Mental Ability Test

INSTRUCTIONS

Read the following instructions carefully before answering the Questions—

1. There are 100 questions in this Booklet and all are compulsory.
2. Answers are to be given on a separate answer sheet (OMR).
3. All particulars on answer sheet (OMR) have to be filled with Blue/ Black ball point pen only.
4. Write your 11 digits Roll Number on the Question Booklet and Answer sheet (OMR) as given in your admission card in the prescribed place given on the question booklet and answer sheet.
5. Fill Question Booklet number carefully on OMR sheet.
6. Darken the circle for the correct alternative on the answer sheet against corresponding question numbers as :

   ![Answer Options]

7. If more than one answer is marked for any question on OMR sheet answer will not be checked.
8. If you do not know the answer of a question, do not waste time on it and pass on to the next question. If time permits try to attempt it.
9. Extra 30 minute time may be given to visually impaired candidates.
10. Use of calculators, log tables or mobile phones etc. is strictly prohibited in the examination room.
11. Rough work can be done only on the page given for it in the Question Booklet.
12. Please return the Answer sheet (OMR) to the invigilator. You are allowed to carry Question Booklet and the carbon copy of answer sheet (OMR) with you.

Please turn over the page and start your work.
Directions (1-10) : In the following questions there is a relationship between the two words/letters/numbers and figures given to the left of the proportionality (::) sign. The same relationship exists between the words/letters/numbers/figures given to the right of the sign (::), of which one is missing. Find the missing one from the given alternatives.

1. 64 : 100 :: 16 : ?
   (A) 25
   (B) 36
   (C) 50
   (D) 55

2. ADBC : EHFG :: ILJK : ?
   (A) MPNO
   (B) RTZV
   (C) RTVZ
   (D) TVXZ

3. Bihu : Assam :: Garba : ?
   (A) Bengal
   (B) Gujrat
   (C) Bihar
   (D) Punjab

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4. \( 85 : 40 :: 77 : ? \)
   (A) 14
   (B) 49
   (C) 48
   (D) 50

5. MRPL : OTRN :: ? : EJID
   (A) CFHB
   (B) GIKF
   (C) CHGB
   (D) CHFB

6.

7.

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9. BDAC : FHEG :: NPMO : ?
   (A) RQTS  (B) QTRS  (C) TRQS  (D) RTQS

10. F : 216 :: L : ?
    (A) 1728  (B) 1700  (C) 1600  (D) 1723

Directions (11-20): In the following questions numbers / letters / figures are arranged on the basis of some logic. Find out the logic and select the correct answer and fill in the missing term/figure from the given alternatives.

11. ST 39, UV43, WX47, ?
    (A) YZ47  (B) YZ52  (C) YZ51  (D) YX50

X MAT 2019
12. \text{aa\_aaa\_aaaa\_aaa\_b}\hfill 12. \text{aa\_aaa\_aaaa\_aaa\_b}
(A) b,a,a,a \hfill (A) b,a,a,a
(B) b,b,a,a \hfill (B) b,b,a,a
(C) b,b,b,b \hfill (C) b,b,b,b
(D) b,b,b,a \hfill (D) b,b,b,a

13. ABILITY, BILITY, BILIT, ?
(A) BAILT \hfill (A) BAILT
(B) ILLIT \hfill (B) ILLIT
(C) ILIT \hfill (C) ILIT
(D) LITY \hfill (D) LITY

14.
(A) \hfill (A)
(B) \hfill (B)
(C) \hfill (C)
(D) \hfill (D)

15. 180, 179, 171, 144, ?
(A) 70 \hfill (A) 70
(B) 72 \hfill (B) 72
(C) 64 \hfill (C) 64
(D) 80 \hfill (D) 80

16.
(A) \hfill (A)
(B) \hfill (B)
(C) \hfill (C)
(D) \hfill (D)

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17. 3, 15, 35, ?, 99, 143
   (A) 69
   (B) 63
   (C) 77
   (D) 81

18. X 78, T 92, P 106, ?
   (A) L 120
   (B) K 120
   (C) M 120
   (D) L 118

19. 7, 12, 22, 42, 82, ?
   (A) 143
   (B) 173
   (C) 162
   (D) 183

20. XWA, VTC, SPF, OKJ, ?
   (A) JDN
   (B) JEO
   (C) JDP
   (D) PSU
Directions (21-27) : In the following questions four items/figures are given. Find the odd one out.

21. (A) AGHB
(B) EUF
(C) ZAZB
(D) CKLD

22. (A) सोना
(B) चांदी
(C) तांबा
(D) कार्बन

23. (A) मास्को
(B) पेरिस
(C) एथेन्स
(D) मिस्र

24. (A) 121
(B) 145
(C) 153
(D) 177
25. (A) 120  
(B) 257  
(C) 224  
(D) 168  

26. (A) Veena  
(B) Sitar  
(C) Drum  
(D) Guitar  

Directions (28-32): Study the following diagram and answer the questions.
28. Which of the following employees are not businessmen?

(A) e, g, h
(B) a, g, h
(C) b, g, e
(D) a, e, g, h

29. Which of the following persons are either employees or businessmen but not female members?

(A) a, b, d
(B) a, e, h
(C) a, g, h
(D) a, d, e, h

30. Who among the following persons are female members as well as businessmen?

(A) a, h
(B) b, g
(C) b, c
(D) b, h
31. Who among the following are businessmen but are neither post graduates nor employees?
   (A) b, d, g
   (B) a, d, h
   (C) c, d
   (D) b, c

32. Who among the following female members are neither businessmen nor employees?
   (A) i, g
   (B) b, c, i, g
   (C) b, i, c
   (D) i

33. Asha walks 3 km. southward and then turns right and walks 2 km. She again turns right and walks 3 km. and turns towards her left and starts walking straight. In which direction is she walking now?
   (A) East
   (B) North
   (C) South
   (D) West
34. If in a certain code language 'THEN' is written as 'RLBS', then in that code language, how will 'CASE' be written as?
(A) PAEP
(B) AEPJ
(C) EPAP
(D) APEP

35. Surbhi is facing east. She turns 100° in the clockwise direction and then 145° in the anti-clockwise direction. Which direction is she facing now?
(A) West
(B) North East
(C) East
(D) South West

36. If in a certain code language 'GO' is written as 'FHPN', then how will 'SUN' be written in that language?
(A) RTTOMY
(B) RTTOVM
(C) RTTVOM
(D) RTTVMO
निदेश (प्र. 37-38) यदि किसी सांकेतिक भाषा में –
a) 'pit dar na' का अर्थ है 'you are good'.
b) 'dar tok pa' का अर्थ है 'good and bad'.
c) 'tim na tok' का अर्थ है 'they are bad'.

37. उस भाषा में 'they' शब्द का क्या तात्पर्य है?
(A) na  
(B) tok  
(C) tim  
(D) pit

38. 'bad' शब्द से तात्पर्य है –
(A) na  
(B) tok  
(C) dar  
(D) tim

39. यदि किसी कूट भाषा में '157' का अर्थ है 'Mother always lovable', '619' का अर्थ है 'Always happy future' तथा '952' का अर्थ है 'Mother very happy'. इसी कूट भाषा में 'future' का कूट क्या है?
(A) 9  
(B) 6  
(C) 1  
(D) उपरोक्त में से कोई नहीं

Directions (Q No. 37-38 ) In a certain code language-
  a) 'pit dar na' means 'you are good'.
  b) 'dar tok pa' means 'good and bad'.
  c) 'tim na tok' means 'they are bad'.

37. In that language which word stands for 'they'?
  (A) na  
  (B) tok  
  (C) tim  
  (D) pit

38. The word 'bad', stands for-
  (A) na  
  (B) tok  
  (C) dar  
  (D) tim

39. In a certain code language '157' means 'Mother always lovable', '619' means 'Always happy future' and '952' means 'Mother very happy'. In the same code language, what is the code for the word 'future'? 
  (A) 9  
  (B) 6  
  (C) 1  
  (D) None of the above
40. Deepak said to Nitin, "that boy playing with the football is the younger of two brothers of the daughter of my father's wife." How is the boy playing football related to Deepak?

(A) Son

(B) Brother

(C) Cousin

(D) Brother in law

41. If January 1 is a Friday, then what is the first day of the month of March in a leap year?

(A) Tuesday

(B) Wednesday

(C) Thursday

(D) Friday

42. X and Y are children of A. A is the father of X but Y is not the son of A. What is the relation of Y with A?

(A) Sister

(B) Brother

(C) Daughter

(D) Son
43. Pointing to a man on the stage, Rashi said, "He is the brother of the daughter of the wife of my husband." How is the man on the stage related to Rashi?

(A) Son  
(B) Husband  
(C) Brother in law  
(D) Nephew

Directions (Q. No. 44 to 48)– If a mirror is placed at XY position then which of the answer figure is exactly a mirror image of the problem figure?

44. Problem figure

Answer figure

(A)  
(B)  
(C)  
(D)
48. The water image of the following figure will be-
Problem figure

Answer figure

49. Choose the correct option so as to balance the equation when symbol is replaced by arithmetic symbols?

\[
2 \times 4 \times 3 \times 4 \times 9
\]

(A) \[+ = \div\]

(B) \[+ \times = -\]

(C) \[\times \div = -\]

(D) \[\times + = -\]

50. If Z stands for '+', Y stands for '÷', X stands for '×' and W stands for '-' then what is the value of the given equation?

\[
-3 Y 3 Z 3 \times 3 W 3
\]

(A) 2  (B) 3

(C) 4  (D) 5

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51. If 'when' means 'X', 'you' means '+', 'come' means '-', 'and will' means '+', then the value of the given equation will be:

\[ 8 \times \frac{96}{8} + 10 \]

8 when 12 will 16 you 2 come 10 = ?

(A) 112  (B) 45  (C) 94  (D) 96

52. If 526 = 9 and 834 = 9, then 716 = ?

(A) 20  (B) 15  (C) 9  (D) 12

53. Present age of Anupam and Raju are in the ratio of 5:4 respectively. After 3 years from today, the ratio of their ages will become 11:9 respectively. What is Raju’s present age?

(A) 24 Years  \[ \frac{5n+3}{4n+3} = \frac{11}{9} \]

(B) 27 Years  \[ 45n+27 = 44n \]

(C) 40 Years

(D) 36 Years

X MAT 2019
54. How many letters are there in the word 'MONKEY' which remain in the same position if the letters are arranged in descending order alphabetically?

(A) None
(B) One
(C) Two
(D) Three

55. If the seventh day of a month is three days earlier than Friday, then what day will it be on the nineteenth day of that month?

(A) Sunday
(B) Thursday
(C) Wednesday
(D) Friday

56. If 27 March, 1995 was a Monday, then what day of the week was 1 November, 1994?

(A) Sunday
(B) Monday
(C) Tuesday
(D) Wednesday
57. How many degrees does the minute hand cover in the same time in which the second hand covers 180°?

(A) 18°
(B) 6°
(C) 10°
(D) 3°

58. If in a given year, the 25th August falls on Thursday then the number of Mondays in that month will be?

(A) 3
(B) 4
(C) 5
(D) 6

59. In the given number series, how many 6 are there which are preceded by odd number and followed by even number.

3 6 2 5 6 3 2 6 2 7 6 4 5 8 6 7 6 4 2 6 8

(A) 2
(B) 4
(C) 3
(D) 1
Directions (Q. No. 60 to 61) Study the following arrangement carefully and answer the questions given below -

60. If in the given series every alternate letter/ number is dropped (dropping starts from E) then which letter/number will be the second to the left of the tenth letter/ number from the left end?

(A) V (B) J  
(C) Q (D) A

61. If the letters / digits only from M to L are written in reverse order and other letters / numbers are kept unaltered, then which letter will be third to the right of the 17th letter / number from the right end?

(A) A (B) C  
(C) Z (D) S

62. If Shaloo is taller than Rakhi but shorter than Prerna. Rakhi is as tall as Meghna but taller than Komal, then Meghna is-

(A) Shorter than Rakhi  
(B) Shorter than Komal  
(C) Taller than Prerna  
(D) Shorter than Shaloo
निदेशः नीचे दी गई सूचनाओं को पढ़ें और प्रश्न 63 से 65 तक के उत्तर दीजिएः

A, B, C, D, E, F और G केंद्र की ओर मुंह कर वृत्ताकार व्यवस्था में बैठे हैं

i) F का स्थान G के दांयी ओर दूसरा है।
ii) B, F का पड़ोसी है परन्तु E का नहीं।
iii) E, G से दांयी ओर चौथे स्थान पर बैठा है। E, C का पड़ोसी है।
iv) D, E और A के मध्य बैठा है।

63. G के बांयी ओर चौथा कौन है?
   (A) D
   (B) E
   (C) C
   (D) कुछ नहीं कहा जा सकता

64. G के बांयी ओर कौन बैठा है?
   (A) A
   (B) C
   (C) B
   (D) इनमें से कोई नहीं

65. F के पड़ोसी कौन-कौन है?
   (A) E और C
   (B) F और B
   (C) A और B
   (D) C और B

Directions: Read the following information carefully and answer the questions (63-65) given below-

A, B, C, D, E, F and G are sitting in a circle facing towards the centre.

i) F is 2nd to the right of G.
ii) B is neighbour of F but not of E.
iii) E is 4th to the right of G and E is the neighbour of C.
iv) D is sitting between E and A.

63. Who is fourth to the left of G?
   (A) D
   (B) E
   (C) C
   (D) Cannot be determined

64. Who is sitting to the left of G?
   (A) A
   (B) C
   (C) B
   (D) None of these

65. Who are the neighbours of F?
   (A) E and C
   (B) F and B
   (C) A and B
   (D) C and B
66. Five books are lying in a pile. E is lying on A. C is lying under B. A is lying above B. D is lying under C. Which book is lying at the bottom of the pile?

(A) A  (B) B  (C) C  (D) D

Directions: (Q. 67 to 74) Study the pattern of numbers/figures in the matrix and find out the missing figure/number which will replace the question mark (?).

67.

<table>
<thead>
<tr>
<th>2</th>
<th>14</th>
<th>21</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>21</td>
<td>28</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>35</td>
<td>?</td>
</tr>
</tbody>
</table>

(A) 35  (B) 42  (C) 21  (D) 28

68.

<table>
<thead>
<tr>
<th>4</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>153</td>
<td>120</td>
<td>?</td>
</tr>
</tbody>
</table>

(A) 32  (B) 45  (C) 16  (D) 48
69. [Diagram with options (A), (B), (C), (D)]

70. [Diagram with options (A), (B), (C), (D)]

71. [Diagram with options (A), (B), (C), (D)]

72. Problem figure [Diagram with options (A), (B), (C), (D)]
73. प्रश्न आकृति

उत्तर आकृति

(A)  (B)  (C)  (D)

74. प्रश्न आकृति

उत्तर आकृति

(A)  (B)  (C)  (D)
Directions (Q. No 75 to 79) : Study the following information carefully and answer the given questions.

i) B and E are good in Dramatics 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 Dramatics.

75. Who is good in Physics, History and Dramatics?

(A) A
(B) B
(C) D
(D) E

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

(A) A
(B) B
(C) C
(D) D
77. Who is good in Computer Science, History and Dramatics?
(A) A
(B) B
(C) C
(D) E

78. Who is good in History, Physics, Computer Science and Mathematics?
(A) A
(B) B
(C) C
(D) D

79. Who is good in Physics, Dramatics and Computer Science?
(A) A
(B) B
(C) D
(D) E
Directions (Q. No.80 - 84) Find the answer figure in which the problem figure is hidden.

80. Problem figure

Answer figure

81. Problem figure

Answer figure
82. प्रश्न आकृति

उत्तर आकृति

(A)  (B)  (C)  (D)

82. Problem figure

Answer figure

(A)  (B)  (C)  (D)

83. प्रश्न आकृति

उत्तर आकृति

(A)  (B)  (C)  (D)

83. Problem figure

Answer figure

(A)  (B)  (C)  (D)

84. प्रश्न आकृति

उत्तर आकृति

(A)  (B)  (C)  (D)

84. Problem figure

Answer figure

(A)  (B)  (C)  (D)
निदेश: (प्र. सं. 85-86) निम्न उत्तर आकृतियों में से उस आकृति को चुनिए जो नीचे दिखाए गये कागज को मोड़ने, पंच करने और खोलने के बाद प्राप्त होगी।

85.

![Figure](image1)

(Α) (Β) (Γ) (Δ)

86. प्रश्न आकृति

![Figure](image2)

उत्तर आकृति

(Α) (Β) (Γ) (Δ)

Directions (Q. No. 85-86) Choose the figure from the given answer figures which will be formed by folding, punching and opening the page.

85.

![Figure](image3)

(Α) (Β) (Γ) (Δ)

86. Problem figure

![Figure](image4)

Answer figure

(Α) (Β) (Γ) (Δ)

X MAT 2019
Directions (Q. No. 87-88) In the given question, jumbled letters of a meaningful word are given. You have to arrange these letters and select the word from the given alternatives which is almost similar in meaning to the rearranged word.

87. ETGNDLII
   (A) INTELLIGENT
   (B) DIFFICULT
   (C) LABORIOUS
   (D) QUICK

88. TRPETY
   (A) CHARMING
   (B) FRAIL
   (C) SINCERE
   (D) AUDACIOUS
89. Count the number of similar sized cubes in the given figure.

(A) 18
(B) 27
(C) 20
(D) 30

90. Count the number of triangles and squares in the given figure.

(A) 28 triangles, 3 Squares
(B) 24 triangles, 5 Squares
(C) 28 triangles, 5 Squares
(D) 24 triangles, 3 Squares
91. In the following question, five words are given. Which of them will come in the middle, if all of them are arranged alphabetically as in a dictionary?

Hobby, Holiday, Hoarse, Hollow, Hobble

(A) Hoarse  
(B) Hobble  
(C) Hobby  
(D) Holiday

92. In the following question, arrange the given words in the sequence in which they occur in English dictionary and then choose the correct option.

1. Select  
2. Seldom  
3. Send  
4. Selfish  
5. 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
93. Make a meaningful word from the given letters and find the Odd one out.

(A) UPJM
(B) WKLA
(C) EELSP
(D) UNR

94. In a class of 45 students, a boy is ranked 20th. When two new boys joined in, his rank was dropped by one. What is the new rank of the boy from the bottom end?

(A) 25th
(B) 26th
(C) 27th
(D) 28th

95. How many triangles are there in the given square?

(A) 18
(B) 16
(C) 12
(D) 14
96. How many parallelograms are there in the following figure?

(A) 4
(B) 5
(C) 6
(D) 8

97. Two positions of the same dice have been shown. If number 2 is marked on the bottom of the dice, which number will be on the top?

(A) 1
(B) 3
(C) 4
(D) 5
98. पासे की तीन स्थितियाँ नीचे दी गई है। सतह 3 के विपरीत कौन सा अंक है?

(A) 1  
(B) 6  
(C) 5  
(D) 4

99. पासे की चार स्थितियाँ नीचे दी गई हैं। अक्षर D के विपरीत फलक पर कौन सा अक्षर होगा?

(A) D  
(B) B  
(C) A  
(D) C

100. A, B की बहिन है लेकिन B, A की बहिन नहीं है। A और B में क्या सम्बन्ध है?

(A) बहिन और भाई  
(B) भाई और भाई  
(C) बहिन और बहिन  
(D) उपरोक्त में से कोई नहीं।

100. A is the sister of B but B is not the sister of A. What is the relation between A and B?

(A) Sister and Brother  
(B) Brother and Brother  
(C) Sister and Sister  
(D) None of the above

X MAT 2019
\[
\begin{align*}
\frac{144}{11} - \frac{64}{8} &= \frac{80}{8} \\
27 &= \frac{144}{12} \\
&= \frac{29 + 31 + 28 + 27}{7} \\
&= \frac{146}{7} = 20 + 6
\end{align*}
\]
[Kachhe kamp ke liye patra] / SPACE FOR ROUGH WORK
Please turn over the page and start your work.

X SAT 2019
1. 'Kolkhoz' were-
   (A) Collective Farms
   (B) War Ships
   (C) Confiscated land
   (D) Quarters for workers

2. The Nuremberg tribunal was set up to-
   (A) prosecute the Bolsheviks
   (B) prosecute Tsar Nicholas II
   (C) prosecute Nazi war criminals
   (D) prosecute the Jews.

3. "Dawes Plan" was introduced by-
   (A) France
   (B) Italy
   (C) Russia
   (D) U.S.A.

4. Who used to live in 'Ghettos'?
   (A) The Nazis
   (B) The Jews
   (C) The Landlords
   (D) The Workers
5. Who followed the 'Scorched Earth policy' -
(A) The Japanese
(B) The French
(C) The Dutch
(D) The Kalangs

6. Who once remarked, "When France sneezes, the rest of Europe catches cold."
(A) Bismarck
(B) Napoleon
(C) Metternich
(D) Hitler

7. Who led the famous 'Expedition of the Thousand' -
(A) Mazzini
(B) Garibaldi
(C) Cavour
(D) Victor Emmanuel II
8. Who was instrumental in setting up of 'Awadh Kisan Sabha' -
(A) Jawahar Lal Nehru
(B) Deen Bandhu Andrews
(C) Govind Ballabh Pant
(D) Rajendra Prasad

9. Who painted the famous painting of Bharat Mata -
(A) Dwarka Nath Tagore
(B) Ravindra Nath Tagore
(C) Abanindra Nath Tagore
(D) Raja Ravi Verma

10. The Bretton Woods twins are called -
(A) The WTO and The UNESCO
(B) The UNO and The UNICEF
(C) The IMF and The World Bank
(D) The WHO and The UNICEF
11. Match the Column A with Column B and choose the correct option—

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Rousseau</td>
<td>(a) Two Treatises of Government</td>
</tr>
<tr>
<td>II) Montesquieu</td>
<td>(b) Marseillaise</td>
</tr>
<tr>
<td>III) Locke</td>
<td>(c) The Social Contract</td>
</tr>
<tr>
<td>IV) Roget de L’Isle</td>
<td>(d) The Spirit of the Laws</td>
</tr>
</tbody>
</table>

(A) d c b a  
(B) b a d c  
(C) c d a b  
(D) d a c b

12. Match the Column A with Column B and choose the correct option—

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Zollverein</td>
<td>(a) Dynasty</td>
</tr>
<tr>
<td>II) Germania</td>
<td>(b) Secret Society</td>
</tr>
<tr>
<td>III) Carbonari</td>
<td>(c) Allegory</td>
</tr>
<tr>
<td>IV) Bourbon</td>
<td>(d) Customs Union</td>
</tr>
</tbody>
</table>

(A) c b d a  
(B) b a d c  
(C) c a d b  
(D) d c b a
13. Who appoints Chief Election Commissioner of India—
(A) The Chief Justice of India
(B) The Governor
(C) The President
(D) The Prime Minister

14. Which Country is not a permanent member of the UN Security Council—
(A) China
(B) Japan
(C) Russia
(D) France

15. Community Government is in—
(A) India
(B) Sri Lanka
(C) Britain
(D) Belgium
16. Match the Column A with Column B and choose the correct option-

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Seven Party Alliance</td>
<td>(a) Bolivia</td>
</tr>
<tr>
<td>II) Water War</td>
<td>(b) Kenya</td>
</tr>
<tr>
<td>III) The Green Belt Movement</td>
<td>(c) Indonesia</td>
</tr>
<tr>
<td>IV) No land, No Vote</td>
<td>(d) Nepal</td>
</tr>
</tbody>
</table>

(A) c d b a
(B) b a d c
(C) c b a d
(D) d a b c

17. Which team was defeated in semifinal by winner of FIFA world cup 2018, France-

(A) Croatia
(B) England
(C) Belgium
(D) Russia
18. स्तम्भ A व स्तम्भ B को समेलित कीजिए तथा सही विकल्प चुनिये -

<table>
<thead>
<tr>
<th>स्तम्भ A</th>
<th>स्तम्भ B</th>
</tr>
</thead>
<tbody>
<tr>
<td>आगस्टो पिनोचेट</td>
<td>(a) गोल्ड</td>
</tr>
<tr>
<td>लेक वालेसा</td>
<td>(b) घाना</td>
</tr>
<tr>
<td>आंग सान सू की</td>
<td>(c) चिली</td>
</tr>
<tr>
<td>कवामे एनेन्योमा</td>
<td>(d) म्यानमार</td>
</tr>
</tbody>
</table>

(A) d c b a       (B) a b c d       (C) c a d b       (D) b a d c

19. लोकतंत्र का एक बुनियादी सिद्धांत है-

(A) जनता ही सारी राजनीतिक शक्ति का स्रोत है।
(B) धार्मिक समुदाय ही सारी राजनीतिक शक्ति का स्रोत है।
(C) राष्ट्र, राजनीतिक शक्ति का स्रोत है।
(D) राष्ट्रपति, राजनीतिक शक्ति का स्रोत है।

18. Match the Column 'A' with Column 'B' and choose the correct option -

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Augusto Pinochet</td>
<td>(a) Poland</td>
</tr>
<tr>
<td>II) Lech Walesa</td>
<td>(b) Ghana</td>
</tr>
<tr>
<td>III) Aung San Suu Kyi</td>
<td>(c) Chile</td>
</tr>
<tr>
<td>IV) Kwame Nkrumah</td>
<td>(d) Myanmar</td>
</tr>
</tbody>
</table>

(A) d c b a       (B) a b c d       (C) c a d b       (D) b a d c

19. One basic principle of democracy is that -

(A) People are the source of all political power.
(B) Religious community is the source of all political power.
(C) Nation is the source of political power.
(D) Head of the state is the source of political power.

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20. In a way, the federal form of government is in contrast to -
   (A) Parliamentary form of government
   (B) Presidential form of government.
   (C) Republican form of government.
   (D) Unitary form of government.

21. Neeraj Chopra has won gold medal in which event of Asian games 2018-
   (A) Judo
   (B) Wrestling
   (C) Javelin Throw
   (D) Shot put

22. The highest point of the Eastern Ghat is-
   (A) Anaimudi
   (B) Doddabetta
   (C) Mahendragiri
   (D) Guru Shikhar
23. World's largest river island 'Majuli' is located in-
   (A) Brahmaputra River  
   (B) Ganga River  
   (C) Yamuna River  
   (D) Satluj River

24. 'Asiatic Lion' is found in which state of India-
   (A) Assam  
   (B) West Bengal  
   (C) Uttarakhand  
   (D) Gujarat

25. Which state of India does not have 'Jhoom agriculture' -
   (A) Mizoram  
   (B) Nagaland  
   (C) Assam  
   (D) Gujarat

26. The coast between Mumbai and Goa is known as-
   (A) Coromandel coast  
   (B) Malabar Coast  
   (C) Konkan Coast  
   (D) Kannad Coast
27. Match the Column I with Column II and choose the correct option-

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Evergreen Forest</td>
<td>(I) Acacia, Palm</td>
</tr>
<tr>
<td>(b) Deciduous Forest</td>
<td>(II) Ebony, Mahogany</td>
</tr>
<tr>
<td>(c) Thorn Forest</td>
<td>(III) Bamboos, Sal</td>
</tr>
<tr>
<td>(d) Mountain Forest</td>
<td>(IV) Pine, Deodar</td>
</tr>
</tbody>
</table>

(A)    (B)    (C)    (D)
(I)    (II)   (III)  (IV)

28. Match the Column I with Column II and choose the correct option-

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Corbett Park</td>
<td>(I) West Bengal</td>
</tr>
<tr>
<td>(b) Sundarban Park</td>
<td>(II) Uttarakhand</td>
</tr>
<tr>
<td>(c) Bandhavgarh Park</td>
<td>(III) Assam</td>
</tr>
<tr>
<td>(d) Manas Tiger Reserve</td>
<td>(IV) Madhya Pradesh</td>
</tr>
</tbody>
</table>

(A)    (B)    (C)    (D)
(I)    (II)   (III)  (IV)
29. Match the Column I with Column II and choose the correct option:

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Mine/Field)</td>
<td>Minerals</td>
</tr>
<tr>
<td>a) Khetri</td>
<td>(I) Coal</td>
</tr>
<tr>
<td>b) Jharia</td>
<td>(II) Copper</td>
</tr>
<tr>
<td>c) Kudremukh</td>
<td>(III) Mica</td>
</tr>
<tr>
<td>d) Koderma</td>
<td>(IV) Iron</td>
</tr>
</tbody>
</table>

(A) I II III IV
(B) II I IV III
(C) III IV I II
(D) IV III II I

30. The Indian standard time is determined by which longitude?

(A) 80° 30' East longitude
(B) 0° 7' East longitude
(C) 23° 30' East longitude
(D) 82° 30' East longitude

31. Jet stream flows between the latitudes-

(A) 27° - 30° N
(B) 20° - 23° N
(C) 17° - 20° S
(D) 14° - 17° S
32. Which of the following is not correctly matched-
   (A) Karakoram - Jammu Kashmir
   (B) Nanda devi - Uttarakhand
   (C) Kanchanjunga - Sikkim
   (D) Garo, Khasi - Tripura

33. Which one of the following is formal sector of credit-
   (A) Bank
   (B) Relatives
   (C) Trader
   (D) Money lenders

34. Which one is accepted as a money in modern economy-
   (A) Currency
   (B) Demand deposits
   (C) Currency and demand deposits
   (D) None of the above

35. Making of Sugar from Sugarcane is associated with-
   (A) Primary Sector
   (B) Secondary Sector
   (C) Tertiary Sector
   (D) All of the above
36. भारत सरकार द्वारा न्यूनतम समर्थन कोषों की घोषणा की जाती है -
(A) बुआई के मौसम से पहले
(B) फसल कटने से पहले
(C) फसल कटने के बाद
(D) कभी भी

37. निम्न में से कौन सा क्रियाकलाप प्राथमिक क्षेत्र से सम्बन्धित नहीं है -
(A) बाणिकी
(B) पशुपालन
(C) खनन एवं उत्खनन
(D) पर्यटन

38. किस अधिनियम के अंतर्गत उपभोक्ता विवादों के निपटारे हेतु त्रिस्तरीय न्यायिक तंत्र स्थापित किया गया है -
(A) आर.टी.ई.
(B) कोपरा
(C) आर.टी.आई.
(D) उपरोक्त में से कोई नहीं
39. स्तम्भ I व स्तम्भ II का मिलान कीजिए तथा सही विकल्प का चयन कीजिए—

स्तम्भ I

a) संशोधित सार्वजनिक  (I) दीन बरिष्ट
b) अंत्योदय अन्न योजना  (II) निर्धारण प्रणाली
c) अन्नपूर्णा योजना  (III) योग्य परिवार
d) राष्ट्रीय खाद्य (IV) पिछड़े ब्लॉक

सुरक्षा अधिनियम

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

(A)  I  III  II  IV
(B)  I  II  III  IV
(C)  IV  II  I  III
(D)  III  I  II  IV

39. Match Column I with Column II and choose the correct option—

Column I          Column II

a) Revised Public  (I) Indigent senior
b) Antyodaya Anna  (II) Poorest of the
    Distribution System  citizen
    Yojana  Poor
    Annapurna Yojana  (III) Priority house
    hold
    National Food  (IV) Backward

Security Act  Blocks

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

(A)  I  III  II  IV
(B)  I  II  III  IV
(C)  IV  II  I  III
(D)  III  I  II  IV

40. वह भुगतान जो सरकार द्वारा किसी उत्पादक को बाजार कीमत की अनुपूर्ति के लिए किया जाता है—

(A) सहायतिकी
(B) शेयर
c) दान
d) उपरोक्त में कोई नहीं

40. A Payment that a government makes to a producer to supplement the market price of a commodity is—

(A) Subsidy
(B) Shares
c) Donation
d) None of the above
41. If \( \sin \theta - \cos \theta = 0 \), then the value of \( \sin^4 \theta + \cos^4 \theta \) will be:

- (A) 1
- (B) \( \frac{3}{4} \)
- (C) \( \frac{1}{2} \)
- (D) \( \frac{1}{4} \)

42. If \( A(0,-1), B(2,1) \) and \( C(0,3) \) are the vertices of \( \Delta ABC \) then the length of median drawn from \( A \) will be:

- (A) 10
- (B) \( \sqrt{10} \)
- (C) \( \sqrt{5} \)
- (D) None of these

43. If the roots of the equation \((a-b)x^2 + (b-c)x + (c-a) = 0\) are equal then the value of \( b + c \) will be:

- (A) 6a
- (B) \(-6a\)
- (C) 2a
- (D) \(-2a\)
44. How many numbers lie between 10 to 300 which when divided by 4 leave a remainder 3-
   (A) 71
   (B) 73
   (C) 72
   (D) 74

45. In the given figure \( ABCD \) is a rhombus in which \( \angle C = 60^\circ \) then \( AC:BD \) will be-
   (A) \( \sqrt{3} : 1 \)
   (B) \( \sqrt{3} : \sqrt{2} \)
   (C) 3 : 1
   (D) 3 : 2

46. If \( \cos(\alpha + \beta) = 0 \), then \( \sin(\alpha - \beta) \) is equal to-
   (A) \( \cos \beta \)
   (B) \( \cos 2\beta \)
   (C) \( \sin \alpha \)
   (D) \( \sin 2\alpha \)
47. In a frequency distribution, the mid value of a class is 10 and its width is 6 then the lower limit of the class will be-

(A) 6
(B) 7
(C) 8
(D) 12

48. In figure if $OP \parallel RS$, $\angle OPQ = 110^\circ$ and $\angle QRS = 130^\circ$, then $\angle PQR$ is equal to-

(A) $40^\circ$
(B) $50^\circ$
(C) $60^\circ$
(D) $70^\circ$

49. Value of $(125)^{\frac{1}{3}} \times (32)^{\frac{1}{5}}$ will be-

(A) 5
(B) 10
(C) 15
(D) 25
50. In figure if \( \angle OAB = 40^\circ \) then \( \angle ACB \) is equal to-

(A) 50\(^\circ\)  
(B) 40\(^\circ\)  
(C) 60\(^\circ\)  
(D) 70\(^\circ\)

51. Polynomial \( x^4 + x^3 - 2x^2 + x + 1 \) is divided by \( x - 1 \), the remainder will be-

(A) 2  
(B) 1  
(C) 0  
(D) 3

52. In the given figure if \( PQ \parallel RS \), \( \angle MXQ = 135^\circ \) and \( \angle MYR = 40^\circ \) then value of \( \angle XMY \) will be-

(A) 95\(^\circ\)  
(B) 45\(^\circ\)  
(C) 140\(^\circ\)  
(D) 85\(^\circ\)

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53. In the figure if \( QT \perp PR \), \( \angle TQR = 40^\circ \) and \( \angle SPR = 30^\circ \). Then the value of \( x \) and \( y \) will be-

(A) \( x = 50^\circ, y = 80^\circ \)
(B) \( x = 80^\circ, y = 50^\circ \)
(C) \( x = 30^\circ, y = 60^\circ \)
(D) \( x = 60^\circ, y = 30^\circ \)

54. The dimensions of a cuboid are in the ratio of 1:2:3 and its total surface area is 88 \( \text{m}^2 \) then the dimensions will be

(A) 1 m, 2 m, and 3 m
(B) 1 m, 4 m, and 6 m
(C) 2 m, 4 m, and 6 m
(D) 2 m, 4 m, and 9 m

55. If \( x^2 + \frac{1}{x^2} = 83 \) then the value of \( x^3 - \frac{1}{x^3} \) will be-

(A) 729
(B) 756
(C) 709
(D) None of these
56. The diameter of 120 cm. long roller is 84 cm. If it takes 500 revolutions to level a playground, find the cost of levelling it at the rate of Rs. 5 per square metre-
(A) Rs. 1584
(B) Rs. 7920
(C) Rs. 3500
(D) None of these

57. In equation \(4^{1+\frac{x}{2}} + 4^{1-\frac{x}{2}} = 10\) in \(x\) the value of \(x\) will be-
(A) \(\frac{1}{2}, -\frac{1}{2}\)
(B) \(-\frac{1}{2}, \frac{1}{2}\)
(C) \(\frac{1}{2}, 1\)
(D) None of these

58. If \(x = a\cos\theta\) and \(y = b\sin\theta\) then the value of \((b^2x^2 + a^2y^2)\) will be-
(A) \(x^2 + y^2\)
(B) \(a^2 + b^2\)
(C) \(a^2b^2\)
(D) \(ab\)
59. In the following figure each quadrilateral is a square. The value of surface area of following figure will be-

(A) $4\sqrt{3}cm^2$
(B) $24\sqrt{3}cm^2$
(C) $36cm^2$
(D) $8\sqrt{3}cm^2$

60. Which of the following statement is true for the values of central tendency-

(A) $2 \text{ median} = \text{ mode} + 2 \text{ mean}$
(B) $\text{ mode} = \text{ mean} - \text{ median}$
(C) $3 \text{ median} = \text{ mode} + 2 \text{ mean}$
(D) none of the above
61. स्तंभ A का स्तंभ B से मिलान कीजिए और सही विकल्प चुनिए -

स्तंभ A

a) इप्सम लवण
b) ग्लाबर्स लवण
c) सफेद शोधा
d) नाइटर

स्तंभ B

(Ⅰ) Na₂SO₄·10H₂O
(Ⅱ) KNO₃
(Ⅲ) MgSO₄
(Ⅳ) ZnSO₄

(a) (b) (c) (d)
(A) III I IV II
(B) I III IV II
(C) IV III II I
(D) I II III IV

61. Match Column A with Column B and choose the correct option -

Column A Column B
a) Epsom salt (Ⅰ) Na₂SO₄·10H₂O
b) Glauber's Salt (Ⅱ) KNO₃
(c) White Vitriol (Ⅲ) MgSO₄
d) Nitre (Ⅳ) ZnSO₄

(A) III I IV II
(B) I III IV II
(C) IV III II I
(D) I II III IV

62. दाँतों की पत्त में उपस्थित कैल्सियम मॉफेट की प्रकृति होती है -

(A) क्षारीय
(B) उभयधामी
(C) अम्लीय
(D) उद्धारीन

62. The nature of calcium phosphate present in tooth enamel is -

(A) Basic
(B) Amphoteric
(C) Acidic
(D) Neutral

63. स्तंब A का स्तंभ B से मिलान कीजिए -

स्तंब A

a) ब्यूटाइरिक अम्ल
b) मैलिक अम्ल
c) आक्जेलिक अम्ल
d) स्टीरिक अम्ल

स्तंब B

(Ⅰ) टमाटर
(Ⅱ) बासी मक्खन
(Ⅲ) सेब
(Ⅳ) वसा

(a) (b) (c) (d)
(A) I II III IV
(B) III I IV II
(C) II III I IV
(D) IV III II I

63. Match Column A with Column B -

Column A Column B
a) Butyric Acid (Ⅰ) Tomatoes
b) Malic Acid (Ⅱ) Rancid Butter
c) Oxalic Acid (Ⅲ) Apple
d) Stearic Acid (Ⅳ) Fats

(A) I II III IV
(B) III I IV II
(C) II III I IV
(D) IV III II I
64. If 110 g of a salt is present in 550 g of solution then the concentration of solution will be-

(A) 50 % (50 Percent)
(B) 40 % (40 Percent)
(C) 20 % (20 Percent)
(D) 10 % (10 Percent)

65. Mass of 56 cc of CO (Carbon mono oxide) at STP will be-

(A) 28 g
(B) 0.04 g
(C) 0.07 g
(D) 0.05 g

66. Hydrogen contains three types of atoms (₁H Protium, ₂H deuterium and ₃H tritium) these atoms are-

(A) Isotopic
(B) Isobaric
(C) Isotopic & Isobaric
(D) none of the above
67. हैलियम (He) के 9.033 \times 10^{24} \text{ परमाणु}
कितने मोल के बराबर हैं?
(A) 1 मोल
(B) 5 मोल
(C) 10 मोल
(D) 15 मोल

68. दी गई संरचना IUPAC पद्धति के अनुसार
kिस प्रकार का जैगिक है?
\[
\begin{align*}
&\text{H} & & \text{H} \\
&| & & | \\
&\text{H} & - & \text{C} & - & \text{C} = & \text{C} \\
&| & & |
\end{align*}
\]
(A) कीटोन
(B) एल्केन
(C) एल्काइन
(D) एल्डिहाइड

69. पाँच तत्व A, B, C, D तथा E जिनका परमाणु
क्रमांक 2, 3, 7, 10 और 18 है, आवर्त सारणी
में कौन-कौन से तत्व समान आवर्त में होंगे?
(A) A, B, C
(B) B, C, D
(C) A, D, E
(D) B, D, E

67. Number of moles present in 9.033 \times 10^{24}
atoms of Helium are-
(A) 1 mole
(B) 5 mole
(C) 10 mole
(D) 15 mole

68. According to IUPAC system which type
of compound is shown by the given
structure-
\[
\begin{align*}
&\text{H} & & \text{H} \\
&| & & | \\
&\text{H} & - & \text{C} & - & \text{C} = & \text{C} \\
&| & & |
\end{align*}
\]
(A) Ketone
(B) Alkene
(C) Alkyne
(D) Aldehyde

69. Five elements A, B, C, D and E have atomic
numbers 2, 3, 7, 10 and 18 respectively.
The elements which belong to the same
period of the periodic table are-
(A) A, B, C
(B) B, C, D
(C) A, D, E
(D) B, D, E
70. The number of covalent bonds present in pentane are-
(A) 5
(B) 12
(C) 17
(D) 16

71. Which method is used to separate cream from milk-
(A) Crystallization
(B) Distillation
(C) Centrifugation
(D) Vapourisation

72. Which group of compounds shows correct increasing order of boiling points-
(A) CH₃COOH, CH₃CH₂OH, CH₄, CHCl₃
(B) CH₃CH₂OH, CHCl₃, CH₄, CH₃COOH
(C) CH₄, CH₃CH₂OH, CHCl₃, CH₃COOH
(D) CH₄, CHCl₃, CH₃CH₂OH, CH₃COOH
73. What is the mass of the oxygen required to react completely with 15g of H₂ gas to form water-

(A) 140 g.
(B) 115 g.
(C) 107.5 g.
(D) 120 g.

74. Percentage purity of a sample of gold is 85%. How many atoms of gold are present in 1 g sample (Atomic mass of Gold = 197u)-

(A) $2.6 \times 10^{21}$
(B) $2.6 \times 10^{22}$
(C) $3.0 \times 10^{21}$
(D) $4.5 \times 10^{20}$

75. Tendon is a structure which connects-

(A) One bone to another bone
(B) Muscle to bone
(C) Neuron to Muscle
(D) Muscle to muscle
76. Platyhelminthes are-
   (A) Coelomates
   (B) Pseudocoelomates
   (C) Homocoelomates
   (D) Acoelomates

77. Bone tissue becomes hard due to presence of phosphate and carbonates of the following-
   (A) Calcium and Sodium
   (B) Calcium and Magnesium
   (C) Magnesium and Sodium
   (D) Magnesium and Potassium

78. What is Zoological name of National Bird of India?
   (A) Psittacula Eupatria
   (B) Passer Domesticus
   (C) Pavo Cristatus
   (D) Corvus Splendens
79. जीव विज्ञान में निम्न में से किसे- 'कोशिका की ऊर्जा मुद्रा' कहा जाता है-
(A) डी.टी.पी.
(B) पी.डी.पी.
(C) ए.टी.पी.
(D) डी.डी. टी.

79. Which of the following is known as the 'energy currency of cells' in Biology-
(A) DTP
(B) PDP
(C) ATP
(D) DDT

80. निम्न में से कौन सा पादप हामोन पादप व्रृद्धि को रोकता है-
(A) एब्सिसिक आम्ल
(B) एस्कर्बिक आम्ल
(C) एथीन
(D) साइटोकाइनिन्स

80. Which of the following plant hormone inhibits plant growth-
(A) Abscisic acid
(B) Ascorbic acid
(C) Ethene
(D) Cytokinins

81. मानव उत्सर्जन तंत्र की इकाई है-
(A) नेफ्रॉन
(B) नेफ्रोडिया
(C) न्यूरॉन
(D) मूत्र वाहिनी

81. Excretory unit of the human excretory system is-
(A) Nephron
(B) Nephridia
(C) Neuron
(D) Ureter
82. Match column I with column II and choose the correct option-

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Arteries and (a) Clotting of blood veins</td>
<td>(a) Clotting of blood veins</td>
</tr>
<tr>
<td>II) Xylem Vessels (b) Carrier of Oxygen</td>
<td>(b) Carrier of Oxygen</td>
</tr>
<tr>
<td>III) RBC (c) Water Transport in Plants</td>
<td>(c) Water Transport in Plants</td>
</tr>
<tr>
<td>IV) Platelets (d) Blood transport in humans</td>
<td>(d) Blood transport in humans</td>
</tr>
</tbody>
</table>

83. In the given figure parts marked A, B and C subsequently are-

(A) Cotyledon, Plumule and radicle
(B) Plumule, cotyledon and Radicle
(C) Plumule, Radicle and Cotyledon
(D) Radicle, Plumule and Cotyledon
84. Lipid molecule in the cell are synthesized by-
   (A) Smooth endoplasmic Reticulum
   (B) Rough endoplasmic Reticulum
   (C) Golgi Apparatus
   (D) Plastid

85. The plant cells become turgid due to-
   (A) Plasmolysis
   (B) Exosmosis
   (C) Endosmosis
   (D) Electrolysis

86. Bile Juice is produced by-
   (A) Gall bladder
   (B) Liver
   (C) Pancreas
   (D) Stomach
87. The right path of energy flow in a eco system is-
- (A) Producer → Herbivorous → Carnivorous → Decomposer
- (B) Producer → Carnivorous → Herbivorous → Decomposer
- (C) Herbivorous → Carnivorous → Producer → Decomposer
- (D) Herbivorous → Producer → Carnivorous → Decomposer

88. Mechanical advantage (MA) Load (L) and effort (E) are related as-
- (A) MA = L x E
- (B) MA x E = L
- (C) MA x L = E
- (D) None of these

89. When light enters from air to glass its wave length-
- (A) Decreases
- (B) Increases
- (C) Remains the same
- (D) None of these
90. The magnetic field inside a long straight current carrying solenoid—

(A) is zero

(B) decreases as we move towards its end

(C) Increases as we move towards its end

(D) is same at all points.

91. Which of the following is correct—

(A) \( \lambda_{\text{blue}} > \lambda_{\text{yellow}} > \lambda_{\text{green}} \)

(B) \( \lambda_{\text{yellow}} > \lambda_{\text{green}} > \lambda_{\text{blue}} \)

(C) \( \lambda_{\text{yellow}} > \lambda_{\text{blue}} > \lambda_{\text{green}} \)

(D) \( \lambda_{\text{green}} > \lambda_{\text{blue}} > \lambda_{\text{yellow}} \)

92. The magnification produced by a spherical mirror and a spherical lens is +0.8 —

(A) The mirror and lens both are convex.

(B) The mirror and lens both are concave.

(C) The mirror is concave but the lens is convex

(D) The mirror is convex but the lens is concave.

X SAT 2019
93. Two bulbs A and B are rated 100 W, 120 V and 10 W, 120 V respectively. They are connected across a 120 V source in series. Which bulb will consume more power-

(A) A
(B) B
(C) both equally
(D) Nothing can be said

94. A coin kept inside water \( \left( \mu = \frac{4}{3} \right) \) when viewed from air in a vertical direction, appears to be raised by 2.0 mm. The depth of the coin in water is-

(A) 8.00 mm
(B) 6.00 mm
(C) 8.00 cm
(D) 6.00 cm
95. Select the correct statement in the following and choose the correct option-

i) An Ammeter is connected in series in a circuit and a Voltmeter is connected in parallel.

ii) An Ammeter has a high resistance.

iii) A Voltmeter has a low resistance.

(A) i, ii and iii
(B) i and ii
(C) ii and iii
(D) only i

96. V-I graph for parallel and series combinations for two identical resistors are as shown in figure. Which graph represents parallel combination-

(A) A
(B) B
(C) A and B both
(D) None of the above
97. The velocity time graph of a ball of mass 20 g moving along a straight line on a long table is given in figure. The force exerted by the table on the ball to bring it to rest is-

(A) $-4 \times 10^{-4}$ N
(B) $8 \times 10^8$ N
(C) $-2 \times 10^4$ N
(D) $6 \times 10^8$ N

98. How fast should a man weighing 600N run to achieve a kinetic energy of 750 J

$g = 10 \text{ m/s}^2$-

(A) 5 m/s
(B) 7 m/s
(C) 10 m/s
(D) 7.5 m/s
99. Which of the following graphs shows correct relation of kinetic energy (E) potential Energy (U) and height (h) from the ground of a particle-

(A) ![Graph A](image)
(B) ![Graph B](image)
(C) ![Graph C](image)
(D) ![Graph D](image)

100. A person has a hearing range from 20 Hz to 20 KHz. The typical wavelengths of sound waves in air corresponding to these two frequencies are (speed of sound in air = 344 m/s) -

(A) 1.72 m, 1.72 mm
(B) 17.2 m, 17.2 mm
(C) 17.2 m, 1.72 mm
(D) None of these

(D) None of these
\( \alpha = \sqrt[4]{\frac{a^4 + a^2 - 2a^2 + a + 1}{a^3 + 2a^2 + 1}} \)

\( \frac{2a^2 - 2a^2 + a + 1}{-2a^2 - 2a^2} \)

\( \alpha^\frac{1}{2} \)

\( \frac{\alpha^\frac{1}{2}}{\alpha} \)

\( \frac{2}{\alpha} \)