

Do not open this booklet until asked to do so



Total Questions : 200 Time : 3 Hr.

ROLL NO :

SIP/Centre:

NAME :

Test ID: 212

# NTSE

(NATIONAL TALENT SEARCH EXAMINATION)

## MOCK TEST - 4

### Guidelines for the Candidate

1. Question paper comprises of Five sections :  
**To be attempted in OMR :**  

Mental Ability	(Q Nos. 1-50)
Language Comprehensive	(Q Nos. 51-100)
Science	(Q Nos. 101-140)
Physics	(Q Nos. 101-114)
Chemistry	(Q Nos. 115-128)
Biology	(Q Nos. 129-140)
Mathematics	(Q Nos. 141-160)
Social Science	(Q Nos. 161-200)
2. All question carry one mark each
3. All questions are compulsory. There is no negative marking. Use of calculator is not permitted.
4. Write your **Name, Roll no.** on the answer sheet and sign the same.
5. There is only **one correct answer**. Choose only one option for an answer.
6. To mark your choice of answer by darkening the circles in the answer sheet, use a **Blue/Black** ball point pen only. If the correct answer is option A, you must darken the circle corresponding to option A in the answer sheet as shown below :  
 A  B  C  D
7. Return the Answer sheet to the invigilator at the end of the Exam.
8. Write your Roll no. on the question paper too and take it home for future reference.

QUESTION PAPER

CLASS

10

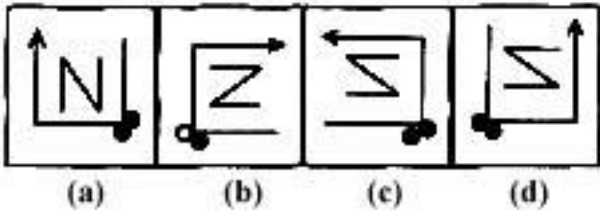
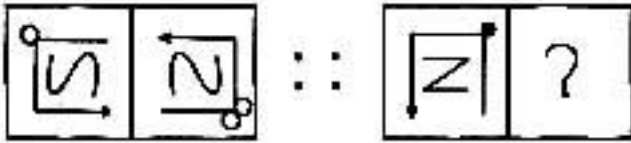
LEVEL-1

*Losers quit when they're tired, winners quit when they've won*

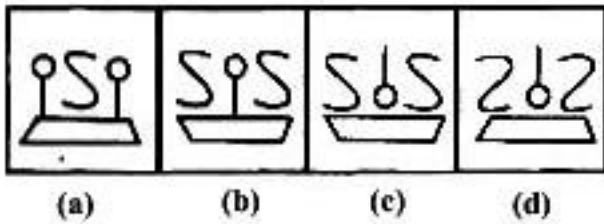
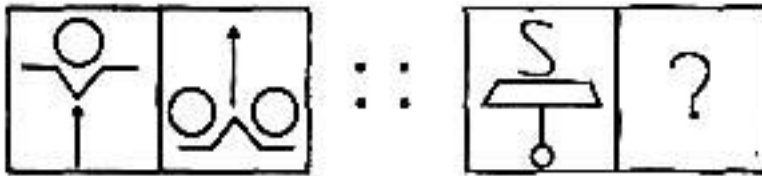
# MENTAL ABILITY

**Directions (1-8):** In each of the following questions, there is some relationship between the two terms (figures, letter clusters or numbers) on the left of the sign (: :). The same relationship exists between the two terms on the right of the sign (: :) of which one is missing. Find the missing one from the four alternatives.

1.



2.



3. FEAL : LEAF :: EAKT : ?

- (a) ETAK                      (b) TAKE                      (c) KATE                      (d) KETA

4. ACEG : JLNP :: BDFH : ?

- (a) KMOQ                      (b) KLON                      (c) NMPR                      (d) LMNO

5. BJRZ : FNVD :: HPXF : ?

- (a) RZFN                      (b) VDFJ                      (c) LTBJ                      (d) NVDJ

6. 7 : 64 :: 13 : ?

- (a) 169                      (b) 196                      (c) 216                      (d) 225

7. 64 : 9 :: 81 : ?

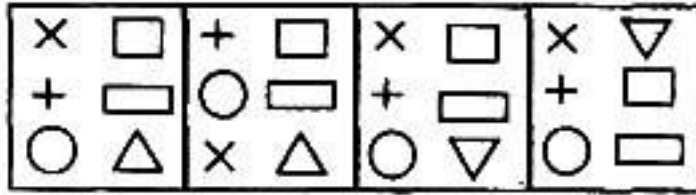
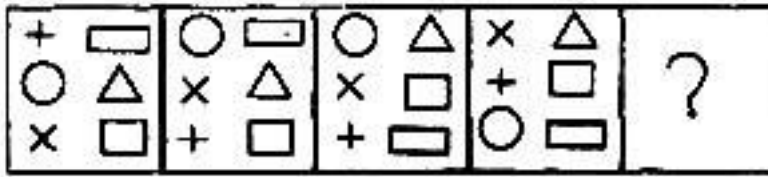
- (a) 15                      (b) 12                      (c) 10                      (d) 7

8. 121 : 1331 :: 81 : ?

- (a) 750                      (b) 735                      (c) 729                      (d) 675

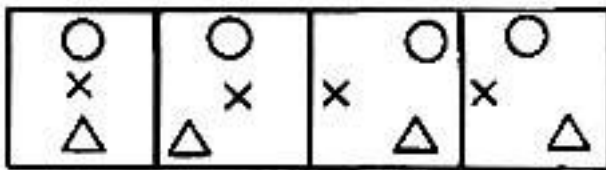
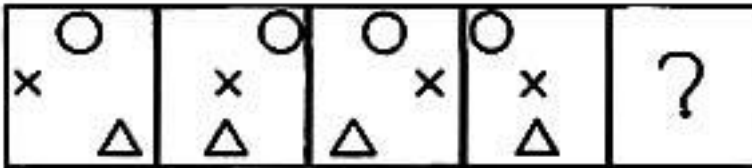
**Directions (9-10):** The figures in each of the following questions follow a series. Select the figure from the given alternatives which would continue the series.

9.



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

10.



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

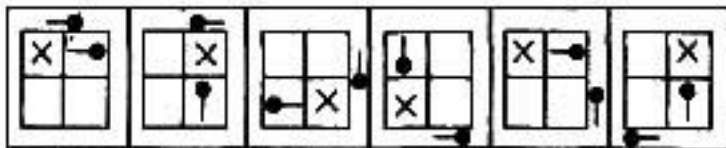
**Directions (11-12):** In the following questions, find the one that does not fit in the sequence established by the six figures given.

11.



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

12.



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

**Directions (13-15):** The following questions are based on letters sequence. In each sequence some letters are missing. Find the correct alternative in each question to fill the blanks:

13. \_ aba \_ a \_ a \_ ab \_

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

14. n \_ m n \_ m m \_ n m \_ n

- (a) n m m n                      (b) m n n m                      (c) n n m m                      (d) m m n m

15. ba \_ bb \_ a \_ b \_ a \_

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

**Directions (16-17):** In each of the following questions a number series is given. Find out the missing term of the series.

16. 806, 519, 287, 232, 55,

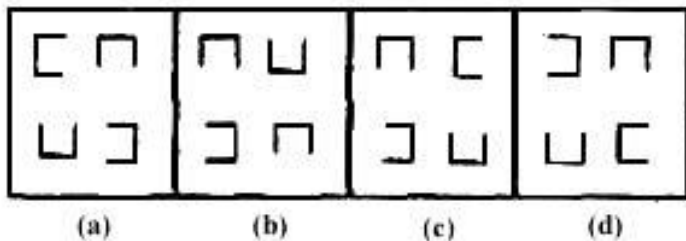
- (a) 47                      (b) 137                      (c) 177                      (d) 205

17. 57, 79, 911, 1113, 1315, ?

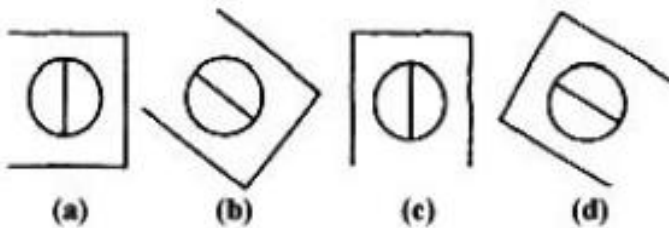
- (a) 1419                      (b) 1503                      (c) 1517                      (d) 1719

**Directions (18-25):** In the following questions, four items (figures, letter clusters or numbers) are given. Three of them are alike in a certain way. Find the one which is different from others.

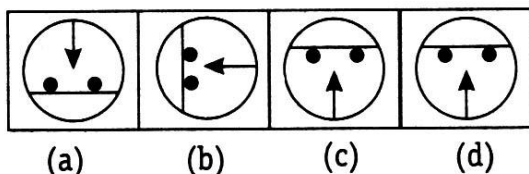
18.



19.



20.

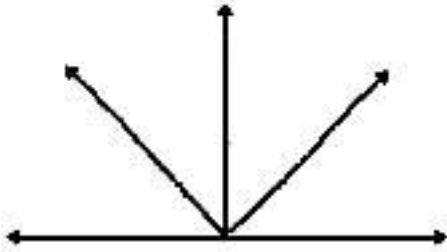


21. (a) CDBE                      (b) LMKN                      (c) RSQT                      (d) WXYZ  
 22. (a) IEAK                      (b) NEAI                      (c) REAT                      (d) GEAI  
 23. (a) 81 : 729                      (b) 25 : 125                      (c) 49 : 343                      (d) 36 : 226  
 24. (a) 3 : 17                      (b) 16 : 64                      (c) 8 : 82                      (d) 9 : 101  
 25. (a) 54                      (b) 90                      (c) 135                      (d) 188



**Directions (31):** In the following question problem figure is given. Study the figure carefully and then answer the question given under it.

31.



How many angles are there

- (a) 11                      (b) 10                      (c) 8                      (d) 5

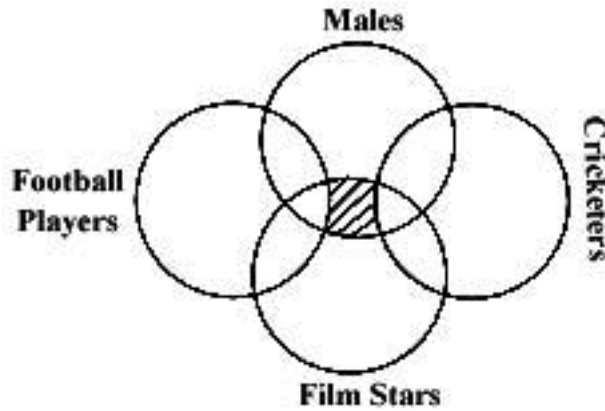
**Directions (32-33):** In each of the following questions two statements are given followed by two conclusions numbered I and II. You have to take two given statements to be true even if they seem to be at variance from the commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows. Find the correct answer from the given alternatives.

32. **Statements:**      1. All lamps are books.  
                                 2. No book is coloured.  
**Conclusions:**      I. Some lamps are coloured.  
                                 II. No lamp is coloured.
- (a) Only conclusion I follows.                      (b) Only conclusion II follows.  
(c) Both I and II follow.                      (d) Neither I nor II follows.
33. **Statements:**      1. All envelopes are umbrellas.  
                                 2. All umbrellas are chalks.  
**Conclusions:**      I. Some chalks are envelopes.  
                                 II. Some umbrellas are not envelopes.
- (a) Only conclusion I follows.                      (b) Only conclusion II follows.  
(c) Both I and II follow.                      (d) Neither I nor II follows.
34. A says, "if B gives me Rs. 40 he will have half as much as C. But if C gives me Rs. 40 then three of us will have the same amount. What is the total amount of money that A, B and C have among them?"  
(a) 240                      (b) 320                      (c) 360                      (d) 420
35. At the end of a dinner party all the eight people present shake hands with each other once. How many hand shakes will there be altogether?  
(a) 8                      (b) 16                      (c) 28                      (d) 64
36. In an examination, a student attempted 15 questions correctly and secured 40 marks. If there were two types of questions i.e. of 2 marks and 4 marks, how many questions of 2 marks did he attempt correctly?  
(a) 5                      (b) 10                      (c) 12                      (d) 15
37. The number of boys in a class is four times the number of girls. Which one of the following numbers cannot represent the total number of children in the class?  
(a) 5                      (b) 16                      (c) 30                      (d) 40

38. Between two book ends in your study are displayed your four favorite puzzle books. If you decide to arrange the four books in every possible combination and move just one book every minute, how long would it take you?

- (a) 24 minutes                      (b) 20 minutes                      (c) 8 minutes                      (d) 4 minutes

39. In the given figure below what does the shaded portion depict?



- (a) A group of male film stars who are football players.  
 (b) A group of film stars who are both football players and cricketers.  
 (c) A group of male film stars who neither play cricket nor football.  
 (d) A group of male film stars who are cricketers but not football players.

40. Vineeta's house is to the right of Kareena's house at a distance of 30 metres in the same row towards north. Sonal's house is in the north-east direction of Kareena's house at a distance of 35 metres. Determine the direction of Vineeta's house with respect to Sonal's house.

- (a) West                      (b) East                      (c) South                      (d) North

41. From his house Mohan moves 30 km in North-West direction and then 30 km in South West direction. Next he moves 30 km in South East direction. Finally he turns towards his house. In which direction is he moving?

- (a) North East                      (b) South East                      (c) North West                      (d) South West

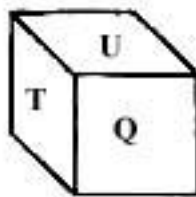
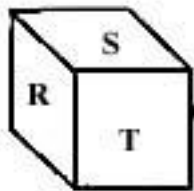
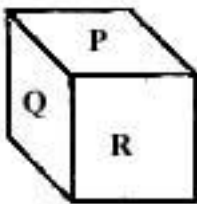
42. If North-West becomes South, South-West becomes East and so on, what will West become?

- (a) North                      (b) North East                      (c) South                      (d) South East

43. If the teachers are to the West of Principal's Office and the students are to the North of Principal's Office, in what direction are teachers with respect to the students?

- (a) South                      (b) Southwest                      (c) North                      (d) North East

44. A dice is thrown thrice and its three positions are given below. Find the alphabet opposite P?



- (a) R                      (b) T                      (c) Q                      (d) S

45. If + means  $\times$ , - means  $\div$ ,  $\div$  means - and  $\times$  means +, then which one of the following equations is correct?
- (a)  $7 + 8 - 2 \div 5 \times 12 = 45$  (b)  $36 - 6 + 10 \times 5 = 65$   
(c)  $66 \times 4 - 9 + 11 = 88$  (d)  $162 + 10 - 2 \times 12 = 218$
46. In the following equation, two signs need to be interchanged to make it correct. Choose the signs from the given alternatives.
- $3 \times 5 + 3 - 18 \div 3 = 12$
- (a)  $\div$  and + (b)  $\times$  and - (c)  $\times$  and + (d) + and -
47. If \* = -; # = +; @ = =; \$ =  $\div$ ; & =  $\times$ , then which one of the following alternatives is true?
- (a)  $(6\#2)\$2@(2\&8)*1$  (b)  $81*4\&3@4\#16*3$   
(c)  $(81*4)\&3@8\$15\&7$  (d)  $(15*4)\&3@(60\$2)\#3$
48. If interchanges are made in signs and numbers, which one of the four equations given in the alternatives would be correct?
- (a)  $3 + 6 \div 6 = 10$  (b)  $6 + 3 \div 4 = 2.5$  (c)  $6 \div 3 + 3 = 6$  (d)  $3 + 6 \div 2 = 4$
49. If 0 stands for the operation "Add and double the sum", that is, a 0 b = 2(a + b); and  $\otimes$  stands for "Multiply and halve", that is, a  $\otimes$  b = 1/2 ab, find the value of  $(5 \otimes 4) 0(7 \otimes 6)$
- (a) 117 (b) 88 (c) 62 (d) 31
50. If the word GROUND is coded as BMJPIY, how the word MINDWELL will be coded?
- (a) R N S I B J Q Q (b) H D I Y R Z G G  
(c) R N I Y B Z G G (d) H D I R Y G Z Z

## GENERAL ENGLISH

**Directions (51-60):** In the following passage, there are blanks' each of which has been numbered. These numbers are printed below the passage and against each four words are suggested, one of which fits the blanks appropriately. Find out the appropriate word in each case.

Gandhiji once said, "I would say that if the village perishes, India will perish too. India will be 51 more India. Her own mission in the world will get 52. The 53 of the village is possible only when it is no more 54. Industrialization on a mass scale will 55 lead to passive or active exploitation of the villagers as the problems 56 competition and marketing come in. Therefore, we have to 57 on the village being self-contained, manufacturing mainly for use. Provided this character of the village industry is 58 there would be no objection to villagers using even the modern machines and tools that they can make and 59 to use. Only, they 60 not be used as a means of exploitation of others".

51. (a) certainly (b) scarcely (c) much (d) no  
52. (a) lost (b) extension (c) elevated (d) flourished  
53. (a) rehabilitation (b) pruning (c) revival (d) devastation  
54. (a) denuded (b) exploited (c) contaminated (d) populated  
55. (a) passionately (b) surprisingly (c) scarcely (d) necessarily  
56. (a) forming (b) enhancing (c) between (d) of  
57. (a) concentrate (b) ponder (c) imagine (d) ensure  
58. (a) regained (b) neglected (c) maintained (d) thwarted  
59. (a) prepare (b) afford (c) hesitate (d) propose



60. (a) can (b) could (c) need (d) should

**Directions (61-68):** In the following questions, groups of four words are given. In each group one word is wrongly-spelt. Find out the wrongly-spelt word.

61. (a) Trickery (b) Uproar (c) Commotion (d) Argument  
62. (a) Benevolent (b) Compassionate (c) Generous (d) Sympathetic  
63. (a) Associate (b) Traipse (c) Breuer (d) Manhandle  
64. (a) Dispatch (b) Attach (c) Detach (d) Catch  
65. (a) Attendance (b) Preference (c) Providence (d) Evidence  
66. (a) Therapeutic (b) Bureaucratic (c) Thermometer (d) Barricade  
67. (a) Idyllic (b) Idiotic (c) Prolific (d) Myopic  
68. (a) Emergency (b) Delegate (c) Mandatory (d) Appreciate

**Direction (69-74):** Select the meaning of given Phrases/Idioms.

69. Knock out  
(a) Make unconscious (b) To leave (c) To be continue (d) To forget  
70. Pick out  
(a) To lift (b) To select (c) Refresh (d) Join together  
71. Rip off  
(a) To change (b) To cheat (c) Meat by chance (d) To tolerate  
72. Flat footed  
(a) Clumsy (b) Cheaply (c) To understand (d) To quarrel  
73. Out of tune  
(a) Difficult task (b) Not in harmony (c) Past achievements (d) Completed changes  
74. Paint the town red  
(a) To make progress (b) Unforeseen trouble (c) Bloody-fight (d) Have a celebration

### PASSAGE - I

**Directions (75-79):** Read the following passages carefully and answer the Questions that follow.

The functional declines of advancing age are depressing. The heart's ability to pump blood drops about one per cent, blood flow to arms and legs decreases by thirty to forty per cent in old age. The amount of air a person can exhale after a deep breath lessens and the chest wall stiffens with age. However, recent studies have shown that most of these age-associated declines can be delayed by exercise. Exercise lowers the resting heart-rate and increases the amount of blood pumped with each beat in older people. When stress is placed on bones through exercise, calcium content rises, with the result that resistance to fracture is improved.

75. Old age is generally a depressing period, because  
(a) old people worry more than others  
(b) old people tend to regret their past  
(c) various organs of the body function less efficiently  
(d) old people do very little work

76. The strength of bones can be increased by exercise, because it
- (a) Increases the amount of blood pumped by the heart
  - (b) Increases calcium content in bones
  - (c) Increases the amount of air exhaled by a person
  - (d) Lessens the stiffness of the chest wall
77. The word 'exhale' means
- (a) breath in
  - (b) breath out
  - (c) breath slowly
  - (d) breath fast
78. Which one of the following statements is correct?
- (a) Exercise delays natural decay of age
  - (b) Old age problems increase due to exercise
  - (c) Exercise Increases the heart-rate, which is dangerous
  - (d) Exercise creates stress which is harmful to bones
79. The chest wall becomes stiff in old age, because
- (a) the heart's ability to pump blood drop about one per cent
  - (b) the blood flow to various organs decreases
  - (c) the resting heart-rate becomes high
  - (d) the person's ability to exhale sufficient air lessens

**Directions (80-84):** Read the following passages carefully and answer the Questions that follow.

#### PASSAGE - II

Jyoti, a gardener's son, was once invited to attend the marriage ceremony of a Brahmin friend. Since, he loved his friend sincerely, he attended the ceremony. The bridegroom was going in a procession to the house of the bride. The procession consisted of Brahmins, men, women and children. There was hardly any person from other communities. Jyoti was walking along with the processionists.

One orthodox Brahmin recognised him and was annoyed at the sight of a low-caste boy in the marriage procession walking along with the Brahmins. Unable to contain himself, he shouted. 'How dare you walk along with us? You are not our equal get behind, otherwise go away'. Jyoti felt insulted. He abandoned the procession and returned home.

He narrated the whole incident to his father with anger in his eyes but his father advised him to observe the old customs. That night Jyoti could not sleep.

He thought what he could do for the equality of human beings. The caste system was deep-rooted. As lower-caste people had no education, they had accepted this mental slavery for ages. Jyoti therefore resolved to revolt against the mental slavery and to educate the lower-caste people. He became the first Indian to start a school for the untouchables and a girl's school in Maharashtra. We recognize him today as Mahatma Phooley.

80. According to the passage, which of the following has primarily made low-caste people accept the mental slavery?
- (a) Poverty
  - (b) Old customs
  - (c) Apathy change
  - (d) Lack of education
81. According to the passage, Jyoti's father
- (a) was a man of revolutionary ideas
  - (b) advised him to make a school for the untouchables
  - (c) did not want to break old tradition
  - (d) was not in favour of his attending the marriage ceremony

82. After his insult, Jyoti
- (a) left the procession and went to his friend
  - (b) tried to take revenge on his friend
  - (c) decided not to attend any such marriage procession in future
  - (d) engaged himself in social service
83. Why did Jyoti attend the marriage?
- (a) He was advised by his father accordingly
  - (b) He was invited by the father of the bride
  - (c) The bridegroom was good friend of Jyoti
  - (d) Not mentioned in the passage
84. Jyoti could not sleep that night because
- (a) he had to attend the marriage of his friend
  - (b) he wanted to do something for lower-caste people
  - (c) the Brahmin insulted his friend
  - (d) his father was sick

**Directions (85-88):** Read the following passages carefully and answer the Questions that follow.

### PASSAGE - III

I do not suggest that the cultural side of education should be ignored. On the contrary, I think, it is essential to the production of the sort of adult, who best fits the modern world. But I think that what is important in cultural education should be conveyed, in the early stages, by methods far more attractive than now used. History and Geography should be taught at first by means of the cinema. When taught this way, they will give pleasure; attention will be spontaneous and therefore the impression will be less temporary. In spite of reforming movements, there is still among educators a feeling that what is enjoyed without effort cannot have much educational value. It would have made children aware of the manners and customs of tribes and nation's parts utterly remote from their own. Education conducted on these lines would do more than many boors to cure provincialism in space and to more children realise that actual human beings with actual feelings can be outwardly very different from the people among whom they, but inwardly composed of the same human material. A Zulu would not appear strange, remote or savage but one like themselves.

85. The writer thinks that the cultural side of education is needed to make man
- (a) appreciate one's heritage
  - (b) appreciate other civilisation
  - (c) suitable for modern civilisation
  - (d) admire his environment
86. The writer criticized traditional educators for not
- (a) using cinema as a method of teaching
  - (b) making learning an attractive activity
  - (c) imparting information about remote tribes
  - (d) imparting information about various cultures
87. The response of the learners to teaching through cinema is
- (a) absorbing
  - (b) long lasting
  - (c) enthusiastic
  - (d) superficial
88. The expression to cure provincialism in space and their means to get rid of
- (a) regional feelings
  - (b) obscure ideas
  - (c) narrow views
  - (d) selfish opinion

**Directions (89-91):** Read the following passages carefully and answer the Questions that follow.

**PASSAGE - IV**

The prisoner was a young man of about twenty-five Charles Darnay. He was tall and handsome, plainly dressed in dark grey, with his dark hair tied back with a ribbon. Though no one in the court had any doubt that he would be found guilty and condemned to a cruel death, the young man watched all that went on with a grave interest. Only when his eyes rested on Dr Manette and his daughter did his expression change.

89. No body doubted that Damay would be  
(a) set free immediately (b) sent to prison  
(c) forced to leave the country (d) sentenced to death
90. The prisoner was dressed  
(a) gorgeously (b) expensively (c) clumsily (d) ordinarily
91. In the court, Darnay was  
(a) in a state of fear (b) completely indifferent  
(c) interested in everything around him (d) absolutely passive

**Directions (92-93):** Following questions have the second sentence missing. Choose the appropriate sentence from the given options to complete it.

92. (A) A well-dressed young man entered a big textile shop one evening  
(B) \_\_\_\_\_  
(C) who thought him rich and likely to make heavy purchases.  
(a) he was shown the superior variety of suitlengths and sarees  
(b) he was able to draw the attention of the salesman  
(c) but after casually examining them  
(d) where ready-made goods were being sold
93. (A) Wild peacocks live together in large flocks in the forests of Central Africa  
(B) \_\_\_\_\_  
(c) for seeds to eat and at night fall they fly up to the trees where they perch and sleep.  
(a) they scratch about in the ground during the day  
(b) every peacock has several wives  
(c) the male utters a harsh raucous cry  
(d) the female birds build their nests on the ground

**Directions (94-96):** In these questions a keyword is followed by four choices. Choose the one opposite to it in the meaning.

94. Triumph  
(a) Defeat (b) Surrender (c) Give up (d) Retreat
95. Defile  
(a) Shine (b) Cleanse (c) Pure (d) Clear
96. Urban  
(a) Local (b) Villager (c) Rural (d) Refined

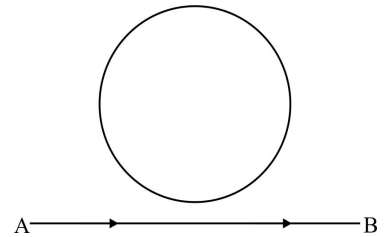
**Directions (97-100):** Select the most appropriate option to fill the blanks from the given alternatives.

97. The brilliant students will be \_\_\_\_\_ scholarships.  
(a) honored (b) awarded (c) rewarded (d) forwarded
98. They are refugees in need of \_\_\_\_\_.  
(a) renovation (b) recapitulation (c) restoration (d) rehabilitation
99. He works \_\_\_\_\_ from morning to evening daily without break.  
(a) continually (b) continuously (c) continuing (d) continued
100. The \_\_\_\_\_ appearance of the person attracted our attention.  
(a) gentle (b) genteel (c) kind (d) graceful

## PHYSICS

101. A current from A to B is increasing in magnitude. What is the direction of induced current, if any in the loop shown in Fig?

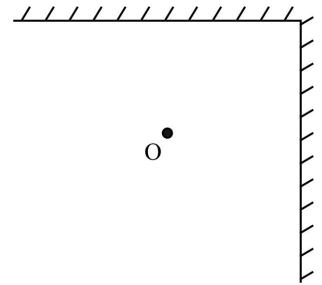
- (a) Clockwise.  
(b) Anticlockwise.  
(c) No current is induced in the loop.  
(d) First clockwise then anticlockwise.



102. In an experiment, it was observed that when the length of a wire in an electrical circuit is doubled, everything else remaining same, the current becomes half. On the other hand, if the thickness (diameter) of the wire is doubled, the current becomes 4 time. Two wires  $W_1$  and  $W_2$  of the same metal have the same current passing through them. The thickness of wire  $W_2$  is twice that of  $W_1$ , then the length of wire  $W_2$  is:  
(a) Sixteen times that of  $W_1$  (b) Four times that of wire  $W_1$   
(c) Two times that of wire  $W_1$  (d) Same as that of wire  $W_1$

103. Two mirrors are placed at right angles to each other as shown in the figure. Total number of images of an object O placed between them, that are seen are:

- (a) Two (b) Three  
(c) Four (d) Six



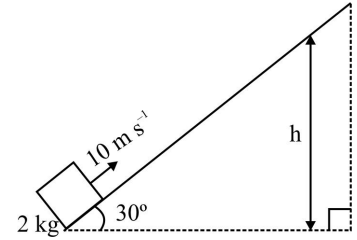
104. If one puts ones ears to the steel rail the sound of a coming train can be heard even when the train cannot be seen. One can conclude from this observation that

- (1) Sound travels faster in steel than in air.  
(2) Amplitude of sound in rail is much larger than in air.  
(3) Sound can travel larger distances in solids than in air.  
(4) Quality of sound in rail is better than in air.

The reasonable conclusions are:

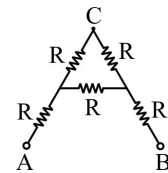
- (a) 1 and 3 (b) 1 and 2 (c) 2 and 3 (d) 2 and 4

105. When we look towards the pole star, it appears stationary because,  
 (a) it is very far from earth as compared to other stars.  
 (b) it moves with much lesser speed than other stars.  
 (c) it is pointing exactly in the south direction.  
 (d) it is pointing exactly in the north direction.
106. Which country is called the country of wind mills?  
 (a) Holland (b) Britain (c) India (d) America
107. An electric iron is connected to a 200V mains supply and draws a current of 4A. What is power rating of iron?  
 (a) 800 W (b) 50 W (c) 106W (d) 112 W
108. A box of mass 2 kg has an initial speed of  $10 \text{ m s}^{-1}$  at the foot of the ramp. Given that the friction along the ramp is 2N, find the height  $h$  that the box reaches when its speed is  $5 \text{ m s}^{-1}$  (Take  $g = 10 \text{ N kg}^{-1}$ )  
 (a) 2.5 m (b) 3.125 m  
 (c) 4.0 m (d) 4.5 m



109. A convex lens is made of a material ( $\mu = 1.2$ ), both the surfaces are convex. If it is dipped in water ( $\mu = 1.33$ ) its focal length will become  
 (a) positive (b) negative (c) remains same (d) data insufficient

110. What will be the equivalent resistance between points A and C in the given circuit.  
 (a)  $(5/3) R$  (b)  $(2/5)R$   
 (c)  $(8/3) R$  (d)  $(3/5)R$



111. A key of a mechanical piano is struck gently and then struck again but much harder this time. In the second case:  
 (a) sound will be louder but pitch will not be different  
 (b) sound will be louder and pitch will also be higher  
 (c) sound will be louder but pitch will be lower  
 (d) Both loudness and pitch will remain unaffected
112. A man running with a uniform speed 'u' on a straight road observes a stationary bus at a distance 'd' ahead of him. At that instant, the bus starts with an acceleration 'a'. The condition that he would be able to catch the bus is

- (a)  $d \leq \frac{u^2}{a}$  (b)  $d \leq \frac{u^2}{2a}$  (c)  $d \leq \frac{u^2}{3a}$  (d)  $d \leq \frac{u^2}{4a}$

113. The escape velocity from earth is 11 km/sec. The escape velocity from a planet having equal density and double radius of earth is—  
 (a) 15.56 km/sec (b) 22 km/sec (c) 5.5 km/sec (d) 11 km/sec
114. An electric stove boils 1 kg of water in time 2 min and another stove boils 1 kg of water in time 3 min. Both electric stoves are designed for the same voltage. When they are joined in parallel, the time required to boil 1 kg of water is  
 (a) 1.2 min (b) 5 min (c) 2.4 min (d) 1 min

# CHEMISTRY

115. Which of the following are present in a aqueous solution of hydrochloric acid?  
 (a)  $\text{H}_3\text{O}^+ + \text{Cl}^-$                       (b)  $\text{H}_3\text{O}^+ + \text{OH}^-$                       (c)  $\text{Cl}^- + \text{OH}^-$                       (d) Unionised HCl
116. The pH of 0.1 M NaOH is:  
 (a) 13                                              (b) 12                                              (c) 11                                              (d) 10
117. What are the values of the quantum numbers of 19<sup>th</sup> electron of Scandium ( $Z = 21$ )?  
 (a)  $n = 4; l = 0; m = 0; m_a = +1/2$                       (b)  $n = 4; l = 1; m = 0; m_a = +1/2$   
 (c)  $n = 4; l = 2; m = 1; m_a = +1/2$                       (d)  $n = 4; l = 3; m = 2; m_a = +1/2$
118. Which one of the following possesses covalent, ionic as well as co-ordinate covalent bonds?  
 (a) HCl                                              (b)  $\text{NH}_4\text{Cl}$                                               (c)  $\text{Cl}_2$                                               (d)  $\text{CH}_4$
119. The IUPAC name of 
$$\begin{array}{c} \text{CH}_3\text{CH}_2 - \text{CH}_2 - \text{CH} - \text{CH}_2\text{CH}_2\text{CH}_3 \\ | \\ \text{CH} = \text{CH}_2 \end{array}$$
 is:  
 (a) 4-ethelene -1- heptane                      (b) 3-propyl-hex -1- ene  
 (c) 4-propyl - hex -6- ene                      (d) 3 -propyl -1- heptane
120. Acetic acid may be prepared by the:  
 (a) reduction of acetone                      (b) Oxidation of ethanol  
 (c) Destructive distillation of soft coal                      (d) Polymerization of ethylene
121. Which of the following is not a suspension?  
 (a) Aluminium paint                      (b) Dust storm                      (c) Muddy water                      (d) Milk
122. Graphite is used as a lubricant in machines because it has a very high melting point and also it:  
 (a) is crystalline                      (b) has layer structure  
 (c) is a giant molecule                      (d) is a liquid at room temperature
123. Which of the following oxyacid of phosphorus are monobasic (monoprotic)?  
 (a)  $\text{H}_3\text{PO}_4$                       (b)  $\text{H}_3\text{PO}_3$                       (c)  $\text{H}_3\text{PO}_2$                       (d)  $\text{H}_4\text{P}_2\text{O}_7$
124. The number of iodine atoms present in 50ml of a 0.1 M KI solution is:  
 (a)  $6 \times 10^{23}$                       (b)  $12 \times 10^{23}$                       (c)  $3 \times 10^{23}$                       (d)  $6 \times 10^{22}$
125. Aluminium ore is:  
 (a) Haematite                      (b) Dolomite                      (c) Bauxite                      (d) Calamine
126. \_\_\_\_\_ are alloys of Iron, Aluminium, Nickel and Cobalt.  
 (a) Brass                      (b) Bronze                      (c) Solder                      (d) Alnicos
127. The equivalent conductance of NaCl at concentration C and at infinite dilution are  $\lambda_c$  and  $\lambda_\infty$  respectively. The correct relationship between  $\lambda_c$  and  $\lambda_\infty$  is given by  
 (Where the constant B is positive)  
 (1)  $\lambda_c = \lambda_\infty - B\sqrt{C}$                       (2)  $\lambda_c = \lambda_\infty + B\sqrt{C}$                       (3)  $\lambda_c = \lambda_\infty + BC$                       (4)  $\lambda_c = \lambda_\infty - BC$
128. Which of the following processes involve the smelting process?  
 (a)  $\text{ZnCO}_3 \longrightarrow \text{ZnO} + \text{CO}_2$                       (b)  $\text{PbS} + 3\text{O}_2 \longrightarrow 2\text{PbO} + 2\text{SO}_2$   
 (c)  $\text{Fe}_2\text{O}_3 + 3\text{C} \longrightarrow 2\text{Fe} + 2\text{CO}$                       (d)  $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{H}_2\text{O}$

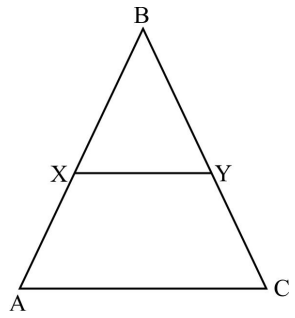
# BIOLOGY

129. 1 gm of Haemoglobin can hold  
(a) 1.34 ml oxygen (b) 13.4 ml oxygen (c) 2.34 ml oxygen (d) 1.5 ml oxygen
130. Which one of the following does not enter into the Calvin cycle?  
(a) Carbon dioxide (b) Enzyme (c) ATP (d) NADP
131. Which one of the following is not always applicable to vein?  
(a) Movement of blood is slow (b) Thin walled  
(c) Valves present (d) Transport deoxygenated blood
132. Detoxification of drugs and toxic substances occur in:  
(a) Lysosome (b) Ribosome (c) Golgi bodies (d) Endoplasmic reticulum
133. An animal with a soft body has a hard cover for its protection. Name the phylum to which it belongs.  
(a) Echinodermata (b) Arthropoda (c) Mollusca (d) Annelida
134. A person is unable to swallow food. Which part of the brain is responsible for this?  
(a) Cerebral hemisphere (b) Diencephalon  
(c) Midbrain (d) Hindbrain
135. Which one of the following organisms secretes enzymes from its body to simplify the complex food for ingestion?  
(a) Round worm (b) Mushroom (c) Head louse (d) Loranthus
136. Which of the following are the components of Phloem tissue?  
(a) Tracheid and Companion cell (b) Vessel and Sieve tube  
(c) Companion cell and Sieve tube (d) Vessel and Companion cell
137. Taking their number into account, select the correct pair.  
(a) Ureter and Urinary bladder (b) Kidney and Urinary bladder  
(c) Urethra and Urinary bladder (d) Urethra and Kidney
138. Pick up the incorrect pairing.  
(a) Mouth cavity - Carbohydrate digestion (b) Small intestine - Fat digestion  
(c) Pancreas - Fat digestion (d) Liver - Protein digestion
139. In which of the following pair, Uric acid is present in the excreta?  
(a) Bird – Shark (b) Frog – Lizard (c) Man-Insect (d) Insect-Shark
140. Knightia is a fossil of  
(a) tree trunk (b) invertebrate (c) fish (d) dinosaur skull

# MATHEMATICS

141.  $\phi$  is an acute angle such that  $\tan\phi = 2/3$  then evaluate  $\left(\frac{1 + \tan\phi}{\sin\phi + \cos\phi}\right) \cdot \left(\frac{1 - \cot\phi}{\sec\phi + \cos\phi}\right)$   
(a)  $-\frac{1}{5}$  (b)  $-\frac{4}{\sqrt{13}}$  (c)  $\frac{1}{5}$  (d)  $\frac{4}{\sqrt{13}}$
142. If the roots of the equation  $2x^2 + ax + b = 0$  are reciprocals to each other, then the value of b is:  
(a) -1 (b) -2 (c) 2 (d) 1



143. The minimum value of the polynomial  $p(x) = 3x^2 - 5x + 2$  is  
 (a)  $-\frac{1}{6}$  (b)  $\frac{1}{6}$  (c)  $\frac{1}{12}$  (d)  $-\frac{1}{12}$
144. For equation  $|x|^2 + |x| - 6 = 0$   
 (a) there are two roots (b) there are four roots  
 (c) the product of the roots is  $-9$  (d) the product of the roots is  $-3$
145. In  $\triangle ABC$ , D is a point on BC such that  $3BD = BC$ . If each side of the triangle is 12 cm, then AD equals  
 (a)  $4\sqrt{5}$  (b)  $4\sqrt{6}$  (c)  $4\sqrt{7}$  (d)  $4\sqrt{11}$
146. In  $\triangle ABC$ ,  $\overline{XY}$  is parallel to  $\overline{AC}$  and divides the triangle into two parts of equal area. Then  $\frac{AX}{AB}$  equals  
 (a)  $\frac{\sqrt{2} + 1}{2}$  (b)  $\frac{2 - \sqrt{2}}{2}$   
 (c)  $\frac{2 + \sqrt{2}}{2}$  (d)  $\frac{\sqrt{2} - 1}{2}$
- 
147. P is point in the interior of an equilateral triangle with side a units. If  $P_1, P_2$  and  $P_3$  are the distances of P from the three sides of the triangle, then  $(P_1 + P_2 + P_3)$   
 (a) equals  $\frac{2a}{3}$  units  
 (b) equals  $\frac{a\sqrt{3}}{2}$  units  
 (c) is more than a unit  
 (d) Cannot be determined unless the location of p is specified
148. In how many ways can given square be cut into any two congruent triangle  
 (a) Exactly 4 (b) Exactly 8 (c) Exactly 12 (d) More than 12
149. A die is thrown twice. The probability of the sum being odd, is:  
 (a)  $\frac{1}{2}$  (b)  $\frac{1}{3}$  (c)  $\frac{1}{4}$  (d)  $\frac{1}{6}$
150. If the height and radii of a cone and a hemisphere are same, then the ratio of their volumes is:  
 (a)  $1 : 2$  (b)  $2 : 3$  (c)  $1 : 3$  (d)  $1 : 1$
151. If a cylinder of radius 3 cm and height 20 cm is melted and recast into the shapes of small spheres of diameter 2 cm, then the number of spheres so formed is:  
 (a) 135 (b) 270 (c) 540 (d) 1080
152. Triangle ABC has a right angle at C. If  $\sin A = \frac{2}{3}$ , then  $\tan B$  is:  
 (a)  $\frac{3}{5}$  (b)  $\frac{\sqrt{5}}{3}$  (c)  $\frac{2}{\sqrt{5}}$  (d)  $\frac{\sqrt{5}}{2}$

153. Which of the following can be expressed as the sum of square of two positive integers, as well as three positive integers?  
 (a) 75 (b) 192 (c) 250 (d) 100
154. If the line segment joining the midpoint of the consecutive side of quadrilateral ABCD form a rectangle then ABCD must be  
 (a) rhombus (b) square (c) kite (d) all of the above
155. The sides of a triangle are of length 20, 21 and 29 units. The sum of the length of altitudes will be  
 (a)  $\frac{1609}{29}$  (b) 49 units (c)  $\frac{1609}{21}$  units (d) 40 units
156. If a, b, c be the 4<sup>th</sup>, 7<sup>th</sup> and 10<sup>th</sup> term of an AP respectively then the sum of the roots of the equation  $ax^2 - 2bx + c = 0$   
 (a)  $-\frac{b}{a}$  (b)  $-\frac{2b}{a}$  (c)  $\frac{c+a}{a}$  (d) None of these
157. Graph drawn from the equation  $y = x^2 - 3x - 4$  will be a  
 (a) Circle (b) Parabola (c) Straight line (d) Hyperbola
158. The coefficient of  $x^7$  in the polynomial expansion of  $(1 + 2x - x^2)^4$  is:  
 (a) -8 (b) 12 (c) 6 (d) -12
159. A man can row three quarters of a km against the stream in  $11\frac{1}{4}$  minutes and return in  $7\frac{1}{2}$  minutes . The speed of the man in still water is:  
 (a) 2 km/h (b) 3 km/h (c) 4 km/h (d) 5 km/h
160. The sum of the third and seventh terms of an A.P. is 6 and their product is 8, then common difference is—  
 (a)  $\pm 1$  (b)  $\pm 2$  (c)  $\pm \frac{1}{2}$  (d)  $\pm \frac{1}{4}$

## SOCIAL SCIENCE

161. The Revolt of 1857, in Kanpur was led by  
 (a) Tantia Tope (b) Rani Laxmi Bai  
 (c) Nana Saheb (d) Amar Singh
162. An organisation founded by Dayanand Sara-swati in 1875 is  
 (a) Prarthna Samaj (b) Brahmo Samaj (c) Arya Samaj (d) Satya Shodhak Samaj
163. Name the first Indian city to enact smoke nuisance legislation in 1863.  
 (a) Bombay (b) Calcutta (c) Surat (d) Jamnagar
164. Limestone deposits are usually found in  
 (a) Metamorphic rocks (b) Igneous rocks  
 (c) Sedimentary rock (d) All of the above
165. The westernmost longitude of India is  
 (a) 8°4'N (b) 37°6'N (c) 97°25'E (d) 68°7'E
166. Where the majority of jute mills located in India?  
 (a) On the banks of river Hugli (b) On the banks of river Yamuna  
 (c) On the banks of river Krishna (d) On the banks of river satluj

167. Which party is recognised as a 'State party'?
- A party that secures 6% of total votes in a Assembly election
  - A party that secures at least 6% of the total votes in an election to the State Assembly and wins at least 2 seats
  - A party that wins 4 seats in the Assembly election
  - None of the above
168. Which body in Indian political system is an example of direct democracy?
- Zila Parishad
  - Panchayat Samiti
  - Gram Sabha
  - Vidhan Sabha
169. 'Justice delayed is justice denied' is often used to characterize
- Time period that courts take
  - Involves lots of money
  - Independence of judiciary
  - Access to court is always difficult
170. Who led Wahabi Revolt?
- Surendra Sai
  - Birsa Munda
  - Shariatulla
  - Sayyid Ahmad Bareilvi
171. Tonkin Free School (1907) Provided which of the following style of education?
- Vietnamese Style
  - French Style
  - Chinese Style
  - Western Style
172. The layer of soil that has the maximum amount of humus is
- Parent rock
  - The bed rock
  - Top soil
  - The subsoil
173. Which of these are human made inputs of agriculture?
- Relief of the land
  - Irrigational facilities
  - Earth worms
  - Crops
174. What is the full form of PAIS?
- Professional Accident Insurance Scheme
  - Personal Application Insurance Scheme
  - Personal Accident Insurance Scheme
  - Personal Accident Insurance Subject
175. The city of Cochamamba is related to which issue?
- Nepal's popular struggle
  - Bolivia's water war
  - Environmental Movement
  - Narmada Bachao Movement
176. Which one of the following is a desirable condition that a good democracy should have?
- Eliminates discrimination based on gender, caste and religion.
  - Rulers take all the major decisions.
  - Rulers are elected by the people.
  - Providing right to vote.
177. What is the minimum age required to contest an election to Lok Sabha?
- 20 years
  - 18 years
  - 25 years
  - 30 years
178. Which of the following is the characteristics or forms of power sharing?
- System of checks and balances
  - Federalism
  - Division of power among different social groups
  - All of these

179. Who can dissolve the Lok Sabha before the expiry of its normal term of 5 yr?  
 (a) The Prime Minister  
 (b) The President of India  
 (c) The President on the recommendation of the Prime Minister  
 (d) None of the above
180. In India, seats are reserved for women in  
 (a) Lok Sabha (b) State Assemblies (c) Cabinets (d) Panchayati Raj
181. Which one of the following contains the famous Gayatri Mantra?  
 (a) Sama Veda (b) Yajur Veda (c) Rig Veda (d) Atharva Veda
182. Why did the cotton factories in India grow during the World War I?  
 (a) Masses refused to wear foreign clothes because of Swadeshi appeal  
 (b) Textile imports from Britain declined because the demand of military supplies from Indian factories increased  
 (c) The Government in England lowered the Import duties on Indian cotton Textiles  
 (d) The Indian cotton Industries started producing cotton clothes at competitive prices
183. Match the following:
- | List               | Subjects           |
|--------------------|--------------------|
| A. Central List    | 1. Railways        |
| B. State List      | 2. Health,         |
| C. Concurrent List | 3. Foreign affairs |
| D. Residuary List  | 4. Water disputes  |

**Codes**

- |  | A B C D     | A B C D     | A B C D     | A B C D     |
|--|-------------|-------------|-------------|-------------|
|  | (a) 1 2 3 4 | (b) 1 2 4 3 | (c) 4 3 2 1 | (d) 3 2 1 4 |
184. Which of the following comes under the category of 'Footloose Industry'?  
 (a) Iron and steel (b) cotton textile (c) Information technology (d) petro-chemical
185. The purna, the Wardha, the pranhita are the tributaries of :  
 (a) Mahanadi (b) Narmada (c) Godavari (d) Tapi
186. Intense damage was caused in Ladakh in 2010, due to which natural calamity?  
 (a) Mud flow (b) Landslide (c) Earthquake (d) Drought
187. Power-sharing or sharing of power is desirable as  
 (a) to reduce the possibility of conflict between social groups  
 (b) power-sharing is the very spirit of democracy  
 (c) it ensures the stability of political order  
 (d) All of the above
188. Which one of the following ideas was not initially included in the Preamble of the Constitution of India?  
 (a) Liberty (b) Equality (c) Socialist (d) Justice
189. Which one of the following writs is issued by a court in case of illegal detention of a person?  
 (a) Habeas Corpus (b) Mandamus (c) Certiorari (d) Quo-warranto



# ANSWER KEYS

## NTSE Paper - 4

1	D	31	B	61	C	91	C	121	D	151	A	181	C
2	C	32	B	62	D	92	B	122	B	152	D	182	B
3	B	33	C	63	C	93	A	123	C	153	C	183	B
4	A	34	C	64	B	94	A	124	C	154	D	184	C
5	C	35	C	65	A	95	B	125	C	155	A	185	C
6	B	36	B	66	B	96	C	126	D	156	C	186	A
7	C	37	B	67	D	97	B	127	A	157	B	187	D
8	C	38	A	68	A	98	D	128	C	158	A	188	C
9	A	39	C	69	A	99	B	129	A	159	D	189	A
10	D	40	A	70	B	100	C	130	D	160	C	190	C
11	C	41	A	71	B	101	A	131	D	161	C	191	A
12	D	42	B	72	A	102	B	132	D	162	C	192	D
13	A	43	B	73	B	103	B	133	C	163	B	193	D
14	B	44	B	74	D	104	A	134	D	164	C	194	B
15	C	45	B	75	C	105	D	135	B	165	D	195	C
16	C	46	C	76	B	106	A	136	C	166	A	196	D
17	C	47	D	77	B	107	A	137	C	167	B	197	A
18	B	48	D	78	A	108	B	138	D	168	C	198	D
19	A	49	C	79	D	109	B	139	C	169	A	199	B
20	D	50	B	80	D	110	A	140	C	170	D	200	D
21	D	51	D	81	C	111	A	141	A	171	D		
22	B	52	A	82	D	112	B	142	C	172	C		
23	D	53	C	83	C	113	B	143	D	173	B		
24	B	54	B	84	B	114	A	144	A	174	C		
25	D	55	D	85	C	115	A	145	C	175	B		
26	C	56	D	86	B	116	A	146	B	176	A		
27	D	57	A	87	B	117	A	147	B	177	C		
28	B	58	C	88	C	118	B	148	D	178	D		
29	C	59	B	89	D	119	B	149	A	179	C		
30	D	60	D	90	D	120	B	150	A	180	D		