



NTSE (EE)

Space for Rough Work

[32]



NTSE (EE)

Medium : ENGLISH

Language : ENGLISH

Roll No.

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NTSE – NOVEMBER, 2013

MENTAL ABILITY AND
SCHOLASTIC APTITUDE TEST

Time : 180 Minutes

Mental Ability Test : 50 Marks

Language Comprehensive Test : 40 Marks

Aptitude Test : 90 Marks

Total : 180 Marks

Instructions to Candidates

Read the following instructions carefully before you answer the questions. Answers are to be SHADED on a SEPARATE OMR Answer Sheet given, with **HB Pencil**. Read the **Instructions printed on the OMR Sheet carefully before answering the question.**

1. Please write your Center Code Number and Roll Number very clearly (only one digit in one block) on the OMR Sheet as given in your admission card. Please see that no block is left unfilled and even zeros appearing in the Center Code Number are correctly transferred to the appropriate blocks on the OMR Sheet as shown in the example given in the OMR Sheet. For all the subsequent purpose your Center Code Number and Roll Number shall remain the same as given on the Admission Card.
2. The Test is in THREE PARTS. Part – I (Mental Ability) consists of 50 Questions (Q. Nos. 1 to 50), Part – II (Language Comprehensive Test) consists of 40 Questions (Q. Nos. 51 to 90) and Part – III (Aptitude Test) consists of 90 questions (Q. Nos. 91 to 180).
3. All questions carry **one** mark each.
4. Since all questions are compulsory, do not try to read through the whole question paper before beginning to answer it.
5. Begin with the first question and keep trying one question after another till you finish all three parts.
6. If you do not know the answer to any question, do not spend much time on it and pass on to next one. If time permits, you can come back to the questions which you have left in the first instance and try them again.
7. Since the time allotted to the question paper is very limited, you should make the best use of it by not spending too much time on any question.



NTSE (EE)

8. A blank page is provided for rough work at the end of each part.
9. REMEMBER YOU HAVE TO SHADE ANSWERS ON A SEPARATE OMR SHEET PROVIDED.
10. Answer to each question is to be indicated by SHADING the circle having the number of the correct alternative in OMR Sheet from among the ones given for the corresponding question in the booklet.
11. Now turn to the next page and start answering the questions.
12. After the examination, you should hand over the OMR Sheet to the Invigilator of the room.
13. The candidate **need not return** this Question Paper booklet and can take it after completion of the examination. No candidate should leave the examination hall before the end of the examination.



NTSE (EE)

PART – I

MENTAL ABILITY TEST (Q. Nos. 1 to 50)

Max. Marks – 50

Note : SHADE the correct alternatives in the OMR Answer Sheet provided, from amongst the ones given against the corresponding question in the Question Booklet. For shading the circles, use **HB Pencil**.

**Directions :****Questions (1 to 6) :**

In the number series given below, one number is missing. Each series is followed by five alternatives (1), (2), (3), (4) and (5). One of them is the right answer. Identify and indicate it as per the "Instructions".

1. 5, 12, 26, 47,

- (1) 90
- (2) 75
- (3) 73
- (4) 118
- (5) 80

2. 76, 65, 55, 46,

- (1) 38
- (2) 39
- (3) 37
- (4) 36
- (5) 64

3. 569, 457, 345, 233,

- (1) 122
- (2) 123
- (3) 124
- (4) 111
- (5) 121

4. 1024, 256,, 16, 4

- (1) 128
- (2) 80
- (3) 64
- (4) 48
- (5) 120

5. 2, 4, 16, 128,

- (1) 2048
- (2) 1024
- (3) 1280
- (4) 768
- (5) 512

6. 275, 265, 250, 230,

- (1) 200
- (2) 215
- (3) 220
- (4) 205
- (5) 210

Directions :

Questions (7 to 10) are based upon letter analogy. There are two pairs of letter combinations in each question. The first (Left hand side) pair has some relationship between its members. In the second pair one member is missing. Find this out from answers (1), (2), (3), (4) and (5), such that this pair has similar relationship as the first pair. Indicate your answers as per the "Instructions".

7. TAS : RCQ :: : NGM

- (1) PFO
- (2) OEP
- (3) NEP
- (4) PFN
- (5) PEO

8. ACDF : BDEG :: KMNP : ?

- (1) LNOP
- (2) LNOQ
- (3) LMOQ
- (4) MNOQ
- (5) LMOP



9. XYAC : UVBD :: RSEG : ?

- (1) OPFH
- (2) OPEH
- (3) OPEF
- (4) POFH
- (5) OPHF

10. BCDE : DCBA :: STUV : ?

- (1) USTR
- (2) URST
- (3) UTSR
- (4) UVST
- (5) VSTR

Directions :

Questions (11 to 14) : In the following questions, Letters/Letter groups are arranged in a particular order with some underlying criterion. Study the order and choose the answer from the alternatives to fill the gaps.

11. AEG, BFH, CGI,

- (1) DHI
- (2) DGJ
- (3) DHK
- (4) GHJ
- (5) DHJ

12. PDC, OFE, NHG,

- (1) NIJ
- (2) MGH
- (3) NJI
- (4) MJI
- (5) MIJ

[2]

[Turn Over]

13. ZYW, ABD, UTR,

- (1) FGI
- (2) GHI
- (3) FHI
- (4) HIJ
- (5) GIJ

14. KLMN, LMNK, MNKL,

- (1) KMLN
- (2) LNKL
- (3) NKLM
- (4) MKLN
- (5) NLMK

Directions :

Questions (15 to 20) : In each of the following questions, five words are given. Four of them are alike in some way. One is different from them. Identify it and indicate as per "Instructions".

15. (1) Slovakia
(2) Mongolia
(3) Serbia
(4) Ukraine
(5) Hungary

16. (1) Cheetah
(2) Bear
(3) Wolf
(4) Camel
(5) Hyena

17. (1) Mango
(2) Guava
(3) Banana
(4) Maize
(5) Apple



18. (1) Sun

- (2) Jupiter
- (3) Mercury
- (4) Mars
- (5) Pluto

19. (1) Ravindranath Tagore

- (2) Bankim Chandra Chatterjee
- (3) Ramakrishna Paramahansa
- (4) Sumitranandan Pant
- (5) K.V. Puttappa (Kuvempu)

20. (1) Heart

- (2) Kidney
- (3) Liver
- (4) Uterus
- (5) Hand

Directions :

Questions (21 to 25) : In these questions, there is a certain relationship between two given words on one side of :: and one word is given on another side of ::, the other word is to be found out from the given five alternatives so that the relationship is the same as for the other pair. Identify correct answer and indicate it as per the "Instructions".

21. Vienna : Austria :: Santiago : ?

- (1) Argentina
- (2) Chile
- (3) Brazil
- (4) Colombia
- (5) Peru

22. Amitabh Bachchan : Cinema ::
Rahul Bajaj : ?

- (1) Literature
- (2) Business
- (3) Arts
- (4) Music
- (5) Lawyer

23. Gitanjali : Ravindranath Tagore ::
Godaan : ?

- (1) Subhadra Kumari Chauhan
- (2) Sumitranandan Pant
- (3) Harivansh Rai Bachchan
- (4) Munshi Premchand
- (5) Maithili Sharan Gupt

24. Lala Lajpat Rai : Freedom
Struggle :: Raja Ram Mohan
Roy : ?

- (1) Social Reforms
- (2) Literature
- (3) Business
- (4) Politics
- (5) Music

25. Temperature : Degrees :: Mass : ?

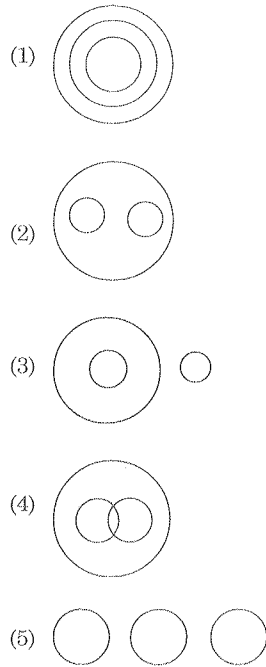
- (1) Seconds
- (2) Metre
- (3) Gram
- (4) Watt
- (5) Joule

[3]

[Turn Over]

**Directions :**

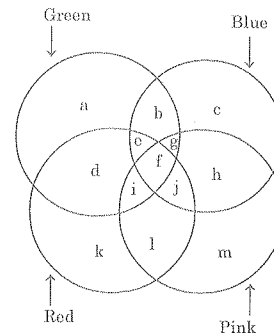
Questions (26 to 30) are based on the following diagrams. Study them carefully and indicate correct answers as per the "Instructions".



26. Animals, Cows, Horses
 27. Fruits, Flowers, Cereals
 28. People, Doctors, Women
 29. Metre, Centimetre, Millimetre
 30. Flowers, Roses, Mangoes

Directions :

Questions (31 to 35) : With the help of the given diagram, answer the following questions making the right choice from the given alternatives. Indicate the answer as per the "Instructions".

**Liking for Colours**

31. Those who like Green, Blue and Red but not Pink are represented by letter
 (1) d
 (2) e
 (3) g
 (4) f
 (5) h
32. Those who like Green, Red and Pink, but not Blue are represented by the letter
 (1) d
 (2) e
 (3) f
 (4) g
 (5) i

[4]

[Turn Over



33. Those who like all the four colours, Green, Blue, Pink and Red are represented by the letter

- (1) j
 (2) e
 (3) i
 (4) f
 (5) g

34. Those who like Green and Blue, but not Pink and Red are re-represented by the letter

- (1) b
 (2) c
 (3) a
 (4) e
 (5) f

35. Those who like Pink and Red only but not Green and Blue are represented by the letter

- (1) k
 (2) m
 (3) l
 (4) j
 (5) i

Directions :

Questions (36 to 38) : If PLACE is coded as 12345 and TIME is coded as 6785 how are the following words coded? Identify the right answer and indicate it as per the "Instructions".

36. PELMET
 (1) 152658
 (2) 125658
 (3) 152568
 (4) 152856
 (5) 125856

37. TEMPLE

- (1) 658215
 (2) 658125
 (3) 658251
 (4) 652851
 (5) 568125

38. PLATE

- (1) 12356
 (2) 12365
 (3) 12456
 (4) 12345
 (5) 12546

Directions :

Questions (39 to 42) are based on simple arithmetic principles. Find the right answer from among the alternatives and indicate it as per the "Instructions".

39. $145 + \dots = 14,500$

- (1) 10.0
 (2) 1.0
 (3) 0.1
 (4) 0.001
 (5) 0.01

40. $(75 + 100) \times 6 = ?$

- (1) 4.5
 (2) 0.45
 (3) 0.4
 (4) 4.75
 (5) 4.05

[5]

[Turn Over



41. $\frac{30 + (7 \times .03)}{9} = ?$

- (1) 3.3367
(2) 3.3356
(3) 3.3257
(4) 3.3567
(5) 3.3557

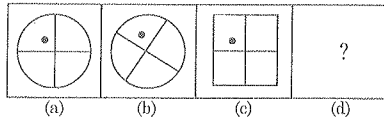
42. $\frac{222 + x}{5} = 15x; x = ?$

- (1) 5
(2) 4
(3) 3
(4) 2
(5) 1

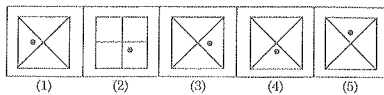
Directions :

Questions (43 to 46) : Each question has four problem figures 'a', 'b', 'c' and 'd'. Figure 'd' has only a question mark '?'. Figure 'b' bears certain relationship to 'a'. Similarly one of the answer figures bears similar relationship to 'c'. Find this out and indicate it as per the "Instructions".

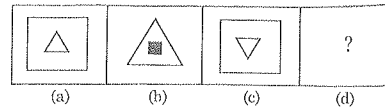
43. *Problem Figures*



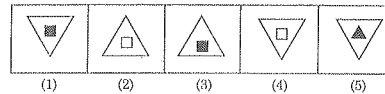
Answer Figures



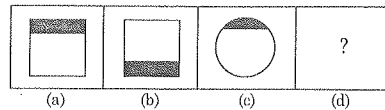
44. *Problem Figures*



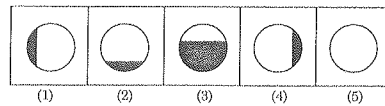
Answer Figures



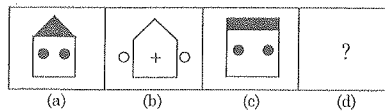
45. *Problem Figures*



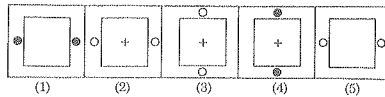
Answer Figures



46. *Problem Figures*



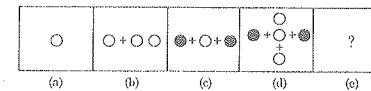
Answer Figures



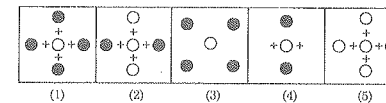
Directions :

Questions (47 to 50) : In these questions, there are five problem figures, (a), (b), (c), (d) and (e). Figure in (e) is however, missing. You have to select one figure from the five answer figures, (1), (2), (3), (4) and (5) such that the series is completed. Indicate your answer as per the "Instructions".

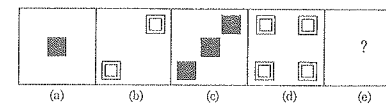
47. *Problem Figures*



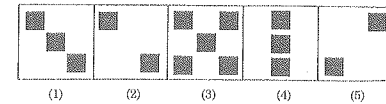
Answer Figures



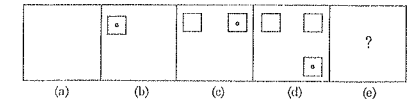
48. *Problem Figures*



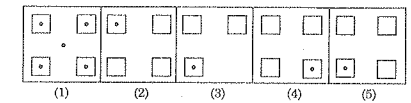
Answer Figures



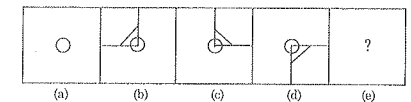
49. *Problem Figures*



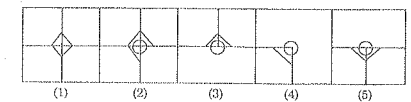
Answer Figures



50. *Problem Figures*



Answer Figures





NTSE (EE)

Space for Rough Work



NTSE (EE)

PART – II

LANGUAGE COMPREHENSIVE TEST
(Q. Nos. 51 to 90)

Max. Marks – 40

Note :

- i) **SHADE** the correct alternatives in the OMR Answer Sheet provided, from amongst the ones given against the corresponding question in the Question Booklet. For shading the circles, use **HB Pencil**.
- ii) Q. No. 51 to 90 of Language Comprehensive Test contains English Language along with a blank sheet for rough work.

**Directions :****Questions (51 to 55) :**

Read the following passage and answer the questions given after it.

Mr. Raman was born in a little village near the coast and had gone to school in the nearest seaside town. Mr. Raman was not a lover of the sea; even when walking along the sands, he was always afraid of being cut off by the tide. He was not a very good swimmer, so perhaps this accounts for it.

Mr. Raman's family outings were often made to the beach. One day, his children pleaded to go to the beach. So Mr. Raman hired a boat and with his two children rowed out into the bay. All went on well, but while turning back, a strong breeze sprung up and the currents were rather treacherous. Mr. Raman rowed hard but it seemed they were making little progress. The children waved to the people on the beach and were at last rescued. Mr. Raman's dislike of the sea was not diminished by this experience.

Choose the correct answer for the following questions :

51. Mr. Raman was nervous of walking along the sands because _____
- (1) he had no love for the sea.
 - (2) there, the sea was infested with deadly monsters.
 - (3) he feared that the tide may cut him off from the land.
 - (4) the sea was too deep even near the coast.

52. What did the children plead for ?
- (1) Climb the cliff to have a better view of the bay.
 - (2) Go to a coastal resort.
 - (3) Take them for a picnic on the beach.
 - (4) Go out into the bay in a boat.
53. What difficulties did they encounter when returning to the shore ?
- (1) The boat they were rowing in suddenly developed a leak
 - (2) Sea monsters surrounded the boat
 - (3) Treacherous currents developed as a result of strong winds
 - (4) The engine of the boat stopped functioning
54. Why did the children wave ?
- (1) They were bidding goodbye to the people on the shore
 - (2) To attract the attention of the people on the bank to their plight
 - (3) They had a joyous ride in the boat
 - (4) Their boat was sinking
55. Mr. Raman's children were rescued by
- (1) the strong wind
 - (2) the flowing water
 - (3) Mr. Raman
 - (4) the people

**Directions :****Questions (56 to 60) :**

Read the following passage and answer the questions given after it.

Once a king saw some young boys pelting stones on a snake. He prevented the boys from killing the snake. The snake, which was the king of the snake-world, thanked him and favoured him with a supernatural gift by which he could understand the language of any animal. But he warned him that the divulgence of the secret would cost him his life. One day, when the king was sitting in his garden and enjoying breakfast, a small portion of the sweet fell on the ground. Soon he heard an ant shouting, "My God, what a big wagon-ful of sweet has fallen and there is none to consume it. Ah ! I can enjoy all, now." Hearing this, the king smiled and chuckled. The queen, who was sitting next to him, was curious to note the changing countenance of the king. She asked him to tell her the reason for the smile. But the king kept silent; as the divulgence of the secret would cost him his life. The queen felt offended and thought that there was something which the king did not want to tell her in public.

56. Whom did the king see one day ?

- (1) Snake-charmers catching snakes
- (2) Young boys pelting stones on a snake
- (3) Young boys running out of fear
- (4) The queen

57. What gift did the king of the snake-world give the king ?

- (1) Supernatural gift that would sense the movements of animals
- (2) Supernatural gift that would make the animals speak to the king
- (3) Supernatural gift that would make the king understand the language of any animal
- (4) Supernatural gift that any animal after seeing the king will not attack him

58. What did the snake warn the king ?

- (1) The divulgence of the secret would cost him his life
- (2) The divulgence of the secret would cost him his queen's life
- (3) The divulgence of the secret would cost him the loss of his throne
- (4) The divulgence of the secret would cost him the loss of his eyesight

59. Why did the king chuckle ?

- (1) Because he was enjoying his breakfast
- (2) Because he was proud of his newly acquired power
- (3) Because he knew that the queen could not hear the animal talk
- (4) Because he had heard an ant talking about the sweet fallen on the ground



60. What did the queen feel ?

- (1) The queen felt offended and thought that the king did not want to tell her in public.
- (2) The queen felt offended and thought that the king did not want to share his feelings.
- (3) The queen felt offended and thought that the king was proud.
- (4) The queen felt that the king out fear did not want to tell her.

Directions :**Questions (61 to 65) :**

Read the following passage and answer the questions given after it.

Ant-eaters are animals that feed on white ants, the kind of ants which are also called termites. Ant-eaters have very small mouths. They have got worm-like tongues which are more than thirty centimetres long. The tongue is covered with a sticky substance. The ant-eaters have powerful forearms and long claws.

The ant-eaters probably choose ants for their food because they have no teeth. When an ant-eater sees a termite, it pushes out its tongue. Thus the ant-eaters catch their prey. They use their forearms and long claws to break the nest of termites, built of hard mud.

There are three different kinds of ant-eaters. They are giant eaters that lives on ground, the silky ant-eater that always lives in trees and the tamandua that can't live in trees without using its tail.

61. White ants are also called

- (1) worms
- (2) termites
- (3) claws
- (4) beetles

62. To break the nest of termites the ants use their

- (1) teeth
- (2) tongue
- (3) claw and teeth
- (4) forearms and long claws

63. The giant ant-eater lives on

- (1) hard mud
- (2) ground
- (3) trees
- (4) branches

64. The tongue of an ant-eater is covered with

- (1) mud
- (2) gum
- (3) sticky substance
- (4) hair

65. The tamandua can't live in trees without its _____

- (1) tail
- (2) tongue
- (3) hair
- (4) teeth

The following five sentences come from a paragraph. The first and the last sentences are given. Choose the order in which the three sentences (PQR) should appear to complete the paragraph.

66. S₁ – There lived in India an Emperor called Shah Jahan.

S₂ –

S₃ –

S₄ –

S₅ – In the year 1630 the beloved wife of the Emperor died.

P – Her name was Mumtaz Mahal.

Q – He had a beautiful and intelligent wife.

R – Its shortened form is Taj Mahal.

Choose from the options given below.

- (1) PQR
- (2) QPR
- (3) RPQ
- (4) QRP



67. The following question has the second sentence missing. Choose the appropriate sentence from the given options to complete it.

A – A young man was called up for army service.

B – _____

C – The doctor was sitting when he went in.

- (1) The doctor pointed a chair for the young man.
(2) The doctor examined the young man completely.
(3) He was to be examined medically.
(4) He possessed enough intelligence for the army.

68. Choose the word which best fills the blank from the four options given.

She received many _____ on her birthday.

- (1) rewards (2) awards
(3) momentos (4) presents

69. He faced and overcame many _____

- (1) objects (2) obstacles
(3) dangers (4) fear

70. She _____ their conversation with a smile.

- (1) interrupting
(2) interrupted
(3) interfered
(4) interruption

[12]

[Turn Over]

71. She _____ something in my ears.

- (1) shouted (2) muttered
(3) whispered (4) spoke

72. I can _____ someone knocking the door.

- (1) listen (2) hear
(3) learn (4) feel

73. I am _____ than my sister.

- (1) taller (2) tall
(3) tallest (4) very tall

74. When he _____ he could only move slowly.

- (1) regained (2) recovered
(3) remained (4) reconciled

Directions :

Questions (75 to 78) :

Select the meaning of the given/underlined phrases/idioms.

75. The prices of commodities are going up by leaps and bounds.

- (1) irregularly
(2) gradually
(3) rapidly
(4) systematically

76. We kept our fingers crossed till the final results were declared.

- (1) waited expectantly
(2) kept praying
(3) felt scared
(4) kept hopeful

77. My car broke down on the way to college yesterday.

- (1) met with an accident
(2) broke into pieces
(3) stopped due to mechanical failure
(4) dashed against another vehicle



78. He burnt his fingers by interfering in others' affairs.

- (1) got himself into trouble
(2) burnt himself
(3) got himself insulted
(4) got rebuked

Directions :

Questions (79 to 83) :

In the following passage there are some numbered blanks. Fill in the blanks by selecting the most appropriate word for each blank from the given options.

Without water 79 animal can survive. In desert regions the greatest 80 to life is drying up. But many creatures are able to make use of 81 little water that exists in arid areas. One of nature's masterpieces 82 creatures equipped to 83 with desert life is the hardy camel.

79. (1) every (2) no
(3) any (4) desert

80. (1) need (2) threat
(3) requirement (4) worry

81. (1) what (2) the
(3) that (4) extremely

82. (1) for (2) about
(3) among (4) with

83. (1) live (2) resist
(3) bear (4) cope

84. Identify the wrongly-spelt word.

- (1) annoyance
(2) conveyance
(3) remembrance
(4) ignorance

85. The bus was _____ time. Choose the correct preposition to fill in the above blank.

- (1) at (2) by
(3) into (4) on

Directions :

Questions (86 to 88) :

Select the most appropriate option to fill in the blanks from the given alternatives.

86. Shraavan _____ cricket in the cricket stadium.

- (1) plays (2) played
(3) playing (4) play

87. Diana _____ in the crowd because of her height and flaming red hair.

- (1) stood up (2) stood off
(3) stood at (4) stood out

88. We should be _____ to all animals.

- (1) kindness (2) kindly
(3) kind (4) kindness

Directions :

Questions (89 to 90) :

Select the word which means the opposite of the given words.

89. STRONG

- (1) lean (2) thin
(3) dull (4) weak

90. OBEY

- (1) dislike
(2) disobedient
(3) disobey
(4) dismiss

[13]

[Turn Over]



Space for Rough Work

PART – III

APTITUDE TEST (Q. Nos. 91 to 180)

Max. Marks – 90

Note :

i. Subjects, Questions Sl. No. and Marks allotted :

1. Physics	91 to 102 Questions	12 Marks
2. Chemistry	103 to 113 Questions	11 Marks
3. Biology	114 to 125 Questions	12 Marks
4. Mathematics	126 to 145 Questions	20 Marks
5. History	146 to 155 Questions	10 Marks
6. Geography	156 to 165 Questions	10 Marks
7. Political Science	166 to 175 Questions	10 Marks
8. Economics	176 to 180 Questions	05 Marks

ii. **SHADE** the circle having the correct alternative in the OMR Sheet provided, from among the ones given against the corresponding question in the Question Paper Booklet. For shading the circles, use **HB Pencil**.



PHYSICS

91. The value of "G" depends on
- (1) Mass of bodies
 - (2) The medium between bodies
 - (3) Temperature of bodies
 - (4) It is an independent constant
92. The gravitational force between two bodies is 'F'. If the mass of each body is doubled and distance between them is halved then the force between them will be
- (1) $\frac{4F}{9}$
 - (2) $\frac{9F}{4}$
 - (3) 16F
 - (4) $\frac{F}{16}$
93. Two cars start a race at same time with velocities 4 m/s and 2 m/s and travel in straight line with uniform accelerations 1 m/s² and 2 m/s² respectively. If they reach the final point at same instant, then length of the path is
- (1) 30 m
 - (2) 32 m
 - (3) 20 m
 - (4) 24 m
94. An object may have
- (1) Varying speed without having varying acceleration
 - (2) Varying velocity without having varying speed
 - (3) Non zero acceleration without having varying velocity
 - (4) Constant acceleration without having varying velocity
95. The angular velocity of minute hand in a wall clock is (in radians/sec)
- (1) $\frac{\pi}{30}$
 - (2) $\frac{\pi}{60}$
 - (3) $\frac{\pi}{3600}$
 - (4) $\frac{\pi}{1800}$
96. A man carries a load of 50 kg to a height of 40 m in 25 seconds. If the power of the man is 1568 W, then mass of the man is
- (1) 20 kg
 - (2) 50 kg
 - (3) 100 kg
 - (4) 75 kg



97. Where will it be profitable to purchase one kilogram of sugar ?

- (1) at poles
- (2) at equator
- (3) at 45° latitude
- (4) at 22½° latitude

98. For a particle executing simple harmonic motion the acceleration is proportional to

- (1) displacement from mean position
- (2) distance from mean position
- (3) distance travelled since $t = 0$
- (4) speed

99. Two bar magnets have their magnetic moments in the ratio of 1 : 2. The first one produces a field of induction 60 newtons/ampere-metre at a point 20 cm from its centre on axial line, the second one produces a field of induction 'B' at a point 20 cm from its centre on equatorial line. Then the value of 'B' is (in newtons/ampere-metre)

- (1) 30
- (2) 60
- (3) 120
- (4) 15

100. The effective resistance of a number of resistors in parallel is 'x' Ω . When one of the resistor is burnt, the effective resistance is 'y' Ω . Then the resistance of burnt resistor is

- (1) $\left(\frac{xy}{x+y}\right)\Omega$
- (2) $(x-y)\Omega$
- (3) $\left(\frac{x-y}{xy}\right)\Omega$
- (4) $\left(\frac{xy}{y-x}\right)\Omega$

101. Two resistors of resistances 3R ohms and R ohms are connected in series in an electric circuit. The ratio of heat produced in resistor of 3R ohms to that of resistor of R ohms is

- (1) 1 : 3
- (2) 3 : 1
- (3) 1 : 9
- (4) 9 : 1

102. An electric iron draws a current of 15 A from 220 V supply. What is the cost of using iron for 30 minutes every day for 15 days if the cost of unit is 2 rupees ? (1 unit = 1 kWhr)

- (1) Rs. 49.50
- (2) Rs. 60
- (3) Rs. 40
- (4) Rs. 10



CHEMISTRY

103. Representative elements belong to

- (1) s-block only
- (2) s and p-blocks only
- (3) d-block only
- (4) d and f-blocks only

104. The highest first Ionization Potential (I.P.) is exhibited by

- (1) Alkali metals
- (2) Halogens
- (3) Noble gases
- (4) Transition elements

105. In which of the following substance solubility decreases with increase in temperature ?

- (1) KNO_3
- (2) Na_2NO_3
- (3) NH_4Cl
- (4) $\text{Ce}_2(\text{SO}_4)_3$

106. pH value of a solution is changed from '2' to '5', then the H^+ ion concentration of the solution

- (1) increases by 3 times
- (2) decreases by 3 times
- (3) increases by 1000 times
- (4) decreases by 1000 times

107. Combustion of Methane and Ethane respectively

- (1) Exothermic and Endothermic
- (2) Endothermic and Exothermic
- (3) Both are endothermic
- (4) Both are exothermic

108. 100 ml of an aqueous solution contain 6.023×10^{22} solute molecules. Then molarity of the solution is

- (1) 1 M
- (2) 0.1 M
- (3) 0.01 M
- (4) 0.2 M

109. Buckminsterfullerene is formed by patching together the carbon atoms of

- (1) 20 hexagons and 12 pentagons
- (2) 16 hexagons and 14 pentagons
- (3) 12 hexagons and 20 pentagons
- (4) 15 hexagons and 18 pentagons



110. Which of the following gives methane gas on treatment with water ?

- (1) Magnesium carbide
- (2) Silicon carbide
- (3) Calcium carbide
- (4) Aluminium carbide

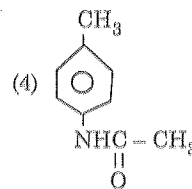
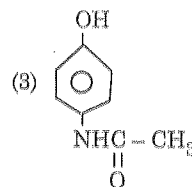
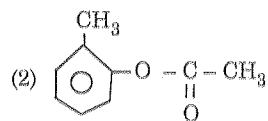
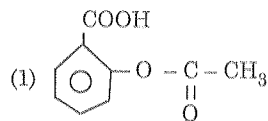
111. Which of the following saccharide is a non-sugar ?

- (1) Glucose
- (2) Fructose
- (3) Sucrose
- (4) Cellulose

112. To get red colour to glass, the following substance is added to the glass when it is liquid form

- (1) Cr_2O_3
- (2) CuSO_4
- (3) Cu_2O
- (4) MnO_2

113. The structure 'aspirin' molecule which is used as medicine among the following



BIOLOGY

114. Identify the process which makes our living possible on this planet

- (1) Respiration
- (2) Excretion
- (3) Nutrition
- (4) Photosynthesis

115. Choose the correct statement/statements from the following :

- A) Branchial respiration takes place in Fishes.
- B) Cutaneous respiration takes place in Leech.
- C) Tracheal respiration takes place in Birds.

- (1) A, B, C
- (2) B, C
- (3) A, B
- (4) A, C

116. Pavan's blood group doesn't have antibodies in plasma and Shashank's blood group doesn't have antigens on RBCs. The blood groups of Pavan and Shashank respectively are

- (1) O, A
- (2) AB, O
- (3) B, AB
- (4) B, A

117. The part of the brain which makes you to remember the shape and colour of Parrot eventhough you do not have Parrot in front of your eyes is

- (1) Cerebrum
- (2) Cerebellum
- (3) Mid brain
- (4) Pons Varolii

118. One of the following is a mismatched pair

- (1) Aspergillus – Conidiophore
- (2) Yeast – Bud
- (3) Grass – Nodes
- (4) Bryophyllum – Root buds

119. The weight of a child is 60% less of the expected weight for that age. This child is affected with

- (1) Measles
- (2) Kwashiorkor
- (3) Marasmus
- (4) Jaundice

120. Consanguineous marriage is the marriage between man and woman who are

- (1) good friends
- (2) related through blood
- (3) having same diseases
- (4) HIV positive



121. The growth pattern in plants can be altered by

- (1) environmental factors and internal conditions
- (2) environmental factors alone
- (3) changing climatic conditions
- (4) removing weeds and adding more fertilizers

122. The sequence of Erythrocytic cycle in the life cycle of Plasmodium is

- (1) Cryptosporozoit → Schizont → Sporozoit → Gametocytes
- (2) Cryptomerozoit → Cryptoschizont → Cryptosporozoit
- (3) Sporozoit → Cryptoschizont → Cryptomerozoit
- (4) Cryptomerozoit → Schizont → Merozoit → Gametocytes

123. The vitamin required for the formation of collagen in humans is

- (1) Vitamin 'K'
- (2) Vitamin 'A'
- (3) Vitamin 'C'
- (4) Vitamin 'D'

124. An example for endospermic seeds

- (1) Bean
- (2) Wheat
- (3) Pea
- (4) Bengal gram

125. One of the reasons for constipation is

- (1) lack of cellulose in diet
- (2) excess intake of water
- (3) infectious blood
- (4) irregular menstrual cycle



MATHEMATICS

126. The roots of a quadratic equation $x^2 + ax + b = 0$ are c and d and the roots of the quadratic equation $x^2 + cx + d = 0$ are a and b , then the numerical value of $a + b + c + d$ is

- (1) 1
- (2) 0
- (3) -2
- (4) 2

127. The value of

$$1 + \frac{1}{1+2} + \frac{1}{1+2+3} + \frac{1}{1+2+3+4} + \dots + \frac{1}{1+2+3+\dots+2013} =$$

- (1) $\frac{1}{2013}$
- (2) $\frac{4026}{2014}$
- (3) $\frac{2013}{2014}$
- (4) $\frac{1}{2}$

128. T I C K

T O C K

T I C K

T O C K

A
C L O C K

where T, I, C, K, O, A, L are positive distinct digits. Then the value of $A + L + C$ is

- (1) 15
- (2) 12
- (3) 21
- (4) 14

129. The remainder when $x^5 + Kx^2$ is divided by $(x-1)(x-2)(x-3)$ contains no term in x^2 . Then the value of K is

- (1) -90
- (2) 67
- (3) 74
- (4) 15

130. Triangle ABC is Isosceles, right angled at B and has area S . A circle is constructed with B as centre and BA as radius. A semicircle is constructed

externally on AC, that is on the side of AC which is opposite to that of B. Then the area of the crescent or sickle formed between the circle and the semi circle

- (1) $2S$
- (2) $\frac{S}{2}$
- (3) S
- (4) $\frac{\pi}{\sqrt{2}} S$

131. In a $\triangle ABC$, $AB = c$, $BC = a$, $CA = b$ and $a^2 + b^2 = 1993 c^2$,

then $\frac{\cot C}{\cot A + \cot B} =$ _____

- (1) 996
- (2) 1000
- (3) 784
- (4) 1



132. Find x if

$$x + y + z + t = 1$$

$$x + 3y + 9z + 27t = 81$$

$$x + 4y + 16z + 64t = 256$$

$$x + 167y + 167^2z + 167^3t = 167^4$$

- (1) 256
(2) -2004
(3) 167
(4) 2013

133. If $\frac{4^5 + 4^5 + 4^5 + 4^5}{3^5 + 3^5 + 3^5} \times$

$$\frac{6^5 + 6^5 + 6^5 + 6^5 + 6^5 + 6^5}{2^5 + 2^5} = 2^n$$

then the value of n is

- (1) 12
(2) 10
(3) 8
(4) 6

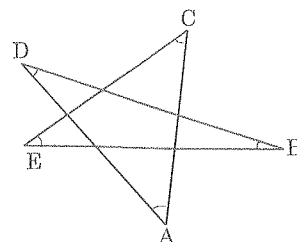
134. Let $3^a = 4$, $4^b = 5$, $5^c = 6$, $6^d = 7$, $7^e = 8$ and $8^f = 9$, what is the value of product abcdef?

- (1) 1
(2) 2
(3) $\sqrt{6}$
(4) 3

135. The value of $\frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} +$

$$\frac{1}{56} + \frac{1}{72} + \frac{1}{90} + \frac{1}{110} + \frac{1}{132}$$
 is

- (1) 1
(2) 0
(3) $\frac{1}{4}$
(4) 2

136. The sum of the angles of the star i.e. $\angle A + \angle B + \angle C + \angle D + \angle E$ is

- (1) 180°
(2) 360°
(3) 270°
(4) 540°

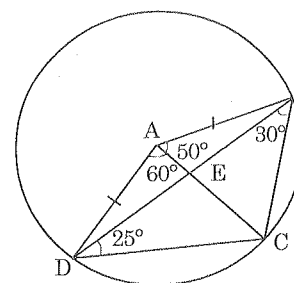
137. The minimum value of $(a + b + c)$

$$\left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right) \text{ is : (where } a, b, c > 0)$$

- (1) 9
(2) 6
(3) 8
(4) 7

138. The number of positive integers which divide 10^{999} but not 10^{998} is

- (1) 999
(2) 998
(3) 1997
(4) 1999

139. ABCD is a convex quadrilateral in which $\angle BAC = 50^\circ$, $\angle CAD = 60^\circ$, $\angle CBD = 30^\circ$ and $\angle BDC = 25^\circ$. If E is the point of intersection of AC and BD, then the value of $\angle AEB$ is

- (1) 85°
(2) 35°
(3) 95°
(4) 100°

140. In a triangle ABC, the incircle touches the sides BC, CA and AB respectively at D, E and F. If the radius of incircle is 4 units and if BD, CE and AF are consecutive integers, then the perimeter of ΔABC is

- (1) 32
(2) 42
(3) 40
(4) 17

141. If n is an integer such that $2.2^2 + 3.2^3 + 4.2^4 + 5.2^5 + \dots + n.2^n = 2^{n+10}$ then the value of n is

- (1) 104
(2) 256
(3) 513
(4) 110

142. If $x + y + z = 15$, $xy + yz + zx = 72$, then the value of x lies between

- (1) 2 and 3
(2) 3 and 7
(3) 5 and 8
(4) 6 and 10

143. The value of $\sum_{n=1}^{2004} (-1)^n [\sqrt{n}]$ where

[x] denotes the integral part of x.

- (1) 40
(2) 60
(3) 22
(4) 15

144. P is a prime, n is a positive integer and $n + P = 2000$. LCM of n and P is 21879. Then the value of P is

- (1) 10
(2) 11
(3) 14
(4) 25

145. The ten digit number 3A55B1063C is a multiple of 792. Then the value of $A + B + C$ is

- (1) 13
(2) 11
(3) 10
(4) 15



HISTORY

146. The 'Republic', a political treatise, was written by this philosopher
- (1) Democritus
 - (2) Thucydides
 - (3) Plato
 - (4) Aristotle
147. This is not a Principle of Judaism
- (1) Love thy neighbour as thyself
 - (2) Repentance saves people from sins
 - (3) There is only one merciful God, Yehova who is love personified
 - (4) Justice, kindness and obedience were the important principles
148. The statement that gives the correct difference between culture and civilization
- (1) They are one and the same
 - (2) Civilization is considered as the impact of technological and scientific growth on society, whereas culture means the artistic and aesthetic influence on it
 - (3) Civilization is traditional based and culture is technology based
 - (4) Civilization is the result of influence of traditions and customs, culture is the result of influence of science and technology
149. The book 'Zendavesta', as written by Zoroaster in 7th Century B.C., describes the fight between
- (1) Persians and Ancient Chinese
 - (2) Persians and Greeks
 - (3) Righteousness and Wickedness
 - (4) The Satan and the 'Wisemen'
150. This event in history is called 'Hijra', the beginning of Mohammedan Era.
- (1) When Gabriel appeared to Mohammad near Hira and made him to realise that he was the Prophet of God
 - (2) When Arabs were driven away from Mecca
 - (3) When Mohammad spent several nights in meditation in the mountains of Hira near Mecca, his inner voice, one day, told him that he was the Prophet of God
 - (4) The year in which Mohammad, being driven away by Arabs from Mecca, migrated to Madina



151. The inventions that took place during 'Industrial Revolution' are given below in a jumbled manner.

- | | |
|------------------------|-----------------|
| i) Cart Wright | a) Power loom |
| ii) Richard Ark Wright | b) Steam engine |
| iii) James Watt | c) Water frame |
| iv) John Macadam | d) Safer roads |
| v) Samuel Crompton | e) Mule |

The correct match from the above :

- (1) ii - b, v - c
- (2) i - a and iv - d
- (3) iii - c and ii - b
- (4) iv - d only

152. Read the following statements related to the effects of 1830 French Revolution

- (a) The settlement of Congress of Vienna, gave Belgium to the king of Holland
- (b) Inclusion of Belgium in Holland, made Belgians feel happy
- (c) As a result of French Revolution Russia was kept under the control of Poland
- (d) Under the influence of July Revolution, Patriotic Germans revolted against their rules in Saxony

The true statement from the above :

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

153. 'Carbonary' means

- (1) A secret treaty
- (2) Royal place
- (3) A secret society formed by Revolutionary forces of Italy
- (4) An army formed by Napoleon

154. Safety valve theory means

- (1) A theory intended to provide a solution for Quit India Movement
- (2) A theory intended to provide a compromise solution between moderates and extremists
- (3) A theory related to safe outlet to growing discontentment among the educated India
- (4) A theory related to safe outlet for 1857 revolt

155. The Vande Mataram Movement was launched in response to

- (1) Partition of Bengal
- (2) Rowlatt Act
- (3) Jallianwala Bagh Incident
- (4) Simon Commission's Report



GEOGRAPHY

156. Winds blowing from the sub-tropical High Pressure belts to the Equatorial Low Pressure belts are called as

- (1) The westerlies
- (2) The polar easterlies
- (3) The seasonal winds
- (4) The trade winds

157. This volcano is present in the Circum-Pacific belt

- (1) Stromboli
- (2) Cotopaxi
- (3) Kilimanjaro
- (4) Narcondam





158. When the sun rises at 7 A.M. in Shillong (92°E), the sun rise at Varanasi (82.5°E) will be at this time

- (1) 6.22 A.M.
- (2) 7.38 A.M.
- (3) 6.12 A.M.
- (4) 7.22 A.M.

159. The grasslands of Eurasia are called as

- (1) Prairies
- (2) Pampas
- (3) Steppes
- (4) Downs

160. The conventional symbol used in weather reports for 'overcast' sky

- (1) 
- (2) 
- (3) 
- (4) 

161. The river in the Peninsular Plateau that flows towards the west

- (1) Tapati
- (2) Mahanadi
- (3) Cauvery
- (4) Godavari



162. The names of the forest type and the availability of forest products are given below in a jumbled way

Name of the forest type	Availability of forest Products
-------------------------	---------------------------------

- | | |
|---|------------------------|
| i) Tropical moist deciduous forests | a) Date palm |
| ii) Tropical dry deciduous forests | b) Hard Sundari timber |
| iii) Thorn forests | c) Dry fruits |
| iv) Tidal forests | d) Sandalwood |
| v) The Himalayan Temperate and Alpine forests | e) Bamboo |

Based on the above, the correct match among the following :

- (1) i - a, ii - b, iii - c, iv - d, v - e
- (2) i - d, ii - e, iii - a, iv - b, v - c
- (3) i - e, ii - a, iii - b, iv - c, v - d
- (4) i - a, ii - d, iii - e, iv - b, v - c

163. The Nuclear Energy mineral among the following :

- (1) Kyanite
- (2) Monazite
- (3) Steatite
- (4) Apatite

164. The thin mantle of top soil which is removed over large areas in the form of layer to layer is called as

- (1) Grooves
- (2) Gullies
- (3) Rill erosion
- (4) Sheet erosion

165. The steel plant which is built with German collaboration under public sector

- (1) Durgapur steel plant
- (2) Bokaro steel plant
- (3) Rourkela steel plant
- (4) Visveswaraya iron and steel plant

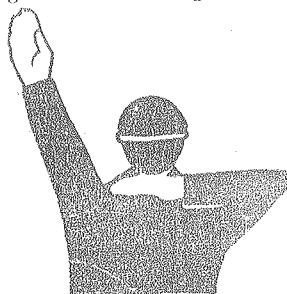


POLITICAL SCIENCE

166. The word "Socialist State" was added in the Preamble to the Constitution through this amendment
- (1) 45th amendment
 - (2) 42nd amendment
 - (3) 39th amendment
 - (4) 49th amendment
167. The statement that shows the correct difference between 'Fundamental Rights' and 'Directive Principles of State Policy'.
- (1) Both are same
 - (2) Directive Principles of State Policy are safeguarded through courts of law, whereas fundamental rights are the guidelines given to Government
 - (3) Fundamental rights are safeguarded through courts of law, whereas Directive Principles of State Policy are only the guidelines given to Government
 - (4) Fundamental rights are the part of the Preamble whereas Directive Principles of State Policy are the part of Constitution

[28]

168. "Issues Ordinances for the welfare of the Country when the Parliament is not in session" — This power enjoyed by the President of India comes under this category
- (1) Legislative powers
 - (2) Executive powers
 - (3) Financial powers
 - (4) Emergency powers
169. The Speaker of Legislative Assembly has this power as regards voting
- (1) Has the right to vote
 - (2) Has no right to vote
 - (3) Has one usual vote and one casting vote
 - (4) Has the right to exercise vote in case of a tie
170. Among the nine signals used to regulate flow of traffic, the picture given below belongs to



- (1) Sixth signal
- (2) Seventh signal
- (3) Eighth signal
- (4) Fifth signal

[Turn Over]



171. 'Right to Education' belongs to this type of 'Rights of a child'.
- (1) The right to development
 - (2) The right to participation
 - (3) The right to protection
 - (4) The right to survival
172. The factor that relates to elections and election process
- (1) The role of public opinion
 - (2) Importance of Dissent
 - (3) Universal adult franchise
 - (4) Need for a vigilant public
173. This is not an essential element of Indian National Life in the contemporary period
- (1) Democracy
 - (2) Secularism
 - (3) Social Justice
 - (4) Federalism
174. This is not an electoral malpractice
- (1) Canvassing in favour of a candidate
 - (2) Gratification to influence the voters
 - (3) Making appeal to win votes in the name of community
 - (4) Hiring vehicles to bring voters to polling booths
175. In this issue India was chosen as a Chairman of the UN Repatriation Commission to deal with the issue of prisoners of war
- (1) Angola war
 - (2) Korean war
 - (3) Cambodia issue
 - (4) Somalia issue

[29]

[Turn Over]

**ECONOMICS**

176. Examine the following :

- | | |
|--------------------------------------|---|
| i) Anti-poverty programmes | a) Working less than standard hours |
| ii) Disguised unemployment | b) Price rise due to rise in aggregate demand |
| iii) Under-employment | c) RWP, MFAL, SFDA |
| iv) Employment generation programmes | d) Working less than full capacity |
| v) Demand-pull inflation | e) SGSY, JGSY |

Based on the above select the correct match.

- (1) i - e, ii - d, iii - a, iv - c, v - b
 (2) i - c, ii - b, iii - e, iv - a, v - d
 (3) i - d, ii - e, iii - b, iv - c, v - a
 (4) i - a, ii - c, iii - d, iv - b, v - e

**Space for Rough Work**

177. In this system of land tenure, the land belonged to a small group of people who were responsible to pay rent to the state
- (1) Zamindari system
 - (2) Tenant system
 - (3) Ryotwari system
 - (4) Mahalwari system
178. The Telecommunication Policy of 1994, encouraged this
- (1) Increase cable lines
 - (2) Increase private investment
 - (3) Increase employment
 - (4) Increase public investment
179. 'Pana', a silver coin was the standard currency during this period
- (1) Gupta period
 - (2) Maghada period
 - (3) Mauryan period
 - (4) Satavahana period
180. This is a social and demographic indicator
- (1) Rise in percapita income
 - (2) Increase in employment
 - (3) Rise in literacy rate
 - (4) Fall in poverty levels