c) RCOOH
(d) RCOOR

Answer (d)

Sol. Structural formula



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

- (a) CH_4 (b) C_2H_6
(c) C_3H_8 (d) C_3H_6

Answer (d)

Sol. C_3H_6

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

- (a) Mg (b) Na
(c) Rb (d) Ca

Answer (c)

Sol. Rb (electrons are easily remove).

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

- (a) O (b) Ca
(c) Co (d) K

Answer (b)

Sol. Ca

According to mendeff of up to Ca element are discovered.

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)

Sol. Group18 (According to periodic table)

