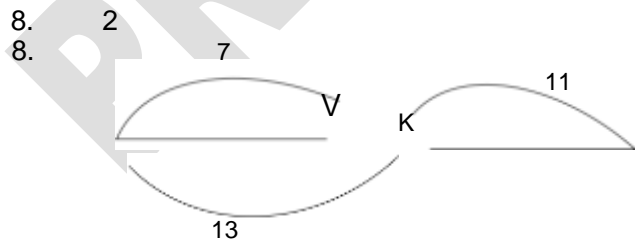


NTSE STAGE – I (2017- 18)

SET-D

HARYANA STATE MENTAL ABILITY TEST SOLUTIONS

- 2
1. Dissent
Dissident
Dissolute
Dissolution
Dissolve
2. 4
2. Amar Winner
Chetan
Bipin
Deepak
3. 3
3. 15th September 2000 Friday
15th September 2001 Saturday [because 2001 is a non – leap year i.e. +1 odd day]
4. 4
4. Except option 4 all are antonyms. Option 4 is synonyms.
5. 1
5. Except 18:48 all other are (1^{st} number $\times 3 - 10$)
6. 3
6. Except QVZBC which follows +5, +4, +2, +1 all follows +5, +4, +3, +2
7. 2
7. Father = Son + 25 ... (i)
After 13 years
(Father + 13) = 2 (Son + 13)
Father – 2 x son = 13 (ii)
Solving equation (i) and (ii) we get father = 37



$$\text{Total} = 13 + 11 - 1 = 23$$

$$\text{Kamal new position} = (23 - 7) + 1 = 17$$

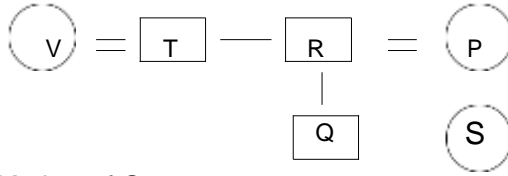
- 4
9. Let x be ques with 2
marks $2x + 4(15 - x) = 40$
-

$$2x + 60 - 4x = 40$$

$$x = -10$$

10. 1

10.



Mother of Q P

11. 4

11.



T is the uncle of Q.

12. 2

12.



Wife of T V

13. 3

13. There is L in MISSILE which is not present in COMMISSIONER.

14. 4

14.	S	I	N	G	E	R
	4	0	5	3	1	2

15. 1

15. DIAMOND DNOMAI

D	N	O	M	A	I	D
+1	-1	+1	-1	+1	-1	+1
E	M	P	L	B	H	E

Similarly for ROUTINE.

16. 3

16. DIAGRAM *□+△\$+@

17. 2

17. MY=16

SUN = 27

Adding positions from back , we get the number HOTEL=19+12+7+22+15=75

18. 4

18. Aero planes fly in the sky, answer is sea.

19. 3

19. 584783285482986854878428645849

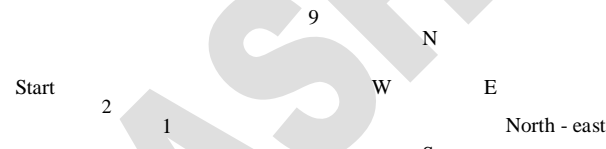
20. 1
 20. J is educated, hard working, polite but not employed.
 21. 2
 21. $357556=24$

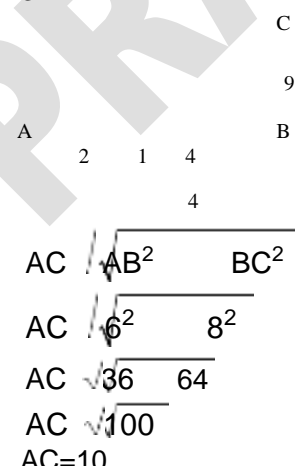
22. 1
 22. $\sqrt[3]{30 \ 20 \ 2}$
 $\sqrt[3]{67 \ 40 \ 3}$
 $\sqrt[3]{416 \ 200 \ 6}$

23. 3
 23. 43214 73425
 94642

24. 3
 24. $9*7=329 \ 7 \ 9 \ 7 \ 32$
 $11*5=9611 \ 5 \ 11 \ 5 \ 96$ Answer = 17 9
 17 9 208

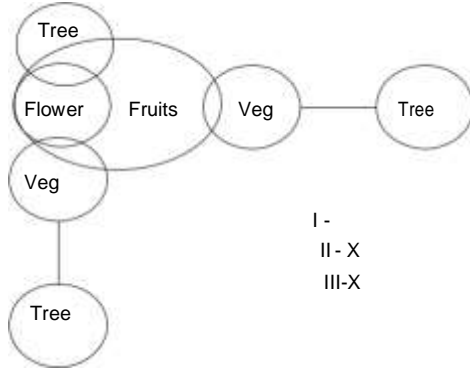
25. 2
 25. 85 14 44
 6 8 28 64
 Similarly,
 79 48 83

26. 2
 26. 

27. 3
 27. 

28. 1

28.



29. 2

29. The statement talks of "Adversity" in general and not lack of money. So I does not follow. II correctly explains the statement and hence it follows

30. 4

30.

F B T

31. 4

31. By observation.

32. 3

32. By observation.

33. 4

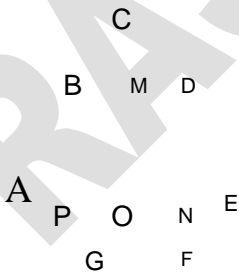
33. By observation.

34. 2

34. 3-6-2
3-5-4
opposite
1

35. 3

35.



Single triangle – APB, APG, BPO, GPO, BMO, MDO, BCM, CMD, DNE, DNO, ONF, ENF, GOF, 13

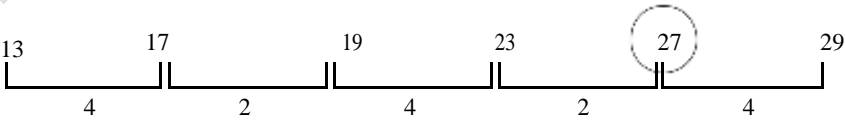
Two combination ABO, AGO, ABG, BOG, BCO, CDO, BCD, BDO, ODE, OEF, ODF, EDF 12

Three triangle combination BGF, GDF 2

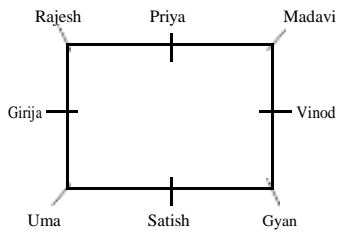
Four triangle combination ACO, COE, GBD, BDF 4

Eight triangle combination ACE 1

$$13+12+2+4+1=32$$

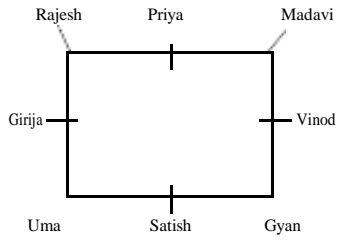
36. 3
36. The pattern is adding 4 to each of the letters after reversing the order of the letter.
37. 2
37. First and last letters of each word are interchanged.
38. 3
38. $63:9::86:14$
 $6+3=9$
Similarly,
 $8+6=14$
39. 4
39. $5:64::11:?$
 $1111 \ 3^2$
40. 1
40. By observation.
41. 2
41. REOC; PGME, NIKG, LKII
Logic $-2, +2, -2, +2$
42. 4
42. BYCX, DWEV, FUGT,
HSIR Logic $+2, -2, +2, -2$
43. 3
43. $6 \quad 11 \quad 26 \quad 71 \quad 206$
 $6 \times 3 - 7 = 11 \quad 11 \times 3 - 7 = 26 \quad 26 \times 3 - 7 = 71 \quad 71 \times 3 - 7 = 206 \quad 206 \times 3 - 7 = 611$
44. 2
44. $81, \quad 192, \quad 375, \quad 648, \quad 1029$
 $9^2 \ 0^2 \ 14^2 \ 2^2 \quad 20^2 \ 5^2 \quad 27^2 \ 9^2 \ 35^2 \ 14^2$
45. 1
45. By observation.
46. 3
46. Root Stem leaf Flower fruit
47. 2
47. 
48. 1

48.



49.

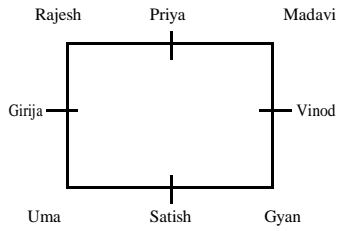
3



49.

50.

2



50.

PRAASHNOTTAR

NTSE STAGE – I (2017- 18)
SET-D
HARYANA STATE
SCHOLASTIC APTITUDE TEST (SAT)
SOLUTIONS

MATHEMATICS

101. 3

101. $5 \ 3 \ 2x \ 1 \ 2 \ 4 \ 30x$
 $15 \ 10 \ 4 \ 30x \ 29$

The numbers are : 119, 149,989

$$989 = 119 + (n-1) \cdot 30$$

$$n-1 = \frac{870}{30}$$

$$n-1 = 29$$

$$n = 30$$

102. 2

102. $p \operatorname{cosec} \cot \sin$
 $\frac{p^2 - 1}{2 \operatorname{cosec} \cot} = \frac{1 - \cos^2}{2 \operatorname{cosec} \cot}$
 $\frac{2}{1 - \cos}$
 Now $\frac{p^2 - 1}{p^2 - 1} = \frac{2}{p^2 - 1} = \frac{2}{1 - \cos}$

103. 1

103. Given, $S_m = n$ and $S_n = m$
 $\frac{m}{2} [2a + (m-1)d] = n$ and $\frac{n}{2} [2a + (n-1)d] = m$
 $2am - m^2 d = 2n$ and $2an - n^2 d = 2m$
 on subtracting above two equations,
 we get $2a - m - n + d = 2$
 So, $S_{m+n} = \frac{m+n}{2} [2a + (m+n-1)d]$
 $= m+n$

104. 4

104. $x^2 - px + 4 = 0$

p 4 4

1 p 1 4

p 3

$x^2 + px + k$ has equal roots

$$p^2 - 4k = 0$$

$$p^2 = 4k$$

$$k = \frac{9}{4}$$

105. 1

$$105. \text{ Speed} = 300 \text{ m/min} \times \frac{300}{60} \text{ m/sec}$$

$$\text{Distance traveled} = 5 \times 12$$

$$= 60 \text{ m}$$

$$\text{Height of tree} = 30 \text{ m}$$

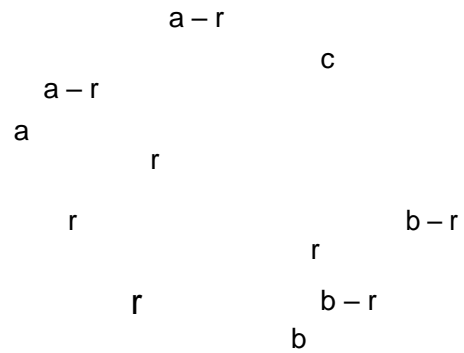
60 m

106. 4

$$106. \frac{a^2 - b^2}{c^2} = \frac{(a-b)(a+b)}{c^2}$$

2

30°



107. 2

107. If roots are reciprocal $\frac{6}{1}$, a 6 a

$$x = \frac{15 \pm \sqrt{225 - 144}}{12}$$

$$15 \pm \sqrt{81}$$

12

15 9

12

$$\frac{24}{12} = \frac{6}{12}$$

$$2 = \frac{1}{2}$$

108. 2
 108. $46n^2 - 44.5n + 20$

109. 2
 109. By using area of triangle formula We get, $8p^2 - 4p + 140 = 0$
 $8p^2 - 4p - 144 = 0$
 $p = 4$ or $p = -\frac{9}{2}$
 Other equation $8p^2 - 4p - 136 = 0$ does not have real roots So, numbers of integral values = 1

110. 1
 110. AE:EC = 3:2
 AE:AC = 3:5 Since
 ADE ~ ABC
 ar ADE = 9
 ABC = 25ar
 $\frac{\text{ar ADE}}{\text{ar DECB}} = \frac{9}{16}$
 So, ar DECB = 16



111. 4
 111. On solving $x + 2y = 10$ and $3x + 4y = 360$ We get
 $x = 340$ and $y = 165$
 So, $1 + 2 = 3$

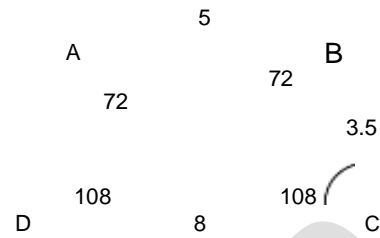
112. 2
 112. Given $xy = 80$ and $6^3 x^3 + y^3 = 12^3 x^3 + y^3 = 1512$
 $x^3 + y^3 = 3xy x + y = 1512$
 Let $x = y = a$
 So, given equation reduces to $a^3 + 240a = 1512 = 0$
 Now, $a = 18$ is root of above equation $x = y = 18$

113. 3
 113. $\cos^2 p + \sin^2 p = 1$
 Now, $\sec^2 p = \frac{1}{\cos^2 p}$
 $\frac{\sin^2 p}{\cos^2 p} = \frac{1}{\cos^2 p} - 1$

$$\sqrt{\frac{2p}{1-p^2}}$$

114. 2

114. ABCD is an isosceles trapezium,
AD = BC = 3.5 cm



115. 3

115. 17, 18, 23, 27, $x-3$, $x+5$, 45, 49, 74, 85

$$\begin{array}{r} x \quad 3 \quad 35 \\ \quad x \quad 5 \\ \quad 2 \\ 2x \quad 35 \end{array}$$

$$\begin{array}{r} 2 \\ 2 \\ x \quad 1 \quad 35 \\ x \quad 34 \end{array}$$

The numbers are 17, 18, 23, 31, 39, 45, 49, 72, 74, 85

$$\begin{array}{r} \text{Median} \quad 39 \quad 45 \quad 84 \\ \quad \quad \quad 22 \quad 42 \end{array}$$

116. 3

116. Longest altitude corresponds to shortest side =
 $h_{35} s = 75$

$$\sqrt{75 \cdot 14 \cdot 21 \cdot 40}$$

$$\sqrt{2532773452}$$

$$420\sqrt{5}$$

$$\frac{1}{35} h_{35} = \frac{420\sqrt{5}}{35} = 12\sqrt{5}$$

$$h_{35} = 24\sqrt{5}$$

117. 2

$$\begin{array}{r} 111 \\ PE \quad 0 \quad 2 \quad 2 \quad 2 \\ 1 \\ 4 \end{array}$$

118. 4

$$\begin{array}{r} x^2 + 5x + d = 0 \quad a = b \\ 5ab = d \end{array}$$

$$\begin{array}{r} x^2 + 6x + 2d = 0 \quad a = c \\ 6 \end{array}$$

ac 2d
 ac 2ab
 c 2b
 a 2b 6 a b
 5
 b = -1 a 4
 d ab4 1 4

119. 2
 119. Mode = 7
 Mean = 7

21 5 x 7 5
 26 x 35
 x 9

120. 4

$$120. \frac{AC^2 EC^2}{DC^2 BC^2}$$

$$\frac{9x^2 BC^2 \quad x^2 BC^2}{4x^2 BC^2 BC^2} \quad \frac{8x^2}{4x^2} \quad \frac{2}{1}$$

A

x

D

x

E

x

B

C

CHEMISTRY

161. 1
 161. 46 gm Na atom
 Moles = $\frac{46}{23} = 2N_A$
 atom 23

162. 4
 162. Cheese is a gel.

163. 3
 163. Valency of X = 2, so correct formula is MgX

164. 4
 164. $CaO + H_2O \rightarrow Ca(OH)_2$
 $Ca(OH)_2 + 2NH_4Cl \rightarrow CaCl_2 + 2NH_3 + 2H_2O$

165. 3
 165. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$ (Molten)

166. 1
 166. $\text{Cu} + \text{SO}_4\text{Cu}^{2+} + \text{SO}_2$ (Choking smell)
167. 1
 167. $\text{CH}_3\text{COOH} \xrightarrow[\text{4}]{\text{LiAlH}_4} \text{CH}_3\text{CH}_2\text{OH}$
168. 4
 168. Carbon has small size and maximum catenation property.
169. 2
 169. Sodium is present in first group.
170. 4
 170. Baking powder is a mixture of sodium hydrogen carbonate and tartaric acid.
171. 2
 171. ${}^7\text{N}$, ${}^3\text{Li}$, ${}^{15}\text{P}$, ${}^{19}\text{K}$
 Oxides of non-metal are acidic.
172. 3
 172. $\text{MnO}_4^- \text{Cl}^- \xrightarrow[\text{2+}]{\text{H}^+} \text{Mn}^{2+} + \text{Cl}_2$
173. 1
 173. CO_2 is a gas and SiO_2 is solid due to polymeric structure because it does not form $\text{Si}=\text{O}$ (multiple bonding).

PHYSICS

174. 3
 174. $F \times S = \frac{1}{2} mv^2$
 $F \times S = \frac{1}{2} m 9V^2$
 $S = 9S$
175. 1
 175. $T \propto \sqrt{\frac{h}{g}}$
 $T_a : T_b = \sqrt{a} : \sqrt{b}$
176. 1
 176. $u = V$
 $v = 3V$
 $a = g$
 $S = \frac{v^2 - u^2}{2a} ; S = \frac{9V^2 - V^2}{2g}$
 $S = \frac{4V^2}{g}$
177. 4
 177. The air bubble has less density than water so it will be collected at the neck.

178. 3

178. $V_3 = V_1 + V_2$ (as V_3 is connected in parallel with V_1 and V_2)

179. 4

179. $V_A + 3 - 7 \times 3 = V_B$
 $V_A - V_B = 18V$

180. 4

180. $P_1 = \frac{V_2}{3R} = 10 \text{ watt}$; $P_2 = \frac{V^2}{R/3}$
 $P_2 = 3 \frac{V_2}{R} = 90 \text{ watt}$

181. 3

181. $B = \frac{\mu_0 i}{2R}$
 $B = \frac{\mu_0 (ni)}{2R}$
 $B = \frac{\mu_0 n^2 i}{2R}$
 $B = n^2 B$

182. 3

182. $\frac{1}{f} = \frac{1}{p} + \frac{1}{q} + \frac{1}{f}$

$f^2 = qp$

183. 3

183. $m = \frac{f}{u_1 f}$; $m = \frac{f}{u_2 f}$
 $\frac{f}{u_1} = \frac{f}{u_2}$
 $f u_1 = f u_2$

184. 3

184. $P \propto (V)^3$
If velocity is doubled.
Power will become 8 times.

185. 1

185. Speed of sound does not depend on frequency.

186. 4

186. Outside a bar magnet field lines move from north pole to south pole and inside it moves from south to north.

BIOLOGY

187. 2
187. Plasmid" is made up only of one type of macro molecule.
188. 2
188. The relative energy yield in Kcal/gm is best represented in first ATP, followed Lipid and protein
189. 4
189. The sub units of ribosomes in the cells of nephron of mouse is 60s & 40s
190. 3
190. Involuntary muscles are not found in "tongue"
191. 1
191. Only "denitrifying bacteria" work strictly under anaerobic conditions.
192. 1
192. The correct sequence of the given figure is (iii), (ii), (iv), (i)
193. 2
193. Mylein sheath is not present in grey neurons. (non myleinated neuron)
194. 3
194. The incorrect statement is they convert water and CO₂ into carbohydrate only in the absence of light)"
195. 1
195. The correct pathway of blood in circulatory system is Atria Ventricles Artery Vein
196. 4
196. "Iodine" is essential for formation of thryoxine in thyroid gland.
197. 2
197. According to Lindemauns' 10% low of energy transfer, only 10% of the energy is transferred from one trophic level to heat.
198. 3
198. both similarities and variation are transmitted from parents to offspring during reproduction.
199. 3
199. During excess of physical exercise, lactic acid gets accumulated in the muscles which causes pain.
200. 2
200. A good food chain includes Grass, Goat, Lion
-