1 Practice Set

ARITHMETIC

1. The value of $\left(\frac{-1}{216}\right)^{-\frac{2}{3}}$ is :

(a) $\frac{1}{36}$ (b) $-\frac{1}{36}$

(c) -36 (d) 36

2. The unit's digit in the product $7^{35} \times 3^{71} \times 11^{55}$ is :

(a) 1 (b) 3

(c) 7 (d) 9

3. When the price of a radio was reduced by 20%, its sale increased by 80%. What was the net effect on the sale?

(a) 44% increase (b) 44% decrease

(c) 66% increase (d) 75% increase

4. How much water must be added to 48 ml of alcohol to make a solution that contains 25% alcohol ?

(a) 24 ml (b) 72 ml

(c) 144 ml (d) 196 ml

5. Ravi's salary is 150% of Amit's salary. Amit's salary is 80% of Ram's salary. What is the ratio of Ram's salary to Ravi's salary ?

(a) 1 to 2 (b) 2 to 3

(c) 5 to 6 (d) 6 to 5

6. A sum of money invested at compound interest amounts in 3 years to ₹ 2,400 and in 4 years to ₹ 2,520. The interest rate per annum is :

(a) 6% (b) 5%

(c) 10% (d) 12%

7. A man borrows ₹ 6000 at 10% compound rate of interest. He pays back ₹ 2000 at the end of each year to clear his debt. The amount that he should pay to clear all his dues at the end of third year is

(a) ₹ 6000 (b) ₹ 3366

(c) ₹ 3060 (d) ₹ 3066

8. At what percentage above the cost price must an article be marked so as to gain 33% after allowing the customer a discount of 5% ?

(a) 48% (b) 43%

(c) 40% (d) 38%

9. The batting average of 40 innings of a cricket player is 50 runs. His highest score exceeds his lowest score by 172 runs. If these two innings are excluded, the average of the remaining 38 innings is 48. His highest score was :

(a) 172 (b) 173

(c) 174 (d) 176

10. The lengths of three sides of a triangle are known. In which of the cases given below, it is impossible to get a triangle ?

(a) 15 cm, 12 cm, 10 cm

(b) 3.6 cm, 4.3 cm, 5.7 cm

(c) 17 cm, 12 cm, 6 cm

(d) 2.3 cm 4.4 cm, 6.8 cm

11. The perimeters of two similar triangles ABC and PQR are 36 cm, and 24 cm, respectively. If PQ = 10 cm, then the length of AB is :

(a) 16 cm (b) 12 cm

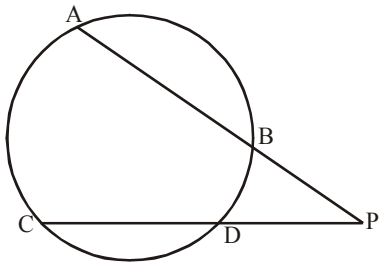
(c) 14 cm (d) 15 cm

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

(a) 3 : 4 (b) 4 : 3

(c) 2 : 1 (d) 1 : 2

13. If in the following figure, PA = 8 cm, PD = 4 cm, CD = 3 cm, then AB is equal to :



(a) 3.0 cm (b) 3.5 cm

(c) 4.0 cm (d) 4.5 cm

14. In a triangle ABC, $\angle A = x$, $\angle B = y$ and $\angle C = y + 20$. If $4x - y = 10$, then the triangle is :

(a) Right-angled (b) Obtuse-angled

(c) Equilateral (d) None of these

15. Which one of the following is a factor of $x^3 - 19x + 30$?
(a) x – 2 (b) x + 2
(c) x – 1 (d) x + 1

16. If $2x^2 - 7xy + 3y^2 = 0$, then the value of x : y is :
(a) 3 : 2 (b) 2 : 3
(c) 3 : 1 or 1 : 2 (d) 5 : 6

17. If $27 \times (81)^{2n+3} - 3^m = 0$, then what is m equal to?
(a) $2n + 5$ (b) $5n + 6$
(c) $8n + 3$ (d) $8n + 15$

18. If $\tan A = -\frac{1}{2}$ and $\tan B = -\frac{1}{3}$, then $A + B =$
(a) $\frac{\pi}{4}$ (b) $\frac{3\pi}{4}$
(c) $\frac{5\pi}{4}$ (d) None of these

19. $\cos 1° . \cos 2°. \cos 3° ..... \cos 179°$ is equal to–
(a) –1 (b) 0
(c) 1 (d) $1/\sqrt{2}$

20. If $\tan 15° = 2 - \sqrt{3}$, then the value of $\cot^2 75°$ is –
(a) $7 + \sqrt{3}$ (b) $7 - 2\sqrt{3}$
(c) $7 - 4\sqrt{3}$ (d) $7 + 4\sqrt{3}$

DIRECTIONS (Qs. 21 to 23) : *The following table, gives the annual production (in thousands) of 5 products of a famous toy company. Study the table and then answer the questions that follow :*

Year	Ludo	Scrabble	Chess	Monopoly	Carrom
1992	200	150	78	90	65
1993	150	180	100	105	70
1994	180	175	92	110	85
1995	195	160	120	125	75
1996	220	185	130	135	80

21. What is the approximate percentage increase in the production of Monopoly form 1993 to 1995?
(a) 10 (b) 20
(c) 5 (d) 25

22. For which toy category there has been a continuous increase in the production over the years?
(a) Ludo (b) Chess
(c) Monopoly (d) Carrom

23. What is the percentage drop in the production of Ludo from 1992 to 1994 ?
(a) 30 (b) 50
(c) 20 (d) 10

24. A circle road runs around a circular garden. If the difference between the circumference of the outer circle and the inner circle is 44 m, the width of the road is
(a) 4 m (b) 7 m
(c) 3.5 m (d) 7.5 m

25. The perimeter of a square whose area is equal to that of a circle with perimeter $2\pi x$ is :
(a) $2\pi x$ (b) $\sqrt{\pi}x$
(c) $4x\sqrt{\pi}$ (d) $4\pi\sqrt{x}$

26. The value of $(243)^{0.16} \times (243)^{0.04}$ is equal to :
(a) 0.16 (b) 3
(c) $\frac{1}{3}$ (d) 0.04

27. $\sqrt{17 + \sqrt{51 + \sqrt{152 + \sqrt{289}}}} = ?$
(a) 3 (b) 5
(c) 8 (d) 11

28. If the L.C.M and H.C.F. of two numbers are 2400 and 16, one number is 480; find the second number.
(a) 40 (b) 80
(c) 60 (d) 50

29. The average age of 80 boys in a class is 15. The average age of a group of 15 boys in the class is 16 and the average age of another 25 boys in the class is 14. What is the average age of the remaining boys in the class ?
(a) 15. 25 (b) 14
(c) 14. 75 (d) Cannot be determined

30. By selling a table for Rs 330, a trader gains 10%. Find the cost price of the table.
(a) 300 (b) 363
(c) 297 (d) 270

31. If a dividend of ₹ 57,834 is to be divided among Meena, Urmila and Vaishali in the proportion of 3:2:1, find Urmila's share.
(a) ₹ 19,281 (b) ₹ 17,350
(c) ₹ 23,133 (d) ₹ 19,278

32. A certain number of men can do a work in 60 days. If there were 8 men more it could be finished in 10 days less. How many men are there ?
(a) 75 men (b) 40 men
(c) 48 men (d) 45 men

33. A cyclist covers a distance of 750 m in 2 min 30 sec. What is the speed in km/h of the cyclist ?
(a) 18 km/h (b) 15 km/h
(c) 20 km/h (d) None of these

34. A horse is tethered to one corner of a rectangular grassy field 40 m by 24 m with a rope 14 m long. Over how much area of the field can it graze?
(a) 154 cm^2 (b) 308 m^2
(c) 150 m^2 (d) None of these

35. A dishonest dealer sells his goods at the cost price but still earns a profit of 25% by underweighing. What weight does he use for a kg?
(a) 750 g (b) 800 g
(c) 825 g (d) 850 g

36. A can do a piece of work in 9 days and B in 18 days. They begin together, but A goes away 3 days before the work in finished. The work lasts for
(a) 6 days (b) 8 days
(c) 12 days (d) 10 days

37. If a man walks to his office at 5/4 of his usual rate, he reaches office 30 minutes early than usual. What is his usual time to reach office.
(a) 2 hr (b) $2\frac{1}{2}$ hr
(c) 1 hr 50 min (d) 2 hr 15 min

38. If $(3.7)^x = (0.037)^y = 10000$, then what is the value of $\frac{1}{x} - \frac{1}{y}$?
(a) 1 (b) 2
(c) $\frac{1}{2}$ (d) $\frac{1}{4}$

39. $(a + b + c)^2 - (a - b - c)^2 = ?$
(a) $4a(b + c)$ (b) $2a(b + c)$
(c) $3a(b + c)$ (d) $4a(b - c)$

40. If cosec 39° = x, the value of $\frac{1}{\text{cosec}^2 51} \sin^2 39 \tan^2 51 - \frac{1}{\sin^2 51 \sec^2 39}$ is
(a) $\sqrt{x^2 - 1}$ (b) $\sqrt{1 - x^2}$
(c) $x^2 - 1$ (d) $1 - x^2$

GENERAL INTELLIGENCE & REASONING

DIRECTIONS (Qs. 41-43) : *In questions, select the related word/letters/number from given alternatives.*

41. Crime : Court : : Disease : ?
(a) Doctor (b) Medicine
(c) Hospital (d) Treatment

42. ADGJ : BEHK : : DGJM : ?
(a) KPUB (b) GJMP
(c) KNQT (d) PSVY

43. 7 : 56 : : 5 : ?
(a) 25 (b) 26
(c) 30 (d) 35

DIRECTIONS (Qs. 44-45) : *In questions, find the odd word/letters/number pair from the given alternatives.*

44. (a) Cabbage (b) Carrot
(c) Potato (d) Beetroot

45. (a) GFI (b) VUX
(c) POR (d) LKM

DIRECTIONS (Qs. 46-47): *In questions, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.*

46. CGJ, KOR, TXA, ___?___.
(a) ACE (b) JDP
(c) FJM (d) UWY

47. B-1, D-2, F-4, H-8, J-16, ___?___.
(a) K-64 (b) L-32
(c) M-32 (d) L-64

DIRECTION (Qs. 48) : *In question, find the missing number from the given responses.*

48. If A = 1, B = 2 and N = 14, then BEADING = ?
(a) 2154 (14) 97 (b) 2514 (14) 79
(c) 25149 (14) 7 (d) 2154(14)79

49. Arrange the letters to form a word and suggest what is it.
NGDEALN
(a) State (b) Country
(c) River (d) Ocean

DIRECTIONS (Qs. 50) : *In question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?*

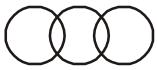
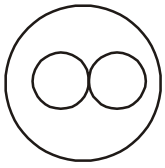
50. a _ n _ b _ _ n c b _ _ n c b
(a) b c a b a b (b) b a c b a b
(c) a b c b c b (d) a b b c c a

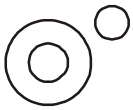
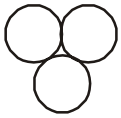
51. In a class of 45 students, a boy is ranked 20th. When two boys joined, his rank was dropped by one. What is his new rank from the end ?
(a) 25th (b) 26th
(c) 27th (d) 28th

52. Introducing a girl, Ram said to his son-in-law. "Her brother is the only son of my brother-in-law." Who is the girl of Ram?
(a) Sister-in-law (b) Niece
(c) Daughter (d) Sister

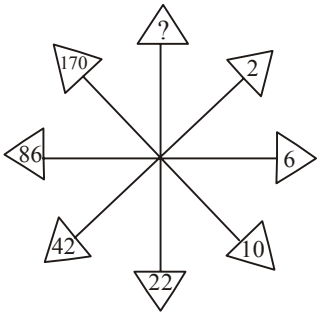
53. If an electric train runs in the direction from North to South with a speed of 150 km/hr covering 2000 km, then in which direction will the smoke of its engine go ?
(a) N→S (b) S→N
(c) E→W (d) No direction

54. Which figure represents the relation among Computer, Internet and Information Communication Technology?

(a)  (b) 

(c)  (d) 

55. Choose the correct alternative.



(a) 422 (b) 374
(c) 256 (d) 342

56. Murthy drove from town A to town B. In the first hour, he travelled $\frac{1}{4}$ of the journey. In the next one hour, he travelled $\frac{1}{2}$ of the journey. In the last 30 minutes, he travelled 80 km. Find the distance of the whole journey.
(a) 240 km (b) 300 km
(c) 320 km (d) 360 km

57. Find the answer of the following:
7 + 3 = 421
11 + 7 = 477
9 + 5 = 445
6 + 2 = ?
(a) 444 (b) 412
(c) 475 (d) 487

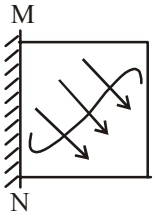
58. A, B, C, D and E are five boys sitting in a circle facing the centre. C is sitting immediately to the left of E. A is sitting between D and E. Then, who is sitting between B and A?
(a) C (b) E
(c) D (d) None of these

DIRECTION (Qs. 59): *In question, one statement is given, followed by three conclusions, I, II, and III . You have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You are to decide which of the given Conclusions can definitely be drawn from the given statement(s). Indicate your answer.*

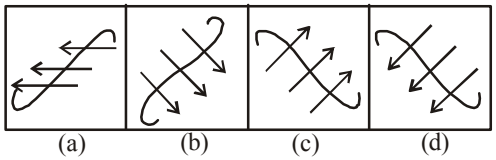
59. **Statements:**
1. SAGE is a reputed publisher of both journals and books.
2. All publishing of SAGE is highly qualitative.

Conclusions:
I. SAGE publishes qualitative articles.
II. SAGE did not publish lowest quality articles.
III. SAGE enriches its publications by high scrutinization.
(a) Only conclusion III
(b) All conclusions .
(c) Only conclusions I and II
(d) Only conclusions II and III

60. If a mirror is placed on the line MN, then which of the answer figures is the correct image of the question figure?
Question figure:



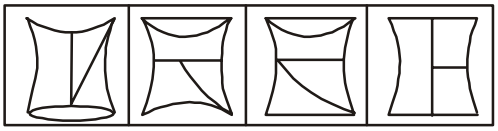
Answer figures :



61. Identify the answer figure from which the pieces given in question figure have been cut.

Question figure :

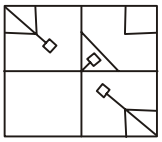
Answer figures:



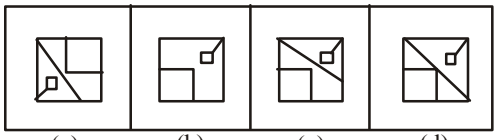
(a) (b) (c) (d)

DIRECTIONS (Qs. 62) : *In question, which answer figure will complete the pattern in the question figure*?

62. **Question figure:**



Answer Figures :

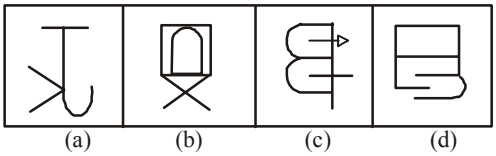


(a) (b) (c) (d)

63. Which of the answer figures is not made up only by the components of the question figure ?

Question figure:

Answer figures:

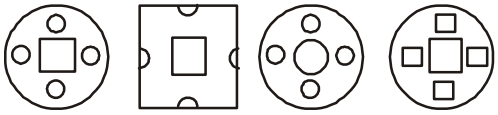


(a) (b) (c) (d)

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

Question figure:

Answer Figures :



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

65. A word is represented by one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column e.g., 'A' can be represented by 40, 01, 13, 32, and 'N' can be represented by 56, 68, 89 etc. Similarly, you have to identify the set for the word given below :

SIX-KIDS

Matrix-I

	0	1	2	3	4
4	A	F	K	P	U
3	F	K	A	U	P
2	P	U	F	K	A
1	K	P	U	A	F
0	U	A	P	F	K

Matrix-II

	5	6	7	8	9
9	D	1	N	S	X
8	X	S	I	D	N
7	N	X	S	I	D
6	S	D	X	N	I
5	I	N	D	X	S

(a) 86, 87, 99 – 40, 41, 86, 64
(b) 98, 96, 85 – 42, 78, 88, 77
(c) 77, 69, 76 – 22, 95, 28, 31
(d) 65, 55, 67 – 05, 25, 91, 40

66. Which is the third number to the left of the number which is exactly in the middle of the following sequence of numbers?
1 2 3 4 5 6 7 8 9 2 4 6 8 9 7 5 3 9 8 7 6 4 3 2 1
(a) 3 (b) 2 (c) 5 (d) 6

67. In a certain code IDEAS is written as HEDBR and WOULD is written as VPTMC. How will RIGHT be written in the same code ?
(a) QJHIS (b) SHHGU
(c) QJFIU (d) QJFIS

68. If the alphabet is written in the reverse order and every alternate letter starting with Y is dropped, which letter will be exactly in the middle of the remaining letters of the alphabet.
(a) M (b) N (c) O (d) M or O

69. In a row of girls, Rita and Monika occupy the ninth place from the right end and tenth place from the left end, respectively. If they interchange their places, then Rita and Monika occupy seventeenth place from the right and eighteenth place form the left respectively. How many girls are there in the row?
(a) 25 (b) 26
(c) 27 (d) Data inadequate

70. In a certain code language 'Ka Bi Pu Ya' means 'You are very intelligent' 'Ya Lo Ka Wo' means 'They seem very intelligent' 'La Pu Le' means 'You can see' and 'Sun Pun Yun Ya' means 'how intelligent she is', In that language, which of the following words means 'are'?
(a) Ka (b) Bi (c) Ya (d) Pu

71. Ankit is related to Binny and Chinky, Daizy is Chinky's mother. Also Daizy is Binny's sister and Aruna is Binny's sister. How is Chinky related to Aruna?
(a) Niece (b) Sister
(c) Cousin (d) Aunt

72. Rama remembers that she met her brother on Saturday, which was after the 20th day of a particular month. If the 1st day of that month was Tuesday, then on which date did Rama meet her brother ?
(a) 24th (b) 23rd (c) 25th (d) 26th

73. If it is possible to make only one such number with the first, the fourth and the sixth digits of the number 531697 which is the perfect square of a two digit even number, which of the following will be the second digit of the two digit even number. If no such number can be made, give '@' as the answer and if more than one such number can be made, give '©' as the answer.
(a) 4 (b) 2 (c) 6 (d) @

74. In a certain code JOURNEY is written as TNISZFO. How is MEDICAL written in that code?
(a) CDLJMBD (b) CDWDBM
(c) LDCJMBD (d) EFNJMBD

75. If 'K' denotes '×', 'B' denotes '÷', 'T' denotes '–' and 'M' denotes '+', then –
40 B 8 T 6 M 3 K 4 = ?
(a) 19 (b) 11 (c) –31 (d) 23

DIRECTIONS (Qs. 76-78) : *In each question below, is given a group of letters followed by found combinations of digits/symbols numbered (a), (b), (c) and (d). You have to find out which of the four combinations correctly represents combination as your answer. If none of the combinations correctly represents the group of letters, mark (e) 'None of these', as your answer.*

Letter	R	E	A	U	M	D	F	P	Q	I	O	H	N	W	Z	B
Digit/Symbol code	7	#	$	6	%	8	5	★	4	9	@	©	3	D	1	2

(i). If the first letter is a consonant and the third letter is a vowel, their codes are to be interchanged.
(ii). If the first letter is a vowel and the fourth letter is a consonant, both are to be coded as the code for the vowel.
(iii). If the second and the third letters are consonants, both are to be coded as the code for the third letter.

76. HUBDIN
(a) ©62893 (b) ©2689%
(c) ©6289© (d) ©62©9%

77. NABAQE
(a) 263$4# (b) 326$4#
(c) 362$4# (d) None of these

78. FWZERA
(a) 5D#7$ (b) 5DD#7$
(c) D17#$ (d) 511#7$

DIRECTIONS (Qs. 79-80) : *Study the following information and answer the questions given below it.*

Seven people—A, B, C, D, E, F and G are sitting in a circle. Five of them are facing the centre while two of them are facing opposite to the centre. C sits third to the left of D and both are facing the centre. E is neither on immediate neighbour of D nor of C. The one sitting exactly between D and F is facing opposite to centre. G sits third to the right of A and G is facing the centre. One of B's neighbour is facing opposite to the centre.

79. Which of the following pairs represents persons facing opposite to the centre?
(a) A and F
(b) E and F
(c) A and E
(d) Cannot be determined

80. Who is sitting second to the left of A?
(a) C (b) G (c) E (d) B

GENERAL AWARENESS

81. Which of the following symbiotic associations forms a lichen?
(a) An algae and a fungus
(b) An algae and a bryophyte
(c) A bacterium and a fungus
(d) A bacterium and a gymnosperm

82. The headquaters of which one of the following organizations is not in Geneva?
(a) Food and Agricultural Organisation
(b) World Meteorological Organisation
(c) World Health Organisation
(d) World Trade Organisation

83. The opportunity cost of a factor of production is
(a) what it earns in its present use.
(b) what it can earn in the long period.
(c) what it can earn in some other use.
(d) the cost of production.

84. Which Amendment Act is referred as mini constitution?
(a) 7^{th} Constitutional Amendment Act, 1956
(b) 24^{th} Constitutional Amendment Act, 1971
(c) 42^{nd} Constitutional Amendment Act, 1976
(d) 44^{th} Consitutional Amendment Act, 1978

85. 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

86. 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

87. 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

88. Arihant is a
(a) Multi barrel rocket launcher
(b) Airborne Early Warning and Control System
(c) Unmarmed Combat Aerial Vehicle
(d) Nuclear-powered ballistic missile submarine

89. Which of the following is *not* a laid down principle of the Panchsheel ?
(a) Mutual respect for each other's territorial integrity
(b) Mutual non-aggression
(c) Mutual support for each other in world forum
(d) Mutual non-interference in each other's internal affairs

90. Denatured alcohol
(a) is a form of alcohol
(b) is unfit for drinking as it contains poisonous substances
(c) contains coloured impurities
(d) is sweet to taste

91. The city of Prayag was named Allahabad - the city of Allah by
(a) Aurangzeb (b) Akbar
(c) Shahjahan (d) Bahadur Shah Zafar

92. Arrange the following historical events chronologically choosing the correct response:
I. French Revolution
II. Glorious Revolution
III. American War of Independence
IV. Russian Revolution
(a) I II III IV
(b) II III I IV
(c) II I IV III
(d) III II I IV

93. Chromosomes are made up of
(a) DNA (b) Protein
(c) DNA and Protein (d) RNA

94. While the computer executes a program, the program is held in
(a) RAM (b) ROM
(c) Hard Disk (d) Floppy Disk

95. 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 of the above

96. Which of the following places of Sikh religious heritage is not in India?
(a) Nankana Sahib (b) Nanded
(c) Paonta Sahib (d) Keshgarh Sahib

97. The total population divided by available arable land area is referred to as
(a) Population density
(b) Nutritional density
(c) Agricultural density
(d) Industrial density

98. The danger signals are red while the eye is more sensitive to yellow because
(a) absorption in red is less than yellow and hence red is visible from a distance
(b) scattering in yellow light is less than red
(c) the wavelength of red light is more than yellow light
(d) none of the above reasons

99. Who was the author of "India of My Dreams" ?
(a) J.B. Kripalani (b) M.K. Gandhi
(c) G.K. Gokhale (d) Jawaharlal Nehru

100. How many players are there in a Polo team ?
(a) 4 (b) 7 (c) 8 (d) 6

101. Hemophilia is –
(a) caused by bacteria (b) caused by virus
(c) caused by pollutants (d) a hereditary defect

102. In human body, vitamin A is stored in the –
(a) liver (b) skin
(c) lung (d) kidney

103. Ondometer is a –
(a) Measuring instrument for distance covered by motor wheels
(b) Measuring instrument for frequency of electromagnetic waves
(c) Device for measuring sound intensity
(d) Measuring instrument for electric power

104. Which acid is used in rubber, textile, leather and electroplating industries ?
(a) Ethanoic acid (b) Methanoic acid
(c) Malanic acid (d) Butairic acid

105. What is the theme of 2016 National Statistics Day?
(a) Social Development
(b) Trees and their calcualtive lives
(c) Human empowerment
(d) Agriculture and Farmers' welfare

106. What is the main folder on a storage device called?
(a) Root directory (b) Interface
(c) Device driver (d) Platform

107. To view information on the web you must have a .....
(a) Cable modem (b) Web browser
(c) Domain Name Server
(d) Hypertext viewer

108. A file is often referred to as a(n) .....
(a) Wizard (b) Document
(c) Pane(d) Device

109. To protect yourself from computer hacker intrusions you should install a .....
(a) Firewall (b) Mailer
(c) Macro (d) Script

110. What type of computers are client computers (most of the time) in a client-server system?
(a) Mainframe (b) Mini-computer
(c) Microcomputer (d) PDA

111. When was the first train steamed off in India?
(a) 1848 (b) 1853
(c) 1875 (d) 1880

112. Which of the following is the headquarters of the newly established railway zone 'East Coast Railways'?
(a) Vishakhapattnam (b) Kolkata
(c) Hyderabad (d) Bhubaneswar

113. Which train in India has the longest route length?
(a) Howrah - Jammu Tawi Himgiri Express
(b) Kanyakumari - Jammu Tawi Himsagar Express
(c) Kanyakumari - Dibrugarh Vivek Express
(d) Guwahati-Thiruvanthapuram Express

114. Where is the Railway Staff College located?
(a) Pune (b) Delhi
(c) Vadodara (d) Allahabad

115. On which of the following is the longest railway bridge in India located?
(a) River Ganges (b) Vembanad Lake
(c) River Brahmaputra (d) Chilka Lake

116. Who of the following was declared as Person of the Year 2016 by Time Magazine?
(a) Angela Merkel (b) Nigel Farage
(c) Donald Trump (d) Narendra Modi

117. Which is the most powerful language as per the 2016 World Power Language Index (PLI)?
(a) English (b) French
(c) Spanish (d) Mandarin

118. Which of the following parliamentary constituency recently became India's first to have health insurance for all?
(a) Vijayawada (b) Guntur
(c) Karimganj (d) Araria

119. Which Indian E-Commerce website has launched it's Toll-Free number on December 7, 2016, to enable the users make transaction through mobile phones even without an internet connection ?
(a) Flipkart (b) Snapdeal
(c) Amazon (d) Paytm

120. Who has been chosen as the new French Prime Minister replacing Manuel Valls who announced his resignation on December 6, 2016?
(a) Francois Hollande (b) Bernard Cazeneuve
(c) Bruno Le Roux (d) Alian Juppe

Hints & Explanations

1. (d) $\left(\frac{-1}{216}\right)^{-\frac{2}{3}} = \left(\frac{-1}{6^3}\right)^{-\frac{2}{3}}$

$= \left(-\frac{1}{6}\right)^2 = (-6)^2 = 36$

2. (a) Unit's digit in $(7^4) = 1$. Therefore, unit's digit in $(7^4)^8$ i.e. 7^{32} will be 1. Hence, unit's digit in

$(7)^{35} = 1 \times 7 \times 7 \times 7 = 3$

Again, unit's digit in $(3)^4 = 1$

Therefore, unit's digit in the expansion of

$(3^4)^{17} = (3)^{68} = 1$

$\Rightarrow$ Unit's digit in the expansion of

$(3^{71}) = 1 \times 3 \times 3 \times 3 = 7$

and unit's digit in the expanison of

$(11^{35}) = 1$

Hence, unit's digit in the expansion of

$7^{35} \times 3^{71} \times 11^{55} = 3 \times 7 \times 1 = 1$

3. (a) Let the original price be x and sale be of y units.

Then, the revenue collected initially = x × y

Now, new price = 0.8x, new sale = 1.8 y

Then, new revenue collected = 1.44xy

$$\% \text{ increase in revenue} = \frac{0.44xy}{xy} \times 100 = 44\%$$

Shortcut Method

$$\text{Net effect} = -20 + 80 + \frac{(-20 \times 80)}{100}$$

$$= 60 - 16 = 44\%$$

4. (c) Let quantity of water to be added be x ml.

Then, $(x + 48) \times \frac{25}{100}$ 48 or x = 144 ml.

5. (c) Let the salary of Ram be ₹ 100.

Then, salary of Amit = ₹ 80

and salary of Ravi = 150% of 80 = ₹ 120

Ratio of Ram's salary to Ravi's salary = 100 : 120 = 5 : 6

6. (b) Let the rate of interest be r%.

Therefore, $\frac{2520}{2400} = \frac{\left(1 + \frac{r}{100}\right)^4}{\left(1 + \frac{r}{100}\right)^3}$

$\Rightarrow 1 \quad \frac{r}{100} \quad \frac{21}{20}$ or r = 5%

7. (b) Amount = 6000

Rate = 10%

$$\text{First year interest} = \frac{6000 \times 10 \times 1}{100} = ₹\,600$$

At the end of first year amount

= 6000 + 600 – 2000 = 4600

At the end of second year

$$\text{Interest} = \frac{4600 \times 10 \times 1}{100} = 460$$

At the second year amount

= 4600 + 460 – 2000 = 3060

At the end of third year

$$\text{Interest} = \frac{3060 \times 10 \times 1}{100} \quad 306$$

Amount at the end of third year

= 3060 + 306 = ₹ 3366

Amount refund in third year = ₹ 3366

8. (c) Let the cost price be ₹ 100.

Gain of 33% = ₹ 33

$\Rightarrow$ SP = ₹ 133

Let the marked price be ₹ x. The SP of ₹ 133 has been arrived after giving a discount of 5% on marked price.

i.e. x × 0.95 = ₹ 133

$$\Rightarrow x = \frac{133}{0.95} = ₹.140$$

Required increase = ₹ 140 – ₹ 100 = ₹ 40

Hence required percentage = 40%.

9. (c) Total score of 40 innings = 40 × 50 = 2000

Total score of 38 innings = 38 × 48 = 1824

Let the highest score be x and the lowest score be y.

Sum of the highest and the lowest score = x + y = 2000 – 1824

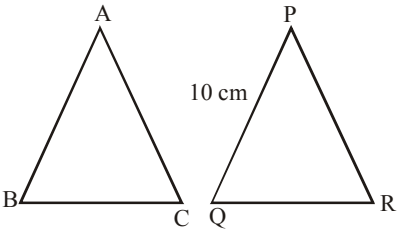
$\Rightarrow$ x + y = 176 ...(i)

and by question, x – y = 172 ...(ii)

Solving (i) and (ii), we get x = 174

10. (d) To construct a triangle, it is necessary that the sum of any two sides is greater than the third side. Checking with options, we find that it is not possible for the measurements given in (d) as $2.3 + 4.4 < 6.8$.

11. (d)



ΔABC and ΔPQR are similar.

$$\frac{AB}{PQ} \quad \frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} \Rightarrow \frac{AB}{PQ} \quad \frac{36}{24}$$

or $AB = \frac{36}{24} \times 10 \quad 15$

12. (a) For the two similar triangles, we have

$$\frac{h_1^2}{h_2^2} \quad \frac{\text{Area of 1st } \Delta}{\text{Area of IInd } \Delta} \quad \frac{9}{16}$$

$\Rightarrow h_1 : h_2 = 3 : 4$

13. (d) We know that
$PC \times PD = PA \times PB$

$$\Rightarrow \quad PB = \frac{28}{8} = 3.5\,\text{cm}$$

Therefore, $AB = AP - BP = 8 - 3.5 = 4.5$ cm

14. (a) We have, $x + y + (y + 20) = 180$
or $x + 2y = 160$ ...(i)
and $4x - y = 10$ ...(ii)
From (i) and (ii), $y = 70, x = 20$
Angles of the triangles are 20°, 70°, 90°.
Hence the triangle is a right angled.

15. (a) If $f(x) = 0$ at $x = 0$, then $(x - 0)$ is a factor of $f(x)$.
Checking with the options, we find that

$$f(2) = (2)^3 - 19 \times (2) + 30 = 0$$

Therefore, $x - 2$ is a factor of $x^3 - 19x + 30$

16. (c) $2x^2 - 7xy + 3y^2 = 0$

$$2\left(\frac{x}{y}\right)^2 - 7\left(\frac{x}{y}\right) \quad 3 \quad 0 \text{ (Dividing by } y^2\text{)}$$

$$\frac{x}{y} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{7 \pm \sqrt{49 - 24}}{2 \times 2} = \frac{7 \pm 5}{4} = 3, \frac{1}{2}$$

$$\Rightarrow \quad \frac{x}{y} = \frac{3}{1} \text{ or } \frac{x}{y} = \frac{1}{2}$$

17. (d) Given, $27 \times (81)^{2n+3} - 3^m = 0$

$$\Rightarrow \quad 3^3 \times (3)^{8n+12} = 3^m$$

$$\Rightarrow \quad 3^{8n+15} = 3^m \quad \Rightarrow \quad m = 8n + 15$$

(on comparing)

18. (b) We have $\tan A = -\frac{1}{2}$ and $\tan B = -\frac{1}{3}$
Now,

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B} = \frac{-\frac{1}{2} - \frac{1}{3}}{1 - \frac{1}{2} \cdot \frac{1}{3}} = -1$$

$\Rightarrow \tan(A + B) = \tan\frac{3\pi}{4}$. Hence, $A + B = \frac{3\pi}{4}$

19. (b) $\cos 1° \cdot \cos 2° \cdot \cos 3° \ldots\ldots \cos 179°$
As value of $\cos 1° = 0$
$\therefore \cos 1° \cdot \cos 2° \cdot \cos 3° \ldots\ldots \cos 179° = 0$

20. (c) $\tan 15° = \cot(90° - 15°) = \cot 75°$
$\therefore \cot 75° = 2 - \sqrt{3}$
i.e., $\cot^2 75° = (2 - \sqrt{3})^2 = 7 - 4\sqrt{3}$

21. (b) Percentage increase in the production of

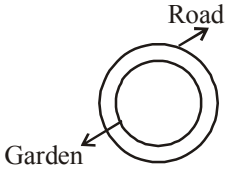
$$\text{monopoly} = \frac{(125 - 105)}{105} \times 100 = \frac{20}{105} \times 100$$

$= 19.05\% \approx 20\%$

22. (c) Production of monopoly has shown continuous increase over the years.

23. (d) $\%\ \text{drop} = \frac{200 - 180}{200} \times 100 \quad 10\%$

24. (b) Let R be the radius of circular road



i.e., R = radius of outer circle.
Let r be the radius of inner circle(garden).
circumference of the road = $2\pi R$
circumference of the garden = $2\pi r$
Given : $2\pi R - 2\pi r = 44$ m

$\Rightarrow \quad 2\pi(R - r) = 44 \Rightarrow R - r = 7$m

Hence, the width of the road = $R - r = 7$m

25. (c) Area of the circle = $\pi (x)^2$ where radius of circle = x
Let side of the square be y.
Then, $y^2 = \pi (x)^2 \Rightarrow y = x\sqrt{\pi}$
Perimeter of the square is = $4y = 4x\sqrt{\pi}$

26. (b) $(243)^{0.16} \times (243)^{0.04}$
$= (243)^{0.16 + 0.04}$
$= (243)^{0.2} = (243)^{1/5} = (3^5)^{1/5} = 3$

27. (b)
$$\sqrt{17+\sqrt{51+\sqrt{152+\sqrt{289}}}} = \sqrt{17+\sqrt{51+\sqrt{152+17}}}$$
$$= \sqrt{17+\sqrt{51+\sqrt{169}}} = 5$$

28. (b) $\because$ Product of numbers = (LCM × HCF)
$\Rightarrow 480 \times$ second number $= 2400 \times 16$
$\Rightarrow$ second number = 80

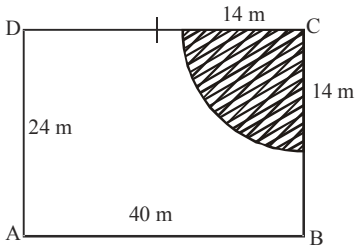
29. (a) Average age of the remaining boys
$$= \frac{(80\times15)-(15\times16+25\times14)}{40}$$
$$= \frac{1200-590}{40} = 15.25$$

30. (a) S.P. = ₹ 330, Gain = 10%
$$\therefore \text{C.P.} = \left(\frac{100}{100+\text{Gain }\%}\right)\times \text{S.P}.$$
$$= ₹\ \frac{100}{100+10}\times 330$$
$$= \frac{100}{110}\times 330 = \text{Rs } 300.$$

31. (d) Share of Urmila in dividend $= \left(\frac{2}{6}\times 57834\right)$
= ₹ 19278

32. (b) We have :
x men to the work in 60 days and (x + 8) men do th work in
(60 – 10 =) 50 days.
Then by "basic formula", 60x = 50(x + 8)
$$\therefore x = \frac{50\times 8}{10} = 40 \text{ men.}$$

33. (a) Speed $= \left(\frac{750}{150}\right)$ m/sec = 5 m/sec
$$= \left(5\times\frac{18}{5}\right) \text{km/hr} = 18 \text{ km/hr.}$$

34. (a)


Area of the shaded portion
$$= \frac{1}{4}\times\pi(14)^2 = 154 \text{ m}^2$$

35. (b) $\frac{\text{True weight}}{\text{False weight}} = \frac{100+\text{gain}\%}{100+x}$
Here S.P. = C. P. $\therefore x = 0$
$$\Rightarrow \text{False weight} = \frac{1000\times100}{125} = 800 \text{ gm}$$

36. (b) Let work will be completed in x days. Then, work done by A in (x – 3) days + work done by B in x days = 1
$$\frac{x-3}{9}+\frac{x}{18} = 1 \Rightarrow 3x = 24 \Rightarrow x = 8 \text{ days}.$$

37. (b) usual time $\times\left(\frac{4}{5}-1\right) = \frac{-30}{60}$
$$\Rightarrow \text{usual time} = \frac{1}{2}\times 5 = 2\frac{1}{2}\text{hr}$$

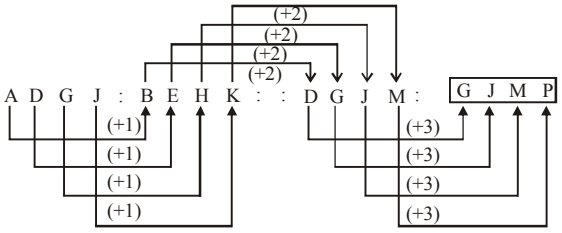
38. (c) Given, $(3.7)^x = (0.037)^y = 10000$
$\Rightarrow (3.7)^x = 10^4$ and $(0.037)^y = 10^4$
$\Rightarrow 37 = 10^{\frac{4}{x}+1}$ and $37 = 10^{\frac{4}{x}+3}$
$$10^{\frac{4}{x}+1} = 10^{\frac{4}{y}+3} \Rightarrow \frac{4}{x}+1 = \frac{4}{y}+3$$
$$\Rightarrow \frac{4}{x}-\frac{4}{y} = 3-1 \Rightarrow \frac{1}{x}-\frac{1}{y} = \frac{1}{2}$$

39. (a) $(a+b+c)^2-(a-b-c)^2$
$= (a+b+c+a-b-c)(a+b+c-a+b+c)$
$= 2a(2b+2c) = 4a(b+c)$

40. (c) $\frac{1}{\text{cosec}^2 51}\ \sin^2 39\ \tan^2 51 - \frac{1}{\sin^2 51\ \sec^2 39}$
$$\sin^2 51\ \sin^2 39\ \tan^2(90-39) - \frac{1}{\sin^2 51\ .\sec^2 39}$$
$$\cos^2 39\ \sin^2 39\ \cot^2 39 - \frac{1}{\cos^2 39\ .\sec^2 39}$$
[$\because \sin(90°-\theta) = \cos\theta, \tan(90°-\theta) = \cos\theta$]
$= 1 + \cot^2 39° - 1 = \text{cosec}^2 39° - 1 = x^2 - 1$

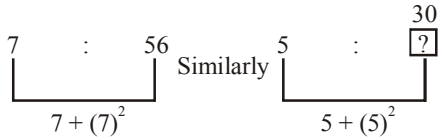
41. (c) "Court" is the place where the judge gives his decision on crime. Similarly, Hospital is the place where the doctor diagnoses the disease of the patient.

42. (b) As,



So, GJMP is the correct answer.

43. (c) As,



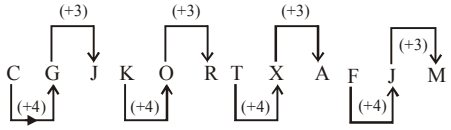
44. (a) All others, except (a) are root vegetables.

45. (d) As,

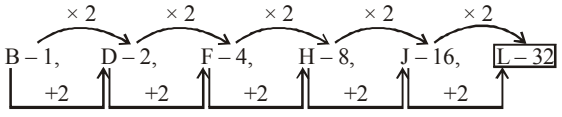
$$G \xrightarrow{(-1)} F \xrightarrow{(+3)} I$$
$$V \xrightarrow{(-1)} U \xrightarrow{(+3)} X$$
$$P \xrightarrow{(-1)} O \xrightarrow{(+3)} R$$
$$\text{But, } L \xrightarrow{(-1)} K \xrightarrow{(+2)} M$$

So, LKM is odd word

46. (c) The pattern of the series is as follows:



47. (b) The pattern of the series is as follows:



48. (c) It is based on position of English alphabet.

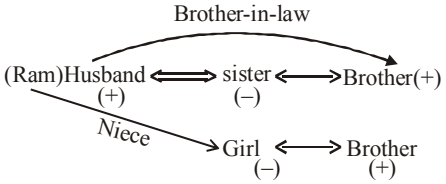
B	E	A	D	I	N	G
↓	↓	↓	↓	↓	↓	↓
2	5	1	4	9	(14)	7

49. (b) After arranging the letters, we get word 'ENGLAND' which is the name of the country.

50. (a) a **b** n **c** b / **a b** n c b / **a b** n c b

51. (c) After 2 boys joined, total strength of class = 45 + 2 = 47
As, rank was dropped by one from 20th rank, new rank is 21st.
Rank of the boy from the beginning = 21
No. of students below his rank = 47 – 21 ⇒ 26
Rank from the end = (47 – 21) + 1 ⇒ 27.

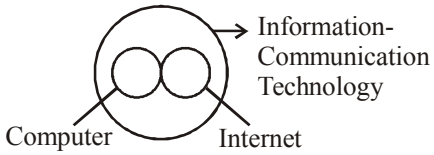
52. (b)



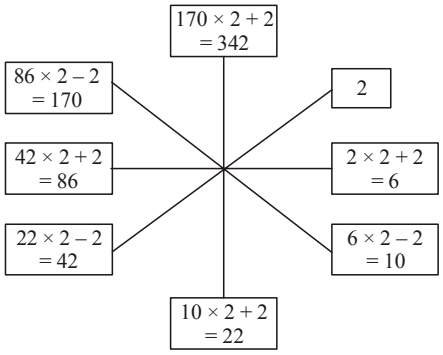
Hence, girl is the niece of Ram.

53. (d) An electric train does not emit smoke. Therefore, no smoke will be going in any of the direction.

54. (b)



55. (d)



56. (c) Let total Journey = x km.

Ist hour, he travelled $= \frac{x}{4}$ km.

Next hour, he travelled $= \frac{x}{2}$ km.

Total distance travelled $= \left(\frac{x}{4} \quad \frac{x}{2}\right)$ km

$$= \frac{3x}{4} \text{ km}$$

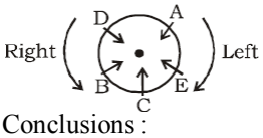
Remaining distance $= \left(x - \frac{3x}{4}\right)$ km $= \frac{x}{4}$ km

It is given that, last
last 30 min, he travelled = 80 km

$$\Rightarrow \frac{x}{4} = 80$$

$$x = 320 \text{ km}.$$

57. (b) As, $7 + 3 = 421 = (7 - 3)(7 \times 3)$
$11 + 7 = 477 = (11 - 7)(11 \times 7)$
$9 + 5 = 445 = (9 - 5)(9 \times 5)$
$6 + 2 = (6 - 2)(6 \times 2) = 412$

58. (c) 

59. (b) Conclusions :
I. (✓)
II. (✓)
III. (✓)
All follow given statements.

60. (d) 61. (c) 62. (c)
63. (c) 64. (a) 65. (b)

66. (b) There are 25 numbers in the given sequence.
So, middle number = 13th number = 8.
Clearly, the third number to the left of this 8 is 2.

67. (d) Coding for:

I	D	E	A	S
–1↓	+1↓	–1↓	+1↓	–1↓
H	E	D	B	R

Coding for:

W	O	U	L	D
–1↓	+1↓	–1↓	+1↓	–1↓
V	P	T	M	C

Similarly,

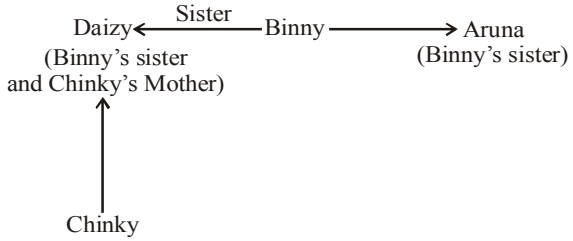
R	I	G	H	T
–1↓	+1↓	–1↓	+1↓	–1↓
Q	J	F	I	S

68. (b) Cancelling every second letter after reversing the alphabet the series becomes.
Z X V T R P N L J H F D B
The middle letter is N.

69. (b) Total no. of girls = 17 + 10 – 1 or 18 + 9 – 1 = 26.

70. (b) From first 2 sentences 'Ka Ya' means 'very intelligent'.
From 1st and 3rd sentences 'Pu' means 'you'
∴ In first sentence 'are' means 'Bi'

71. (a)



It is cleraly shown from the above diagram that Chinky is niece to Aruna.

72. (d) 1st of month was Tuesday, hence the date on first Saturday was 5th.
Hence, the other Saturdays of the month are 12, 19, 26. Rama met her brother on 26th.

73. (a) [5] 3 1 [6] 9 [7]
$576 = 24 \times 24$
∴ 4 will be the second digit of the two even number.

74. (a) As,

J O U	R	N E Y
–1	+1	+1
T N I	S	Z F O

Similarly,

M E D	I	C A L
–1	+1	+1
C D L	J	M B D

75. (b) 40 B 8 T 6 M 3 K 4 = ?
$\Rightarrow ? = 40 + 8 - 6 + 3 \times 4$
$\Rightarrow ? = 5 + 6 - 12 = 11$

76. (a) Here, none of the condition is applied, so the coding is done as follows.

H	U	B	D	I	N
↓	↓	↓	↓	↓	↓
©	6	2	8	9	3

77. (d) Here, none of the condition is applied, so the coding is done as follows.

N	A	B	A	Q	E
↓	↓	↓	↓	↓	↓
3	$	2	$	4	#

∴ Code for NABAQE ⇒ 3$2$4#

78. (d) When no condition is applied, the coding is done as follows.

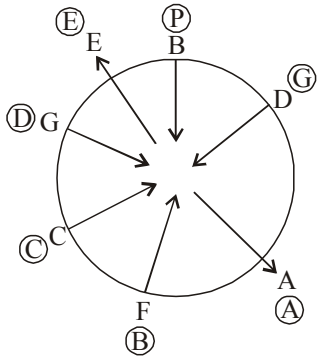
F	W	Z	E	R	A
↓	↓	↓	↓	↓	↓
5	D	1	#	7	$

But here the second and third letters are consonants, therefore condition (iii) is applied here. As condition (iii) is applied here, both the seond and third letters are to be coded as the code for the third letter.

F	W	Z	E	R	A
↓	↓	↓	↓	↓	↓
5	1	1	#	7	$

∴ Code for FWZERA ⇒ 511#7$

Solutions : (Qs. 79-80)



A and E is not facing centre. Rest of all facing centre.

79. (c) A and E person facing opposite to centre.
80. (d) B, because A is facing opposite to centre.
81. (a) 82. (a) 83. (c) 84. (c)
85. (b) 86. (d) 87. (a)
88. (d) Arihant is a Nuclear powered ballistic missile submarine.
89. (c) Option (c) is not in the list of principles of panchsheel.
This agreement stated the five principles as:
1. Mutual respect for each other's territorial integrity and sovereignty.
2. Mutual non-aggression.
3. Mutual non-interference in each other's internal affairs.
4. Equality and cooperation for mutual benefit.
5. Peaceful co-existence.
90. (b)
91. (b) Emperor Akbar named Prayag as Allahabad - City of God- also called Allahabad in 1575 AD. The city of Allahabad is situated at the confluence of three rivers - Ganga, Yamuna and the invisible Saraswati. Every 12th year when the waters are felt to be especially purifying, Allahabad holds a much greater festival called Kumbh Mela. Built by Emperor Akbar in 1583 AD, the Allahbad fort stands on the banks of the river Yamuna near the confluence site i.e SANGAM.
92. (b) 93. (c) 94. (a)
95. (d) 96. (a) 97. (a)
98. (c) This is because the scattering in red light is less than that of yellow colour. The longest visible wavelength is red and the shortest is violet. The wavelength of red light is more than yellow light.
99. (b)
100. (a) There are 4 players in a polo team.
101. (d) Hemophilia is a **hereditary defect**.
102. (a) In human body, vitamin A is stored in the **liver**.
103. (b) Ondometer is a **measuring instrument for frequency of electromagnetic waves.**
104. (b) **Methanoic acid** is a colorless, pungent smelling liquid with a boiling point 373.5 K. Due to the presence of aldehyde-like hydrogen, it is powerful reducing agent.It reduces Tollen's reagent and Fehling's solution.
It is used in **rubber, textile, dyeing, leather** and **electroplating industries**.
105. (d) 106. (a) 107. (b) 108. (b) 109. (a)
110. (a) 111. (b) 112. (d) 113. (c) 114. (c)
115. (b) 116. (c) 117. (a) 118. (a)
119. (d) Paytm, Indian e-commerce website Paytm launched it's toll-free number 180018001234 to enable transaction through mobile phones without an internet connection on December 7, 2016. Customers can use basic mobile phones to transact money using this service, before that they need to register with Paytm their mobile number and set a four digit paytm PIN.
120. (b) Bernard Cazeneuve, The French president, François Hollande, has named Bernard Cazeneuve as the new prime minister of France until a presidential election next May. Cazeneuve, who was interior minister, will replace Manuel Valls, who resigned on December 6, 2016, in a bid to become France's next president.