

SYMBIOSIS NATIONAL APTITUDE TEST (SNAP)

SOLVED PAPER - 2016

(HELD ON 18-12-2016)

(Based on Memory)

QUANTITATIVE APTITUDE & DATA INTERPRETATION

- The ratio of monthly incomes of A and B is 7 : 6 and the ratio of their monthly expenditures is 5 : 4. If each of them saves ₹ 600 per month, find the sum of their monthly incomes?
(a) 3600 (b) 2100
(c) 3900 (d) None of these
- A and B have together three times what B and C have, while A, B and C together have 150 rupees more than that of A. If B has five times that of C, then A has
(a) ₹ 300 (b) ₹ 325
(c) ₹ 375 (d) ₹ 225
- A cricket player after playing 15 tests scored 124 runs in the 16th test. As a result, the average of his runs is increased by 4. The present average of runs is
(a) 55 (b) 64
(c) 60 (d) 68
- A fruit seller buys some apples at the rate of 5 for ₹ 6 and an equal number more at 4 for ₹ 5. He sells the whole lot at 9 for ₹ 11. What is his loss or gain percent?
(a) loss $\frac{100}{441}$ % (b) gain $\frac{100}{441}$ %
(c) No profit No loss (d) Loss $\frac{5}{22}$ %
- A can do a piece of work in 6 days while B alone can do it in 8 days. With the help of C, they can complete the work in 2 days. If they are paid ₹ 720 for the whole work, how much money A gets?
(a) ₹ 180 (b) ₹ 240
(c) ₹ 300 (d) ₹ 420
- P and Q are working on an assignment. P takes 3 hours to type 20 pages on a computer. While Q take 4 hours to type 25 pages. How much time will they together take to type an assignment of 620 pages working on two different computers?
(a) 64 hrs (b) 48 hrs
(c) 40 hrs. (d) 60 hrs.
- A shopkeeper bought 30 kg of rice at the rate of ₹ 90 per kg. He sold forty percent of the total quantity at the rate of ₹ 60 per kg. Approximately at what price per kg should he sell the remaining quantity to make 25% overall profit?
(a) 155.5 (b) 167.5
(c) 157.5 (d) 147.5
- If $X = 2 + \sqrt{3}$, then the value of $\sqrt{X} + \frac{1}{\sqrt{X}}$ is
(a) $\sqrt{3}$ (b) $\sqrt{6}$
(c) $2\sqrt{6}$ (d) 6
- In an equilateral triangle ABC, if the area of its in-circle is $4\pi \text{ cm}^2$, then find the length of the angle bisector AD?
(a) 2 cm (b) 4 cm
(c) 6 cm (d) 10 cm
- If $x + \frac{1}{x-1} = 5$, then find the value of $(x-1)^2 + \frac{1}{(x-1)^2}$?
(a) 10 (b) 11
(c) 14 (d) None of these
- Veeru gave ₹ 2400 on loan. Some amount he gave at 4% per annum simple interest and remaining at 5% per annum simple interest. After two years he got ₹ 220 as interest. Then the amount given at 4% and 5% per annum simple interest are, respectively?
(a) ₹ 1000, ₹ 1400 (b) ₹ 800, ₹ 1600
(c) ₹ 1800 ₹ 600 (d) ₹ 2200, ₹ 200
- A student was asked to divide a number by 6 and add 12 to the quotient. He however, first added 12 to the number and then divided it by 6, getting 112 as the answer. The correct answer should have been.
(a) 124 (b) 172
(c) 118 (d) 122
- The average of marks obtained by 120 candidates in a certain examination is 35. If the average marks of passed candidates is 39 and that of the failed candidates is 15, what is the number of candidates who passed the examination?
(a) 90 (b) 85
(c) 100 (d) 120
- Two pipes A, B can fill a tank in 24 min. and 32 min. respectively. If both the pipes are opened simultaneously, after how much time B should be closed so that the tank is full in 18 min.?
(a) 8 min (b) 12 min
(c) 15 min (d) 20 min
- A tap can fill a tank in 6 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the tank completely?
(a) 3 hours 15 min (b) 3 hours 45 min
(c) 3 hours 40 min (d) 3 hours 50 min
- A company produces two articles, A and B. The per unit price of A is 25% less than per unit price of B. By what percent is the sales of A more than sales of B if the revenue earned from A is 1.5 times total revenue earned from B.
(a) 50% (b) 75% (c) 100% (d) 125%

17. The salary of a man increase by 10% in first year, then by 20% in second year and then by 25% in third year. If the last increase is equivalent to an increase of ₹ 6600, then what is the equivalent of second increase?
 (a) ₹ 2000 (b) ₹ 2200
 (c) ₹ 4000 (d) ₹ 4400
18. The profit earned after selling an article for ₹ 996 is the same as the loss incurred after selling the article for ₹ 894. What is the cost price of the article?
 (a) ₹ 935 (b) ₹ 905
 (c) ₹ 945 (d) ₹ 975
19. Deepti invests 11% of her monthly salary i.e., ₹ 5,236 in Fixed Deposits. Later she invests 19% of her salary on Life insurance policies. Also, she invests 7% of her monthly salary on Mutual funds. What is the total annual amount invested by Deepti?
 (a) ₹ 2,11,344 (b) ₹ 17,612
 (c) ₹ 1,05,672 (d) ₹ 35,224
20. By selling 18 articles, a shopkeeper earns the cost price of 24 articles. By what percent should he increase the selling price so that by selling 24 articles, he earns cost price of 36 articles?
 (a) 10% (b) 20%
 (c) 12.5% (d) 25%
21. If $\sec(7\theta + 28^\circ) = \operatorname{cosec}(30^\circ - 3\theta)$, then find θ ?
 (a) 8° (b) 5°
 (c) 6° (d) 9°
22. Find the value of $\cos 24^\circ + \cos 55^\circ + \cos 125^\circ + \cos 156^\circ$
 (a) 0 (b) 2
 (c) 3 (d) 1
23. If $ax + by = 6$, $bx - ay = 2$ and $x^2 + y^2 = 4$, then the value of $(a^2 + b^2)$ would be :
 (a) 10 (b) 2
 (c) 4 (d) 5
24. A cylindrical pipe of radius 1.4 m has water flowing out a speed of 2.5m/sec into a cuboidal tank of dimensions $28\text{m} \times 11\text{m} \times 25\text{m}$. The flow of water completely occupies the cross-sectional area of the pipe. What percentage of the tank is filled up in 8min and 20sec?
 (a) 66.66% (b) 100%
 (c) 86% (d) 75%
25. The area of trapezium of height 40cm is 1600cm^2 . One parallel side is 10cm longer than the other side. Find the ratio of lengths of the parallel side.
 (a) 7:9 (b) 5:7
 (c) 3:5 (d) 2:3
26. Some spherical balls of diameter 2.8 cm are dropped into a cylindrical container containing some water and are fully submerged. The diameter of the container is 14 cm. Find how many balls have been dropped in it if the water rises by 11.2 cm.
 (a) 50 (b) 150
 (c) 250 (d) 350
27. In a competition, a school awarded medals in different categories. 36 medals in dance, 12 medals in dramatics and 18 medals in music. If these medals went to a total of 45 persons and only 4 persons got medals in all the three

categories, how many received medals in exactly two of these categories?

- (a) 7 (b) 5
 (c) 3 (d) 2
28. Let $u = (\log_2 x)^2 - 6\log_2 x + 12$ where x is a real number. Then the equation $x^u = 256$, has
 (a) no solution for x
 (b) exactly one solution for x
 (c) exactly two distinct solutions for x
 (d) exactly three distinct solutions for x

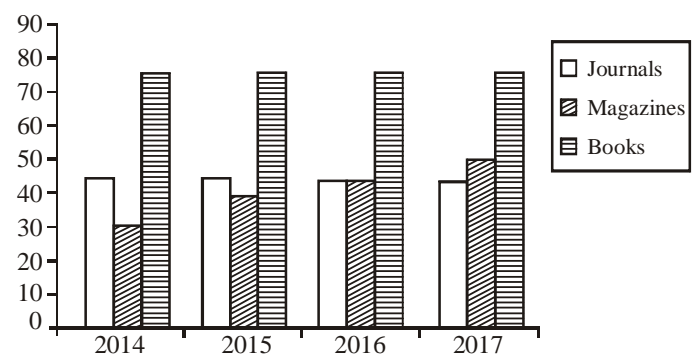
DIRECTION (Qs. 29 to 30) : Each of the following questions is followed by two statements.

Mark,

- (a) if the question can be answered with the help of statement I alone,
 (b) if the question can be answered with the help of statement II alone,
 (c) if both, statement I and statement II are needed to answer the question, and
 (d) if the statement cannot be answered even with the help of both the statements.
29. If R is an integer between 1 & 9, $P - R = 2370$, what is the value of R ?
 I. P is divisible by 4.
 II. P is divisible by 9.
30. A man distributed 43 chocolates to his children. How many of his children are more than five years old?
 I. A child older than five years gets 5 chocolates.
 II. A child 5 years or younger in age gets 6 chocolates.
31. There are six boxes numbered 1, 2, 3, 4, 5, 6. Each box is to be filled up either with a white ball or a black ball in such a manner that at least one box contains a black ball and all the boxes containing black balls are consecutively numbered. The total number of ways in which this can be done equals.
 (a) 15 (b) 21
 (c) 63 (d) 64

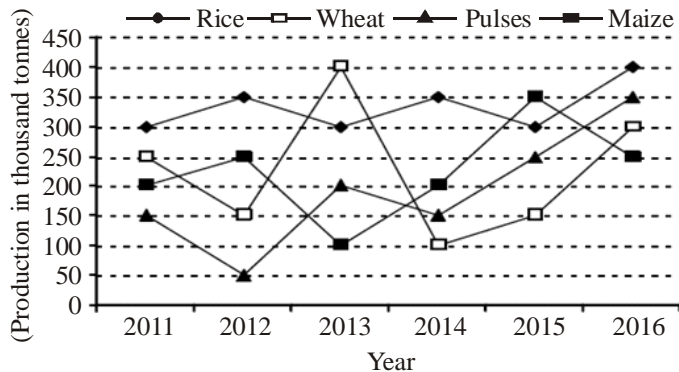
DIRECTIONS (Qs. 32-35) Answer the questions based on the following graph.

Revenue obtained by a publishing house while selling books, magazines and journals (₹ in lakh).



32. Which year shows the highest change in revenue obtained from journals?
 (a) 2013 (b) 2014
 (c) 2015 (d) 2016
33. In 2016, what per cent of the total revenue came from books?
 (a) 45% (b) 55%
 (c) 35% (d) 25%
34. The number of years in which there was an increase in revenue from at least two categories is
 (a) 1 (b) 2
 (c) 3 (d) 4
35. If 2017 were to show the same growth as 2016 over 2015, the revenue in 2017 must be
 (a) ₹194 lakh (b) ₹187 lakh
 (c) ₹172 lakh (d) ₹177 lakh

DIRECTIONS (Qs. 36-40) : Study the given chart and table carefully to answer the given questions. The graph shows the production of Rice, Maize, Pulses and Wheat in six different years.



Percentage of the total production used under various heads

Year	Export(%)	PDS Supply (%)	In open market (%)
2011	40%	12%	48%
2012	20%	18%	62%
2013	25%	16%	59%
2014	30%	14%	56%
2015	15%	20%	65%
2016	20%	22%	58%

36. In 2015 what is the difference between the amount of PDS supply and that used in export ?
 (a) 53000 tonnes (b) 56000 tonnes
 (c) 54500 tonnes (d) 52500 tonnes
37. What is the ratio of the production of Pulses to that of Wheat over the six years ?
 (a) 25 : 27 (b) 23 : 25
 (c) 23 : 28 (d) 23 : 27
38. In which year is the production the minimum ?
 (a) 2012 and 2014 (b) 2015
 (c) 2016 (d) 2013 and 2015
39. In which year is the quantity of export the maximum ?
 (a) 2011 (b) 2012
 (c) 2013 (d) 2014

40. In which year is the quantity of PDS supply the minimum ?
 (a) 2011 (b) 2012
 (c) 2016 (d) 2015

ANALYTICAL & LOGICAL REASONING

DIRECTIONS (Qs. 41-45) : Study the following information carefully and answer the given questions.

When a word and number arrangement machine is given an input line of words and numbers, it arranges them following a particular rule. The following is an illustration of Input and rearrangement. (All the numbers are two digit numbers.)

Input: Racecar 7 Mom 12 16 Earth 9 Noon 5 Union

Step 1: Mom Racecar 7 12 16 Earth Noon 5 Union 9

Step 2: Mom 5 7 12 16 Earth Noon Union Racecar 9

Step 3: Mom 5 Earth 16 7 Noon Union 12 Racecar 9

Step 4: Mom 5 Earth 16 Noon 7 Union 12 Racecar 9

Step IV is the last step of above arrangement as the intended arrangement is obtained.

As per the rules followed in the given steps, find out the appropriate steps for the Input.

Input : Rotator 9 Wow 14 18 Orange 11 Radar 3 Unit 9

41. Which element comes exactly between '9' and '18' in Step II of the given Input?
 (a) Radar (b) 14
 (c) Union (d) Rotator
42. If in the third step, "9" interchanges its position with '14' and 'Orange' also interchanges its position with "rotator" then which element will be to the immediate right of '18'?
 (a) Radar (b) 14
 (c) Union (d) Rotator
43. Which of the following combinations represent the third and fifth element from the left end in Step 3 of the given input?
 (a) Orange, Radar (b) Orange, 9
 (c) Wow, 18 (d) Rotator, 11
44. Which element is fifth to the right of the one which is eighth from the right in Step 2 of the given Input?
 (a) Radar (b) 14
 (c) Union (d) Rotator
45. In which step are the elements '5 9 14 18 Orange' found in the same order?
 (a) Third (b) Fourth
 (c) Second (d) First

DIRECTIONS (Qs.46-48): Study the following information carefully and answer the questions given below:

P is the daughter of Q. R has only two children - P and S. T is the brother of U. S is married to V. R has only two daughters. W is the mother of Q. T is married to P. W is married to X. R is the son of Y.

46. Who among the following is the father of Q?
 (a) W (b) Y
 (c) R (d) X
47. Who among the following is the sister-in-law of U?
 (a) S (b) P
 (c) Q (d) W

48. How is R related to T?
 (a) Father-in-law (b) Mother-in-law
 (c) Father (d) Mother

DIRECTIONS (Qs.49-50) : Study the information carefully to answer the questions.

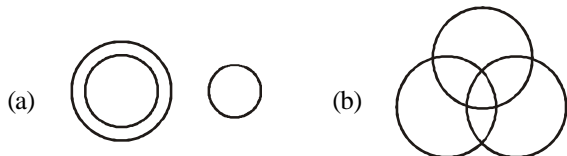
Bala walked 25km towards west, took a left turn and walked 15km. He again took a left turn and walked 30km. He then took a right turn and stopped.

49. Now he was facing which direction ?
 (a) West (b) East
 (c) South (d) North
50. Instead of turning right at the end if he took left and walked 20km, what is the shortest distance to his starting point?
 (a) $3\sqrt{7}$ km (b) $2\sqrt{5}$ km
 (c) $7\sqrt{2}$ km (d) $5\sqrt{2}$ km
51. If in a certain code CRYSTAL is written as DTJSXFR then in the same code how QUANTUM is written?
 (a) WRDNXZS (b) RWDNYZS
 (c) RWDNXZS (d) RWNDXZS
52. If in certain code MONKEY is written as ZFLOPN then in the same code how CHARACTER is written?
 (a) SFUDBSCID (b) SFUDBEBID
 (c) SFUBIDDBS (d) SFUDBSBID

DIRECTIONS (Qs.53-57) : Study the following arrangement to answer the given questions.

Y # O U 7 D \$ V @ B E 8 © X 1 A C % P 2 4 Q I N 6 M * Z 5

53. If all the numbers are dropped from the above arrangement, which of the following will be the ninth from the right end?
 (a) A (b) C
 (c) X (d) Y
54. Which of the following will be the sixth to the left of the fourteenth from the left end of the above arrangement?
 (a) Y (b) O
 (c) U (d) V
55. Which of the following is the fifth to the right of the thirteenth to the left of Q in the given arrangement?
 (a) X (b) @
 (c) U (d) *
56. How many such vowels are there in the above arrangement, each of which is immediately preceded by a consonant and immediately followed by a number?
 (a) None (b) One
 (c) Two (d) Three
57. How many such symbols are there in the above arrangement, each of which is immediately preceded and also immediately followed by a consonant?
 (a) One (b) Two
 (c) Three (d) Four
58. Which of the following diagrams indicates the best relationship between Teacher, Writer and Musician?



DIRECTIONS (Qs. 59-62): Find the missing number (?) from the given options.

59. 5, 11, 21, 43, 85, ?
 (a) 185 (b) 170
 (c) 171 (d) 181
60. ADGJ, YVSP, KNQT, ?
 (a) SVZB (b) QTWZ
 (c) OLIF (d) LORU
61. 12, 27, 85, 345, ?
 (a) 1737 (b) 1380
 (c) 1725 (d) 1731
62. Some equations are solved on the basis of a certain system. Find the correct answer for the unsolved equation on that basis.
 $5 \times 8 = 28$, $3 \times 7 = 12$, $8 \times 6 = 35$, $13 \times 13 = ?$
 (a) 169 (b) 130
 (c) 140 (d) 144

DIRECTIONS (Qs. 63-65): From the given options choose the missing number.

63.

4	7	9
8	6	8
3	7	9
35	49	?

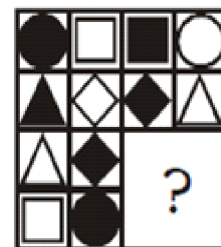
 (a) 63 (b) 89
 (c) 81 (d) 64
64.

7	6	8
5	4	9
3	2	1
83	56	?

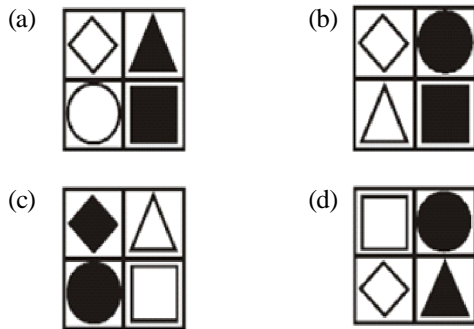
 (a) 146 (b) 128
 (c) 136 (d) 148
65.

15	225	30
7	70	20
3	?	8

 (a) 70 (b) 12
 (c) 16 (d) 24
66. Identify the figure that completes the pattern of the question figure?

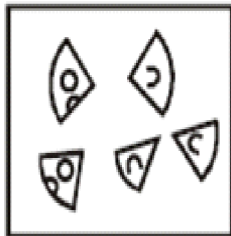


Answer figure

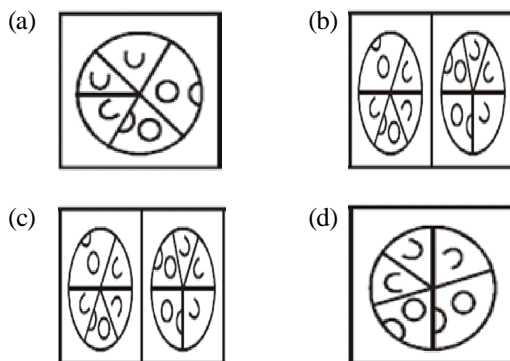


67. Five bells begin to ring together and ring respectively at intervals of 6, 5, 7, 10 and 12 seconds. How many times will they ring together in one hour excluding the one at the start ?
 (a) 7 times (b) 8 times
 (c) 9 times (d) 11 times
68. Find out which of the answer figures among (a), (b), (c) and (d) can be formed from the pieces given in the question figure.

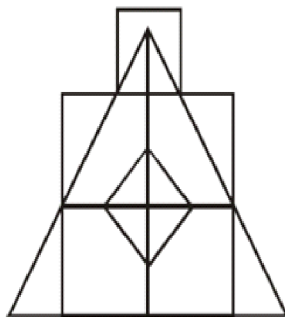
Question Figure



Answer Figures



69. Count the number of triangles and squares in the given figure.



- (a) 21 triangles, 7 squares (b) 18 triangles, 8 squares
 (c) 20 triangles, 8 squares (d) 22 triangles, 7 squares

DIRECTIONS (Qs. 70-71): Each of these questions are based on the information given below.

P, Q, R, S, W, X, Y, Z are sitting around a circle facing centre but not necessarily in the same order. The husband of Z is sitting second to the right of Q who is sitting between two males. X sits second to the left of the daughter of S. X is the sister of Y. X is not an immediate neighbour of Z's husband. Only one person sits between P and X. P is the father of Y. S, who is brother of Z sits to the immediate left of his mother. Only one person sits between Z's mother and W. Only one person sits immediate Z and Y. Y is the mother of R. Y is not an immediate neighbour of W.

70. Which of the following is true with respect to the given seating arrangement?
 (a) R is the cousin of W.
 (b) Q is the mother of Z.
 (c) Z sits third to the left of her daughter.
 (d) No female is an immediate neighbour of R.
71. What is the position of P with respect to his grandchild?
 (a) Immediate right (b) Third to the right
 (c) Third to the left (d) Fourth to the right
72. India's baffling array of state and national labor laws date to the 1940s: one provides for the type and number of spittoons in a factory. Another says an enterprise with more than 100 workers needs government permission to scale back or close. Many Indian businesses stay small in order to remain beyond the reach of the laws. Big firms use temporary workers to avoid them. Less than 15% of Indian workers have legal job security. The new government can sidestep the difficult politics of curbing privileges by establishing a new, simpler labor contract that gives basic protection to workers but makes lay-offs less costly to firms. It would apply only to new hires; the small proportion of existing workers with gold-star protections would keep them.
- Which of the following options best summarizes the main idea of the paragraph?
 (a) More Indian workers can get permanent jobs and legal job security if existing labor laws are reformed.
 (b) Effective labor law reform can encourage many Indian businesses to grow to more than 100 workers.
 (c) Outdated Indian labor laws need to be simplified to provide basic protection to workers and curb privileges.
 (d) The difficult politics of curbing privileges can be avoided if the changes in the labor law only apply to the new hires.
73. Data on planes returning from bombing missions was used to study of the vulnerability of airplanes to enemy fire. Analyzing the pattern and frequency of hits from enemy gunfire, it was seen that some parts of planes were hit disproportionately more often than other parts. How could these planes be optimally reinforced with armor plating? There were tradeoffs to consider. Every addition of plating added to the weight of the plane, decreasing its performance. Therefore, reinforcements needed to be added only to the most vulnerable areas of the planes.

86. He **had not been comfortable** with the audience in those days.
- (a) had not been in any comfort
 (b) had little comfort
 (c) had been not comfortable
 (d) No correction required

DIRECTIONS (Qs. 87-91): Which of the phrase (a), (b) and (c) given below each sentence should replace the phrase printed in bold in the sentence to make it grammatically correct ? If the sentence is correct as it is given and no correction is required, mark (d) as the answer.

87. I am **fully convinced of** the integrity of my colleagues.
- (a) Fully convincing of (b) Fully convincing about
 (c) Fully convincing of (d) No correction required
88. The spectators were spellbound at the thrilling sight and at the end, they could not **held their applause** in appreciation.
- (a) withheld their applause (b) held their applauding
 (c) hold their applaud (d) No correction required
89. Tokyo is one of the **mostly populated cities** in the world.
- (a) thickly populated city in (b) thickly populated city of
 (c) most populated cities in (d) No correction required
90. My colleague **made his mark** as a lawyer at an early age.
- (a) secured good marks (b) distinguished himself
 (c) created a vacancy (d) No correction required
91. Global warming is a **burning problem** for this summit.
- (a) A problem that is obvious
 (b) An urgent, important problem
 (c) A dangerous problem
 (d) No correction required

DIRECTIONS (Qs. 92-94): Sentences given with blanks to be filled in with an appropriate words. Four alternatives are suggested for each question. Choose the correct answer.

92. I _____ you to be home by 8 o'clock.
- (a) expect (b) accept
 (c) aspect (d) except
93. Admission was _____ ladies.
- (a) limited of (b) restricted by
 (c) restricted to (d) limited by
94. You will come, _____?
- (a) won't you (b) will you
 (c) shouldn't you (d) aren't you

DIRECTIONS: (Qs. 95 & 96) Out of the four alternatives, choose the one which best expresses the meaning of the given word.

95. SUPPLE
- (a) Hard (b) Round
 (c) Rigid (d) Flexible
96. SUBMISSIVE
- (a) Obstinate (b) Unyielding
 (c) Stubborn (d) Docile

DIRECTIONS (Qs. 97-101): Read the following passage carefully and answer the questions given below it. Certain words/phrases are in bold to help you locate them while answering some of the questions.

Scientists have found **irrefutable** evidence that Mars once had the ingredients for life. This confirmation comes seven months after NASA's rover Curiosity landed on Mars. Analysis of powdered samples drilled out from inside an ancient and once water-soaked rock at the rover's Gale Crater landing site shows clays, sulphates and other minerals that are all key to life, scientists told reporters at NASA headquarters in Washington on March 12. The water that once flowed through the area known as Yellowknife Bay, was likely drinkable, said Curiosity's lead scientist John Grotzinger, who is with the California Institute of Technology. The analysis stopped short of a confirmation of organics, which are key to most Earth-like life. But with 17 months left in the rover's primary mission, scientists said they expect to delve further into that question. Science operations currently are suspended because of a computer glitch, which is expected to be resolved shortly. Whether or not Mars has or ever had life, it should have at one time at least had organic compounds delivered to its surface by organic-rich comets and asteroids. Finding places where the organics could have been preserved, however, is a much trickier prospect than finding the environmental niches and chemistry needed to support life, scientists said. In May, following a one-month interruption of radio communication caused by the positions of Earth and Mars, scientists plan to drill a second hole into the Gale Crater rock to look for organic compounds. "If there was organic material there, it could have been preserved," said David Blake, principal investigator for Curiosity's Chemistry and Mineralogy, or CheMin, experiment. A lack of organics, however, would not rule out the Yellowknife Bay site as suitable for life, scientists added. "You don't have to have carbon present in a geological environment that's habitable in order to have microbial metabolism occur," Grotzinger said. Some micro-organisms on Earth, for example, can feed on inorganic compounds, such as what are found inside rocks. "There does need to be sources of carbon somewhere, but if it's just C , you can have chemoautotrophic organic compounds based on that carbon," Grozinger said. Analysis shows the Gale Crater rock contains carbon dioxide, in addition to hydrogen, oxygen, phosphorus, sulphur and nitrogen. Carbon dioxide provides a key ingredient in the building blocks for life, all of which have now been found in the Mars rock sample, Grotzinger sai(d) The \$2.5-billion, nuclear-powered Curiosity rover landed inside the giant Gale Crater impact basin, located near the Martian equator, on August 6 for a two-year mission. Scientists were drawn to the area because of a five-km mountain of sediment, called Mount Sharp, rising from the crater floor. But shortly after the rover's landing, the team decided to first explore the Yellowknife Bay area, located in the opposite direction from Mount Sharp. Observations from Mars orbiters showed three different types of terrain coming together in Yellowknife Bay, plus a low elevation, all hints that water could have once flowed and pooled on the surface.

97. Which of the following is not necessarily correct in the context of the passage?
- (a) On the basis of evidence found on Mars scientists have confirmed that ingredients for life once existed on Mars.
 (b) NASA's rover Curiosity landed on Mars near Gale Crater.
 (c) Drinkable water flowed through Yellowknife Bay once.
 (d) Scientists are not sure if organic compounds existed on Mars.

98. What do clays, sulphates and other minerals found near the rover's landing site suggest?

- (a) Clays, sulphates and other minerals found near the rover's landing site suggest that huge volcanic eruptions might have taken place in the remote past.
- (b) Clays, sulphates and other minerals found at the rover's landing site revealed that Mars once had favourable conditions for life.
- (c) The evidence of clay found near the rover's landing site suggests that once water flowed through the area.
 - (a) All (a), (b) and (c)
 - (b) Only (b)
 - (c) Only (c)
 - (d) Only (b) and (c)

99. Find the correct statement according to the passage.

- (a) Though there is no evidence of organics at Yellowknife Bay site yet the possibility of life over there cannot be ruled out.
- (b) There can be no life without carbon or organic compound.
- (c) Even micro-organisms cannot exist in geological environment where there is complete lack of organics.
- (d) The presence of water confirms the existence of life on Mars.

100. Which of the following conclusions can be drawn on the basis of facts mentioned in the given passage?

- (a) Chemoautotrophic organisms with the help of C generate organic compounds.
- (b) Life is not possible without (c)
- (c) Some of the micro-organisms on Earth can feed on inorganic compounds.
- (d) Gale Crater contains not only hydrogen, oxygen and phosphorus but also carbon dioxide.

101. What is the meaning of the word 'irrefutable' as used in the given passage?

- (a) indefinite
- (b) dubious
- (c) questionable
- (d) indisputable

DIRECTIONS: (Qs. 102 & 103) Choose the word opposite in meaning to the given word.

102. PAUCITY

- (a) Paragon
- (b) Pronounce
- (c) Plethora
- (d) Persuade

103. HOSTILE

- (a) Joyful
- (b) Helpful
- (c) Friendly
- (d) Violent

DIRECTIONS (Qs. 104 & 105): Read each sentence to find out whether there is any grammatical or idiomatic error in it. The error, if any, will be in one part of the sentence. The number of the part is the answer. If there is 'No error', the answer is (d). (Ignore errors of punctuation, if any.)

104.

- (a) The car flew off the road
- (b) and fell into the valley because
- (c) Harish was driving faster
- (d) No error

105. (a) You may choose (b) any
(c) of the two subjects (d) No error

DIRECTIONS (Qs. 106-110): Fill in the blanks and choose the correct definition for the punctuation.

106. _____ is used to indicate possession.

- (a) Hyphen
- (b) Apostrophe
- (c) Semi Colon
- (d) Period

107. _____ is used to mark the end of declarative and imperative sentences.

- (a) Semicolon
- (b) Comma
- (c) Dash
- (d) Period

108. When a subordinate clause is followed by the main clause, _____ is required.

- (a) Dash
- (b) Semi-colon
- (c) Comma
- (d) Colon

109. Can you give me _____ details, please?

- (a) faster
- (b) further
- (c) farther
- (d) further

110. By the time he was eighteen years old, Peter _____ to make a living and support his family.

- (a) begins
- (b) began
- (c) started beginning
- (d) would begin

DIRECTIONS (Qs. 111 & 112): Select the pair of words that best expresses a relationship similar to the capitalized pair.

111. **FLIMSY : STURDY**

- (a) prognosis : diagnosis
- (b) gauche : eloquent
- (c) flippant : earnest
- (d) drizzle : downpour

112. **GREGARIOUS : OUTGOING**

- (a) groggy : lucid
- (b) grouchy : irritable
- (c) aggressive : extrovert
- (d) gritty : sociable

DIRECTIONS (Qs. 113 & 114): In each question, the word at the top of the table is used in four different ways, numbered (a) to (d). Choose the option in which the usage of the word is incorrect or inappropriate.

113. **For**

- (a) He has a great eye for detail.
- (b) We are waiting for the day.
- (c) I can't bear for her to be angry.
- (d) It couldn't be done for ever.

114. **SLAM**

- (a) I heard the door slam behind him
- (b) She slammed down the phone angrily
- (c) She slammed his face hard
- (d) The ear skidded and slammed into a tree

DIRECTIONS (Qs. 115 & 116): The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.

115. (A) Similarly, turning to caste, even though being lower caste a undoubtedly a separate cause of disparity, its impact is all the greater when the lower-caste families also happen to be poor.

- (B) Belonging to a privileged class can help a woman to overcome many barriers that obstruct women from less thriving classes.
- (C) It is the interactive presence of these two kinds of deprivation- being low class and being female - that massively impoverishes women from the less privileged classes
- (D) A congruence of class deprivation and gender discrimination can blight the lives of poorer women very severely.
- (E) Gender is certainly a contributor to societal inequality, but it does not act independently of class.
- (a) EABDC (b) EBDCA
(c) DAEBE (d) BECDA
116. (A) This is now orthodoxy to which I subscribe-up to appoint.
(B) It emerged from the mathematics of chance and statistics.
(C) Therefore the risk is measurable and manageable.
(D) The fundamental concept: Prices are not predictable, but the mathematical laws of chance can describe their fluctuations.
(E) This is how what business schools now call modern finance was born.
- (a) ADCBE (b) EBDCA
(c) ABDCE (d) DCBEA

DIRECTIONS (Qs. 117 & 118): Select the most suitable synonym for the underlined word in the sentence.

117. The policy announcement was made to the much chagrin of the farmers.
(a) euphoria (b) placation
(c) glee (d) Mortification
118. The leader summoned the group and told that the time has come to act and not genueflect.
(a) grovel (b) procrastinate
(c) renounce (d) incriminate

DIRECTIONS (Qs. 119 & 120): Select a word to replace the blank spaces.

119. Alleviate : Aggravate :: Elastic : _____
(a) Rigid (b) Flexible
(c) Malleable (d) Strong
120. Benevolent : Kind :: Unclear: _____
(a) Bright (b) Thick
(c) Luminous (d) Muddy

GENERAL AWARENESS

121. The Minister of Defence and National Security of Fiji, Ratu Inoke Kubuabola signed an MoU with the Minister of Defence, Finance and Corporate Affairs, Shri Arun Jaitley, recently. What is the capital of Fiji?
(a) Baku (b) Suva
(c) Samona (d) Paloha
122. Which Indian sportsperson has been appointed as the WHO Goodwill Ambassador for physical activity in the South-East Asia Region (SEAR)?
(a) Mary Kom (b) Milkha Singh
(c) Pallela Gopichand (d) Abhinav Bindra

123. Asian Infrastructure Investment Bank (AIIB) has approved USD 150 million equity investment loan to the India Infrastructure Fund. It is the bank's first such loan to fund private projects. AIIB based in-?
(a) France (b) Australia
(c) China (d) Germany
124. Which bank has started insolvency resolution process against Lanco Infratech Ltd. following a directive from the Reserve Bank of India (RBI), while this is the first resolution process initiated by the lenders against 12 large borrowers identified by the RBI recently?
(a) State Bank of India (b) IDBI Bank
(c) Punjab National Bank (d) Bank of India
125. Which Indian student has been selected to represent India as young journalist at the global Football for Friendship (F4F) social programme?
(a) Satnam Bhamara
(b) Ananya Kamboj
(c) Shekhar Ramamurthy
(d) Samar Singh Sheikawat
126. The Bank of Bombay (15 April 1840) and the Bank of Madras (1 July 1843) followed the Bank of Bengal. These three banks remained at the apex of modern banking in India till their amalgamation as the Imperial Bank of India on 27 January-
(a) 1961 (b) 1956
(c) 1949 (d) 1921
127. Who has won the Baileys Women's Prize for Fiction 2015?
(a) Ali Smith (b) Rachel Cusk
(c) Anne Tyler (d) Sarah Waters
128. The highest multipurpose dam built on the river Ravi is-
(a) Bhakra Nagal (b) Kahalgaon
(c) Ranjit Sagar dam (d) Rihand dam
129. The district Primary Education Programme in India is supported by:
(a) International Monetary Found
(b) World Bank
(c) UNESCO
(d) Japanese Government
130. Which of the following mahatma Gandhi series of currency notes issued by RBI has "ecology" depicted on it?
(a) ₹ 500 (b) ₹ 100
(c) ₹ 50 (d) ₹ 5
131. Which country providing technology to develop coastal road project in Maharashtra?
(a) Netherland (b) Japan
(c) China (d) Australia
132. The first BRICS film festival has begun in which of the following cities in India?
(a) New Delhi (b) Bhopal
(c) Jaipur (d) Goa
133. Which of the following state governments has signed a memorandum of understanding (MoU) with the ministry of civil aviation to develop 11 airports and airstrips to boost regional connectivity recently?
(a) Kerala (b) Gujarat
(c) Rajasthan (d) Madhya Pradesh

134. Who is the newly elected President of Mongolia?
 (a) Sainkhuugiin Ganbaatar
 (b) Miyeegombyn Enkhbold
 (c) Tsakhiagiin Elbegdorj
 (d) Khaltmaagiin Battulga
135. Name the agency, which is an agency to provide 'soft-loans' to developing countries?
 (a) Asian Infrastructure Investment Bank (AIIB)
 (b) Organization of the Petroleum Exporting Countries (OPEC)
 (c) Asian Development Bank (ADB)
 (d) International Development Association (IDA)
136. Which one of the following does not appear on the abacus of the Sarnath Lion capital of Ashoka?
 (a) Bull (b) Deer
 (c) Elephant (d) Horse
137. Which authority recommends the principles governing the grants-in-aid of the revenues of the states out of the Consolidated Fund of India?
 (a) Public Accounts Committee
 (b) Union Ministry of Finance
 (c) Finance Commission
 (d) Inter State Council
138. Which city to host the 2017 World Food India (WFI)?
 (a) Kochi (b) New Delhi
 (c) Chandigarh (d) Surat
139. The tax which the kings used to collect from the people in the Vedic period was called-
 (a) Bali (b) Vidatha
 (c) Varman (d) Kara
140. Which of the following cities has won the right to host the 2020 edition of the Olympic Games, the world's biggest sporting event?
 (a) St Petersburg (b) Tokyo
 (c) Madrid (d) Istanbul
141. World's first Bank Agnostic Instant Funds Transfer Platform using Facebook launched by-
 (a) ICICI Bank
 (b) Kotak Mahindra Bank
 (c) Indusind Bank
 (d) Central Bank
142. Open market operations, one of the measures taken by RBI in order to control credit expansion in the economy means?
 (a) Sale or purchase of Govt. securities
 (b) Issuance of different types of bonds
 (c) Auction of gold
 (d) None of the above
143. Which city is hosting the 12th edition of G-20 Summit 2017?
 (a) Hamburg (b) Berlin
 (c) Frankfurt (d) Stuttgart
144. The 'Seven Pagodas' of Mahabalipuram are a witness to the art patronized by the
 (a) Pallavas (b) Pandyas
 (c) Cholas (d) Cheras
145. The Phillip's curve is the schedule showing the relationship between
 (a) Aggregate supply and demand
 (b) Total saving and investment
 (c) The rate of unemployment and rate of inflation
 (d) Demand for and supply of loan able funds
146. Mantle of the earth crust is-
 (a) A layer with the composition of semi-solid mineral matter
 (b) A layer with the composition of fluid mineral matter
 (c) Layer with the composition of semi-fluid mineral matter
 (d) A layer with the composition of gaseous mineral matter
147. "Dulari Kanya" scheme has been launched by which state government to check infant mortality?
 (a) Arunachal Pradesh
 (b) Himachal Pradesh
 (c) Madhya Pradesh
 (d) Andhra Pradesh
148. Which of the following companies inked pact with Microsoft India to offer telecom and IT solutions for big businesses promoting the demand for IT and cloud services?
 (a) BHEL (b) ONGC
 (c) IRCTC (d) BSNL
149. Who wrote the line: 'A thing of beauty is a joy forever'?
 (a) John Keats
 (b) Robert Browning
 (c) P.B. Shelley
 (d) William Wordsworth
150. The Tadoba Andhari Tiger Reserve (TATR) is located in which state?
 (a) Tamil Nadu (b) Karnataka
 (c) Maharashtra (d) Goa

ANSWERS WITH EXPLANATIONS

1. (c) Let the monthly incomes of A and B be $7x$ and $6x$ respectively. Now
- $$\frac{7x - 600}{6x - 600} = \frac{5}{4}$$
- $$x = 300$$
- Total monthly income of A and B = $7x + 6x = 13x = 3900$
2. (b) $A + B + C = 150 + A$
 $B + C = 150$
 Also $B = 5C$
 Solving the equations we get
 $C = 25$ and $B = 125$.
 Also
 $A + B = 3(B + C)$
 Substituting B and C we get
 $A = 325$
3. (b) Let the original average be x . Then
- $$\frac{15x + 124}{16} = x + 4$$
- $$x = 60$$
- Present average = $x + 4 = 64$
4. (a) Let he buys 180 apples at both the given rates (180 is LCM of 5, 4 and 9)
- The cost of 180 apples at 5 for ₹ 6 = $180 \times \frac{6}{5} = 216$
- The cost of 180 apples at 4 for ₹ 5 = $180 \times \frac{5}{4} = 225$
- Total CP = $216 + 225 = 441$
- Total SP of 360 apples at 9 for ₹ 11 = $360 \times \frac{11}{9} = 440$
- $$\text{Loss \%} = \frac{1}{441} \times 100 = \frac{100}{441} \%$$
5. (b) Let the total work be 24 units.
 Work done by A in one day = $24/6 = 4$ units
 Work done by B in one day = $24/8 = 3$ units
 Work done by A in 2 days = 8 units
 Work done by B in 2 days = 6 units
 Work done by C in 2 days = $24 - 8 - 6 = 10$ units
- A's share from the total money = $\frac{8}{24} \times 720 = 240$
6. (b) Total number of pages typed by P and Q in one hour = $20/3 + 25/4 = 155/12$
 Time taken by them to type 620 pages
- $$= 620 \times \frac{12}{155} = 48 \text{ hrs.}$$
7. (d) Total expenditure = $30 \times 90 = 2700$
- $$\Rightarrow 12 \times 60 + x \times 18 = \frac{2700 \times 125}{100}$$
- $$\Rightarrow x = 147.5$$
8. (b) Let $X = 2 + \sqrt{3} = \frac{4 + 2\sqrt{3}}{2} = \left[\frac{\sqrt{3} + 1}{\sqrt{2}} \right]^2$
- So, $\sqrt{X} + \frac{1}{\sqrt{X}} = \frac{\sqrt{3} + 1}{\sqrt{2}} + \frac{\sqrt{2}}{\sqrt{3} + 1} = \frac{6 + 2\sqrt{3}}{\sqrt{2}(\sqrt{3} + 1)} = \sqrt{6}$
9. (c) In any equilateral triangle, the length of the inradius is one-third of length of angle bisector. So, if area of incircle is 4π , then its radius is 2cm. So, the length of angle bisector is 6cm.
10. (c) $x + \frac{1}{x-1} = 5$.
 Subtracting 1 from both sides, we get
- $$(x-1) + \frac{1}{(x-1)} = 4$$
- Squaring both sides, we get
- $$(x-1)^2 + \frac{1}{(x-1)^2} = 14$$
11. (a) Let the amount he gave 4% per annum = x
- $$\frac{x \times 4 \times 2}{100} + \frac{(2400 - x) \times 5 \times 2}{100} = 220$$
- $$\therefore x = 1000$$
- And second amount = $2400 - 1000 = 1400$
12. (d) Let that number be x , then getting the answer by student $\Rightarrow (x + 12) \div 6 = 112$
 $\Rightarrow (x + 12)/6 = 112$
 $\Rightarrow x + 12 = 6 \times 112 = 672$
 $x = 672 - 12 = 660$
- Correct Answer = $\left(\frac{660}{6} \right) + 12 = 110 + 12 = 122$
13. (c) Let the number of passed candidates be x .
 Then total marks = $120 \times 35 = 39x + (120 - x) \times 15$
 $\Rightarrow 4200 = 39x + 1800 - 15x$
 $\Rightarrow 24x = 2400$,
 So $x = 100$
 \therefore Number of candidates who passed the examination = 100.
14. (a) Let B be closed after x min. then,
 Part filled by (A + B) in x min. + part filled by A in $(18 - x)$ min. = 1
 Therefore $x \times ((1/24) + (1/32)) + (18 - x) \times (1/24) = 1$
 $(7x/96) + ((18 - x)/24) = 1$.
 $7x + 4 \times (18 - x) = 96$.
 $\Rightarrow 3x = 24$
 $\therefore x = 8$
 Hence, B must be closed after 8 min.

15. (b) A tap can fill a tank in 6 hours.
After half the tank is filled i.e. after 3 hrs.
Three more similar taps are opened i.e.
no. of taps to fill remaining half tank = 4 taps
when 1 tap is used = (3 hrs/1 tap)
when 4 taps are used = (3 hrs/4 taps)=45min
Total = 3 hrs + 45 min
∴ Total Time = 3 hours 45 minutes.
16. (c) Let the per unit price of B be ₹ 100. So, per unit price of A is ₹ 75. Let the revenue of B be 'x'. So, revenue of A is 1.5x. Since, total revenue = sales × unit price
Therefore, for A, 1.5x = sales of A × 75
For B, x = sales of B × 100
Comparing both relation above, we can say that 1.5 (sales of B × 100) = sales of A × 75
⇒ sales of B = 0.5 (sales of A).
So, sales of A are 100% more than sales of B.
17. (d) Let the salary be ₹ 100. So, after first increase is ₹ 10. Now, his salary is ₹ 110. Second increase is ₹ 22. Now the salary is ₹ 132. The third increase is ₹ 33.
So, for initial salary of ₹ 100, the third increase is ₹ 33.
Therefore, for an increase of ₹ 6600, the initial salary will be ₹ 20000. So, the second increase is ₹ 4400.
18. (c) CP = (996 + 894)/2 = ₹ 945
19. (a) Let monthly income = x
$$\frac{11x}{100} = 5236$$

⇒ x = ₹ 47600 (Monthly income)
total monthly amount invested by Deepti
= 47600 × (11 + 19 + 7)%
$$= 47600 \times \frac{37}{100} = ₹ 17,612$$

total annual amount invested by Deepti = 17612 × 12 = ₹ 2,11,344
20. (c) Since, 18 SP = 24 CP. Therefore, SP = 1.33 CP or profit % = 33.33%. So, if initial CP = ₹ 100, then initially, he is selling the articles at ₹ 133.33. Now, in new case, 24 SP = 36 CP, then SP = 1.5 CP or new profit% = 50%. So, new SP will be ₹ 150. Therefore, increase in SP will be
$$\frac{150 - 133.33}{133.33} \times 100 = \frac{16.66}{133.33} \times 100 = 12.5\%$$
21. (a) Here,
 $\sec(7\theta + 28^\circ) = \operatorname{cosec}(30^\circ - 3\theta)$
⇒ $\sec(7\theta + 28^\circ) = \sec(90^\circ - (30^\circ - 3\theta))$
⇒ $(7\theta + 28^\circ) = 90^\circ - 30^\circ + 3\theta$
⇒ $4\theta = 32^\circ$ or
 $\theta = 8^\circ$
22. (a) $\cos 24^\circ + \cos 55^\circ + \cos 125^\circ + \cos 156^\circ$
 $\cos 24^\circ + \cos 55^\circ + \cos (180^\circ - 55^\circ) + \cos (180^\circ - 24^\circ)$
 $\cos 24^\circ + \cos 55^\circ - \cos 55^\circ - \cos 24^\circ = 0$
23. (a) $ax + by = 6$
⇒ $(ax + by)^2 = 36$
 $a^2x^2 + b^2y^2 + 2abxy = 36$ — (i)
 $bx - ay = 2$
⇒ $(bx - ay)^2 = 4$
 $b^2x^2 + a^2y^2 - 2abxy = 4$ — (ii)
By equation (i) + equation (ii)
We get, $a^2x^2 + b^2y^2 + b^2x^2 + a^2y^2 = 40$
 $(a^2 + b^2)(x^2 + y^2) = 40$
 $(a^2 + b^2)4 = 40 \Rightarrow a^2 + b^2 = 10$
24. (b) Time taken to fill the tank =
$$\frac{\text{Volume of tank}}{\text{Volume of water flowing per minute}}$$

$$= \frac{28 \times 11 \times 25}{\pi \times 1.4 \times 1.4 \times 2.5} = 500 \text{ sec.}$$

So, the tank is completely filled in 500 sec or 8 min and 20 sec.
So, 100 percentage of the tank is filled up in 8 minutes 20 seconds.
25. (a) The area of trapezium =
$$\frac{1}{2} \times (\text{sum of parallel sides}) \times (\text{height})$$

Let one of parallel side be 'x' and other side be 'x+10'.
So, by above formula,
⇒ $1600 = \frac{1}{2} \times (x + x + 10) \times (40)$
⇒ $1600 = (2x + 10) \times 20$
⇒ $2x + 10 = 80$
⇒ ∴ $2x = 80 - 10$
⇒ $x = \frac{70}{2} = 35$
Here, we get 'x' = 35. So ratio of parallel sides is 7:9.
26. (b) Volume of water level raised = total volume of spherical balls
$$\pi \times 7^2 \times 11.2 = n \times \frac{4}{3} \times \pi \times 1.4^3$$

Solving for 'n', we get 'n' = 150
So, 150 balls have been dropped in the container.
27. (c) Let A = set of persons who got medals in dance.
B = set of persons who got medals in dramatics.
C = set of persons who got medals in music.
Given,
 $n(A) = 36$
 $n(B) = 12$
 $n(C) = 18$
 $n(A \cup B \cup C) = 45$
 $n(A \cap B \cap C) = 4$
We know that number of elements belonging to exactly two of the three sets A, B, C

$$= n(A \cap B) + n(B \cap C) + n(A \cap C) - 3n(A \cap B \cap C)$$

$$= n(A \cap B) + n(B \cap C) + n(A \cap C) - 3 \times 4 \dots\dots(i)$$

$$n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C)$$

Therefore, $n(A \cap B) + n(B \cap C) + n(A \cap C) = n(A) + n(B) + n(C) + n(A \cap B \cap C) - n(A \cup B \cup C)$

From (i) required number

$$= n(A) + n(B) + n(C) + n(A \cap B \cap C) - n(A \cup B \cup C) - 12$$

$$= 36 + 12 + 18 + 4 - 45 - 12$$

$$= 70 - 67$$

$$= 3$$

28. (b) $u = (\log_2 x)^2 - 6\log_2 x + 12$
 $\Rightarrow x^u = 256$
 Let $\log_2 x = y \Rightarrow x = 2^y$
 $x^u = 2^8 \Rightarrow uy = 8 \Rightarrow u = 8/y$
 $\Rightarrow \therefore 8/y = y^2 - 6y + 12 \Rightarrow y^3 - 6y^2 + 12y - 8 = 0$
 $\Rightarrow (y-2)^3 = 0 \Rightarrow y = 2$
 $\therefore x = 4, u = 4$
29. (b) From the question we can figure out that P lies between 2371 and 2379.
 Using statement I: $P = 2372$ or 2376
 Using statement II: $P = 2376$
 Hence, Statement II alone is sufficient to get a unique value of R.
30. (c) As 43 is neither a multiple of 5 nor 6, either statement alone is not sufficient to answer the question.
 Using both statements together: Let the number of children older than 5 years be 'a' and that of 5 years or younger be 'b'.
 As per the given information, $5a + 6b = 43$.
 As a and b are non-negative integer, only possible value: $a = 5$ and $b = 3$.
31. (b) If there is only one box containing black ball, the boxes can be filled in 6 ways.
 If there are two boxes containing black ball, the boxes can be filled in 5 ways. (The two black balls can be in either of the boxes (1,2), (2,3), (3,4), (4,5) or (5,6)).
 If there are 3 boxes containing black ball the boxes can be filled in 4 ways viz.(123), (234), (345), (456).
 Similarly if there are 4 boxes, it can be done in 3 ways viz.(1234), (2345), (3456), if there are 5 boxes it can be done in 2 ways viz.(12345), (23456) and all 6 boxes can have a black ball only in 1 way.
 Hence, total number of ways = $6 + 5 + 4 + 3 + 2 + 1 = 21$.

Solution (32 to 35):

	2013	2014	2015	2016
Journals	46	47	45	44
Magazines	31	39	45	50
Books	73	77	79	79
Total	150	163	169	173

32. (c) The highest change in the revenue obtained from journals is $(47 - 45) = 2$ in 2015.
33. (a) In 2016, percentage of total revenue that came from books = $(79/173 \times 100) = 45.6\% = 45\%$ (approximately).
34. (b) In 2014, there was an increase in revenue for all the 3 categories. In 2015, it increased for magazines and books. And in 2016, it increased only for magazines. So, the answer is (b) viz. 2 years.
35. (d) Growth rate in 2016 over 2015 = $(173 - 169)/169 \times 100 = 2.36\%$.
 If this rate remained same in 2017 as well, then the revenue in 2017 would be $173 \times (1 + 2.36/100) = ₹ 177$ lakh.
36. (d) Total production of all products in 2015 = $(150 + 250 + 300 + 350) \times 1000 = 1050000$ tonnes
 \Rightarrow Amount used in PDS supply = $1050000 \times \frac{20}{100} = 210000$ tonnes
 \Rightarrow Amount used in Exports = $1050000 \times \frac{15}{100} = 157500$ tonnes
 \Rightarrow Req'd difference = $(210000 - 157500) = 52500$ tonnes
37. (d) Production of pulses during six years = $(150 + 50 + 200 + 150 + 250 + 350) \times 1000 = 1150000$ tonnes
 Production of Wheat during six years = $(250 + 150 + 400 + 100 + 150 + 300) \times 1000 = 1350000$ tonnes
 \therefore Req'd ratio = $1150000 : 1350000 = 115 : 135 = 23 : 27$
38. (a) Total production in 2011 = $(150 + 200 + 250 + 300) \times 1000 = 900000$ tonnes
 Total production in 2012 = $(50 + 150 + 250 + 350) \times 1000 = 800000$ tonnes
 Total production in 2013 = $(100 + 200 + 300 + 400) \times 1000 = 1000000$ tonnes
 Total production in 2014 = $(100 + 150 + 200 + 350) \times 1000 = 800000$ tonnes
 Total production in 2015 = $(150 + 250 + 300 + 350) \times 1000 = 1050000$ tonnes

Total production in 2016 = $(250 + 300 + 350 + 400) \times 1000 = 1300000$ tonnes
 \therefore In year 2012 and 2014 the production is the minimum.

39. (a) Quantity of exports in 2011
 $= 900000 \times \frac{40}{100} = 360000$ tonnes
 Quantity of exports in 2012
 $= 800000 \times \frac{20}{100} = 160000$ tonnes
 Quantity of exports in 2013
 $= 1000000 \times \frac{25}{100} = 250000$ tonnes
 Quantity of exports in 2014
 $= 800000 \times \frac{30}{100} = 240000$ tonnes
 Quantity of exports in 2015
 $= 1050000 \times \frac{15}{100} = 157500$ tonnes

\therefore Quantity of exports is maximum in the year 2012.

40. (a) \therefore Quantity of PDS supply in 2011
 $= 900000 \times \frac{12}{100} = 108000$ tonnes
 Quantity of PDS supply in 2012
 $= 800000 \times \frac{18}{100} = 144000$ tonnes
 Quantity of PDS supply in 2014
 $= 800000 \times \frac{14}{100} = 112000$ tonnes
 Quantity of PDS supply in 2015
 $= 1050000 \times \frac{20}{100} = 210000$ tonnes
 Quantity of PDS supply in 2016
 $= 1300000 \times \frac{22}{100} = 286000$ tonnes

In 2011, the quantity of PDS supply is the minimum.

Sol. (Qs. 41-45):

Input: Rotator 9 Wow 14 18 Orange 11 Radar 5 Union

Step 1: Wow Rotator 9 14 18 Orange Radar 5 Union 11

Step 2: Wow 5 9 14 18 Orange Radar Union Rotator 11

Step 3: Wow 5 Orange 18 9 Radar Union 14 Rotator 11

Step 4: Wow 5 Orange 18 Radar 9 Union 14 Rotator 11

Final Step Pattern: "3 letter Palindrome, odd number, Word, Even number, 5 letter Palindrome, Odd Number, Word, Even number, 7 letter Palindrome, Odd Number

Odd numbers are arranged in ascending order.

Even numbers are arranged in descending order.

Words are arranged in forwarding order.

41. (b) 14
 42. (b) 14
 43. (b) Orange, 9
 44. (c) Union
 45. (c) Second

Sol. (Qs.46-48)

46. (d) X
 47. (b) P
 48. (a) Father-in-law

Sol. (Qs. 49-50)

49. (c) South
 50. (d) $X^2 = 5^2 + 5^2$

$$X = \sqrt{50} = 5\sqrt{2}$$

51. (c) Pattern follow +1, +2, +3, +4, +5, +6 keeping the fourth letter constant.
 52. (d) Write the word in reverse order and then shift one place forward
 CHARACTER = RETCARAHC (in reverse order) = SFUDBSBID (+1 forward)

Sol. (Qs. 53-57)

53. (b) Y#OU7D\$V@BE8©X1AC%P24QIN6M*Z5
 Ninth from the right end - C
 54. (d) 6th to the left of the 14th from the left end -> 8th from the left end
 Y#OU7D\$V@BE8©X1AC%P24QIN6M*Z5
 55. (a) Y#OU7D\$V@BE8©X1AC%P24QIN6M*Z5
 13th to the left of Q - @
 5th to the right of - X
 56. (b) One
 57. (d) D\$V, V@B, C%P, M*Z
 58. (b) Some teachers may be writers and vice versa.

Sol. (59-61)

59. (c) $5 \times 2 + 1 = 11$
 $11 \times 2 - 1 = 21$
 $21 \times 2 + 1 = 43$
 $43 \times 2 - 1 = 85$

$$85 \times 2 + 1 = \boxed{171}$$

60. (c) $A \xrightarrow{+3} D \xrightarrow{+3} G \xrightarrow{+3} J$
 $K \xrightarrow{-3} V \xrightarrow{-3} S \xrightarrow{-3} P$
 $A \xrightarrow{+3} N \xrightarrow{+3} Q \xrightarrow{+3} T$
 Similarly,
 $O \xrightarrow{-3} L \xrightarrow{-3} I \xrightarrow{-3} F$

61. (d) $12 \times 2 + 3 = 27$
 $27 \times 3 + 4 = 85$
 $85 \times 4 + 5 = 345$
 $345 \times 5 + 6 = 1731$

62. (d) As, $5 \times 8 = 28 \rightarrow 5 \times 8 = 40 \rightarrow 5 + 8 = 13$,
 $12 - 1 = 12 \rightarrow 40 - 12 = 28$,
 $3 \times 7 = 12 \rightarrow 3 \times 7 = 21 \rightarrow 3 + 7 = 10$,
 $10 - 1 = 9 \rightarrow 21 - 9 = 12$, and
 $8 \times 6 = 35 \rightarrow 8 \times 6 = 48 \rightarrow 8 + 6 = 14$,
 $14 - 1 = 13 \rightarrow 48 - 13 = 35$,

Similarly,

$13 \times 13 = ? \rightarrow 13 \times 13 = 169 \rightarrow 13 + 13 = 26$,
 $26 - 1 = 25 \rightarrow 169 - 25 = 144$

Sol. (63-65):

63. (c) $4 \times 8 + 3 = 32 + 3 = 35$
 $7 \times 6 + 7 = 42 + 7 = 49$
 $9 \times 8 + 9 = 72 + 9 = 81$

64. (a) $(7)^2 + (5)^2 + (3)^2 = 49 + 25 + 9 = 83$
 $(6)^2 + (4)^2 + (2)^2 = 36 + 16 + 4 = 56$
 $(8)^2 + (9)^2 + (1)^2 = 64 + 81 + 1 = 146$

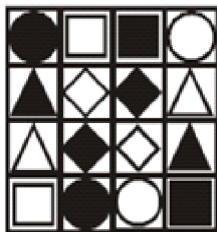
65. (b) $\frac{225}{15} = 15 \rightarrow 15 \times 2 = 30$

$\frac{70}{7} = 10 \rightarrow 10 \times 2 = 20$

$\frac{?}{3} = \frac{8}{2} \rightarrow 2 \times ? = 8 \times 3$

$\therefore \frac{24}{2} = 12$

66. (a)



67. (b) L.C.M. of 6, 5, 7, 10 and 12 is 420.

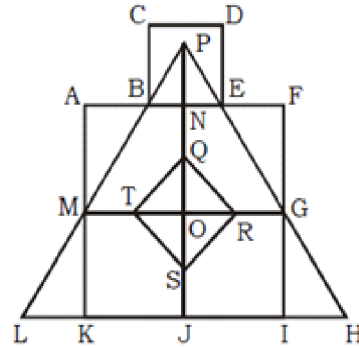
So, the bells will ring together after every 420 seconds i.e. 7 minutes.

Now, $7 \times 8 = 56$ and $7 \times 9 = 63$.

Thus, in 1 hour (or 60 minutes), the bells will toll together 8 times, excluding the one at the start.

68. (c) Option (c) is correct.

69. (a)



Triangles:

Simple triangles are BPN, PNE, ABM, EFG, MLK, GHI, QRO, RSO, STO and QTO i.e. 10 in number.

Triangles composed of two components each are BPE, TQR, QRS, RST and STQ i.e. 5 in number.

Triangles composed of three components each are MPO and GPO i.e. 2 in number.

Triangles composed of six components each are LPJ, HPJ and MPG i.e. 3 in number.

There is only one triangle LPH composed of twelve components.

Total number of triangles in the figure = $10 + 5 + 2 + 3 + 1 = 21$.

Squares :

Squares composed of two components each are KJOM and JIGQ i.e. 2 in number.

Squares composed of three components each are ANOM, NFGO and CDEB i.e. 3 in number.

There is only one square i.e. QRST composed of four components.

There is only one square i.e. AFIK composed of ten components.

Total number of squares in the figure = $2 + 3 + 1 + 1 = 7$.

Sol. (70 & 71)

70. (b) 71. (a)

72. (c) 73. (c)

74. (b) Time from 7 a.m. to 4.15 p.m. = 9 hrs 15 min. = $\frac{37}{4}$ hrs.

3 min. 5 sec. of this clock = 3 min. of the correct clock.

$\Rightarrow \frac{37}{720}$ hrs of this clock = $\frac{1}{20}$ hrs. of the correct clock.

$\Rightarrow \frac{37}{4}$ hrs of this clock = $\left(\frac{1}{20} \times \frac{720}{37} \times \frac{37}{4} \right)$ hrs of the

correct clock.

= 9 hrs. of the correct clock.

\therefore The correct time is 9 hrs. after 7 a.m. i.e., 4 p.m.

75. (d) The year 2006 is an ordinary year. So, it has 1 odd day.
So, the day on 8th Dec, 2007 will be 1 day beyond the day on 8th Dec, 2006.
But, 8th Dec, 2007 is Saturday.
8th Dec, 2006 is Friday.
76. (d) $8 \times 6 \div 2 - 4 + 8 = 28$
 $\Rightarrow 8 \times 3 - 4 + 8 = 28$
 $\Rightarrow 24 - 4 + 8 = 28$
 $\Rightarrow 24 + 4 = 28$
 $\Rightarrow 28 = 28.$
77. (b) Given the information presented, the only statement that could be considered true is that the fruit should not be eaten because it is poisonous. There is no support that taxol is poisonous or that taxol has cured anyone.
78. (a) From the first two statements, you know that the Kingston Mall has the most stores, so the Kingston Mall would have more stores than the Four Corners Mall.
79. (c) Option (c) is correct answer.
80. (c) Both conclusions I and II follow.
81. (a) 82. (c) 83. (b) 84. (c) 85. (d) 86. (d)
87. (d) 88. (c) 89. (c) 90. (b) 91. (b) 92. (a)
93. (c) 94. (a) 95. (d) 96. (d)
97. (c) Drinkable water flowed through Yellowknife Bay once.
98. (d) Only (b) and (c)
99. (a) Though there is no evidence of organics at Yellowknife Bay site yet the possibility of life over there cannot be ruled out.
100. (b) Life is not possible without C.
101. (d) Irrefutable means impossible to deny or disprove. So, indisputable is the word which is similar in meaning to it.
102. (c) 103. (c) 104. (c) 105. (b) 106. (b) 107. (d)
108. (c) 109. (b) 110. (b) 111. (c) 112. (b) 113. (d)
114. (c) 115. (b) 116. (b) 117. (d) 118. (a) 119. (a)
120. (d) 121. (b) 122. (b) 123. (c) 124. (b) 125. (b)
126. (d) 127. (a) 128. (c) 129. (c) 130. (d) 131. (a)
132. (a) 133. (b) 134. (d) 135. (d) 136. (b) 137. (c)
138. (b) 139. (a) 140. (b) 141. (b) 142. (a) 143. (a)
144. (a) 145. (c) 146. (a) 147. (a) 148. (d) 149. (a)
150. (c)

