

Management Aptitude Test September 2001

All India Management Aptitude Testing Service (AIMATS)

Section I : Language Comprehension

Directions (Qs. 1 to 5) : Read the following passage carefully and then answer these questions based on what is stated or implied therein :

Are the 1980s and 1990s the era of colour ? According to some people, they are. Now you can buy radios and electric fans in lavender and pink. Restaurants have an emphasis on flowers and colourful plates. Cars are coming out in pink and aqua. Even bathroom fixtures are being made in "honeydew" and "blond". Part of the importance of the colour of an object is that the colour affects the way one feels about it. You want a vacuum cleaner to look light and easy, which is why it may be coloured in pastels and light colours. But gardening equipment and athletic equipment you want to look powerful. You would never find a lawn mower in pink, but red would be fine. Not very long ago, sheets were always white and refrigerators commonly came in colours like "old gold", "avocado green" and "coppertone". Now those are thought of as old-fashioned. Popular colours change because fashion influences everything. In fact, new colours often spring from the fashion industry. It's a

lot cheaper to make a blouse or skirt than a sofa. After people get used to seeing new colours on clothing or towels, they are ready to accept those colours in carpeting, refrigerators, or cars. Colour-analysis consultants have been very successful in recent years. People want to choose the most flattering colours for make up and clothing. Some car designers are even saying that people may begin buying cars of the colour that goes with their skin colouring. This sounds too extreme. It's hard to believe that people are that impressionable !

1. The main subject of the passage is

- (1) Popular colours today
- (2) Colour consultants
- (3) The influence of colour
- (4) Colours that flatter people

2. The word "era" in line 1 could best be replaced by which of the following words ?

- (1) Season
- (2) Age
- (3) Epic
- (4) Generation

3. According to the author which of the following is not popular now ?

- (1) "Coppertone"
- (2) Colourful cars
- (3) Pastels
- (4) Colourful bathroom fixtures

4. According to the author, why would red be a good colour for a lawn mower ?

- (1) Because it is strong
- (2) Because it is cheap
- (3) Because it is light
- (4) Because it is pastel

5. In this passage which of the following are not used as names for colours ?

- (1) Fruit
- (2) Hair colour
- (3) Minerals
- (4) Drinks

Directions (Qs. 6 to 10) : Read the following passage carefully and then answer these questions based on what is stated or implied therein :

If life exists on Mars, it is most likely to be in the form of bacteria buried deep in the planet's permafrost or lichens growing within rocks, say scientists from NASA. There might even be fossilised Martian algae locked up in ancient lake beds, waiting to be found.

Christopher McKay of NASA's Ames Research Centre in California told the AAAS that exobiologists, who look for life on other planets, should look for clues among the life forms of the Earth's ultra-cold regions, where conditions are similar to those on Mars.

Lichens, for example, are found within some Antarctic rocks, just beneath the surface where sunlight can still reach them. The rock protects the lichen from cold and absorbs water, providing enough for the lichen's needs, said McKay.

Bacteria have also been found in 3-million-year-old permafrost dug up from Siberia. If there are any bacteria alive on Mars today, they would have had to have survived from the time before the planet cooled more than 3 billion years ago. Nevertheless, McKay is optimistic : "It may be possible that bacteria frozen into the permafrost at the Martian South Pole may be viable."

McKay said algae are found in Antarctic lakes with permanently frozen surfaces. Although no lakes are thought to exist on Mars today, they might have existed long ago. If so, the dried-out Martian lake beds may contain the fossilised remains of algae. On Earth, masses of microscopic algae form large, layered structures known as stromatolites, which survive as fossils on lake beds, and the putative Martian algae might have done the same thing, said Jack Farmer, one of McKay's colleagues.

The researchers are compiling a list of promising Martian lake beds to be photographed from spacecraft, said Farmer. Those photographs could help to select sites for landers that would search for signs of life, past or present. "If we find algae on Mars, I would say the Universe is lousy with algae," McKay said. "Intelligence would be another question."

6. The passage is primarily concerned with

- (1) The possibility of life on Mars
- (2) Selecting sites for landers on Mars
- (3) Research on Mars
- (4) Findings of Christopher McKay on Mars

7. Lichens survive in the extreme cold conditions of Antarctica on earth for all the following reasons, except

- (1) Some Antarctic rocks protect lichens beneath their surface
- (2) Bacteria in the Antarctic frost protect lichen from the residual cold after the rock absorbs water
- (3) Sunlight penetrates the surface of the Antarctic rock where lichen grows
- (4) The Antarctic rocks protect the lichen from cold by absorbing water and leaving enough for the lichen's needs

8. Which of the following statements is not true ?

- (1) If any bacteria are alive today on Mars, they must have survived from the time before the planet cooled
- (2) Space photographs of Martian craters should reveal to the explorers signs of life there
- (3) Bacteria frozen into permafrost at the Martian South Pole may be viable
- (4) On digging up, more than 3 million years old Siberian permafrost has revealed bacteria

9. The most primitive forms of life likely to exist on Mars are all the following, except

- (1) Villus and spare
- (2) Bacteria
- (3) Algae
- (4) Lichen

10. Exobiologists might find on Mars algae similar to stromatolites on earth because

- (1) On our planet stromatolites are formed by microscopic algae
- (2) Martian lake beds may contain fossilised remains of algae similar to stromatolites on earth
- (3) There is evidence that photosynthesis which takes place in earth's algae can be found in Martian algae too
- (4) All the above

Directions (Qs. 11 to 16) : In these questions, a word is given in capital letters followed by four alternative words. Choose the word that is most similar in meaning to the word given in capital letters :

11. PROPITIOUS

- (1) Favourable
- (2) Similar
- (3) Humble
- (4) Versatile

12. TALISMAN

- (1) Fiction
- (2) Charm
- (3) Aptitude
- (4) Strength

13. PENURY

- (1) Destitution
- (2) Digestive
- (3) Pension
- (4) Vigour

14. AFFRONT

- (1) Exile
- (2) Contour
- (3) Eruption
- (4) Indignity

15. AMICABLE

- (1) Nebulous
- (2) Abominable
- (3) Harmonious
- (4) Delicate

16. DREGS

- (1) Cream
- (2) Power
- (3) Debris
- (4) Accoutrements

Directions (Qs. 17 to 22) : In these questions, a word is given in capital letters followed by four alternative words. Choose the word that is nearly opposite in meaning to the word given in capital letters :

17. SCRIMP

- (1) Lavish
- (2) Parsimonious
- (3) Meticulous
- (4) Polite

18. DELECTABLE

- (1) Agonising
- (2) Appetising
- (3) Distasteful
- (4) Laborious

19. GRAVE

- (1) Noble
- (2) Inconsequential
- (3) Solemn
- (4) Senile

20. CONFIDANT

- (1) Turncoat
- (2) Arrogant
- (3) Confederate
- (4) Firm

21. AMALGAMATE

- (1) Merge
- (2) Consecrate
- (3) Impoverish
- (4) Split

22. BOISTEROUS

- (1) Serene
- (2) Tumultuous
- (3) Brazen
- (4) Opaque

Directions (Qs. 23 to 28) : In these questions, there are incomplete sentences. Beneath each sentence, there are four words or phrases. Choose the one word or phrase that best completes the sentence.

23. After the election, a new stage.

- (1) The entering nation
- (2) The nation will enter
- (3) To enter the nation
- (4) Will the nation enter

24. He is tennis.

- (1) Fond to play
- (2) Fond of playing
- (3) Fond in playing
- (4) Fond at playing

25. I hope she

- (1) Must come
- (2) Should come
- (3) Will come
- (4) Must be coming

26. An increase in population, without an increase in economic level, result in a lower standard of living.

- (1) Tends to (2) Tending to
- (3) Will tend (4) Tends

27. as President, a candidate must win a majority of votes.

- (1) Elected (2) To be elected
- (3) Having elected (4) Electing

28. Encounters between people from different countries can result in misunderstandings different conceptions about space.

- (1) Because they
- (2) Is because they
- (3) Is because their
- (4) Because of their

Directions (Qs. 29 to 34) : In these questions, each sentence has four underlined words or phrases marked (A), (B), (C) and (D). Choose one word or phrase that must be changed to make the sentence correct :

29. Three conditions critical (A)/ for growing (B)/ plants are soil, temperature, chemical balance or (C)/ amount (D)/ of moisture.

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

30. Atrophy can affect (A)/ a cell, organ, (B)/ tissues (C)/ or (D)/ limb.

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

31. While (A)/ a strong defend (B)/ is important to any country it cannot be more important than the livelihood (C)/ of its (D)/ citizens.

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

32. It (A)/ can take hundreds (B)/ of different experiments to achieve (C)/ a (D)/ ultimate solution.

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

33. Caffeine (A)/ in coffee is relative (B)/ harmless if people drink (C)/ it moderately. (D)

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

34. It is (A)/ impossible of (B)/ an (C) alcoholic to (D)/ drink moderately.

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

Directions (Qs. 35 to 40) : In these questions, a related pair of words is followed by four lettered pairs of words. Select the lettered pair that best expresses a relationship similar to that expressed in the original pair :

35. Pain : Brush ::

- (1) Floor : Polish
- (2) Conflagration : Match
- (3) Cement : Travel
- (4) Wallpaper : Ladder

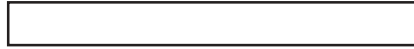
36. Encomium : Laudatory ::

- (1) Tirade : Abusive
- (2) Monologue : Lengthy
- (3) Critique : Insolent
- (4) Prologue : Conclusive

37. Impeccable : Flaw ::

- (1) Intolerable : Defect
- (2) Immovable : Choice
- (3) Infallible : Error
- (4) Irreversible : Cure

- 38.** Trailer : Picture ::
 (1) Truck : Cargo
 (2) Theatre : Play
 (3) Edition : Novel
 (4) Commercial : Product
- 39.** Chatter : Talk ::
 (1) Scurry : Move
 (2) Sleep : Drowse
 (3) Limp : Walk
 (4) Chant : Sing
- 40.** Confine : Prisoner ::
 (1) Trace : Fugitive
 (2) Ambush : Sentry
 (3) Detain : Suspect
 (4) Impeach : President



Section II : Mathematical Skills

Directions : There are four options below for each question. Select the correct option.

41. If $a : b = 2 : 5$, then the value of $(2a + 3b) : (7a + 5b)$ is

- (1) $\frac{19}{39}$ (2) $\frac{99}{13}$ (3) $\frac{31}{19}$ (4) $\frac{19}{31}$

42. A bag contains Rs. 216 in the form of one-rupee, 50-paise and 25-paise coins in the ratio of 2 : 3 : 4. The number of 50-paise coins is

- (1) 96 (2) 144
 (3) 114 (4) 141

43. If two numbers are in the ratio 6 : 13 and their least common multiple is 312, then the sum of the numbers is

- (1) 75 (2) 57
 (3) 76 (4) 67

44. If $\frac{5a + 3b}{2a - 3b} = \frac{23}{5}$, then the value of $a : b$ is

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

45. A bag contains 3 white balls and 2 black balls. Another bag contains 2 white balls and 4 black balls. A bag and a ball are picked at random. The probability that the ball will be white is

- (1) $\frac{7}{11}$ (2) $\frac{7}{30}$ (3) $\frac{5}{11}$ (4) $\frac{7}{15}$

46. There are 6 positive and 8 negative numbers. Four numbers are chosen at random and multiplied. The probability that the product is a positive number is

- (1) $\frac{500}{1001}$ (2) $\frac{503}{1001}$
 (3) $\frac{505}{1001}$ (4) $\frac{101}{1001}$

47. One hundred identical coins each with probability p of showing up heads are tossed. If $0 < p < 1$ and the probability of heads showing on 50 coins is equal to that of heads on 51 coins, then the value of p is

- (1) $\frac{1}{2}$ (2) $\frac{49}{101}$ (3) $\frac{50}{101}$ (4) $\frac{51}{101}$

48. Two dice are tossed. The probability that the total score is a prime number is

- (1) $\frac{1}{6}$ (2) $\frac{5}{12}$ (3) $\frac{1}{2}$ (4) $\frac{7}{9}$

49. A boat goes 24 km upstream and 28 km downstream in 6 hours. It goes 30 km upstream and 21 km downstream in 6 hours and 30 minutes. The speed of the boat in still water is

- (1) 10 km/hr (2) 4 km/hr
(3) 14 km/hr (4) 6 km/hr

50. It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the speed of the car is

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

51. Points A and B are 70 km apart on a highway. One car starts from A and the another one from B at the same time. If they travel in the same direction, they meet in 7 hours. But if they travel towards each other, they meet in one hour. The speeds of the two cars are

- (1) 45 and 25 km/hr
(2) 70 and 10 km/hr
(3) 40 and 30 km/hr
(4) 60 and 40 km/hr

52. A journey of 192 km between two cities takes two hours less by a fast train than by a slow train. If the average speed of the slow train is 16 km/hr less than that of the fast train, then the average speed of the fast train is

- (1) 36 km/hr (2) 64 km/hr
(3) 32 km/hr (4) 48 km/hr

53. A motor boat whose speed is 15 km/hr in still water goes 30 km downstream and comes back in four and a half hours. The speed of the stream is

- (1) 4 km/hr (2) 6 km/hr
(3) 7 km/hr (4) 5 km/hr

54. A passenger train takes two hours less for a journey of 300 km if its speed is increased by 5 km/hr from its normal speed. The normal speed is

- (1) 35 km/hr (2) 50 km/hr
(3) 25 km/hr (4) 30 km/hr

55. A train 100 m long passes a bridge at the rate of 72 km per hour in 25 seconds. The length of the bridge is

- (1) 150 m (2) 400 m
(3) 300 m (4) 200 m

56. A train 110 m in length travels at 60 km/hr. How much time does the train take in passing a man walking at 6 km/hr against the train ?

- (1) 6 seconds (2) 12 seconds
(3) 16 seconds (4) 18 seconds

57. If $P = \frac{x^2 - 36}{x^2 - 49}$ and $Q = \frac{x + 6}{x + 7}$,

then the value of P/Q is

- (1) $\frac{x - 6}{x - 7}$ (2) $\frac{x - 6}{x + 7}$

- (3) $\frac{x - 7}{x + 6}$ (4) $\frac{x + 6}{x - 7}$

58. Two numbers are in the ratio 2 : 3. If eight is added to both the numbers, then the ratio becomes 3 : 4. The numbers are

- (1) 15 and 20
(2) 16 and 24
(3) 13 and 17
(4) 17 and 9

59. Which of the following equations has real roots ?

- (1) $3x^2 + 4x + 5 = 0$
(2) $x^2 + x + 4 = 0$
(3) $(x - 1)(2x - 5) = 0$
(4) $2x^2 - 3x + 4 = 0$

60. Which of the following is a quadratic equation ?

- (1) $x^{1/2} + 2x + 3 = 0$
 (2) $(x - 1)(x + 4) = x^2 + 1$
 (3) $x^4 - 3x + 5 = 0$
 (4) $(2x + 1)(3x - 4) = 2x^2 + 3$

61. Semi-circular lawns are attached to both the edges of a rectangular field measuring $42\text{ m} \times 35\text{ m}$. The area of the total field is

- (1) 3818.5 m^2 (2) 8318 m^2
 (3) 5813 m^2 (4) 1358 m^2

62. The area of the four walls of a room is 120 m^2 . The length is twice its breadth. If the height of the room is 4 m , then the area of the floor is

- (1) 30 m^2 (2) 50 m^2
 (3) 40 m^2 (4) 60 m^2

63. A wire is in the form of a circle of radius 35 cm . If it is bent into the shape of a rhombus, then what is the side of the rhombus ?

- (1) 32 cm (2) 70 cm
 (3) 55 cm (4) 17 cm

64. The cross-section of a canal is in the form of a trapezium. If the canal top is 10 m wide, the bottom is 6 m wide and the area of the cross-section is 72 m^2 , then the depth of the canal is

- (1) 10 m (2) 7 m
 (3) 6 m (4) 9 m

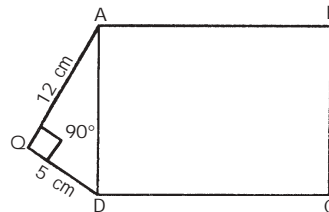
65. Two isosceles triangles have equal vertical angles and their areas are in the ratio $9 : 16$. The ratio of their corresponding heights is

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

66. The Qutab Minar casts a shadow 150 m long at the same time when the Vikas Minar casts a shadow of 120 m long on the ground. If the height of the Vikas Minar is 80 m , then the height of the Qutab Minar is

- (1) 180 m (2) 100 m
 (3) 150 m (4) 120 m

67. The area of the square ABCD given below is



- (1) 60 cm^2 (2) 90 cm^2
 (3) 169 cm^2 (4) 144 cm^2

68. The perimeters of two similar triangles ABC and PQR are 36 cm and 24 cm respectively. If $PQ = 10\text{ cm}$, then the length of AB is

- (1) 16 cm (2) 12 cm
 (3) 14 cm (4) 15 cm

69. Which of the following groups of fractions is arranged in ascending order ?

- (1) $\frac{5}{16}, \frac{7}{18}, \frac{6}{17}$ (2) $\frac{7}{18}, \frac{6}{17}, \frac{5}{16}$
 (3) $\frac{5}{16}, \frac{6}{17}, \frac{7}{18}$ (4) $\frac{6}{17}, \frac{7}{18}, \frac{5}{16}$

70. The value of $\frac{\frac{1}{2} + \frac{1}{2}}{\frac{1}{2} + \frac{1}{2}}$ of $\frac{1}{2}$ is

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

71. What is the least fraction which, when added to or subtracted from

$\frac{29}{12} + \frac{15}{16}$, will make the result a whole number ?

- (1) $\frac{21}{38}$ (2) $\frac{31}{38}$
 (3) $\frac{31}{48}$ (4) $\frac{17}{48}$

$$\begin{aligned}
 44.(4) : \quad & \frac{5a + 3b}{2a - 3b} = \frac{23}{5} \\
 \Rightarrow & 25a + 15b = 46a - 69b \\
 \Rightarrow & 21a = 84b \\
 \Rightarrow & \frac{a}{b} = \frac{84}{21} = \frac{4}{1}
 \end{aligned}$$

$$\begin{aligned}
 45.(4) : \quad & \text{Prob that bag A is drawn} = \frac{1}{2} \\
 & \text{Prob that white ball is drawn} \\
 & \text{from bag A} = \frac{1}{2} \times \frac{3}{5} = \frac{3}{10} \\
 & \text{Prob that bag B is drawn} = \frac{1}{2} \\
 & \text{Prob that white ball is drawn} \\
 & \text{from bag B} = \frac{1}{2} \times \frac{2}{6} = \frac{1}{6} \\
 & \text{Prob that white ball is drawn} \\
 & \text{either from bag A or from bag B} \\
 & = \frac{3}{10} + \frac{1}{6} = \frac{7}{15}
 \end{aligned}$$

46.(3) : The event, that four numbers, such that their product is positive, will occur in the following ways :

Ways of occurring the event	Prob of occurrence
1. + + + +	$\frac{6}{14} \times \frac{5}{13} \times \frac{4}{12} \times \frac{3}{11} = \frac{15}{1001}$
2. - - - -	$\frac{8}{14} \times \frac{7}{13} \times \frac{6}{12} \times \frac{5}{11} = \frac{70}{1001}$
3. + + - -	$\frac{6}{14} \times \frac{5}{13} \times \frac{8}{12} \times \frac{7}{11} = \frac{70}{1001}$
4. + - + -	$\frac{6}{14} \times \frac{8}{13} \times \frac{5}{12} \times \frac{7}{11} = \frac{70}{1001}$
5. + - - +	$\frac{6}{14} \times \frac{8}{13} \times \frac{7}{12} \times \frac{5}{11} = \frac{70}{1001}$
6. - + + -	$\frac{8}{14} \times \frac{6}{13} \times \frac{5}{12} \times \frac{7}{11} = \frac{70}{1001}$
7. - + - +	$\frac{8}{14} \times \frac{6}{13} \times \frac{7}{12} \times \frac{5}{11} = \frac{70}{1001}$
8. - - + +	$\frac{8}{14} \times \frac{7}{13} \times \frac{6}{12} \times \frac{5}{11} = \frac{70}{1001}$

Prob that the event that the product of four numbers

comes out to be positive

$$= \frac{15}{1001} + \frac{70}{1001} \times 7 = \frac{505}{1001}$$

$$\begin{aligned}
 47.(1) : \quad & p^{50}(1 - p)^{50} = p^{51}(1 - p)^{49} \\
 \Rightarrow & p = \frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 48.(2) : \quad & \text{Total score will be a prime} \\
 & \text{number in 15 ways out of 36 :} \\
 & (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), \\
 & (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), \\
 & (4, 3), (5, 2), (5, 6), (6, 1), (6, 5). \\
 & \text{Hence, the required probability} \\
 & = \frac{15}{36} = \frac{5}{12}
 \end{aligned}$$

$$\begin{aligned}
 49.(2) : \quad & \text{Let the speed of the boat in} \\
 & \text{still water be } a \text{ km/hr. Let the} \\
 & \text{rate of the current be } b \text{ km/hr.} \\
 \therefore & \text{Speed of the boat downstream} \\
 & = (a + b) \text{ km/hr} \\
 & \text{Speed of the boat upstream} \\
 & = (a - b) \text{ km/hr} \\
 \therefore & \frac{24}{a - b} + \frac{28}{a + b} = 6 \\
 & \frac{30}{a - b} + \frac{21}{a + b} = \frac{13}{2} \\
 \Rightarrow & b = 4, a = 10
 \end{aligned}$$

$$\begin{aligned}
 50.(2) : \quad & \text{Let the speed of the train be} \\
 & a \text{ km/hr and speed of the car} \\
 & \text{be } b \text{ km/hr.} \\
 \therefore & \frac{120}{a} + \frac{480}{b} = 8 \text{ and} \\
 & \frac{200}{a} + \frac{400}{b} = 8 \frac{1}{3} = \frac{25}{3} \\
 \Rightarrow & 120b + 480a = 8ab \text{ and} \\
 & 200b + 400a = \frac{25}{3} ab \\
 \Rightarrow & 15b + 60a = ab \text{ and} \\
 & 24b + 48a = ab \\
 \Rightarrow & 15b + 60a = 24b + 48a \\
 \Rightarrow & 12a = 9b \Rightarrow \frac{a}{b} = \frac{3}{4}
 \end{aligned}$$

51.(3) : Let the speed of the car at A = a km/hr and speed of the car at B = b km/hr.

∴ Relative motion of the car at A w.r.t. the car at B = (a - b) km/hr, if both the cars run in the same direction.

Relative motion of the car at A w.r.t. the car at B = (a + b) km/hr, if both the cars run in opposite directions.

$$\therefore 7(a - b) = a + b \Rightarrow \frac{a}{b} = \frac{4}{3}$$

52.(4) : Let speed of the faster train be a km/hr.

∴ Speed of the slower train = (a - 16) km/hr

$$\Rightarrow \frac{192}{a} = \frac{192}{a - 16} - 2$$

$$\Rightarrow a = 48$$

53.(4) : Let the speed of the stream be a km/hr.

∴ Speed of the motor boat upstream = (15 - a) km/hr

Speed of the motor boat down-stream = (15 + a) km/hr.

$$\therefore \frac{30}{15 + a} + \frac{30}{15 - a} = \frac{9}{2}$$

$$\Rightarrow a = 5$$

54.(3) : Let the normal speed be a km/hr.

$$\therefore \frac{300}{a + 5} = \frac{300}{a} - 2$$

$$\Rightarrow a = 25$$

55.(2) : Let the length of the bridge be a metres.

∴ The train running @ 72000m/3600 seconds will cover the distance of (100 + a) metres in 25 seconds.

$$\Rightarrow \frac{3600}{72000} (100 + a) = 25$$

$$\Rightarrow a = 400$$

56.(1) : Relative speed of the train w.r.t. the man = 66 km/hr.

$$\Rightarrow 66000 \text{ m}/3600 \text{ sec.}$$

$$\Rightarrow 110 \text{ m}/6 \text{ sec.}$$

∴ The 110 m long train running @ 60 km/hr will pass the man walking @ 6 km/hr in opposite direction in 6 seconds.

$$57.(1) : \frac{P}{Q} = \frac{x^2 - 36}{x^2 - 49} \times \frac{x + 7}{x + 6} = \frac{x - 6}{x - 7}$$

58.(2) : Let the two numbers be a and b.

$$\therefore \frac{a}{b} = \frac{2}{3} \text{ and } \frac{a + 8}{b + 8} = \frac{3}{4}$$

$$\Rightarrow b = 24, a = 16$$

$$59.(3) : x = 1, x = \frac{5}{2}$$

Both roots are real.

For real roots, $b^2 - 4ac > 0$ if $ax^2 + bx + c = 0$ is the quadratic equation.

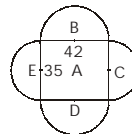
$$(1) \Rightarrow b^2 - 4ac = 16 - 60 = -44$$

$$(2) \Rightarrow b^2 - 4ac = 1 - 16 = -15$$

$$(4) \Rightarrow b^2 - 4ac = 9 - 32 = -23$$

60.(4)

61.(1) :



Area of the field = Area of (A + B + C + D + E)

$$= 42 \times 35 + \frac{1}{2} \pi \times 21^2$$

$$+ \frac{1}{2} \pi \times 17.5^2 + \frac{1}{2} \pi \times 21^2$$

$$+ \frac{1}{2} \pi \times 17.5^2$$

$$= 1470 + 693 + 481.25$$

$$+ 693 + 481.25$$

$$= 3818.5 \text{ m}^2$$

62.(2) : $L = 2B, H = 4.$

Area of 4 walls of the room
 $= L \times H + B \times H + L \times H + B \times H$
 $= H \times [2L + 2B] = 2H(L + B)$
 $= 2 \times 4 \times (2B + B)$

$\Rightarrow 24B = 120 \Rightarrow B = 5, L = 10$

\therefore Area of the floor
 $= L \times B = 50 \text{ sq. m.}$

63.(3) : Circumference of the circle

$= 2\pi r = 2 \times \frac{22}{7} \times 35 = 220 \text{ cm}$

$=$ Perimeter of the rhombus

\therefore Side of the rhombus

$= \frac{220}{4} = 55 \text{ cm}$

64.(4) : Area of the cross-section of the canal (in the form of

trapezium) $= \frac{1}{2}(10 + 6) \times h$, where h is the height of the trapezium.

$\therefore \frac{1}{2} \times 16 \times h = 72 \Rightarrow h = 9$

65.(1)

66.(2) : $\frac{150}{120} \times 80 = \frac{5}{4} \times 80 = 100 \text{ m}$

67.(3) : $AD = 13 \text{ cm}$

68.(4) : $\frac{36}{24} \times 10 = 15 \text{ cm.}$

69.(3) : $\frac{5}{16} = .3125, \frac{6}{17} = .353,$

$\frac{7}{8} = .3889$

70.(1) : Given expression

$\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4} = \frac{8}{3} = 2 \frac{2}{3}$

71.(4) : $\frac{29}{12} + \frac{15}{16} = \frac{232 + 90}{96} = \frac{322}{96}$

$= \frac{161}{48} = 3 \frac{17}{48}$

72.(1) : $\frac{P+Q}{P-Q} = \frac{\frac{P}{Q}+1}{\frac{P}{Q}-1} = \frac{7+1}{7-1} = \frac{8}{6} = \frac{4}{3}$

73.(1) : Let the C.P. be Rs. $k.$

\therefore S.P. $= k + 12\%$ of k

$= \frac{112k}{100} = \frac{28k}{25}$

$\therefore \frac{28k}{25} + 10\%$ of $\frac{28k}{25} = 616$

$\Rightarrow k = 500$

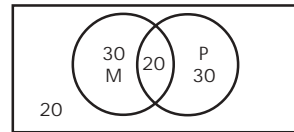
74.(3) : $15\% = \text{Rs. } 60000$

\therefore Total amount spent on machinery and raw material

$= 75\% = 75 \times \frac{60000}{100}$

$= \text{Rs. } 300,000$

75.(2) :



76.(4) : Let the C.P. of the article be Rs. $k.$

$\therefore k + 12\frac{1}{2}\%$ of $k + 22.50$

$= k + 25\%$ of k

$\Rightarrow 12\frac{1}{2}\%$ of $k = 22.50$

$\Rightarrow k = 180.$

77.(4) : There are 12 edges in the cube. Volume $= V.$

Each edge $= \sqrt[3]{V}$

Total length of the edges $= 12\sqrt[3]{V}$

78.(4) : $\left(\frac{1}{4}\right)^{-2} = \left(\frac{4}{1}\right)^2 = 16$

79.(1) : $2^5 \times 9^2 = 32 \times 81 = 2592$

80.(2) : Given expression

$= \sqrt[3]{0.008} = 0.2$

Section III : Data Analysis And Sufficiency

Directions (Qs. 81 to 88) : Answer these questions on the basis of the data given in the following table giving the trend in sales of four companies. The amounts given are in lakhs of rupees.

Year	Name of the Company			
	Alpha	Baron	Celia	Dowby
1986	12.00	2.00	18.50	12.00
1987	10.00	5.00	15.00	16.00
1988	18.00	7.50	16.50	15.00
1989	20.00	11.50	14.50	36.00
1990	25.00	15.00	50.00	48.00

81. Which company has shown consistently an increasing sales average ?

- (1) Alpha (2) Baron
(3) Celia (4) Dowby

82. The cumulative sales of all the companies put together in 1987 was how much of the sales of 1990 ?

- (1) $\frac{3}{7}$ (2) $\frac{2}{5}$ (3) $\frac{1}{4}$ (4) $\frac{1}{3}$

83. What was the average sales of Celia over the 5 years ?

- (1) 22.90 (2) 21.90
(3) 23.90 (4) 20.90

84. Which company recorded the lowest growth rate in sales in 1990 over its previous year ?

- (1) Alpha (2) Baron
(3) Celia (4) Dowby

85. Which two years have shown approximately equal sales for all the companies put together ?

- (1) 1987 and 1988
(2) 1986 and 1987
(3) 1989 and 1990
(4) 1988 and 1989

86. Which company faced a decline in sales in 1989 over its previous year ?

- (1) Alpha (2) Baron
(3) Celia (4) Dowby

87. The ratio of the highest turnover of any company in any year to the lowest turnover of any company in any year is

- (1) 25 (2) 15 (3) 2.5 (4) 0.25

88. How many companies had the same turnover in the same year ?

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

Directions (Qs. 89 to 92) : These questions are to be answered on the basis of the following table, giving the thermal and hydel generation over the period 1991 to 1995, in terms of kWh per kW of installed capacity.

Year	Thermal	Hydel
1991	4000	4240
1992	4200	4010
1993	4020	4160
1994	4050	3700
1995	4040	3930

89. The ratio of thermal and hydel installed capacity over the period 1991-1995 is nearly

- (1) 1 : 1 (2) 203 : 200
(3) 20 : 21 (4) 10 : 11

90. The average kWh generated per kW of installed capacity for Hydel power generation was approximately

- (1) 4100 (2) 3820 (3) 4000
(4) 4050

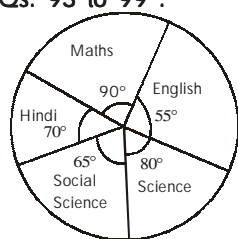
91. If the total installed capacity in the Thermal Sector in 1992 was 89×10^5 kW, then how many kWh of energy was generated ?

- (1) 3.74×10^{10} (2) 2.2×10^8
(3) 5.23×10^{10} (4) 3.74×10^8

92. The worst performance in terms of energy generation per kW of installed capacity was in

- (1) 1991 (2) 1992
(3) 1993 (4) 1994

Directions (Qs. 93 to 99) : These questions are to be answered on the basis of the following pie chart which gives the marks scored by a student in an Examination in five subjects—English, Hindi, Mathematics, Science and Social Science. Assuming that the total marks obtained for the examination are 540, answer Qs. 93 to 99 :



93. The marks scored by the student in Hindi and Mathematics exceed the marks scored in English and Social Science by

- (1) 60 (2) 75 (3) 40 (4) 30

94. The subject in which the student scored 22.2% marks is

- (1) Hindi (2) Science
(3) Social Science (4) English

95. The subject in which the student scored 105 marks is

- (1) Mathematics (2) Hindi
(3) Science (4) Maths

96. The marks obtained in three subjects, English, Science and Social Science, are what percent of the total marks ?

- (1) 45% (2) $44\frac{4}{9}\%$

- (3) 55% (4) $55\frac{5}{9}\%$

97. The marks obtained in Mathematics are what percent of the total marks ?

- (1) 20% (2) 30% (3) 35% (4) 25%

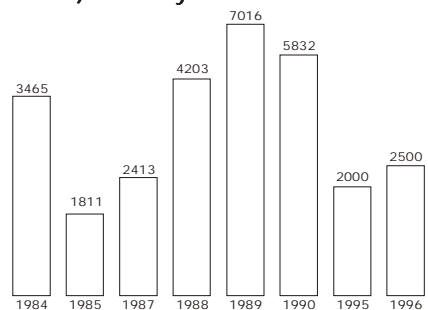
98. The difference of marks between English and Social Science is the same as between

- (1) Science and Hindi
(2) Hindi and Social Science
(3) English and Hindi
(4) Hindi and Science

99. The aggregate marks obtained by the students averaged over the 5 subjects is

- (1) 72 (2) 108 (3) 90 (4) 75

Directions (Qs. 100 to 105) : These questions are to be answered on the basis of the bar-chart given below, giving the wheat imports (In thousand tonnes) for the years 1984 to 1996.



100. In which year did the imports register the highest increase over its preceding years ?

- (1) 1996 (2) 1989
(3) 1988 (4) 1987

101. The imports in 1990 were approximately how many times to that of 1985 ?

- (1) 3.22 (2) 2.41
(3) 1.68 (4) 0.31

102. What is the ratio of the years which have above average imports to those which have below average imports ?

- (1) 3 : 8 (2) 8 : 3
(3) 3 : 5 (4) 5 : 3

103. The increase in imports in 1996 was what percent of the imports in 1995 ?

- (1) 80 (2) 125
(3) 5 (4) 25

104. The imports in 1988 are approximately what percent of the average imports for the given years ?
 (1) 65 (2) 85 (3) 190 (4) 115

105. For which year is the amount of wheat imported closest to the average of imports over the entire period ?
 (1) 1987 (2) 1995
 (3) 1984 (4) 1996

Directions (Qs. 106 to 120) : Each of these questions is followed by two statements labelled A and B, in which certain data is given. You have to decide whether the data given in the statements are sufficient to answer the question. Using the data given, together with your everyday knowledge, choose

(1) If statement A alone is sufficient but statement B alone is not sufficient to answer the question :

(2) If statement B alone is sufficient but statement A alone is not sufficient to answer the question :

(3) If both the statements A and B together are sufficient to answer the question but neither statement alone is sufficient to answer the question :

(4) If A and B together are not sufficient to answer the question and additional information is required :

106. What is x ?
 A : $2x + 10 = 35$
 B : $x + y = 17$

107. What is x ?
 A : $x + z = 23$
 B : $3x - 35 = 10$

108. What is x ?
 A : $3x + 4y = 12$
 B : $4x + 3y = 17$

109. What is y ?
 A : $\frac{1}{2}x + y = 5$
 B : $x + \frac{1}{3}y = 5$

110. What is z ?
 A : $3x + 45 + 5z = 120$
 B : $4x + 72 + 3y = 130$

111. How tall is Purnendu ?
 A : Sanjeeva is 5 ft 7 inch.
 B : Sanjay is taller than Purnendu.

112. Is Delhi the most polluted city in the world ?

A : Delhi is the most polluted city in India.

B : Delhi is the capital of India.

113. What marks have been obtained by Akshay ?

A : Akshay's marks are the average of marks of Namita and Mona.

B : Namita obtained 80 marks and this is 33% more than the marks obtained by Mona.

114. Is Heathrow the busiest airport in the world ?

A : On an average, a flight takes off every 2 minutes from terminal 4.

B : There are no flights between 10 p.m. and 5 a.m.

115. How much weight did Sheela lose within the first one week of her dieting ?

A : She lost 300 gms per day during the first month.

B : She lost 250 gms per day during the second month.

116. A certain bookshop sold 92 copies of Bill Gates' book *Business At The Speed Of Thought* during the first day. What percent of his stock of this book did he sell on that day ?

A : The total number of books with this title on stock is 230.

B : There are a total of 1000 books in his store.

117. Did Jayalalitha receive more than 40% of the 30,000 votes cast in an election?

A : Mamata received 45% of the votes.

B : Jayalalitha received exactly 11000 votes.

118. What is the value of y ?

A : $x - y = 3$

B : $y (x^0) = 0$

119. What was the combined average attendance per game at the Jawaharlal Nehru Stadium for the months of June and July?

A : The total attendance for the month of June was 23,100 and the total attendance for the month of July was 25,200.

B : There were 20 games played in June and 22 games played in July.

120. If t is a multiple of prime number S , is t a multiple of S^2 ?

A : $S < 4$. B : $t = 18$

ANSWERS

81.(2)

82.(4) : Commulative Sales of all the companies put together in 1987 = 46.00

Commulative Sales of all the companies put together in 1990 = 138.00

83.(1) : $\frac{114.50}{5} = 22.90$

84.(1) : Growth rate in 1990 as compared to the previous year for company

Alpha = $\frac{5}{20} \times 100 = 25\%$

Baron = $\frac{3.50}{11.50} \times 100 = 30.43\%$

Celia = $\frac{35.50}{14.50} \times 100 = 244.82\%$

Dowby = $\frac{12}{36} \times 100 = 33.33\%$

85.(2) : Sales of all the companies put together in the year

1986 = 44.50, 1987 = 46.00

1988 = 57.00, 1989 = 82.00

1990 = 138.00

86.(3) **87.**(1) : $\frac{50.00}{2.00} = 25$

88.(2) : Two. Alpha and Dowby, 12.00 in 1986.

89.(2) : 20310 : 20040 \approx 203 : 200

90.(3) : $\frac{20040}{5} = 4008 \approx 4000$

91.(1) : $89 \times 10^5 \times 4200$
 $= 3738 \times 10^7 = 3.738 \times 10^{10}$
 $= 3.74 \times 10^{10}$

92.(4) : 4050 + 3700 = 7750 (In 1994)
 In 1993, 8180. In 1992, 8210. In 1991, 8240.

93.(1) : $(70 + 90) - (55 + 65)$
 $= 160 - 120 = 40$

Since $360^\circ = 540$ marks
 $\Rightarrow 40^\circ = 60$ marks

94.(2) : Hindi : $\frac{70}{360} \times 100 = 19.44\%$

Science : $\frac{80}{360} \times 100 = 22.22\%$

Social Science :

$\frac{65}{360} \times 100 = 18.05\%$

English : $\frac{55}{360} \times 100 = 15.28\%$

95.(2) : Maths : $\frac{90}{360} \times 540 = 135$

Hindi : $\frac{70}{360} \times 540 = 105$

Science : $\frac{80}{360} \times 540 = 120$

$$96.(4) : \frac{55 + 80 + 65}{360} \times 100$$

$$= \frac{200}{360} \times 100 = 55\frac{5}{9} \%$$

$$97.(4) : \frac{90}{360} \times 100 = 25\%$$

98.(4)

$$99.(2) : \frac{540}{5} = 108$$

100.(3) : In 1996, 25%.

$$\text{In 1989, } \frac{2813}{4203} \times 100 = 66.9\%$$

$$\text{In 1988, } \frac{1790}{2413} \times 100 = 74.2\%$$

$$\text{In 1987, } \frac{602}{1811} \times 100 = 33.24\%$$

101.(1) : Suppose $5832 = k \times 1811$

$$\Rightarrow k = \frac{5832}{1811} = 3.22$$

102.(3) : Average imports

$$= \frac{29240}{8} = 3655$$

$$\therefore \text{ Required ratio} = \frac{3}{5}$$

103.(4) : Let $500 = k\%$ of 2000

$$\Rightarrow k = \frac{500 \times 100}{2000} = 25$$

104.(4) : Suppose $4203 = k\%$ of 3655

$$\Rightarrow k = \frac{4203 \times 100}{3655} = 115\%$$

105.(3) 106.(1) 107.(2) 108.(3)

109.(3) 110.(4) 111.(4) 112.(4)

$$113.(3) : \text{Akshay} = \frac{\text{Namita} + \text{Mona}}{2}$$

$$\text{Mona} = 60, \text{ Namita} = 80$$

$$\therefore \text{Akshay} = \frac{80 + 60}{2} = 70$$

114.(4)

115.(1) : 2100 grams

$$116.(1) : \frac{92}{230} \times 100 = 40\%$$

117.(2) : No.

$$40\% \text{ of the votes} = 12000.$$

118.(2) : $y = 0$

$$119.(3) : \frac{23100 + 25200}{20 + 22} = \frac{48300}{42}$$

$$= 1150$$

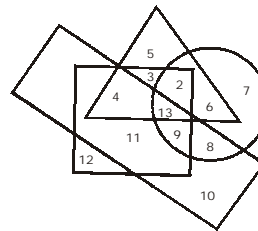
120.(4) : $18 = 2 \times 3 \times 3$ ($t = 18, S = 3$)

Also, $t = 45$ is a multiple of 5 but is not a multiple of 5^2 .

\therefore It is not possible to conclude whether t will be a multiple of 5^2 .

Section IV : Intelligence & Critical Reasoning

Directions (Qs. 121 to 125) : In the given diagram the circle stands for 'educated', square for 'hard working', triangle for 'urban' and the rectangle for 'honest people'. Different regions in the diagram are numbered from 2 to 13. Study the diagram carefully to choose the correct answer in Qs. 121 to 125 :



121. People who are educated, hard-working and honest but not urban are represented by

- (1) 8 (2) 13 (3) 2 (4) 9

122. Hardworking people who are uneducated, dishonest and urban are represented by

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

123. Hard working, non-urban people who are neither educated nor honest are indicated by

- (1) 10 (2) 12 (3) 11 (4) 9

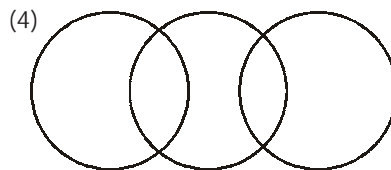
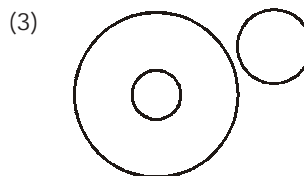
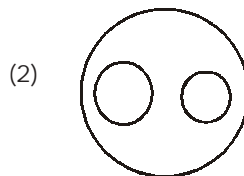
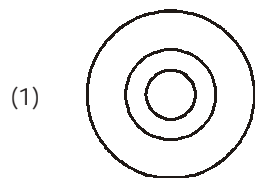
124. Which of the following statements are true ?

- (1) All educated people are urban
 (2) Uneducated people are either honest or hardworking
 (3) Some honest people are also hardworking and are educated
 (4) No person is urban, educated, honest and hardworking

125. Region 4 is best described as consisting of

- (1) People who are uneducated, urban, hardworking and dishonest
 (2) People who are urban, hardworking, honest and educated
 (3) People who are uneducated, urban, honest and hardworking
 (4) People who are non-urban, honest, uneducated and hardworking

Directions (Qs. 126 to 130) : In these questions, choose one of the figures labelled 1, 2, 3 or 4 which best represents the relationship among the items given.



126. Mangoes, Apples, Fruits

127. Coffee, Tea, Beverages

128. Musicians, Men, Women

129. Parrots, Birds, Mice

130. Fish, Herring, Animals living in water

Directions (Qs. 131 to 135) : For these questions, what is the missing element in the sequence represented by the question mark ?

131. 1, 1, 2, 6, 24, ? , 720

- (1) 100 (2) 104
 (3) 108 (4) 120

132. 2, 12, 30, 56, ? , 132, 182

- (1) 116 (2) 76
 (3) 90 (4) 86

133. 625, 5, 125, 25, 25, ?, 5

- (1) 125 (2) 5
 (3) 25 (4) 625

134. P3C, R5F, T8I, V12L, ?

- (1) Y17O (2) X17M
 (3) X17O (4) X16O

135. A, G, L, P, S, ?

- (1) X (2) Y (3) W (4) U

136. In a certain code, EASE is written as GUCG. How is CUT written in that code ?

- (1) UWE (2) VWE
(3) EWU (4) CWF

137. If BRIDGE is written as EULGJH in a certain code, how will FRUIT be written in that code ?

- (1) IUXLW (2) IVLXW
(3) IUWXL (4) IUXVT

138. In a certain code language, '134' means 'Good and Tasty', '478' means 'see good pictures' and '729' means 'pictures are faint'. Which of the following numerical symbols stands for 'see' ?

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

139. In a certain code, CAT is written as SATC and DEAR is written as SEARD. How would SING be written in that code ?

- (1) GNISS (2) SINGS
(3) SGNIS (4) BGINIS

140. If the code of ABCDEF is ZYXWVU, then what is the code for PASS ?

- (1) KZHH (2) KHZZ
(3) KMHH (4) WZHH

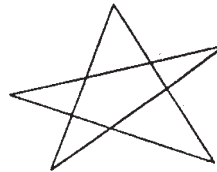
141. At an enquiry office at a railway station, a passenger was told 'A train for Delhi has left 15 minutes ago, but after every 45 minutes a train leaves for Delhi. The next train will leave at 8.30 pm'. At what time was this information given to the passenger ?

- (1) 7.45 pm (2) 8.00 pm
(3) 8.15 pm (4) 8.05 pm

142. Five newly-born babies were weighed by the doctor. In her report, she stated that child A is lighter than child B. Child C is lighter than child D. Child B is lighter than child D, but heavier than child E. Which child is the heaviest ?

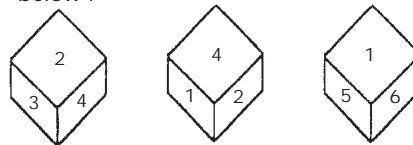
- (1) E (2) D
(3) C (4) A

143. How many triangles are there in the following diagram of a 5-cornered star ?



- (1) 6 (2) 10 (3) 12 (4) 14

144. Three views of a cube are given below :



Which number is opposite to the face 4 ?

- (1) 5 (2) 3 (3) 6 (4) 2

145. If 21st July, 1999 was Wednesday, what would have been the day of the week on 21st July, 1947 ?

- (1) Monday (2) Sunday
(3) Thursday (4) Saturday

146. Three numbers are in G.P. Their sum is 28 and product is 512. The numbers are

- (1) 6, 9 and 13 (2) 4, 8 and 16
(3) 2, 8 and 18 (4) 2, 6 and 18

147. The sum of the series :

$$1^2 + 2^2 + 3^2 + 4^2 + \dots + 15^2 \text{ is}$$

- (1) 1080 (2) 1240
(3) 1460 (4) 1620

148. If the n th term of an A.P. is $4n + 1$, then the common difference is

- (1) 3 (2) 4 (3) 5 (4) 6

149. If $\frac{1}{b-a} + \frac{1}{b-c} = \frac{1}{a} + \frac{1}{c}$,

then a, b, c form a/an

- (1) Arithmetic progression
(2) Geometric progression
(3) Harmonic progression
(4) None of these

150. If the second term of a geometric progression is 2 and the sum of the series to infinity is 8, then the first term is
 (1) 5 (2) 2 (3) 4 (4) 1

Directions (Qs. 151 to 160) : In these questions, two statements are given, followed by two inferences A and B. Assume the statements to be true, mark your answer as

- (1) If only inference A follows,
 (2) If only inference B follows,
 (3) If both A and B follow,
 (4) If neither A nor B follows.

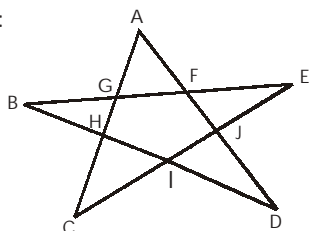
151. All mothers are aunts.
 All aunts are ladies. So,
 A : All mothers are ladies.
 B : All aunts are mothers.
152. Some doctors are fools.
 Some fools are rich. So,
 A : Some doctors are rich.
 B : Some rich are doctors.
153. All goats are cows.
 Some goats are lambs. So,
 A : All goats are lambs.
 B : Some lambs are cows.
154. All pedestrians are poor.
 All poor are honest. So,
 A : All honest are pedestrians.
 B : All pedestrians are honest.
155. All rings are wings.
 All wings are kings. So,
 A : All rings are kings.
 B : All kings are rings.
156. Some books are hooks.
 All books are fish. So,
 A : Some hooks are fish.
 B : Some fish are hooks.
157. All pens are guns.
 All guns are inkpots. So,
 A : All pens are inkpots.
 B : All inkpots are pens.
158. All P's are Q's. All Q's are R's. So,
 A : All P's are R's.
 B : All R's are P's.

159. Some swords are sharp.
 All swords are rusty. So,
 A : Some rusty things are sharp.
 B : Some rusty things are not sharp.
160. All liquor is water.
 No water is bitter. So,
 A : No liquor is bitter.
 B : No bitter thing is liquor.

ANSWERS

- 121.(4) 122.(1) 123.(2) 124.(3)
 125.(3) 126.(2) 127.(2) 128.(4)
 129.(3) 130.(1)
- 131.(4) : The sequence in the given series is $\times 1, \times 2, \times 3, \times 4, \times 5, \times 6$.
- 132.(3) : The sequence in the given series is $+10, +18, +26, +34, +42, +50$.
- 133.(1) : The sequence in the alternate terms (odd) is $\div 5$. The sequence in the alternate terms (even) is $\times 5$.
- 134.(3) : First letter moves $+2$ steps each time.
 Third letter moves $+3$ steps each time.
 The sequence in the middle number is $+2, +3, +4, +5$.
- 135.(4) : The sequence in the given series is $+6, +5, +4, +3, +2$.
- 136.(2) : The 1st and the 4th letters are interchanged. Then the 2nd and the 3rd letters are interchanged. Then each letter is moved $+2$ steps.
- 137.(1) : Each letter moves $+5$ steps.
- 138.(4) : 4 = Good, 7 = Pictures, 8 = See
- 139.(2) 140.(1) 141.(2)
 142.(2) : $E < B < D, A < B < D, C < D$.

143. (2) :



ACJ, ADH, AFG, BDF, BEI,
BGH, CEG, CHI, DIJ, EFJ

144. (1) 145. (1)

146. (2) : Let the numbers in G.P. be

$\frac{a}{r}, a, ar$, where r is the
common ratio.

$\therefore a^3 = 512$ and

$$\frac{a}{r} + a + ar = 28$$

$$\Rightarrow r = 2, r = \frac{1}{2}, a = 8$$

147. (2) : $\frac{n(n+1)(2n+1)}{6} [n = 15]$

148. (2) : nth term = $4n + 1$
1st term = $4 \times 1 + 1 = 5$
2nd term = $4 \times 2 + 1 = 9$
 \therefore Common difference = 4.

149. (3) : To show a, b, c are in H.P., i.e.

to show $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in A.P.,

i.e. to show $b = \frac{2ac}{a+c}$... (1)

Now to show

$$\frac{1}{b-a} + \frac{1}{b-c} = \frac{1}{a} + \frac{1}{c}$$

Consider L.H.S.

$$= \frac{1}{b-a} + \frac{1}{b-c}$$

$$= \frac{1}{\frac{2ac}{a+c} - a} + \frac{1}{\frac{2ac}{a+c} - c}$$

$$= \frac{a+c}{2ac-a^2-ac} + \frac{a+c}{2ac-ac-c^2}$$

$$= (a+c) \left[\frac{1}{ac-a^2} + \frac{1}{ac-c^2} \right]$$

$$= (a+c) \left[\frac{ac-c^2+ac-a^2}{ca(c-a)(a-c)} \right]$$

$$= \frac{(a+c)(a-c)^2}{ca(a-c)(a-c)}$$

$$= \frac{a+c}{ca} = \frac{1}{a} + \frac{1}{c}$$

150. (3) : 2nd term = $ar = 2$,

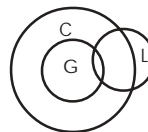
$$S_{\infty} = \text{Sum to infinity} = \frac{a}{1-r} = 8$$

$$\Rightarrow a = 4, r = \frac{1}{2}$$

(where $a = 1$ st term,
 $r =$ common ratio)

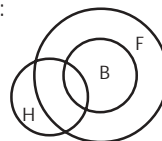
151. (1)

153. (2) :



154. (2)

156. (3) :

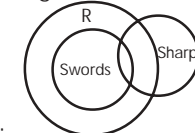


155. (1)

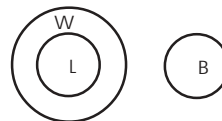
157. (1)

158. (1)

159. (1) : The conclusion cannot be
negative.



160. (3) :



Section V : Indian And Global Environment

161. Sariska and Ranthambore are reserves for a particular animal. Which is this animal ?

- (1) Lion (2) Deer
(3) Tiger (4) Bear

162. Which one of the following countries is NOT a member of the G-8 group ?

- (1) France (2) Italy
(3) Spain (4) Germany

163. What is the minimum age laid down for a person to seek election to the Lok Sabha ?

- (1) 18 Years (2) 21 Years
(3) 25 Years (4) 30 Years

164. Which article of the Constitution of India gives precedence to constitutional provisions over the laws made by the Union Parliament/State Legislatures ?

- (1) 13 (2) 32
(3) 245 (4) 326

165. The period of the Ninth Five-Year Plan was

- (1) 1995-2000 (2) 1997-2002
(3) 1994-1999 (4) 1996-2001

166. "India 2020—A Vision for the New Millennium" is a new book which has attracted the readers' attention. Who wrote this book ?

- (1) Khushwant Singh
(2) R. K. Laxman
(3) A. P. J. Abdul Kalam and Y. S. Rajan
(4) Nirad C. Chaudhuri

167. Which of the following countries has the second largest rail network in the world ?

- (1) India (2) U.S.A.
(3) Russia (4) China

168. Which of the following organisations gives the Kalinga Prize ?

- (1) UNESCO
(2) CSIR

(3) Ministry of Welfare

(4) Department of Science and Technology

169. APSARA is the name of India's first

- (1) Nuclear reactor
(2) Helicopter
(3) Ground battle tank
(4) Railway locomotive

170. Numismatics is the study of

- (1) Insects (2) Numbers
(3) Stamps (4) Coins

171. Which of the following parts of the sunlight makes the solar cooker hot ?

- (1) Ultraviolet (2) Red light rays
(3) Infrared (4) Cosmic rays

172. The chronological order of the three dynasties that ruled in India is

- (1) Slave, Khilji, Tughlaq
(2) Tughlaq, Slave, Khilji
(3) Khilji, Tughlaq, Slave
(4) Slave, Tughlaq, Khilji

173. Recently the Supreme Court has passed an order to convert all public transport vehicles in Delhi to CNG ? What does CNG stand for ?

- (1) Compressed Natural Gas
(2) Carbon Naturalised Gas
(3) Compound Natural Gas
(4) Cryogenic Natural Gas

174. Hindi is written in the Devanagri Script. In which of the following scripts Punjabi is written ?

- (1) Sanskrit (2) Indo-Iranian
(3) Gurmukhi (4) Devnagri

175. What is the maximum number of ministers allowed in the Union Cabinet ?

- (1) 15 (2) 28
(3) 39 (4) There is no such limit

176. Who is the Supreme Commander of the Indian Armed Forces ?

- (1) Prime Minister
- (2) Defence Minister
- (3) President
- (4) Chief of the Army Staff

177. Who is associated with Narmada Bachao Andolan ?

- (1) A. B. Vajpayee
- (2) Medha Patkar
- (3) Mamata Bannerjee
- (4) Sunder Lal Bahuguna

178. Maximum rainfall in India is during the months of

- (1) January-April
- (2) June-September
- (3) September-December
- (4) February-March

179. Gandhi Peace Prize for the year 2000 was awarded to the former President of South Africa along with

- (1) C. Subramaniam
- (2) Grameen Bank of Bangladesh
- (3) Satish Dhawan
- (4) World Health Organisation

180. Which is/are the main provisions of Information Technology (IT) Act, 2000 ?

- (1) Legal recognition to digital signatures and documents
- (2) Finalisation of contracts through electronic media.
- (3) Making hacking with computer system an offence
- (4) All of these

181. Human Genome Project endeavours to

- (1) Decode DNA
- (2) Invent AIDS treatment
- (3) Study evolution of human
- (4) Study finger prints

182. The earlier name of WTO was

- (1) UNCTAD
- (2) GATT
- (3) UNESCO
- (4) FICCI

183. The Green revolution in crops, Yellow revolution in oil seeds and Golden

revolution in has been an ample testimony to the contributions of agricultural research and development efforts undertaken in the country.

- (1) Horticulture
- (2) Wheat
- (3) Petrol
- (4) None of these

184. Which of the following aspects is/are addressed in the National Population Policy, 2000 ?

- (1) Promote delayed marriage for girls, not earlier than 18 years of age and preferably after 20 years of age.
- (2) Reduce maternal mortality ratio to below 100 per 100,000 live births.
- (3) Make school education upto the age of 14 free and compulsory, and reduce the drop outs at primary and secondary school levels to below 20 percent for both the boys and the girls.
- (4) All of these

185. Which of the following does not come as a product of vehicular pollution ?

- (1) Sulphur dioxide
- (2) Nitrogen oxide
- (3) Carbon monoxide
- (4) Hydrogen peroxide

186. In April 2001, India successfully launched the GSLV. What does GSLV stand for ?

- (1) Geosynchronous Satellite Launch Vehicle
- (2) Gamma Satellite Launch Vehicle
- (3) Gautam Satellite Launch Vehicle
- (4) None of the above

187. India owns one of the largest livestock population in the world. It accounts for nearly 57% of the world's buffalo population and 16% of the cattle population. India's position is as a producer of milk in the world.

- (1) First
- (2) Second
- (3) Fifth
- (4) Tenth

188. Which river is mainly associated with the Sardar Sarovar Project ?

- (1) Ganga (2) Brahmaputra
(3) Krishna (4) Narmada

189. Which port-city in Orissa was damaged during the 1999 super cyclone ?

- (1) Visakhapatnam (2) Paradeep
(3) Mandvi (4) Kandla

190. The apex organisation in the field of rural credit is

- (1) National Bank for Agriculture and Rural Development (NABARD)
(2) State Bank of India (SBI)
(3) Grameen Vikas Bank (GVB)
(4) Reserve Bank of India (RBI)

191. What is the capital of the newly-created state of Chhattisgarh ?

- (1) Ranchi (2) Raigarh
(3) Raipur (4) Jabalpur

192. On whose birthday Teacher's Day is celebrated ?

- (1) S. Radhakrishnan
(2) Maulana Abul Kalam Azad
(3) Rajendra Prasad
(4) Jawaharlal Nehru

193. According to the Indian Constitution, what is the minimum educational qualification required for contesting the Lok Sabha elections ?

- (1) Post Graduation (2) Graduation
(3) Higher Secondary
(4) No such qualification is required

194. The Kisan Credit Card Scheme, introduced in 1998-99, is an innovative mechanism for facilitating

- (1) Long term credit to the farmers
(2) Short term credit to the farmers
(3) Credit payment for fertilisers
(4) Payment for minor irrigation charges

195. The global community comes together to celebrate World Environment Day on

- (1) June 5 (2) June 4
(3) July 6 (4) October 2

196. Which sport has been nominated for the Nobel Peace Prize 2001 for promoting understanding among nations ?

- (1) Basketball (2) Tennis
(3) Soccer (4) Hockey

197. The theme of the World Development Report 2001 is

- (1) From Plan to Market
(2) Knowledge for Development
(3) Attacking Poverty
(4) The State in the Changing World.

198. In which one of the following areas does the State Government NOT have control over its local bodies ?

- (1) Citizens' grievances
(2) Financial matters
(3) Legislation
(4) Personnel matters

199. Which one of the following does a TV remote control unit use to operate at TV set ?

- (1) Light waves (2) Sound waves
(3) Microwaves (4) Radio waves

200. The Indian National Army (I.N.A.) came into existence in 1943 in

- (1) Japan (2) Then Burma
(3) Singapore (4) Then Malaya

ANSWERS

- 161.** (3) **162.** (3) **163.** (3) **164.** (1)
165. (2) **166.** (3) **167.** (1) **168.** (1)
169. (1) **170.** (4) **171.** (3) **172.** (1)
173. (1) **174.** (3) **175.** (4) **176.** (3)
177. (2) **178.** (2) **179.** (2) **180.** (1)
181. (1) **182.** (2) **183.** (1) **184.** (1)
185. (4) **186.** (1) **187.** (1) **188.** (4)
189. (2) **190.** (1) **191.** (3) **192.** (1)
193. (4) **194.** (2) **195.** (1) **196.** (3)
197. (3) **198.** (4) **199.** (4) **200.** (3)