

Roll No.

--	--	--	--	--	--	--	--	--	--	--

झारखण्ड अधिविद्य परिषद्, राँची, झारखण्ड

राष्ट्रीय प्रतिभा खोज परीक्षा (Stage-I) 2019-20

PAPER - I

बौद्धिक योग्यता परीक्षा

समय : 120 मिनट

पूर्णांक : 100

दृष्टि बाधित परीक्षार्थियों के लिए समय : 150 मिनट

परीक्षार्थियों के लिए निर्देश

प्रश्नों के उत्तर देने के पहले निम्नलिखित निर्देशों को ध्यान से पढ़िए। उत्तर एक अलग ओ.एम.आर. उत्तर-पत्रक पर देने हैं।

- अपना रोल नम्बर, जैसा कि आपके प्रवेश-पत्र में दिया गया है, स्पष्ट (एक Box में केवल एक अंक) लिखिए। यह ध्यान रखें कि कोई Box रिक्त न रह जाए, यहाँ तक कि आपके रोल नम्बर में आने वाले शून्य के अंक भी इस पुस्तिका तथा ओ.एम.आर. उत्तर-पत्रक पर सही Box में स्थानांतरित किए जाएँ। उदाहरण के लिए एक विद्यार्थी जो राँची केन्द्र से जिसका रोल नं. 21198899999 है, इस प्रकार Box में प्रविष्टियाँ करेगा :

Roll No.

2	1	1	9	8	8	9	9	9	9
---	---	---	---	---	---	---	---	---	---

- इस प्रश्न पुस्तिका में 100 बहुविकल्पीय प्रश्न हैं।
- सभी प्रश्नों में से प्रत्येक के लिए 1 अंक निर्धारित है।
- प्रश्न पुस्तिका के अन्त में रफ (Rough) कार्य के लिए एक खाली पृष्ठ दिया गया है।
- याद रखिए कि आपको अपने उत्तरों के चिह्न एक अलग ओ.एम.आर. उत्तर-पत्रक पर दिए गए निर्देशों के अनुसार लगाने हैं।
- प्रत्येक प्रश्न का उत्तर ओ.एम.आर. उत्तर-पत्रक पर उसी प्रश्न के सामने दिए गए विकल्पों में से सबसे उपयुक्त विकल्प वाला गोला को सिर्फ नीले या काले बॉल पेन से ही काला करना है। पेंसिल का प्रयोग वर्जित है।
- अनुवादित विवरण में अन्तर से उठे किसी भी विवाद की स्थिति में, प्रश्न पत्र के अंग्रेजी विवरण को निर्णायक माना जाएगा।

नोट : पुस्तिका में रोल नम्बर लिखने के अतिरिक्त कहीं कुछ नहीं लिखिए।

MENTAL ABILITY TEST

1. Qutb Minar: Delhi: : Rock Garden: ?
(A) Kolkata (B) Chennai
(C) Chandigarh (D) Bengaluru
2. If in a code CLOUD is written as DMPVE, then in the same code how SIGHT will be written?
(A) SGHJV (B) UGHHT
(C) UHJFW (D) TJHIU

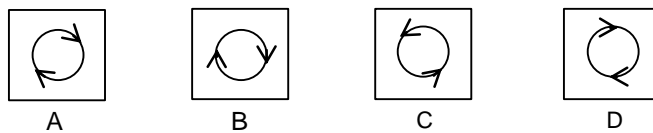
Paragraph for Q. No. 3-7

Read the following information and answer the questions based on it:

- (I) A, B, C, D, E and F are six family members.
- (II) There is one Teacher, one Professor, one Engineer, two students and one Housewife.
- (III) There are two married couples in the family.
- (IV) A who is a Teacher is father of E.
- (V) F is a Student and mother of D.
- (VI) B is grandmother of D and is a Housewife.
- (VII) C is father of A and is an Engineer.
- (VIII) D is brother of E.

3. Which of the following statements is definitely true?
(A) C is father of the Student (B) B is grandmother of Professor
(C) F is the father of Professor (D) D is the brother of the professor
4. Which of the following is one of the pairs of married couples?
(A) FB (B) FA
(C) CF (D) FD
5. Who is the professor?
(A) D (B) E
(C) Either D or E (D) A's son
6. How many female members are there in the family?
(A) Three only (B) Two only
(C) Three (D) Two or three
7. How is D related to B?
(A) Granddaughter (B) Grandson
(C) Son (D) None of these
8. A man walks 2km to the east, turns left, walks 2 km and turns left and walks 2km. which direction is he facing now?
(A) East (B) West
(C) North (D) South
9. If UNDERSTAND is written as 1234567823 in a code language then in that language START will be written as
(A) 56781 (B) 83243
(C) 73652 (D) 67857

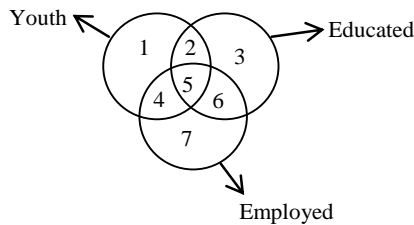
10. In this question, select the one figure which is different from the other three.



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

Paragraph for Q. No. 11-13

Study the following diagram.



11. Identify the region representing the youths who are employed, but not educated.
(A) 4, 5, 6 (B) 4 only
(C) 1, 4, 7 (D) 4, 7
12. Identify the region representing youths who are educated but not employed.
(A) 2, 5, 4 (B) 2, 5, 6
(C) 4, 5, 6 (D) 2 only
13. Identify the region representing youths who are educated and employed also
(A) 6 only (B) 7 only
(C) 5 only (D) none of these
14. If 'x' means 'sum', '-' means 'division', '+' means subtract and '·' means 'multiplication', then which of the following equation is true?
(A) $16 + 5 - 10 \times 4 \div 3 = 9$ (B) $16 - 5 \times 10 \div 4 + 3 = 12$
(C) $16 + 5 \div 10 \times 4 - 3 = 9$ (D) $16 \times 5 \div 10 + 4 - 3 = 9$

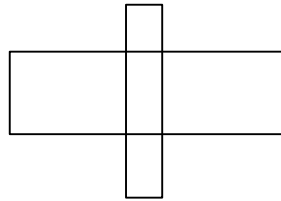
Paragraph for Q. No. 15-16

Identify the missing number in the following sequence:

[Hints: all are prime nos.]

15. 31, 37 ? 43, 47, 53
(A) 39 (B) 40
(C) 41 (D) 42
16. 2, 3, 6, 15, 42, ?
(A) 84 (B) 123
(C) 94 (D) 60

17. If BAT is coded as 283, CAT is coded as 383 and ARE is coded as 801, the code for BETTER is
 (A) 123301 (B) 213310
 (C) 213301 (D) 012334
18. How many rectangles are there in the following diagram?



- (A) 5 (B) 15
 (C) 11 (D) 12
19. In any code language DEVIL is written as ABSFI, then how OTHER will be written in that language?
 (A) LRECO (B) LQEBO
 (C) LWEBO (D) RWKHV
20. What will be in place of (?) ?
 A, G, M, R, X, ?
 (A) A (B) B
 (C) C (D) D
21. What will be in place of (?) ?
 AT, CS, ER, GQ, ?
 (A) JP (B) IQ
 (C) IP (D) JO
22. Crime: Punishment: :Good work: ?
 (A) Sin (B) Reward
 (C) Good (D) Entertainment
23. import: Export: :Expenditure: ?
 (A) Revenue (B) Deficit
 (C) Tax (D) Exchange
24. If in English alphabets first and twenty-sixth letters are a pair, second and twenty-fifth are a pair and so on, then which of the following is a like pair?
 (A) IP (B) GR
 (C) CW (D) EV
25. Select the word which can be made by using the letters of the given word:
 MULTIPLICATION
 (A) MUTUALY (B) LIMITATION
 (C) APPLICABLE (D) NOTIFICATION
26. How many meaningful English words can be made by using each letter of the group of letters ACER only once?
 (A) 1 (B) 2
 (C) 3 (D) 4

27. Select the word from the alternative which cannot be made by using the letters of the given word.
SUPERIORITY
(A) PURSE (B) PURSUIT
(C) PRIORITY (D) PURITY
28. If in any code language CAME is written as JZBF then, what will be written for CAKE in that language?
(A) J BVF (B) FJVB
(C) J VBF (D) FBVJ
29. In any code language CARE is written as BZQD then how LEMON will be written in that language?
(A) GDEDO (B) GDDMO
(C) OVNLM (D) KDLNM
30. In certain code CLOUD is written as DMPVE then how SIGHT will be written in that code?
(A) SGHJV (B) UGHHT
(C) UHJFW (D) TJHIU

For Q.31- 35 : Below are given some numbers with some letters. Study them and answer the questions:

5	2	6	3	0	1	8	7	4	9
P	D	N	L	G	K	H	J	B	A

31. 384029
(A) LHBGDA (B) ADGBLH
(C) PDNLHG (D) DCBANL
32. 422605
(A) CLNDOPB (B) BDDNGP
(C) PGNDBC (D) CBADLC
33. 3265401
(A) OPNDCBA (B) LCDBDNO
(C) LDNPBGK (D) KGBCDNC
34. 1003241
(A) KGGDLBDK (B) CNDLBOK
(C) BCDBAAC (D) KGGLDBK
35. 321567
(A) LDKPNJ (B) JNPKDL
(C) LKDNJP (D) PJKLDN
36. The way in which 'Whale' is related to 'Mammal' in the same way to which the 'Crocodile' will be related?
(A) Amphibian (B) Aquatic
(C) Mammal (D) Bird
37. The relation that exists between China and Beijing, the same relation exists between Japan and which of the following .
(A) Moscow (B) Rome
(C) Berlin (D) Tokyo

38. The relation which exists between pasteurization and Louis Pasteur the same relation exists between Aeroplane and which of the following?
 (A) G. Marcony (B) J.L Baird
 (C) Wriugh brothers (D) Brecket
39. The relation exists between DSO and GVR the same relation exists between NDV and which of the following .
 (A) YGQ (B) QYG
 (C) YQG (D) QGY
40. The relation that exists between 'Canada' and 'Maple leaves' the same relation exists between 'Sri Lanka' and which of the following?
 (A) Lion and Sword (B) Olive leaves
 (C) Eagle (D) Rose flower

Paragraph for Q. No. 41-43:

Answer the following questions on the basis of the information given

- (A) The meaning of $P+Q$ is – P is the brother of Q
 (B) The meaning of $P-Q$ is – P is the mother of Q
 (C) The meaning of $P \times Q$ is – P is the sister of Q

41. Which of the following means that M is the maternal uncle of R?
 (A) $M + K - R$ (B) $M - R + K$
 (C) $M + K \times Q$ (D) $M - K + P$
42. What conclusion do you extract from $M + N - Q \times R$?
 (A) R is the sister of N
 (B) M is the maternal uncle of Q
 (C) R is the husband of N
 (D) R is the brother of Q
43. P is the brother of Q,R is the sister of Q and S is the sister of R, then how is Q related to R?
 (A) Sister (B) Brother or sister
 (C) Brother (D) Father
44. Indicating to a picture Aparna said “ He is the only son of the father of the brother of my sister” how is Aparna related to that person?
 (A) Maternal uncle (B) Father
 (C) Grandfather (D) Brother
45. Chhaya is telling to Anuradha “ The father of your daughter is the son of my maternal grandfather” How is Chhaya related to the husband of Anuradha?
 (A) Sister (B) Mother
 (C) Aunt (D) Niece
46. A lady walked 15 km in the eastern direction, then walked 4km towards north and again walked 12 km towards west, How far is he from her starting place ?
 (A) 31 km (B) 5 km
 (C) 19 km (D) 27 km

47. If a clock is kept in such a way that its figure of 12 comes towards east, then in which direction will be the figure of 9?
(A) South (B) West
(C) North (D) East
48. In the morning I went for a walk in the garden. I was standing in a place and wanted to see the sun. For this purpose I turned 90° anticlockwise. But I could not see the sun. So I turned 270° clockwise. This time I could see the sun. In which direction I was facing at the first
(A) North-west (B) North
(C) South- East (D) West
49. In a morning just after the sunrise A and B was talking between each other face to face. If the shadow of B fell just on the left of A, then just opposite of which direction was the face of A?
(A) North- East (B) North
(C) West (D) South
50. In the evening just before sunset, Ram and Mohan were standing in a courtyard and talking between each other. If the shadow of Mohan falls is just on the left of Ram, then in which direction is the face of Ram?
(A) East (B) West
(C) South (D) North
51. Kiran, Suman, Vidya, Naina and Kamala are five friends, Naina is younger than Kamala, Suman, is younger than Vidya and Vidya is younger than Kiran. If Suman is elder than Kamala then who will be in the middle in the order of their ages?
(A) Anjali (B) Khushbu
(C) Rupa (D) Garima
52. Garima, Rupa, Anjali and Khushbu are made to stand in ascending order of their ages. If Rupa is elder than Khushbhu, Garima is younger than Anjali and elder than Rupa, then who is the youngest?
(A) Anjali (B) Khusbhu
(C) Rupa (D) Garima
53. In an examination Suman has got equal marks as Kavita. Meena got more marks than Geeta, but her marks was less than Suman. Who got the least marks?
(A) Suman (B) Meena
(C) Geeta (D) Kavita
54. Gopal is elder than Mohan but younger than Ram. Mohan is elder than Sohan but younger than Ram. Who is the eldest?
(A) Mohan (B) Sohan
(C) Ram (D) Gopal
55. Sourav is elder than Neeraj, but younger than Vinod. Manu is elder than Vinod, but younger than Shivam. Who is the eldest?
(A) Sourav (B) Neeraj
(C) Shivam (D) Manu

Paragraph for Q. No. 56-60

Six persons A, B, C, D, E and F are sitting in a circle facing the centre. A is in the middle of B and C, but E and C are face to face to F. D is second in the left of E.

56. Who is second person sitting in the right of A?
(A) D (B) E
(C) B (D) F
57. Who is sitting just on the left of D?
(A) B (B) A
(C) C (D) F
58. Who is sitting just in front of F?
(A) C (B) B
(C) A (D) F
59. Who is sitting just in front of E?
(A) C (B) D
(C) B (D) A
60. Who is sitting just in front of D?
(A) C (B) A
(C) F (D) E

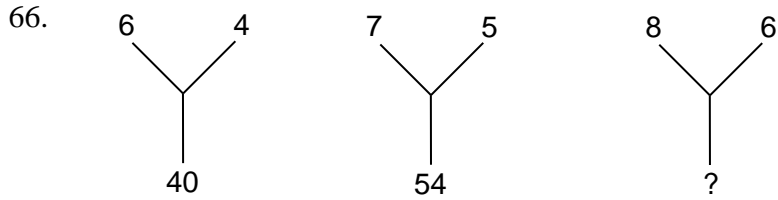
Paragraph for Q. No. 61-64

Six books are kept one above another. Biology book is just under the Physics book. Chemistry book is in between Hindi and Geography books. Anthropology book is not on the top. Biology book is at the bottom and Hindi book is on the top.

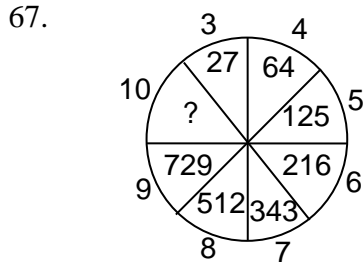
61. Which book is in second place from the top?
(A) Chemistry (B) Anthropology
(C) Geography (D) Biology
62. Which book is fourth from the bottom?
(A) Hindi (B) Geography
(C) Anthropology (D) Chemistry
63. Which book is third from the top?
(A) Geography (B) Anthropology
(C) Physics (D) Biology
64. Which book is in between Chemistry and Anthropology?
(A) Physics (B) Geography
(C) Biology (D) Hindi
65. Which of the following words will come third in the English dictionary?
(A) Reconcile (B) Reconstruct
(C) Reconsider (D) Reconnoitre

Paragraph for Q. No. 66-70

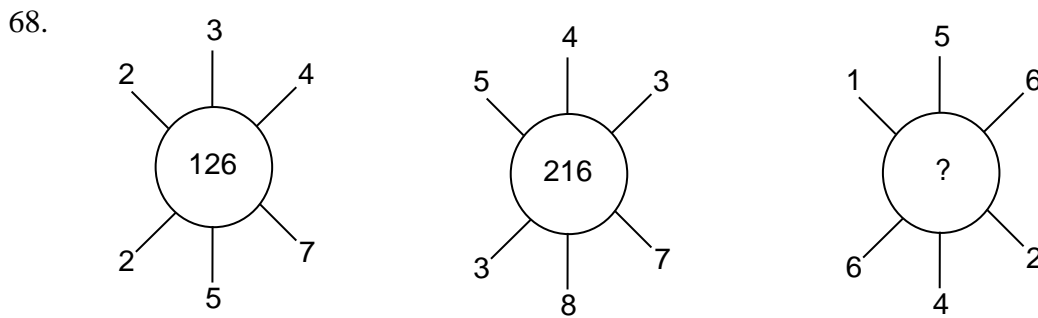
What will be in the place of (/)



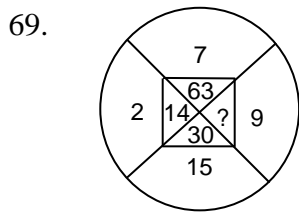
- (A) 70 (B) 75
(C) 80 (D) 85



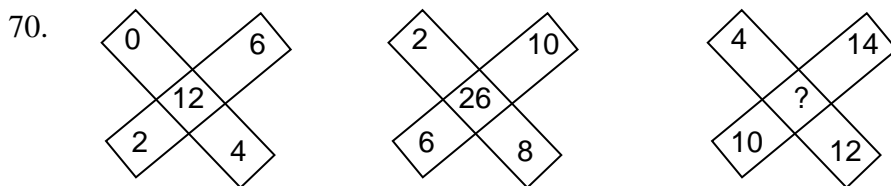
- (A) 1000 (B) 2000
(C) 3000 (D) 4000



- (A) 142 (B) 242
(C) 144 (D) 216



- (A) 33 (B) 145
(C) 135 (D) 18



- (A) 36 (B) 38
(C) 40 (D) 48

Paragraph for Q. No. 71-75

In the following questions two statements and four conclusions I, II, III and IV have been given. According to the logic you have to decide on the basis of the given two statements that which conclusion is correct :

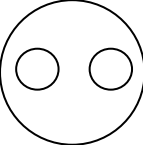
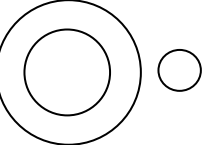
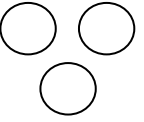
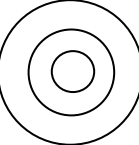
71. Statements : A Some students are children.
B All children are girls.
Conclusions: I. All students are girls.
II. Some girls are students.
III. Some girls are children.
IV. All children are students.
(A) Only conclusions II is correct
(B) Conclusions I, II and III are correct
(C) All conclusions are correct
(D) Conclusions II and III are correct.

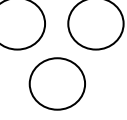
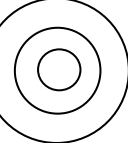
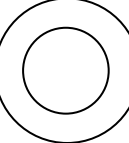
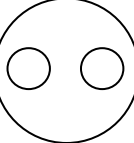
72. Statements : A. All papers are pens.
B. All pens are wet.
Conclusions : I. Some pens are papers.
II. No pen is paper.
III. Some wet are pens.
IV. All wets are papers.
(A) Only conclusion I is correct
(B) Conclusion I or II is correct
(C) Conclusions I and III are correct
(D) Conclusion III or IV is correct

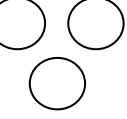

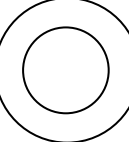
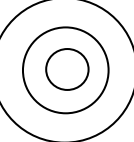
73. Statements : A. Some windows are doors.
B. All doors are handles.
Conclusions : I. Some windows are handles.
II. All windows are handles.
III. Some cats are handles.
IV. All cats are handles.
(A) All conclusions are correct.
(B) Conclusions II and IV are correct.
(C) No conclusion is correct.
(D) Conclusions I and III are correct.


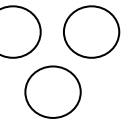
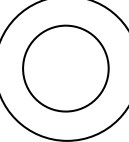
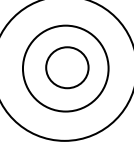
74. Statements : A. Some black are yellow.
B. No yellow is not white.
Conclusions : I. Some yellow are black.
II. Some white are black.
III. Some white are black.
IV. All white are black.
(A) Only conclusion I is correct.
(B) Conclusions II & III are correct.
(C) Conclusions I & III are correct.
(D) Only conclusion III is correct.


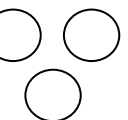
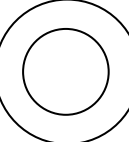
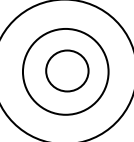
75. Statements : A. Some pens are pencils.
 B. Some pencils are papers.
 Conclusions : I. All papers are pens.
 II. Some papers are pens.
 (A) Only conclusion I is correct.
 (B) Only conclusion II is correct.
 (C) Both conclusions I & II are correct.
 (D) Neither conclusion I nor conclusions II is correct.

76. Which diagram represents the relation between Ruble, Dollar and Rupee?
 (A)  (B)  (C)  (D) 

77. Which diagram represents angle, side and triangle?
 (A)  (B)  (C)  (D) 

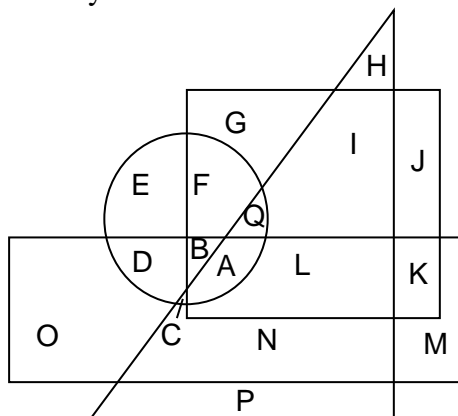
78. Which diagram represents TV, Freeze and Cooler?
 (A)  (B)  (C)  (D) 

79. Which diagram represents Boy, Girl and Man?
 (A)  (B)  (C)  (D) 

80. Which diagram represents India, China and Russia?
 (A)  (B)  (C)  (D) 

Paragraph for Q. No. 81-85

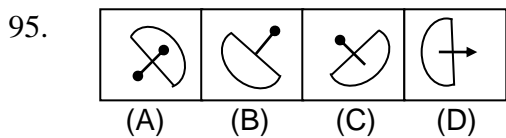
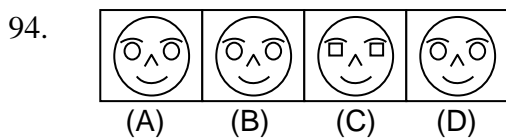
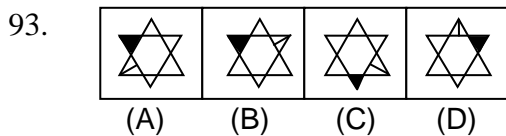
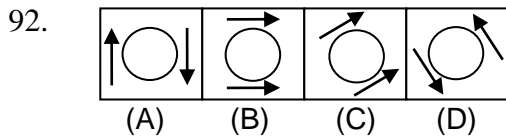
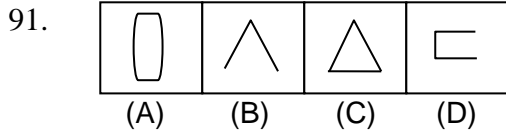
Question Nos. 81 to 85 are based on the following diagram in which four figures (one circle, one square, one triangle and one rectangle) are overlapping each other. Different regions of the diagram are marked with letters A to Q. Read each question carefully and choose the correct alternatives.



81. In the given diagram which letter is inside the square and triangle, but outside the rectangle and circle?
(A) G (B) I
(C) L (D) F
82. Which letter is outside the square and triangle, but inside the rectangle and circle?
(A) D (B) B
(C) C (D) A
83. Which letter will come inside the square, circle and rectangle, but not inside the triangle?
(A) E (B) D
(C) C (D) B
84. Which letter is inside of all the figures?
(A) C (B) B
(C) A (D) Q
85. Which letter is inside the rectangle, square and triangle, but outside the circle?
(A) B (B) C
(C) A (D) L
86. The director reached the conference hall for the meeting at 10 minutes earlier than 11:40 and found that his joint director who was 30 minutes late had reached 20 minutes earlier. What is the scheduled time of the meeting?
(A) 11:40 (B) 11:30
(C) 11:20 (D) 11:50
87. A candidate joined an examination in which he answered 108 questions. In the examination every wrong answer will get negative $\frac{1}{3}$ rd mark and every correct answer will get 1 mark. If the candidate has got zero then how many wrong answers he has given?
(A) 27 (B) 62
(C) 54 (D) 81
88. On my birthday my father distributed Rs.280 in such a way that each girl gets Rs.20 and each boy gets Rs.10. If the number of girls is 2 more than the boys then how many boys were there?
(A) 5 (B) 9
(C) 10 (D) 8
89. My mother's age is double of my sister. My father is 20 years elder than me. When my sister was born I was 5 years old. If my sister is at present 17 years old, then what is the difference of ages of my father and mother?
(A) 5 years (B) 6 years
(C) 7 years (D) 8 years
90. B's age is 4 years less than A. D's age is 4 years less than C, but $\frac{1}{4}$ th of A. If C's age is 8 years then B's age is how much time(s) of D?
(A) 1 (B) 2
(C) 3 (D) $\frac{1}{2}$

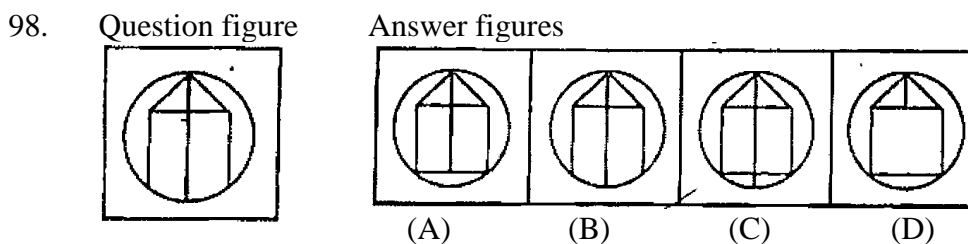
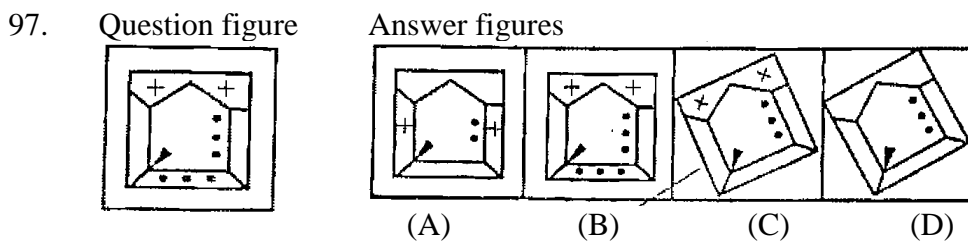
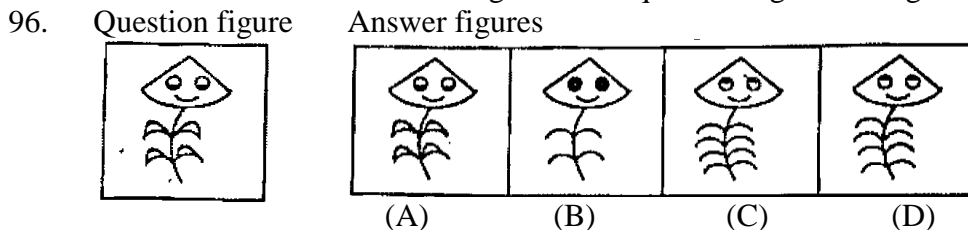
Paragraph for Q. No. 91-95

In each question there are four figures 1, 2, 3 and 4. Among these four figures three are alike and one is different. Select the different figure.



Paragraph for Q. No. 96-100

In the left of each question there is one question figure and to the right there are four answer figures 1, 2, 3 and 4. You have to select the similar figure to the question figure among the four answer figures.



शैक्षिक योग्यता परीक्षा

समय : 120 मिनट

पूर्णांक : 100

निर्देश

शैक्षिक योग्यता परीक्षा के विषय निम्नवत् तीन समूहों में विभक्त हैं :

क्र.सं.	समूह का नाम	समूह के अंतर्गत समाहित विषय	पूर्णांक	प्रश्नों की संख्या	प्रत्येक प्रश्न का मान
(i)	विज्ञान	भौतिकी, रसायन एवं जीव विज्ञान	40	40	1 (एक) अंक
(ii)	गणित	गणित	20	20	1 (एक) अंक
(iii)	सामाजिक विज्ञान एवं मानविकी विषय	इतिहास, भूगोल, नागरिकशास्त्र एवं अर्थशास्त्र	40	40	1 (एक) अंक

कृपया पत्रा उलटें और अपना कार्य आरम्भ करें।

Scholastic Aptitude Test

Time : 120 Minutes

Full Marks : 100

DIRECTION

The subjects of Scholastic Aptitude Test are divided into three groups, as given below :

Sl. No.	Title of the group	Subjects covered under the group	Full marks	No. of questions	Marks allotted to each question
(i)	Science	Physics, Chemistry and Biology	40	40	1 (one)
(ii)	Mathematics	Mathematics	20	20	1 (one)
(iii)	Social Sciences and Humanities	History, Geography, Civics and Economics	40	40	1 (one)

Please Turn over the Page and Start Your Work.

SCHOLASTIC APTITUDE TEST 2019-20**(PHYSICS)**

1. Which of the following terms does not represent electrical power in a circuit ?
(A) I^2R (B) IR^2
(C) VI (D) V^2/R
2. For a steady current I , the amount of heat H produced in time t is
(A) IR^2t (B) IRt^2
(C) I^2Rt (D) I^2R^2t
3. What phenomenon of light causes the blue colour of the sky and the redding of the sun at sunrise or sunset?
(A) Reflection (B) Refraction
(C) Scattering (D) total internal reflection
4. The power of a lens is $-2.5D$. Its focal length is
(A) $-2.5cm$ (B) $-4D$
(C) $-40cm$ (D) $-66.6cm$
5. At focus F and between F and $2F$, a concave mirror always forms a
(A) real, inverted and magnified image (B) virtual, erect and magnified image
(C) virtual, inverted and diminished image (D) real, erect and diminished image
6. What is the magnitude of force F on a charge q moving with a velocity v in a perpendicular magnetic field B ?
(A) $\frac{qB}{v}$ (B) $\frac{vB}{q}$
(C) qvB (D) $\frac{qv}{B}$
7. Which of the following is most suitable for the core of electromagnets?
(A) Air (B) Soft iron
(C) Steel (D) Cu-Ni alloy
8. Magnetic fields do not interact with
(A) electric charges at rest (B) electric charges in motion
(C) permanent magnets at rest (D) permanent magnets in motion
9. Which of the following is correct?
(A) Joule = Coulomb \times Volt (B) Joule = Coulomb / Volt
(C) Joule = Volt/ Ampere (D) Joule = Ampere/ volt
10. A body can be negatively charged by
(A) giving some protons to it (B) removing some neutrons from it
(C) giving electrons to it (D) removing some electrons from it

11. The resistances R_1 and R_2 are connected in parallel. The equivalent resistance of the combination is
 (A) $R_1 + R_2$ (B) $R_1 - R_2$
 (C) $\frac{R_1 R_2}{R_1 + R_2}$ (D) $\frac{R_1 + R_2}{R_1 R_2}$
12. One ampere is synonymous with
 (A) Cs^{-1} (B) JC
 (C) JC^{-1} (D) NC^{-1}
13. The ratio of the focal length of spherical mirror to its radius of curvature is
 (A) 0.5 (B) 1
 (C) 2 (D) 3

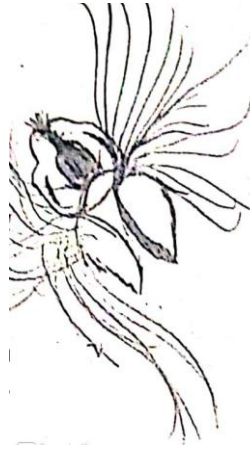
(CHEMISTRY)

14. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$
 The above reaction is an example of a
 (A) combination reaction (B) double displacement reaction
 (C) decomposition reaction (D) displacement reaction
15. Select the mineral acid from the following
 (A) Acetic Acid (B) Citric acid
 (C) Hydrochloric acid (D) Lactic acid
16. Which of the following indicators is not an acid- base indicator ?
 (A) Phenolphthalein (B) Vanilla
 (C) Litmus (D) Methyl orange
17. Which of the following methods is used to obtain chlorine and hydrogen from sodium chloride?
 (A) Electrolysis (B) Thermal heating
 (C) Evaporation (D) Electroplating
18. Which of the following metals does not react with dilute hydrochloric acid to liberate hydrogen gas?
 (A) Calcium (B) Zinc
 (C) Iron (D) Silver
19. Which of the following reaction is not a redox reaction ?
 (A) $Mg + Cl_2 \rightarrow Cu + Cl_2$ (B) $CuO + H_2 \rightarrow Cu + H_2O$
 (C) $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ (D) $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + 2Cl_2$
20. In Aqua regia the ratio of concentrated HCl to concentrated HNO_3 is
 (A) 1 : 3 (B) 3 : 1
 (C) 1 : 2 (D) 2 : 1
21. Ethane, with the molecular formula C_2H_6 has
 (A) 6 covalent bonds (B) 7 covalent bonds
 (C) 8 covalent bonds (D) 9 covalent bonds
22. Glacial acetic acid is
 (A) An aqueous solution of alcohol (B) Vinegar
 (C) an aqueous solution of acetic acid (D) 100% pure – ethanoic acid

23. Which of the following is a non-metal and also a solid?
(A) Iodine (B) Mercury
(C) Boron (D) Hydrogen
24. Propane has
(A) 8 covalent bonds (B) 9 covalent bonds
(C) 10 covalent bonds (D) 11 covalent bonds
25. An element has electronic configuration 2, 8, 8, 1. Which statement is not correct about the element ?
(A) It is present in group 3 (B) Its valency is one negative
(C) It is present in group 1 (D) It is present in 4th period
26. The property by which a large number of atoms of the same element get linked through covalent bonds forming long chains is called
(A) catenation (B) polymerization
(C) allotropy (D) addition reaction

(BIOLOGY)

27. Saliva contains an enzyme called
(A) Amylase (B) Lypase
(C) Pepsin (D) Tripsin
28. Regulation of respiration is under the control of
(A) Cerebrum (B) cerebellum
(C) Medula oblongata (D) Pons
29. Embryo sac is found in
(A) endosperm (B) embryo
(C) ovule (D) seed
30. A pair of contrasting characters is called
(A) Phenotype (B) genotype
(C) allele (D) gene
31. Which of the following is not used as biomass?
(A) Plant waste (B) Wood
(C) Animal waste (D) Human excreta
32. The green plants in a terrestrial ecosystem capture the energy of the sun about
(A) 90% (B) 80%
(C) 70 % (D) 10%
33. The presence of which microorganism in Ganga water indicates contamination ?



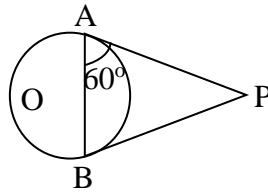
- (A) Lactobacillus bacteria
(C) Coliform bacteria
- (B) Amoeba
(D) Mucor spores
34. In which part of the alimentary canal digested food is absorbed ?
(A) Stomach
(C) Large intestine
- (B) Appendix
(D) Small intestine
35. Which of the following is a plant hormone ?
(A) Insulin
(C) Oestrogen
- (B) Thyroxine
(D) Cytokinin
36. Pollen grains are produced by
(A) Ovary
(C) Seed
- (B) Petal
(D) another
37. Chromosomes are made up of
(A) Proteins
(C) Both (A) and (B)
- (B) DNA
(D) RNA
38. The non-renewable source of energy amongst the following is
(A) Coal energy
(C) wood
- (B) nuclear energy
(D) wind energy
39. The structure formed by the union of male and female gametes is termed as
(A) embryo
(C) zygote
- (B) morula
(D) placenta
40. The three R's to save the environment are
(A) Reserve, Reduce, Recycle
(C) Reserve, Reuse, Reduce
- (B) Reuse, Reserve, Reduce
(D) Reduce, Recycle, Reuse

(MATHEMATICS)

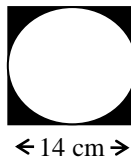
41. π is
(A) an irrational number
(B) a rational number
(C) a prime number
(D) a composite number
42. The value of $p(x) = x^2 - 3x - 4$ at $x = -1$ is
(A) 1
(B) -4
(C) 0
(D) -3
43. The solution of the equations $\frac{x}{a} + \frac{y}{b} = 2$
 $ax - by = a^2 - b^2$ is
(A) $x = a, y = b$
(B) $x = -a, y = -b$
(C) $x = a; y = -b$
(D) $x = -a, y = b$
44. The height of an equilateral triangle of side a is
(A) $\frac{a}{2}$
(B) $a\sqrt{3}$
(C) $\frac{a\sqrt{3}}{2}$
(D) $\frac{a\sqrt{3}}{4}$
45. If $\sec \theta + \tan \theta = m$ and $\sec \theta - \tan \theta = n$, then the value of mn is
(A) 2
(B) 1
(C) ± 1
(D) ± 2
46. The mean of first ten odd natural numbers is
(A) 5
(B) 10
(C) 20
(D) 19
47. The solution of the pair of equations
 $x + y = 14$
 $x - y = 4$ is
(A) $x = 9, y = 5$
(B) $x = 5, y = 9$
(C) $x = 9, y = 9$
(D) $x = 5, y = 5$
48. Sum of the first n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \dots$ is
(A) $\frac{n(n+1)}{2}$
(B) $\sqrt{2}n$
(C) $\frac{n(n+1)}{\sqrt{2}}$
(D) 1
49. The area of the triangle whose vertices are $(0, 0), (a, 0)$ and $(0, b)$ is
(A) ab
(B) $\frac{1}{2}ab$
(C) $a + b$
(D) $a^2 + b^2$

50. If the shadow of 10 m high tree is $10\sqrt{3}$ m, then the angle of elevation of sun is
 (A) 60° (B) 90°
 (C) 45° (D) 30°

51. In the following figure, the measure of $\angle PBA$ is



- (A) 60° (B) 30°
 (C) 45° (D) none of these
52. A segment AB is divided at a point P such that $\frac{PB}{AB} = \frac{3}{7}$, then the ratio of AP : PB is
 (A) 4 : 7 (B) 7 : 4
 (C) 7 : 3 (D) 4 : 3
53. A square is circumscribing a circle. The side of the square is 14 cm. The area of the square not included in the circle is



- (A) 21 cm^2 (B) 42 cm^2
 (C) 48 cm^2 (D) 196 cm^2
54. By melting a solid sphere of radius 5 cm a solid right circular cone of the same circular base is made. The height of the cone is
 (A) 20 cm (B) 10 cm
 (C) 5 cm (D) 12 cm
55. Two friends were born in the year 2000. The probability that they have the same birth date is
 (A) $\frac{1}{2000}$ (B) $\frac{2}{365}$
 (C) $\frac{1}{365}$ (D) $\frac{1}{366}$
56. If $3x + y = 10$ and $y = 4$, then the value of x is
 (A) 0 (B) 1
 (C) 2 (D) 3

57. $\frac{\sin \theta}{1 + \cos \theta}$ is
 (A) $\frac{\cos \theta}{1 - \sin \theta}$ (B) $\frac{1 - \cos \theta}{\sin \theta}$
 (C) $\frac{1 - \sin \theta}{\cos \theta}$ (D) $\frac{1 - \cos \theta}{1 + \cos \theta}$

58. The area swept out by a horse tied in a rectangular grass field with a rope 8 m long is
(A) $16 \pi m^2$ (B) $64 \pi m^2$
(C) $48 \pi m^2$ (D) $32 \pi m^2$
59. A tree breaks into two parts due to heavy wind such that the upper part makes an angle of 30° with plane. The place where the upper part of the tree touches the ground is at a distance of 10 m from the base point of the tree. The height of the tree is
(A) $10\sqrt{3} m$ (B) $10\sqrt{2} m$
(C) $\frac{10}{\sqrt{3}} m$ (D) $5\sqrt{2} m$
60. If the perimeter and the area of a circle are equal numerically, then the diameter of the circle is
(A) 2 units (B) π units
(C) 4 units (D) 7 units

SOCIAL STUDIES

61. Who was responsible for the unification of Germany?
(A) Bismarck (B) Garibaldi
(C) Cavour (D) Mazzini
62. Printing press first came to India with
(A) the English (B) the French
(C) the Dutch (D) Portuguese missionaries
63. Champaran Satyagraha (1916) was launched by Gandhiji against
(A) high revenue demands (B) indigo planters
(C) mill owners (D) salt tax
64. Which of the following emerged as the centre of world trade in the 18th century?
(A) Europe (B) India
(C) China (D) America
65. Which of the following ports lost its importance under colonial rule?
(A) Calcutta (B) Bombay
(C) Surat (D) Madras
66. The first Factories Act, to help keep children out of industrial work was passed in
(A) 1870 (B) 1902
(C) 1906 (D) 1912
67. For which of the following reasons was the Simon Commissions boycotted?
(A) It supported the Muslim League
(B) It did not recognize Congress as a party
(C) There was no Indian in the Commission
(D) There were differences among the members
68. Munshi Premchand wrote on which of the following themes?
(A) Religious and Mythological
(B) Oppression in society
(C) Historical
(D) Detective and mystery

69. Akbar's court poet was
(A) Tulsidas
(B) Abdur Rahim Khan Khana
(C) Amir Khusro
(D) Tukaram
70. Which of the following was the reason for calling off the Non-Cooperation Movement by Gandhiji?
(A) High pressure from the British government
(B) Round Table Conference
(C) Gandhiji's arrest
(D) The Chauri Chaura incident
71. Which Sikh guru was executed by Aurangzeb?
(A) Tegh Bahadur
(B) Arjun Dev
(C) Hargobind
(D) Govind Singh
72. Where was the first Cotton Mill set up in India?
(A) Ahmedabad
(B) Kanpur
(C) Mumbai
(D) Madras
73. Which Mughal king died by a sudden fall from the staircase?
(A) Babur
(B) Akbar
(C) Jahangir
(D) Humayun
74. Which of the following newspapers was started by Bal Gangadhar Tilak?
(A) Kesari
(B) Jansatta
(C) The Statesman
(D) Amrita Bazar Patrika
75. Which king started the organization of Kumbh fair at Allahabad?
(A) Harshavardhana
(B) Dhruvasena II
(C) Narsimhavarnam
(D) Akbar
76. What per cent area of the whole country does mountain occupy?
(A) 27%
(B) 43%
(C) 30%
(D) 50%
77. Which wildlife is protected by the villagers of Bishnoi village in Rajasthan?
(A) Chinkara
(B) Elephant
(C) Tiger
(D) Lion
78. The system of agriculture when a single crop is grown on a large area is termed as
(A) shifting agriculture
(B) horticulture
(C) intensive agriculture
(D) plantation agriculture
79. Which is called the 'Queen of Arabian Sea'?
(A) Venice
(B) Kochin
(C) Surat
(D) Lakshadwip
80. Which one of the following agencies markets steel for the public sector plants?
(A) HAIL
(B) TATA steel
(C) SAIL
(D) MNCC

81. Which two of the following extreme locations are connected by the east-west corridor?
(A) Mumbai and Kolkata (B) Mumbai and Nagpur
(C) Nagpur and Siliguri (D) Silchar and Porbandar
82. Which is not the soil conservation method?
(A) Contour planning (B) Strip cropping
(C) Terracing of slopes (D) Shelter belts
83. Species found in isolated places only are called
(A) normal species (B) endemic species
(C) vulnerable species (D) rare species
84. Which of the following is not the purpose that modern dams serve?
(A) Generation of hydroelectricity
(B) Industrial use
(C) Irrigation
(D) Inland navigation
85. Rearing of silkworms for production of silk fibre is called
(A) interculture (B) sericulture
(C) horticulture (D) pisciculture
86. Which one of the following minerals is formed due to evaporation?
(A) Chalk (B) Silica
(C) Petroleum (D) Gypsum
87. Which one of the following minerals is not used in making cement?
(A) Coal (B) Silica
(C) Aluminum (D) Copper
88. Which one of the following countries imports iron ore from India?
(A) USA (B) Japan
(C) Russia (D) China
89. Which one of the following is a riverine port?
(A) Kolkata (B) Mumbai
(C) Kandla (D) Vishakhapatnam
90. The place of India in respect of rice cultivation is
(A) first (B) second
(C) third (D) fourth
91. Which of the following are the two Ethnic groups in Sri Lanka?
(A) Hindus and Muslims (B) Sinhalese and Tamils
(C) Muslims and Cristians (D) Christans and Tamils
92. the number of subjects given in Union List is
(A) 47 (B) 66
(C) 85 (D) 97
93. The policy of 'Apartheid' was adopted by the government of
(A) U.S.A (B) South Africa
(C) India (D) England

94. Untouchability has been abolished in India by which of the following articles of the constitution of India?
(A) Article 14 (B) Article 15
(C) Article 16 (D) Article 17
95. Democracy was re-established in Nepal in
(A) 2005 (B) 2006
(C) 2007 (D) 2008
96. Average income is
(A) Total national income/ population of the country
(B) Per capita income/ total national income
(C) national wealth/ Per person of the country
(D) National Capital/ National Budget
97. Tertiary sector has become an important part of Indian economy on account of
(A) development of agriculture and industry
(B) rise in levels of income
(C) both A and B
(D) None of these
98. The main function of Reserve Bank of India is
(A) providing loans (B) credit control
(C) dealing with World bank (D) none of these
99. MNC is a company
(A) that owns or controls production in more than one nation
(B) that owns or controls production in one nation
(C) that owns or controls production outside the nation
(D) all of these
100. Which of the following does not fall under consumer rights?
(A) Right to be informed
(B) Right to choose
(C) Right to seek government help
(D) Right to represent in the consumer courts