PART I : GENERAL INTELLIGENCE

Directions : In questions no. 1 to 7, select the related word/letters/number from the given alternatives.

1. MOQS : ACEG : : PRTV : ?

    (A) KMNP   (B) OQSU

    (C) EGIJ   (D) FHJM

2. 36 : 144 : : 49 : ?

    (A) 196   (B) 154

    (C) 81   (D) 149

3. 76 : 42 : : 66 : ?

    (A) 36   (B) 63

    (C) 12   (D) 35

4. Picture : See : : Book : ?

    (A) Listen   (B) Library

    (C) Buy   (D) Read

5. Dark : Light : : ?

    (A) Ill : Diseased

    (B) Hot : Cold

    (C) Polluted : Contaminated

    (D) Accrued : Accumulated

6. Swimming : River : : Hiking : ?

    (A) Mountain   (B) Sea

    (C) Road   (D) Pond

7. HOPEFUL : LUFEPOH : : ETHNICITY : ?

    (A) ICINHTEYT   (B) CINHTEYTI

    (C) YTICINHTE   (D) TICINHTEY

Directions : In questions no. 8 to 11, find the odd words/letters/number pair from the given alternatives.

8. (A) Poet   (B) Publisher

    (C) Author   (D) Novelist

9. (A) KHEB   (B) WTQN

    (C) MKHE   (D) MIDA

10. (A) 41, 52   (B) 64, 73

    (C) 46, 57   (D) 38, 49

11. (A) Hexagon : Angle

    (B) Square : Line

    (C) Circle : Arc

    (D) Line : Dot

12. Which one of the given responses would be a meaningful order of the following ?

    1. Plant   2. Fruit

    3. Seed   4. Flower

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

    (C) 3, 2, 4, 1   (D) 3, 1, 2, 4

13. Arrange the following words according to English Dictionary :

    1. Bound   2. Bonus

    3. Bunch   4. Board

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

    (C) 1, 4, 2, 3   (D) 2, 4, 3, 1

14. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?

    a _ a _ a b a b _ b a _

    (A) abba   (B) bbab

    (C) abab   (D) baab

15. In the following letter series, how many times does 'P' occur in such a way that after 'P', N O should occur ?

    A P N Q P N O S P T O Z P N O Y M P N O

    (A) 2   (B) 5

    (C) 4   (D) 3

16. Find out the set among the four sets which is like the given set.

    (23 : 30 : 37)

    (A) (21 : 28 : 34)   (B) (12 : 19 : 25)

    (C) (6 : 13 : 20)   (D) (7 : 15 : 22)

Directions : In questions no. 17 to 19, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

17. YVP, WTN, URL, ?

    (A) SPJ   (B) TQL

    (C) VSP   (D) SRJ

18. 2, 8, 18, 32, 50, ?
   (A) 70   (B) 68
   (C) 64   (D) 72

19. 1, 3, 7, 15, 31, ?
   (A) 73   (B) 63
   (C) 37   (D) 36

20. C is the mother of A and B. If D is the husband of B, what is C to D ?
   (A) Mother-in-law   (B) Sister
   (C) Mother   (D) Aunt

21. If A = 1, ACE = 9, then ART = ?
   (A) 29   (B) 38
   (C) 10   (D) 39

22. If PARK is coded as 5394, SHIRT is coded as 17698 and PANDIT is coded as 532068, how would you code NISHAR in that code language ?
   (A) 201739   (B) 261739
   (C) 266734   (D) 231954

23. If the 5th date of a month is Tuesday, what date will be 3 days after the 3rd Friday in the month ?
   (A) 17   (B) 22
   (C) 19   (D) 18

24. Seema's younger brother Sohan is older than Seeta. Sweta is younger than Deepti but elder than Seema. Who is the eldest ?
   (A) Seeta   (B) Deepti
   (C) Seema   (D) Sweta

25. Rahim and his uncle differ in their ages by 30 years. After 7 years, if the sum of their ages is 66, what will be the age of the uncle ?
   (A) 39   (B) 41
   (C) 51   (D) 49

26. Sohan ranks seventh from the top and twenty-sixth from the bottom in a class. How many students are there in the class ?
   (A) 33   (B) 34
   (C) 31   (D) 32

27. From the given alternatives select the word which *cannot* be formed using the letters of the given word.
   SIGNATURE
   (A) SIGHT   (B) GAIN
   (C) NATURE   (D) GATE

28. If 'SYNDICATE' is written as 'SYTENDCAI', then how can 'PSYCHOTIC' be written ?
   (A) PSICYOCTH   (B) PSICYCOTH
   (C) PSYICTCOH   (D) PSYCOHTCI

29. Some letters are given below in the first line and numbers are given below them in the second line. Numbers are the codes for the alphabets and vice-versa. Choose the correct letter-code for the given set of numbers.
   E M K B Z W Q U D J
   5 9 1 6 4 8 2 0 7 3
   429753
   (A) ZQMDEJ   (B) ZQEDMJ
   (C) ZQMJDE   (D) ZQMEDJ

30. From the given alternatives select the word which can be formed using the letters of the given word.
   DICTIONARY
   (A) BINARY   (B) DAIRY
   (C) NATION   (D) ADDITION

Directions : In questions no. 31 and 32, select the missing number from the given responses.

31.
5	25	5
7	49	7
6	?	6
   (A) 38   (B) 40
   (C) 36   (D) 35

32.
96	100	132
6	4	6
5	7	3
21	32	?
   (A) 32   (B) 20
   (C) 25   (D) 30

33. If $782 = 20$
    and $671 = 17$, then
    $884 = ?$

    (A) 26   (B) 23
    (C) 32   (D) 19

34. $5 \times 6 \times 4 = 456$, $3 \times 6 \times 5 = 536$,
    $4 \times 8 \times 7 = ?$

    (A) 847   (B) 784
    (C) 748   (D) 478

35. A cyclist goes 30 km to North and then turning East he goes 40 km. Again he turns to his right and goes 20 km. After this, he turns to his right and goes 40 km. How far is he from his starting point ?

    (A) 25 km   (B) 40 km
    (C) 6 km   (D) 10 km

36. Select the correct combination of mathematical signs to replace '*' signs and to balance the given equation.

    $9 * 7 * 2 * 3 * 10$

    (A) $+ - \times =$ (B) $- \div \times =$
    (C) $\div \times + =$ (D) $- + \div =$

37. If '+' denotes $\div$, '−' denotes $\times$, 'x' denotes − and '$\div$' denotes +, then

    $35 + 7 - 5 \div 5 \times 6 = ?$

    (A) 20   (B) 14
    (C) 36   (D) 24

38. One morning at 7 o'clock, Naresh started walking with his back towards the Sun. Then he turned towards left, walked straight and then turned towards right and walked straight. Then he again turned towards left. Now in which direction is he facing ?

    (A) West   (B) South
    (C) North   (D) East

39. *Statements* :

    1. Education is a process of lighting.

    2. Mind requires light to enlighten the core of cognitive aspect.

    Conclusions :

    I. Education is a light which removes the darkness of mind.

    II. Education is a static process for mind.

    (A) Both conclusions I and II follow
    (B) Neither conclusion I nor II follows
    (C) Only conclusion I follows
    (D) Only conclusion II follows

40. *Statements* :

    1. All students in my class are intelligent.

    2. Sunil is not intelligent.

    Conclusions :

    I. Sunil is not a student of my class.

    II. Sunil must work hard.

    (A) Both conclusions I and II follow
    (B) Neither conclusion I nor II follows
    (C) Only conclusion I follows
    (D) Only conclusion II follows

41. 3 daily wage workers A, B and C are distributed ₹ 178 in such a way that A gets ₹ 4 less than C, B gets ₹ 15 more than A and C gets ₹ 11 less than B. What is the ratio of their shares ?

    (A) 53 : 68 : 57   (B) 57 : 53 : 68
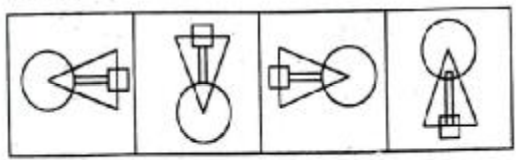   (C) 50 : 51 : 52   (D) 53 : 56 : 68

42. Five boys A, B, C, D and E are standing in a row. D is on the right of E. B is on the left of E, but on the right of A. D is on the left of C, who is standing on the extreme right. Who is standing in the middle ?
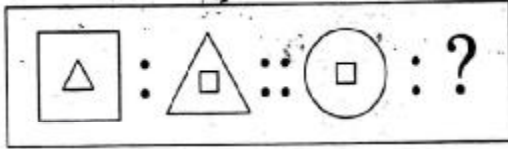
(A) D

(B) E

(C) B

(D) C

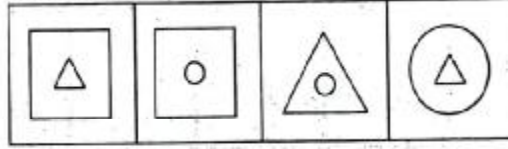**43.** Which figure is different from the rest of the three ?

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

44. Select the related figure from the given alternatives.
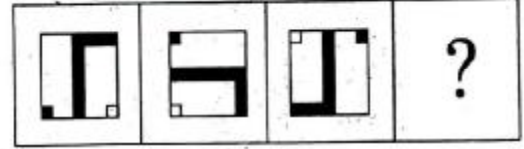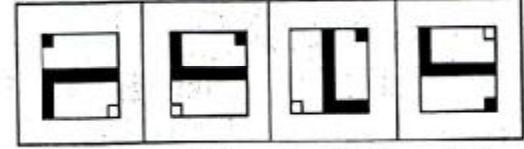
Question figures :

Answer figures :

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

45. Select the correct alternative from the given ones which will complete the figural series.
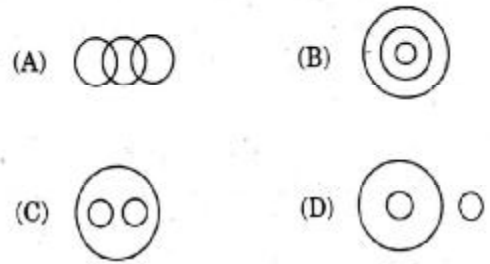
Question figures :

Answer figures :

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

46. Identify the diagram that best represents the relationship among the classes given below :

Liquids, Milk, River water
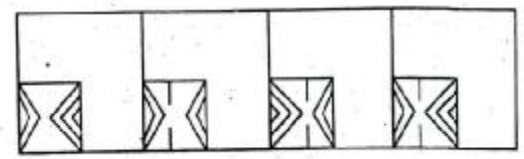

(A)   (B)

(C)   (D)

47. Which answer figure will complete the pattern in the question figure ?
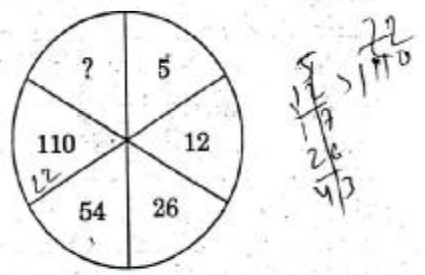
Question figure :
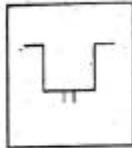

Answer figures :

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

48. Select the missing number from the given responses :
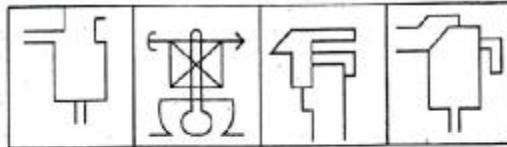

(A) 132

(B) 122

(C) 222

(D) 212

49. From the given answer figures, select the one in which the question figure is hidden/embedded.
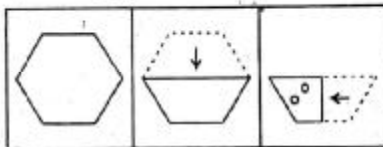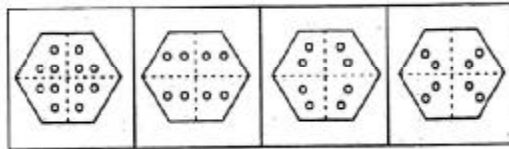
Question figure :

Answer figures :

(A)　　(B)　　(C)　　(D)

50. A piece of paper is folded and cut/punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question figures :

Answer figures :

(A)　　(B)　　(C)　　(D)

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43. Rita ranks 19th in a class of 40 students. What is her rank from the last ?

(A) 21　　　　　　(B) 22

(C) 19　　　　　　(D) 20

44. $\frac{1}{4}$th of $\frac{3}{4}$th of a number is 363. What is the square root of that number ?

(A) 44　　　　　　(B) 40

(C) 88　　　　　　(D) 80

45. How many even numbers are there in the following sequence of numbers, each of which is followed by an odd number as well as preceded by an even number ?

8 6 7 6 8 9 3 2 7 5 3 4 2 2 3 5 5 2 2 8 1 1 9

(A) 3　　　　　　(B) 4

(C) 1　　　　　　(D) 2

46. A man was going to the market with his three brothers, each one of them carrying one child in their arms. How many were going to the market ?

(A) 7　　　　　　(B) 10

(C) 6　　　　　　(D) 13

47. Find the wrong number in the given series.
8, 17, 36, 75, 154, 308

(A) 75　　　　　　(B) 308

(C) 36　　　　　　(D) 17

48. In a wooden box there are 'n' number of socks of two different colours. You cannot see outside, but can put your hand and take out any number of socks one by one. What is the minimum number of socks one should take out to get one perfect pair of socks ?

(A) 11　　　　　　(B) 101

(C) 2　　　　　　(D) 3

49. If A stands for +, Q stands for –, V stands for × and R stands for ÷, then what is the value of the given equation ?

16 A 8 R 2 Q 3 V 5 = ?

(A) 5　　　　　　(B) 6

(C) 17　　　　　　(D) 25

50. Leela and Geeta had to pick up 1460 tiles from a ground. Leela picked up 30 tiles more than Geeta. How many tiles did Geeta pick up ?

(A) 730　　　　　　(B) 760

(C) 745　　　　　　(D) 715

PART II : ENGLISH LANGUAGE

Directions : In questions no. 51 to 55, some parts of the sentences have errors and some are correct. Find out which part of a sentence has an error and blacken the oval (●) corresponding to the appropriate letter (A, B, C). If a sentence is free from error, blacken the oval corresponding to (D) in the Answer Sheet.

51. Hasan plays / both cricket and billiards / at the national level. / No error.
    (A)　　　　　(B)　　　　　(C)　　　　　(D)

52. My father gave me / a pair of binocular / on my birthday. / No error.
    (A)　　　　　(B)　　　　　(C)　　　　　(D)

53. Kalidas is / a Shakespeare / of India. / No error.
    (A)　　　(B)　　　(C)　　　(D)

54. The teacher as well as his students, / all left / for the trip. / No error.
    (A)　　　　　　　(B)　　　(C)　　　(D)

55. More you / think of it, / the worse it becomes. / No error.
    (A)　　(B)　　　　(C)　　　　(D)

Directions : In questions no. 56 to 60, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it by blackening the appropriate oval (●) in the Answer Sheet.

56. The human mind seems to have built-in _____ against original thought.
    (A) prejudices　　　(B) ideas
    (C) interests　　　(D) safeguards

57. A child is the future of a family _____ nation.
    (A) just as　　　(B) as a
    (C) like a　　　(D) as well as of a

58. If strict security measures were taken, the tragedy might have been _____ .
    (A) restrained　　　(B) averted
    (C) removed　　　(D) controlled

59. The deceased left _____ him two young children.
    (A) behind　　　(B) for
    (C) with　　　(D) by

60. The statue _____ a global symbol of freedom.
    (A) stands against　　　(B) stands to
    (C) stands for　　　(D) stands as

Directions : *In questions no. 61 and 62, out of the four alternatives, choose the one which best expresses the meaning of the given word and mark it in the Answer Sheet.*

61. Wily

(A) Angry   (B) Wise

(C) Stupid   (D) Cunning

62. Temerity

(A) Paucity   (B) Verity

(C) Audacity   (D) Simplicity

Directions : *In questions no. 63 and 64, choose the word opposite in meaning to the given word and mark it in the Answer Sheet.*

63. Insipid

(A) Tasty   (B) Colourful

(C) Colourless   (D) Dull

64. Relinquish

(A) Relish   (B) Continue

(C) Vanish   (D) Quench

Directions : *In questions no. 65 and 66, four words are given in each question, out of which only one word is correctly spelt. Find the correctly spelt word and mark your answer in the Answer Sheet.*

65. (A) Dysentary   (B) Dysantery

(C) Dysentry   (D) Dysentery

66. (A) Rejevanation   (B) Rejuvenation

(C) Rejvenation   (D) Rejuenation

Directions : *In questions no. 67 to 69, four alternatives are given for the Idiom/Phrase underlined in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase and mark it in the Answer Sheet.*

67. The police cordoned off the area after the explosion.

(A) The police checked everyone in the area

(B) The police did not allow anyone to leave the area

(C) The police filled the whole area

(D) The police isolated the area

68. The manager hesitated to assign the job to the newcomer as he was wet behind the ears.

(A) stupid and slow-witted

(B) young and inexperienced

(C) drenched in the rain

(D) unpunctual and lethargic

69. Mrs. Roy keeps an open house on Saturday evening parties — you'll find all kinds of people there.

(A) keeps the doors of the house open

(B) keeps the gates open for a few persons

(C) welcomes all members

(D) welcomes a select group of people

Directions : *In questions no. 70 to 72, out of the four alternatives choose the one which can be substituted for the given words/sentence.*

70. A former student of a school, college or university

(A) Alumnus   (B) Genius

(C) Scholar   (D) Learner

71. A building in which aircraft are housed

(A) Hangar   (B) Granary

(C) Dockyard   (D) Garage

72. A short story based on your personal experience

(A) Parable   (B) Legend

(C) Anecdote   (D) Fable

73. The commoners joined the king's army at crushing the rebels.

    (A) into

    (B) in

    (C) without

    (D) No improvement

74. She is quite well now, except a slight cold.

    (A) except have a slight cold

    (B) excepting a slight cold

    (C) except for a slight cold

    (D) No improvement

75. She took the dog for a walk.

    (A) The dog was took for a walk.

    (B) The dog took a walk by her.

    (C) The dog was taken for a walk by her.

    (D) The dog took her for a walk.

76. The waiter filled the glasses with water.

    (A) The waiter was filled the glasses with water.

    (B) The water were filled in the glasses by waiter.

    (C) The glasses filled with water by the waiter.

    (D) The glasses were filled with water by the waiter.

77. They will laugh at you.

    (A) You will be laughed at by them.

    (B) You will have been laughed at by them.

    (C) You can be laughed at by them.

    (D) You may be laughed at by them.

78. Trespassers shall be prosecuted.

    (A) The authorities may prosecute trespassers.

    (B) The authorities might prosecute trespassers.

    (C) The authorities can prosecute trespassers.

    (D) The authorities shall prosecute trespassers.

79. He was driving the car so fast that it skidded on the snowy road.

    (A) The car had been driven by him so fast that it skidded on the snowy road.

    (B) The car has been driven by him so fast that it skidded on the snowy road.

    (C) The car was driven by him so fast that it skidded on the snowy road.

    (D) The car was being driven by him so fast that it skidded on the snowy road.

80. He said to me, "I grew these carrots myself."

    (A) He told me that he had grown those carrots himself.

    (B) He told me that he grew those carrots himself.

    (C) He told me I grew these carrots myself.

    (D) He told me that he grew these carrots himself.

81. Mrs. Shankar said, "I know what it is to be depressed."

(A) Mrs. Shankar is depressed she said.

(B) Mrs. Shankar said that she was knowing what it was to be depressed.

(C) Mrs. Shankar said that she knew what it was to be depressed.

(D) Mrs. Shankar knows what it is to be depressed.

82. "Who now," they had asked, "will listen to our troubles and protect us from the crocodiles ?"

(A) They had wanted to know who will now listen to their troubles and protect them from the crocodiles.

(B) They wanted to know who will listen to their troubles and protect them from the crocodiles.

(C) They had wanted to know who would listen to their troubles and protect them from the crocodiles.

(D) They had wanted to know who then would listen to their troubles and protect them from the crocodiles.

83. Moti asked Gangu whether the latter was in his senses.

(A) "Gangu, are you in your senses ?" asked Moti.

(B) "Are you senseless, Gangu ?" asked Moti.

(C) "Hey Gangu, are you in your senses now ?" asked Moti.

(D) "Gangu, have you lost your senses ?" asked Moti.

84. He said that we are all born to die.

(A) He said, "We are all born to die."

(B) He said, "We have all been born to die."

(C) He exclaimed, "We were all born to die."

(D) He said, "We were all born to die."

Directions : In questions no. 85 to 90, the 1st and the last sentences/parts of the passage/sentence are numbered 1 and 6. The rest of the passage/sentence is split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the passage/sentence and find out which of the four combinations is correct. Then find the correct answer and indicate it by blackening the appropriate oval [●] in the Answer Sheet.

85. 1. There are a lot of ways to communicate : speaking, singing, clapping, hooting.

P. Even animals communicate with one another.

Q. Only humans can express their thoughts and feelings in words because of our superior brain.

R. Both humans and animals also communicate through body language.

S. But their ways differ from the humans.

6. Sometimes we don't use words but make gestures (like traffic signs) or simple movements of the hand in order to communicate.

(A) PRSQ   (B) QPRS

(C) PQRS   (D) PSQR

86. 1. Fires in the Steppes or bushes scared humans earlier.

P. Gradually, they learnt to appreciate the power of fire.

Q. It gave them light and warmth and kept away wild animals.

R. About 700,000 years ago, humans started fire accidentally by lightning.

S. They could harden the tips of wooden spears and cook meat in it.

6. Soon they learnt to produce fire by striking flintstone and pyrite with each other or by rubbing lumbers.

(A) QSPR   (B) PQSR

(C) PQRS   (D) QRSP

87. 1. When the Impressionists

   P. they made them look like

   Q. everyday and often putting

   R. people you would see

   S. painted pictures of people

   6. more emphasis on the scene.

   (A) RQPS   (B) SRQP

   (C) PRQS   (D) SPRQ ✓

88. 1. Sherlock Holmes is the

   P. who is in a state of grace

   Q. is raised to the status

   R. because in him scientific curiosity

   S. exceptional individual

   6. of a heroic passion.

   (A) PRQS   (B) SRQP

   (C) SPRQ   (D) RPSQ

89. 1. The goals of our present system

   P. schooling is to prepare

   Q. students for the examination system

   R. which will take them to the

   S. of primary and secondary

   6. best technical institutions in the country.

   (A) SPQR   (B) QPRS

   (C) PRQS   (D) PSQR

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90. 1. Egotism is the most common fault of mankind.

   P. However, with time it becomes an exaggerated form of self display.

   Q. It is the product of a perfectly natural desire to display oneself.

   R. This is necessary as it impairs the personality and frustrates all efforts at self improvement.

   S. Beyond any shadow of doubt, it is a defect that ought to be constantly hunted down, and scotched.

   6. One should always be on guard not to give into egotism.

   (A) RSPQ   (B) PSRQ

   (C) PQRS   (D) QPSR

Directions : *In questions no. 91 to 95, in the following passage some of the words have been left out. Read the passage carefully and choose the correct answer to each question out of the four alternatives and fill in the blanks.*

One fine morning a __91__ man knocked at the doors of the home for the aged run by nuns. He told the nun in charge that as he was __92__ to Delhi, he wanted to leave his servant-maid to the __93__ of the nuns. He assured the nun of sending some money every month __94__ she was an orphan. The nun __95__ her saying that she had got an excellent master.

91. (A) gentle   (B) bad
    (C) nice   (D) good

92. (A) moved   (B) shifted ✓
    (C) changed   (D) transferred

93. (A) care   (B) home
    (C) custody   (D) protection

94. (A) because   (B) and
    (C) though   (D) if

95. (A) loved   (B) praised ✓
    (C) consoled   (D) condoled

Directions : *In questions no. 96 to 100, you have a brief passage with 5 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives and mark it by blackening the appropriate oval (●) in the Answer Sheet.*

Freedom has assuredly given us a new status and new opportunities. But it also implies that we should discard selfishness, laziness and all narrowness of outlook. Our freedom suggests toil and creation of new values for old ones. We should so discipline ourselves as to be able to discharge our new responsibilities satisfactorily. If there is any one thing that needs to be stressed more than any other in the new set-up, it is that we should put into action our full capacity, each one of us in productive effort – each one of us in his own sphere, however humble. Work, unceasing work, should now be our watch-word. Work is wealth, and service is happiness. Nothing else is. The greatest crime in India today is idleness. If we root out idleness, all our difficulties, including even conflicts, will gradually disappear.

96. Anyone can free himself from the clutches of difficulties, if he

    (A) eliminates narrow outlook

    (B) fulfils his responsibilities

    (C) discards idleness

    (D) discharges his obligations

97. What has freedom undeniably offered to the citizens of India ?

    (A) New opportunities

    (B) New outlook

    (C) New responsibilities

    (D) New values

98. One thing needs to be stressed more than anything else in this new set-up. It is that people should

    (A) discard narrowness of outlook

    (B) discipline themselves suitably

    (C) work to their full capacity

    (D) substitute old values with new ones

99. _____ work should be the motto of our citizens.

    (A) Resourceful

    (B) Incessant

    (C) Productive

    (D) Ingenious

100. Nothing else can give us joy except

    (A) service

    (B) idleness

    (C) wealth

    (D) freedom

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PART III : QUANTITATIVE APTITUDE

101. $2 \csc^2 23° \cot^2 67° - \sin^2 23° - \sin^2 67° - \cot^2 67°$

is equal to

(A) 0   (B) 1

(C) $\sec^2 23°$ (D) $\tan^2 23°$

102. The base of a right pyramid is an equilateral triangle of side $10\sqrt{3}$ cm. If the total surface area of the pyramid is $270\sqrt{3}$ sq. cm, its height is

(A) 12 cm   (B) $12\sqrt{3}$ cm

(C) 10 cm   (D) $10\sqrt{3}$ cm

103. The volumes of a cylinder and a cone are in the ratio 3 : 1. Find their diameters and then compare them when their heights are equal.

(A) Diameter of cylinder < Diameter of cone
(B) Diameter of cylinder = 2 times of diameter of cone
(C) Diameter of cylinder = Diameter of cone
(D) Diameter of cylinder > Diameter of cone

104. A square of side 3 cm is cut off from each corner of a rectangular sheet of length 24 cm and breadth 18 cm and the remaining sheet is folded to form an open rectangular box. The surface area of the box is

(A) 423 cm^2 (B) 468 cm^2

(C) 396 cm^2 (D) 612 cm^2

105. The sides of a triangle are 16 cm, 12 cm and 20 cm. Find the area.
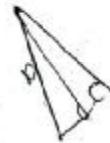
(A) 81 cm^2 (B) 64 cm^2

(C) 112 cm^2 (D) 96 cm^2

106. What is the height of a cylinder that has the same volume and radius as a sphere of diameter 12 cm ?

(A) 8 cm   (B) 7 cm

(C) 10 cm   (D) 9 cm

107. The length of the shadow of a vertical tower on level ground increases by 10 metres when the altitude of the sun changes from 45° to 30°. Then the height of the tower is

(A) $10\sqrt{3}$ m

(B) $5\sqrt{3}$ m

(C) $10(\sqrt{3}+1)$ m

(D) $5(\sqrt{3}+1)$ m

108. If $5\tan\theta = 4$, then $\dfrac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta}$ is equal to

(A) $\dfrac{1}{3}$ (B) $\dfrac{2}{3}$

(C) $\dfrac{1}{4}$ (D) $\dfrac{1}{6}$

109. If $x\sin\theta - y\sin\theta = \sqrt{x^2 + y^2}$ and $\dfrac{\cos^2\theta}{a^2} + \dfrac{\sin^2\theta}{b^2} = \dfrac{1}{x^2 + y^2}$, then the correct relation is

(A) $\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1$

(B) $\dfrac{x^2}{b^2} - \dfrac{y^2}{a^2} = 1$

(C) $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$

(D) $\dfrac{x^2}{b^2} + \dfrac{y^2}{a^2} = 1$

110. If $2(\cos^2\theta - \sin^2\theta) = 1$ (θ is a positive acute angle), then $\cot\theta$ is equal to

(A) $\sqrt{3}$ (B) $-\sqrt{3}$

(C) $\dfrac{1}{\sqrt{3}}$ (D) 1

     SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

111. Number of solutions of the two equations
$4x - y = 2$ and $2y - 8x + 4 = 0$
is

(A) infinitely many

(B) zero

(C) one

(D) two

112. If $a^2 + b^2 + c^2 = 2(a - b - c) - 3$, then the value of $2a - 3b + 4c$ is

(A) 1   (B) 7

(C) 2   (D) 3

113. Let $a = \sqrt{6} - \sqrt{5}$, $b = \sqrt{5} - 2$, $c = 2 - \sqrt{3}$.
Then point out the correct alternative among the four alternatives given below.

(A) $a < b < c$ (B) $b < a < c$

(C) $a < c < b$ (D) $b < c < a$

114. If $a = \dfrac{b^2}{b - a}$, then the value of $a^3 + b^3$ is
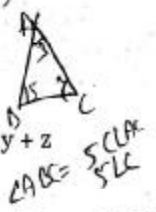
(A) 2   (B) 6ab

(C) 0   (D) 1

115. If $xy + yz + zx = 0$, then
$$\left(\frac{1}{x^2 - yz} + \frac{1}{y^2 - zx} + \frac{1}{z^2 - xy} \right) (x, y, z \neq 0)$$
is equal to

(A) 0   (B) 3

(C) 1   (D) $x + y + z$

116. A can do a work in 20 days and B can do the same work in 30 days. In how many days can A and B together do the work ?

(A) 15   (B) 16

(C) 10   (D) 12

117. The volume of air in a room is 204 m^3. The height of the room is 6 m. What is the floor area of the room ?

(A) 34 m^2 (B) 32 m^2

(C) 46 m^2 (D) 44 m^2

118. If the total surface area of a cube is 96 cm^2, its volume is

(A) 36 cm^3 (B) 56 cm^3

(C) 16 cm^3 (D) 64 cm^3

119. From a point P, two tangents PA and PB are drawn to a circle with centre O. If OP is equal to diameter of the circle, then $\angle APB$ is

(A) 60°   (B) 45°

(C) 90°   (D) 30°

120. A chord 12 cm long is drawn in a circle of diameter 20 cm. The distance of the chord from the centre is

(A) 16 cm   (B) 8 cm

(C) 6 cm   (D) 10 cm

121. 360 sq. cm and 250 sq. cm are the areas of two similar triangles. If the length of one of the sides of the first triangle be 8 cm, then the length of the corresponding side of the second triangle is

(A) 6 cm   (B) $6\frac{1}{5}$ cm

(C) $6\frac{1}{3}$ cm   (D) $6\frac{2}{3}$ cm

122. If in $\triangle ABC$, $\angle ABC = 5 \angle ACB$ and $\angle BAC = 3 \angle ACB$, then $\angle ABC =$

(A) 120°   (B) 130°

(C) 80°   (D) 100°

123. The perpendiculars, drawn from the vertices to the opposite sides of a triangle, meet at the point whose name is

(A) orthocentre   (B) incentre

(C) circumcentre   (D) centroid
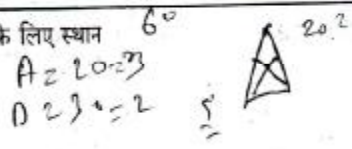
124. A sum becomes ₹ 2,916 in 2 years at 8% per annum compound interest. The simple interest at 9% per annum for 3 years on the same amount will be

(A) ₹ 625
(B) ₹ 600
(C) ₹ 675
(D) ₹ 650

125. The average of 30 numbers is 40 and that of other 40 numbers is 30. The average of all the numbers is

(A) 34·5
(B) $34\frac{2}{7}$
(C) 35
(D) 34

126. The value of $\sqrt{40 + \sqrt{9\sqrt{81}}}$ is

(A) 11
(B) $\sqrt{111}$
(C) 9
(D) 7

127. The ratio of age of two boys is 5 : 6. After two years the ratio will be 7 : 8. The ratio of their ages after 12 years will be

(A) 11/12
(B) 22/24
(C) 15/16
(D) 17/18

128. Divide 50 into two parts so that the sum of their reciprocals is 1/12.

(A) 28, 22
(B) 35, 15
(C) 20, 30
(D) 24, 36

129. The length and breadth of a rectangle are doubled. Percentage increase in area is

(A) 400%
(B) 150%
(C) 200%
(D) 300%

130. In the annual examination Mahuya got 10% less marks than Supriyo in Mathematics. Mahuya got 81 marks. The marks of Supriyo are

(A) 89
(B) 90
(C) 87
(D) 88

131. A train is moving at a speed of 80 km/h and covers a certain distance in 4·5 hours. The speed of the train to cover the same distance in 4 hours is

(A) 90 km/h
(B) 100 km/h
(C) 70 km/h
(D) 85 km/h

132. A shopkeeper blends two varieties of tea costing ₹ 18 and ₹ 13 per 100 gm in the ratio 7 : 3. He sells the blended variety at the rate of ₹ 18·15 per 100 gm. His percentage gain in the transaction is

(A) 8%
(B) 10%
(C) 12%
(D) 14%

133. A invests ₹ 64,000 in a business. After few months B joined him with ₹ 48,000. At the end of year, the total profit was divided between them in the ratio 2 : 1. After how many months did B join ?

(A) 7
(B) 8
(C) 4
(D) 6

134. A got 30% concession on the label price of an article sold for ₹ 8,750 with 25% profit on the price he bought. The label price was

(A) ₹ 10,000
(B) ₹ 13,000
(C) ₹ 16,000
(D) ₹ 12,000

135. The cost price of a book is ₹ 150. At what price should it be sold to gain 20% ?

(A) ₹ 80
(B) ₹ 120
(C) ₹ 180
(D) ₹ 100

136. If books bought at prices ranging from ₹ 150 to ₹ 300 are sold at prices ranging from ₹ 250 to ₹ 350, what is the greatest possible profit that might be made in selling 15 books ?

(A) ₹ 3,000
(B) Cannot be determined
(C) ₹ 750
(D) ₹ 4,250

137. In a two-digit number, the digit at the unit's place is 1 less than twice the digit at the ten's place. If the digits at unit's and ten's place are interchanged, the difference between the new and the original number is less than the original number by 20. The original number is

(A) 47   (B) 59

(C) 23   (D) 35

138. The base of a right prism is a triangle whose perimeter is 28 cm and the inradius of the triangle is 4 cm. If the volume of the prism is 366 cc, then its height is

(A) 4 cm   (B) 8 cm

(C) 6 cm   (D) None of these

139. The equation $\cos^2\theta = \dfrac{(x+y)^2}{4xy}$ is only possible when

(A) $x < y$ (B) $x = -y$

(C) $x > y$ (D) $x = y$

140. Which is greater $\sqrt[3]{2}$ or $\sqrt{3}$?

(A) Equal

(B) Cannot be compared

(C) $\sqrt[3]{2}$

(D) $\sqrt{3}$

141. If $a + b + c = 9$ (where a, b, c are real numbers), then the minimum value of $a^2 + b^2 + c^2$ is

(A) 81   (B) 100

(C) 9   (D) 27

142. L.C.M. of $\dfrac{2}{3}, \dfrac{4}{9}, \dfrac{5}{6}$ is

(A) $\dfrac{20}{27}$ (B) $\dfrac{8}{27}$

(C) $\dfrac{20}{3}$ (D) $\dfrac{10}{3}$

143. Find the value of

$3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{\sqrt{3}+3} + \dfrac{1}{\sqrt{3}-3}$.

(A) 6

(B) 3

(C) $\dfrac{3}{2(\sqrt{3}+3)}$

(D) $2\sqrt{3}$

144. 'a' divides 228 leaving a remainder 18. The biggest two-digit value of 'a' is

(A) 30   (B) 70

(C) 21   (D) 35

145. If the sum of the digits of any integer lying between 100 and 1000 is subtracted from the number, the result always is

(A) divisible by 5

(B) divisible by 6

(C) divisible by 2

(D) divisible by 9

146. If a number is as much greater than 31 as it is less than 75, then the number is

(A) 53   (B) 106

(C) 44   (D) 74

Directions : The bar graph shows the marks obtained by a student in an examination out of 100 marks in each subject. Study the diagram and answer the Q. Nos. 147 and 148.
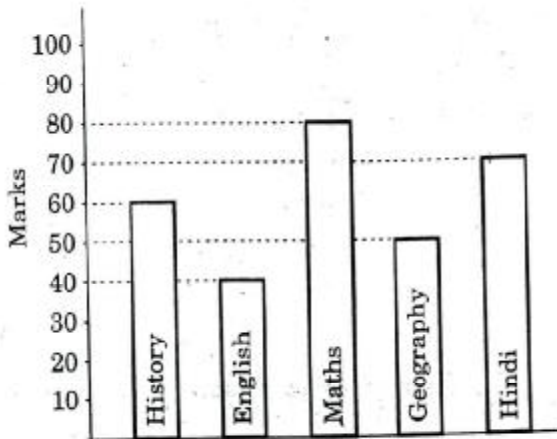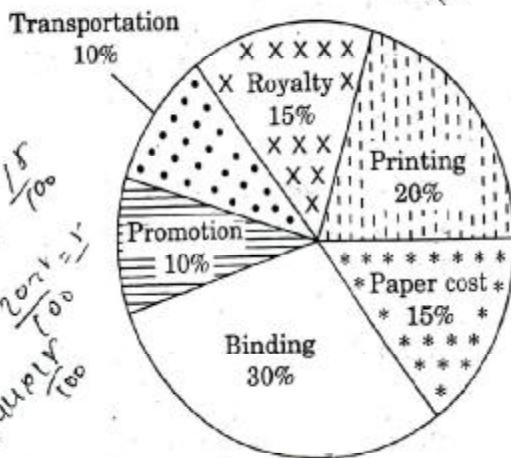

147. The average marks of Hindi and English is

(A) 60 (B) 65

(C) 50 (D) 55

148. The ratio of the marks of Maths and History is

(A) 4 : 3 (B) 6 : 5

(C) 8 : 5 (D) 3 : 4

Directions : Various expenditures incurred by a publishing company for publishing a book in 2011 are given below. Study the chart and answer the Q. Nos. 149 and 150.

Transportation 10%
Royalty 15%
Printing 20%
Promotion 10%
Paper cost 15%
Binding 30%

149. Royalty of a book is less than the printing cost by

(A) 20% (B) 25%

(C) 5% (D) $33\frac{1}{3}$ %

150. Price of a book is 20% above cost price. If the marked price is ₹ 180, then the cost of paper for a single copy, in ₹, is

(A) 42 (B) 44·25

(C) 36 (D) 22·50

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147. The difference between the circumference and the radius of a circle is 37 cm. The area of the circle is (Take $\pi = \frac{22}{7}$)

(A) 154 sq. cm (B) 259 sq. cm

(C) 148 sq. cm (D) 111 sq. cm

148. If $\tan^2 \theta - \sin^2 \theta = x$, then the value of $\tan^2 \theta \sin^2 \theta$ is

(A) x (B) 2

(C) $\frac{1}{x}$ (D) 1

149. If $x - y = 1$, then $x^3 - y^3 - 3 (xy - 2)$ is equal to

(A) 7 (B) 6

(C) 10 (D) 4

150. Ram's income is greater than Shyam's income by 20%. Then the percent by which Shyam's income is less than Ram's income is

(A) $16\frac{2}{3}$ (B) $18\frac{2}{5}$

(C) $10\frac{1}{5}$ (D) $12\frac{1}{3}$

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

PART IV : GENERAL AWARENESS

151. How many members can be nominated to both the Houses of the Parliament by the President ?

- (A) 14
- (B) 16
- (C) 10
- (D) 12

152. Under which Article of the Constitution can an individual move to the Supreme Court directly in case of any violation of Fundamental Rights ?

- (A) Article 31
- (B) Article 32
- (C) Article 28
- (D) Article 29

153. The Dandi March of Gandhi is an example of

- (A) Non-Cooperation
- (B) Direct Action
- (C) Boycott
- (D) Civil Disobedience

154. Presidential form of government consists of the following :

- (A) Popular election of the President
- (B) No overlap in membership between the executive and the legislature
- (C) Fixed term of office
- (D) All the above

155. Which one of the following inscriptions relate to the Chalukya king, Pulakesin II ?

- (A) Nasik
- (B) Maski
- (C) Hathigumpha
- (D) Aihole

156. Who among the following introduced the Mansabdari system ?

- (A) Jahangir
- (B) Shah Jahan
- (C) Sher Shah
- (D) Akbar

157. The basic object of all production is to

- (A) increase physical output
- (B) satisfy human wants
- (C) provide employment
- (D) make profits

158. Inflation is caused by

- (A) decrease in production
- (B) increase in money supply and decrease in production
- (C) increase in money supply
- (D) increase in production

159. Dumping is a form of price discrimination at

- (A) local level
- (B) within industry
- (C) national level
- (D) international level

160. The equilibrium of a firm under perfect competition will be determined when

- (A) Marginal Cost > Average Cost
- (B) Marginal Revenue > Average Cost
- (C) Marginal Revenue > Average Revenue
- (D) Marginal Revenue = Marginal Cost

161. Expenditure on advertisement and public relations by an enterprise is a part of its

- (A) fixed capital
- (B) consumption of fixed capital
- (C) final consumption expenditure
- (D) intermediate consumption

162. The concept of Concurrent List in Indian Constitution is borrowed from the Constitution of

- (A) U.S.A.
- (B) Japan
- (C) Canada
- (D) Australia

163. Match correctly the following deserts and their location by choosing the correct response :

Desert		Location
a.	Kalahari	1. South America
b.	Atacama	2. Australia
c.	Thar	3. Africa
d.	Great Victoria	4. Asia

(A) a-3, b-1, c-4, d-2

(B) a-2, b-3, c-1, d-4

(C) a-4, b-3, c-2, d-1

(D) a-3, b-2, c-1, d-4

164. What is a neuron ?

(A) Basic unit of nervous system

(B) Basic unit of energy

(C) Particle released during radioactivity

(D) The anti-particle of neutron

165. A cellulosic wall is found in the cells of

(A) plants

(B) animals

(C) bacteria

(D) fungi

166. The filtration unit of kidney is

(A) yellow fiber   (B) axon

(C) nephron   (D) neuron

167. The nutritive tissue in the seeds of higher plants is known as

(A) nucellus   (B) hypocotyl

(C) embryo   (D) endosperm

168. Yeast is an important source of

(A) protein   (B) vitamin B

(C) invertase   (D) vitamin C

169. Which one of the following cities and the personalities associated with their establishment is *wrongly* matched ?

(A) Calcutta – Robert Clive

(B) Pondicherry – Francis Martin

(C) Ahmedabad – Ahmad Shah I

(D) Madras – Francis Day

170. Which one of the following wars decided the fate of the French in India ?

(A) Battle of Plassey

(B) Battle of Wandiwash

(C) First Carnatic War

(D) Battle of Buxar

171. The Crimean War came to an end by the

(A) Treaty of St. Germain

(B) Treaty of Trianon

(C) Treaty of Versailles

(D) Treaty of Paris

172. The longest river of peninsular India is

(A) Godavari   (B) Krishna

(C) Kaveri   (D) Narmada

173. Moraines are formed in

(A) Monsoon region

(B) River deltas

(C) Arid regions

(D) Glacial regions

174. The Himalayan mountain range is an example of

(A) Fold mountain

(B) Volcanic mountain

(C) Residual mountain

(D) Block mountain

175. Which one of the following is a warm ocean current ?

(A) Gulf Stream   (B) Kurile

(C) Canary   (D) Labrador

176. A nibble is equal to _____ bits.

   (A) 16   (B) 32

   (C) 4   (D) 8

177. In HTML, tags consists of keywords enclosed within

   (A) flower brackets { }

   (B) angular brackets < >

   (C) parentheses ( )

   (D) square brackets [ ]

178. _____ printer cannot print more than one character at a time.

   (A) Line   (B) Daisy-wheel

   (C) Laser   (D) Dot-matrix

179. Enzymes are

   (A) Lipids   (B) Steroids

   (C) Carbohydrates   (D) Proteins

180. Heating of a ore below its melting point in the absence of air is known as

   (A) Smelting

   (B) Refining

   (C) Calcination

   (D) Roasting

181. The most electronegative element among the following is

   (A) Oxygen   (B) Fluorine

   (C) Sodium   (D) Chlorine

182. Mark the compound which possesses ionic, covalent and co-ordinate bonds.

   (A) H_2O (B) NH_4Cl

   (C) SO_3 (D) SO_2

183. The depletion of Ozone layer is mainly due to

   (A) Chlorofluorocarbons

   (B) Volcanic eruptions

   (C) Aviation fuels

   (D) Radioactive rays

184. Match correctly the infectious agents given in List I with the diseases caused by them given in List II :

List I		List II
a.	Bacterium	1. Kala-azar
b.	Fungus	2. Tuberculosis
c.	Protozoan	3. Influenza
d.	Virus	4. Ringworm

   (A) a-4, b-2, c-3, d-1

   (B) a-1, b-2, c-4, d-3

   (C) a-2, b-4, c-1, d-3

   (D) a-3, b-1, c-2, d-4

185. Matter waves are

   (A) Longitudinal waves

   (B) de Broglie waves

   (C) Electromagnetic waves

   (D) Transverse waves

186. When the milk is churned vigorously the cream from it is separated out due to

   (A) Centrifugal force

   (B) Centripetal force

   (C) Gravitational force

   (D) Frictional force

187. Gas thermometers are more sensitive than the liquid thermometers because the gases

   (A) have high specific heat

   (B) have large coefficient of expansion

   (C) are lighter

   (D) have low specific heat

188. Which of the following is *not* caused by atmospheric refraction of light ?

   (A) Sun becoming visible two or three minutes before actual sunrise

   (B) Sun appearing red at sunset

   (C) Twinkling of stars at night

   (D) Sun appearing higher in the sky than it actually is

189. Minorities Rights Day is observed in India on

(A) 18th December (B) 23rd December

(C) 5th September (D) 1st December

190. Which one of the following institutes in List I is *wrongly* matched with its location indicated in List II ?

List I	List II
(A) Central Institute of Mining and Fuel Research	Dhanbad
(B) Central Building Research Institute	Roorkee
(C) Central Arid Zone Research Institute	Jodhpur
(D) Central Drug Research Institute	Kanpur

191. Match the two lists given below :

List I		List II
a.	London	1. St. Peter's Square
b.	Vatican City	2. Times Square
c.	Moscow	3. Trafalgar Square
d.	New York	4. Red Square

(A) a-1, b-3, c-2, d-4

(B) a-2, b-4, c-3, d-1

(C) a-3, b-1, c-4, d-2

(D) a-4, b-2, c-1, d-3

192. Who among the following women tennis players has won the Grand Slam titles for the maximum number of times ?

(A) Serena Williams

(B) Venus Williams

(C) Steffi Graf

(D) Margaret Court

193. In which one of the following films did Pran act as a character artist and not in the role of a villain ?

(A) *Himalaya Ki Godh Mein*

(B) *Ram aur Shyam*

(C) *Zanjeer*

(D) *Madhumati*

194. The main advantage of Rain Water Harvesting (RWH) is

(A) Avoid soil erosion

(B) Recharge ground water

(C) Avoid floods

(D) Reduce the loss of water

195. The waste generated by end life personal computers is known as

(A) E-waste (B) PC-waste

(C) Physical waste (D) Computer waste

196. Who was the first posthumous recipient of Bharat Ratna ?

(A) M.G. Ramachandran

(B) B.R. Ambedkar

(C) K. Kamraj

(D) Lal Bahadur Shastri

197. Which country won the ICC Women's World Cup held in February 2013 ?

(A) India (B) New Zealand

(C) England (D) Australia

198. Which country's currency is Ngultrum ?

(A) Bhutan (B) Laos

(C) Bangladesh (D) Nepal

199. "Sattriya Nritya" recognised as a classical dance form of India by the Sangeet Natak Akademi only in 2000, originated from

(A) Tripura (B) Assam

(C) Karnataka (D) Gujarat

200. Given below are pairs of the winners and the specific categories pertaining to the 14th International Indian Film Academy (IIFA) Awards. Which one of the pairs is *wrongly* matched ?

(A) Best Film – Agneepath

(B) Best Actor in a negative role – Rishi Kapoor

(C) Best Actor – Ranbir Kapoor

(D) Best Female Actor – Vidya Balan