SYMBIOSIS NATIONAL APTITUDE TEST (SNAP)

SOLVED PAPER - 2019

Memory Based

GENERAL ENGLISH: READING COMPREHENSION, VERBAL REASONING, VERBAL ABILITY

DIRECTIONS (1-5): *Read the following passage and answer the questions as directed.*

Two years after the World Health Organization labeled air pollution a global "public health emergency", and the House of Commons environment committee used the same phrase to describe the situation in the UK, new evidence shows that breathing unsafe air causes a loss of intelligence, particularly in the over-64s. The research, carried out in China, showed that test scores declined when people breathed toxins including nitrogen dioxide and particulate, with language ability more affected than maths. This news, though alarming, is unlikely to change anything straight away. China has been engaged in a "war against pollution" for five years, while governments and policymakers around the world already have **ample** evidence that pollution is extremely harmful. Top of the list of dangers is the way it worsens heart and lung diseases including asthma and emphysema, while one study last year suggested a link to dementia.

The problem is both global and national: urbanisation and increasing car use mean that pollution is on the rise internationally, while the UK government is under huge pressure to clean up air that has broken EU legal limits for the past eight years. Western capitals do not feature in the WHO's lists of the planet's most polluted cities, and levels of most pollutants in the UK have fallen (though not ammonia, a byproduct of farming). But increased scientific understanding of the damage to health caused by gases such as nitrogen oxides makes inexcusable the complacency of which we have seen so much, both under the current Conservative government and its coalition predecessor. London mayor Sadiq Khan's "ultra low-emission zone", which comes into force next year and will charge the most polluting vehicles to enter central London, looks set to be a game-changer. Government analysis shows clean air zones to be by far the most effective measure in reducing nitrogen oxides. But critics think it is still too ……., while leaders of other cities are calling for government funding to implement their own clean air zones, as well as a new clean air act to provide a national framework. Campaigners struggle to understand why the public outcry is not loud or angry enough to force the government to act, when air pollution is thought to be a factor in shortening the lives of 40,000 people in the UK every year. So do all those who worry about air pollution, among them parents anxious about the impact on growing lungs. The usual answer is cars, and **the fact that even if people would like their cities to be cleaner, they don't want restrictions on their freedom to drive**.

1. As per the passage, which of the following is the result of breathing unsafe air?
   (a) People, particularly below 64 of years of age can lose their intelligence.
   (b) People, irrespective of age can lose their intelligence and sight.
   (c) People, particularly above 64 of years of age can lose their intelligence.
   (d) People tend to loose their power to think and speak.
2. Which of the following statements is/are true in context of the passage above?
   (I) Urbanisation and increasing car use mean that pollution is on the rise internationally.
   (II) The research, carried out in China, showed that test scores declined when people breathed toxins including nitrogen dioxide and particulate, with language ability more affected than maths.
   (a) Only (I) (b) Only (II)
   (c) Both (I) and (II) (d) None of these
3. Which of the following can replace the word given in bold in the passage?
   (a) Insufficient (b) Pathetic
   (c) Meagre (d) Plentiful
4. In the passage above, a line is given in bold. Which of the following best describes the meaning of the line given in bold?
   (a) Even though people would like their cities to be cleaner, they also want restrictions on their freedom to drive.
   (b) People want their cities to be cleaner and so they do not want to drive cars without restrictions.
   (c) People would like their cities to be cleaner but they don't want restrictions on their freedom.
   (d) Despite the fact that people want their cities to be cleaner, they do not want to compromise on their freedom to drive.
5. Which of the following words can fill in the blank to make it meaningful?
   (a) Bold (b) Timid
   (c) Forthcoming (d) Brazen

DIRECTIONS (6-8): *Read the following passage and answer the questions as directed.*

Paragraph 1- One of the easiest ways to establish a savings habit is to participate in your employer's 401(k) plan. Funds are withheld from each paycheck and deposited into your account. If your employer matches part of your contribution - and many do! - you will accumulate yet more. A second way to consistently

save is with an automatic savings transfer program with your financial institution. You decide how much and when you want funds transferred from your checking account into a savings account. You can also use a payroll deduction plan from your employer and get the same results.

Paragraph 2- Along with how much and how often you save, what you earn on your funds will determine how fast your money grows. You cannot control what happens with interest rates or the stock market, but you can consider different types of savings vehicles that provide different returns. The simplest savings vehicle to consider is buying certificates of deposit (CDs) instead of leaving funds in a savings account. CDs usually offer higher interest rates, but they are time deposits and have ..... for early withdrawal. If you can accept not having immediate access to your funds, CDs can be an attractive savings vehicle.

6. Which of the following can be inferred as the theme of the passage?
   (a) Certificate of deposits is the best way to establish savings habit.
   (b) Establishing a consistent saving habit and also smart saving with CDs.
   (c) Employer's 401(k) plan provides a convenient way for consistent and smart savings.
   (d) Your savings decide how well you flourish and grow.
7. What is the tone of writing in the passage?
   (a) Satirical (b) Critical
   (c) Didactic (d) Sarcastic
8. Which of the following words can fill in the blank to make it meaningful?
   (a) gifts (b) lucrative
   (c) causalities (d) penalties
9. The sentences given in a question, which 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.
   A. Never in the wildest of his dreams had he ever imagined that the new addition to the business family would take the venture to such great heights. This franchise agent subsequently purchased the restaurant chain from him and gave his business an altogether different global approach.
   B. It was only when his business grew further that he started heading a complete fast-food restaurant chain. The business was at its peak, when a gentleman approached this man and joined the chain as a franchise agent.
   C. At a very young age, he had become the proud owner of a large chain of fast food restaurants that satiated the burger-pangs of many. Today, the old man sits and narrates his intriguing business journey.
   D. Looking back, he tells how he had started his business with just one barbecue restaurant several decades ago and how this small business eventually took its present shape.
   (a) CDBA (b) ABCD
   (c) BCDA (d) DCBA
10. In the question below, there are two sentences containing underlined homonyms, which may either be miss - spelt or inappropriately used in the context of the sentence. Select the appropriate and from the option given below:
    I. A vote of censure was passed against the chairman.
    II. Before release, every film is passed by the censor Board.
    (a) Only sentence I is correct
    (b) Only sentence I is correct
    (c) Both sentence I and II are correct
    (d) Both sentence I and II are incorrect
11. In the following question, there are sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are correct in terms of grammar and usage (including spelling, punctuation and logical consistency). Then, choose the most appropriate option.
    I. I did not know what to make of you.
    II. Because you'd lived in India, I associate you more with my parents than with me.
    III. And yet you were unlike my cousins in Calcutta, who seem so innocent and obedient when I visited them.
    IV. You were not curious about me in the least.
    V. Although you did make effort to meet me.
    (a) Only I (b) Only I and II
    (c) Only I and V (d) Only I and IV
12. Fill in the blanks with the appropriate conjunction.
    You must start at once; ..... you will be late.
    (a) whereas (b) otherwise
    (c) as long as (d) but
13. Choose the word closet in meaning to the given word.
    Abnegation
    (a) renunciation (b) Excess
    (c) Saction (d) yielding
14. Choose the word. Which is most opposite in meaning to the given words.
    Abjure
    (a) Renounde (b) Relinquish
    (c) Abnegate (d) Acquire
15. Choose the word closet in meaning to the given word.:
    lingua franca
    (a) Common (b) Different
    (c) Mixture (d) Share
16. Choose the word opposite in meaning to the given word.
    Petulant
    (a) disagreeable (b) dyspeptic,
    (c) ill-humored (d) amiable
17. Find the word that is the odd one out.
    (a) Exacerbate (b) Alleviate
    (c) Mitigate (d) Assuage
18. Change the voice of the given sentence:
    I didn't realise that somebody was watching me
    (a) I didn't realise that I was being watched .
    (b) I didn't realise that I was being watching .
    (c) I didn't realised that I was being watched .
    (d) I didn't realise that I was been watched .

19. Complete the meaning of the given sentence
If you behaved well, your peers _____ you.
(a) will respect (b) would respect
(c) respect (d) shall respect

20. Choose the correct spelling from the given option:
The Stars were_____ in the sky.
(a) scintillating (b) scintilating
(c) scintiellating (d) scientillating

21. Choose the correct spelling from the given option:
The defence lawyer _____ there was insufficient evidence to convict his client.
(a) rieterated (b) reiterated
(c) reiteirated (d) reitierated

22. Choose the word NOT having a prefix.
(a) Distemper (b) Dislike
(c) Dishonest (d) Disargee

23. Identify the correct figure of speech.
I must have called out to you a thousand times.
(a) Personification (b) Metaphor
(c) Oxymoron (d) Hyperbole

24. Choose the word opposite in meaning to the given word.
Servile
(a) Imperious (b) Humorous
(c) Helpful (d) Conspiratorial

25. Find a correct match of grammatical function with the usage of the word DOWN.
1. Noun - A. Some people can down a whole chicken in a meal.
2. Verb - B. There is a down trend in the real state market.
3. Adjective - C. He was sent down to work in the branch office.
4. Adverb-D. In southern England the downs are so pretty

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

26. Choose the word closet in meaning to the given word.
Diaphanous
(a) Transparent (b) cloudy
(c) foggy (d) drab

27. Fill in the blanks with correct modal verb.
(a) Might (b) Would
(c) Should (d) Do

28. Change the voice of the given sentence.
Windowpanes are washed by cleaners
(a) Cleaners wash windowpanes
(b) Cleaners are washed by windowpanes.
(c) Cleaners washed windowpanes.
(d) Cleaners was washed windowpanes.

29. Identify the correct figure of speech.
Neeta needed new notebooks.
(a) Personification (b) Metaphor
(c) Alliteration (d) Hyperbole

30. Which part of speech is the given (underlined) word?
This wood will make a good <u>hiding</u> place.
(a) Adverb (b) Adjective
(c) Noun (d) Pronoun

31. Choose the correct option of the following incorrect sentence:
No matter what that I do , I can't make her happy.
(a) No matter what should I do , I can't make her happy.
(b) No matter what will I do , I can't make her happy.
(c) No matter what I do , I can't make her happy.
(d) No matter what I did , I can't make her happy.

32. Fill in the blank with proper conditional:
Suppose your car broke down in the middle of nowhere, What _____do?
(a) will you (b) would you
(c) may you (d) did you

33. Fill in the blank with appropriate option:
I _____ anything from her in a long time.
(a) haven't heard (b) haven't hear
(c) hasn't heard (d) hasn't hear

34. Complete the meaning of the given sentence.
If you behaved well, your peers ____you.
(a) would respect (b) will respect
(c) would respected (d) None of these

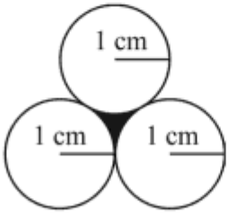
QUANTITATIVE, DATA INTERPRETATION AND DATA SUFFICIENCY

35. Find the value of the givne expression:

$$\sqrt{\frac{\left(3\frac{1}{4}\right)^4-\left(4\frac{1}{3}\right)^4}{\left(3\frac{1}{4}\right)^2-\left(4\frac{1}{3}\right)^2}}=?$$

(a) 5 (b) $5\frac{5}{12}$
(c) $5\frac{7}{12}$ (d) $5\frac{11}{12}$

36. Three circles with radii 1 cm each are drawn touching each other. Find the area of the shaded portion (in cm^2)?



(a) $\frac{(\sqrt{3}-\pi)}{2}$ (b) $\frac{(2\sqrt{3}-\pi)}{2}$
(c) $\frac{(\pi-\sqrt{3})}{2}$ (d) $\frac{(\pi-2\sqrt{3})}{2}$

37. Two trains of length 150 m each pass each other in 20 sec, when moving in opposite direction. When they move in the same direction, they take 40 sec to pass each other completely. Find the speed of the faster train.
(a) 10.25 m/sec. (b) 11.25 m/sec.
(c) 11.75 m/sec. (d) 12 m/sec.

38. Brigadier Rastogi travels from point A to B at 40 km/hr on bike. He travels from point B to C at 10 km/hr on cycle. The distance from A to B is eqaul to that of B to C. Then he travels from C to A via B at 24 km/hr by autorickshaw. Then find his average speed.
(a) 12.2 km/hr (b) 12.4 km/hr
(c) 19.2 km/hr (d) 19.4 km/hr

39. Rohan and Rahul, are 144 km apart on point (A) and point (B), respectively. Rohan trvavels constantly at 8 km/hr. Rahul travels 4 km in first hour, 5 km in second hour, 6 km in third hour and so on. Find the point where they will meet.
(a) 64 km from point A
(b) 64 km from point B
(c) Midway of A and B
(d) None of the above

40. Find the unit's place digit of $(1!)^{1!} + (2!)^{2!} + (3!)^{3!} + ... + (100!)^{100!}$
(a) 4 (b) 5
(c) 6 (d) 7

41. In how many ways can 10 books on Mechanics and 8 books on quantum physics be placed in a row such that two books on quantum physics may not be together.
(a) 165 (b) 176
(c) 187 (d) 198

42. In an institute, MBA Exam is conducted and sectional cutoff has been introduced into it. Any candidate appearing for the exam cannot qualify unless he clears the sectional cutoff. If there are 4 sections in the paper, then what is the number of ways an applicant may fail in the exam?
(a) 15 (b) 16
(c) 32 (d) 64

43. In how many ways letters of word POTICA can be arranged such that vowel occupy at odd positions?
(a) 24 (b) 30
(c) 36 (d) 42

44. Square, Circle, Hexagon and Octagon have equal perimeter. Which of the following has maximum area?
(a) Square (b) Circle
(c) Hexagon (d) Octagon

45. In how many ways can one wrap 3 kitkat, 2 fivestar and 3 Bar one, if atleast one kitkat has to be there in the gift pack and the gift pack has three chocolates.
(a) 3 (b) 10
(c) 46 (d) 56

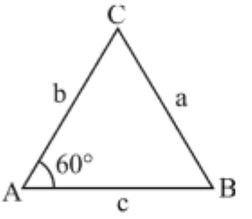
46. The difference between CI and SI for a loan is ₹114 when invested for 2 years. The rate of interest is 6% per annum. Find the loan amount.
(a) ₹31,667 (b) ₹41,667
(c) ₹51,667 (d) None of the above

47. The sum of series of n terms:
$$\log a + \log\left[\frac{a^2}{b}\right] + \log\left[\frac{a^3}{b^2}\right] + ... = ?$$
(a) $\log\left(\frac{a^{n+1}}{b^{n-1}}\right)^{\frac{n}{2}}$ (b) $\log\left(\frac{a^{n-1}}{b^{n+1}}\right)^{\frac{n}{2}}$
(c) $\log\left(\frac{a^{n+1}}{b^{n-1}}\right)^{n}$ (d) $\log\left(\frac{a^{n-1}}{b^{n+1}}\right)^{n}$

48. What is the coefficient of Z^3 in $-7xy^2z^3a^2b^2$?
(a) $-7xy^2$ (b) 7
(c) $-7xy^2a^2b^2$ (d) -1

49. In a regular hexagon field, ropes are tied to connect all vertices (diagonal and sides). What is the number of intersection points ropes?
(a) 16 (b) 17
(c) 19 (d) 20

50. In the given diagram, $\angle CAB = 60°$ and $BC = a$, $AC = b$ and $AB = c$



Then which of the following connect?
(a) $a^2 = b^2 + c^2 - bc$ (b) $a^2 = b^2 + c^2 - 2bc$
(c) $a^2 = b^2 + c^2 + bc$ (d) $a^2 = b^2 + c^2 + 2bc$

51. In a closed wooden box, length = 20 cm, breadth = 14 cm and height = 10 cm and thickness = 5 mm. If weight of empty box is 3.462 kg, then what is the weight of 1 cm^3 of wood?
(a) 4 grams (b) 5 grams
(c) 6 grams (d) 7 grams

52. Find the number of zeros at the end of $(5!)^{5!} + (10!)^{10!} + (50!)^{50!} + (100!)^{100!}$.
(a) 11 (b) 12
(c) 110 (d) 120

53. Ritesh is twice as good as Mitesh. Ritesh takes 30 days less than Mitesh to finish a task. How long will Ritesh and Mitesh take to complete the task together.
(a) 10 days (b) 20 days
(c) 30 days (d) 60 days

54. Mohan has a 200 litre container. x litre of milk is kept in container. Mohan removes 6 litre milk and adds 5 litre water. He again replaces 6 litre of solution with water. Now milk and water are in the ratio 9 : 16. What is the quantity of mixture?
(a) 6 litres (b) 9 litres
(c) 15 litres (d) 16 litres

55. India express travels at 60 km/hr and halts for fixed time every hour. Due to halts, the average speed becomes 50 km/hr. Find the time of halt.
(a) 8 minutes (b) 10 minutes
(c) 12 minutes (d) 14 minutes

DIRECTIONS (Qs. 56–59): *Answer the questions given below:*

In 2015, 100 aspirants appeared for an exam.
They had to answer four sections Maths, DI, LR and English.
The number of students who qualified in Maths = 55.
The number of students who qualified in LR = 38
The number of students who qualified in (Maths + English) = 30.
The number of students who qualified in (LR + English) = 15.
The number of students who qualified in (Maths + LR) = 20.
The number of students who qualified in (Math + LR + English) = 5.
The number of students who qualified in DI = 22.
The number of students who qualified in (DI + LR) = 5.
The number of students who qualified in (DI + Maths) = 5.
The number of students who qualified in (DI + Math + LR) = 5.
The number of students who qualified in English = 50.
Those who qualified in English could not qualify in DI Section,

56. How many qualified at least two sections?
(a) 35 (b) 45
(c) 55 (d) 65

57. How many qualified in both Maths and LR but not any other subjects?
(a) 5 (b) 10
(c) 15 (d) 20

58. How many did not qualify in any section?
(a) 3 (b) 5
(c) 12 (d) None of these

59. How many qualify only in DI section?
(a) 12 (b) 15
(c) 17 (d) 21

DIRECTIONS (Qs. 60–62): *Go through the table given below which contains data about production of rice in various years and change percentage compared to previous data.*

Years	Quantity of Rice (Town)	% change over previous year
20-21	134350	+6.25
30-31	1097172	+12.5
40-41	264280	+11.11
50-51	127890	–09.09
60-61	201924	+20.00
70-71	112325	–16.66
80-81	213465	–25.00
90-91	169368	+33.33
00-01	100956	+50.00
10-11	23800	–80.33

60. What is the approx production of rice in year 1949-50?
(a) 1278890 (b) 264280
(c) 116263 (d) 140679

61. What is the difference in the production of rice in 1969-70 and 1979-80?
(a) 284620 (b) 134790
(c) 149830 (d) 23800

62. What is the approx production in 1959–60?
(a) 33654 (b) 168270
(c) 16827 (d) 201924

63. Valve A fills a bathtub in 10 hours and valve B fills the same bathtub in 15 hours. A and B are opened together, and later B was closed after some time. Total time taken to fill the batchtub is 8 hours. For how long B was open?
(a) 1 hour (b) 2 hours
(c) 3 hours (d) 4 hours

64. Average stipend of a group of students is ₹50 per day. The difference between maximum and minimum stipend is ₹45. If these students are excluded, the average decreases by ₹1. Minimum earning for any student lie between ₹42 to ₹47 and the number of students is a prime number, where both the digit is also prime. What is the number of students initially?
(a) 33 (b) 35
(c) 37 (d) 39

65. In a smart phone factory, Robot A, B and C manufacture 25%, 35% and 40% circuits board respectively. For each of the robot faulty circuit board is 5%, 4% and 2% respectively. What is the probability that the printed circuit board is defective if 1 circuit board is picked at random?
(a) 0.034 (b) 0.34
(c) 0.66 (d) 0.066

66. A robot is 4 meters in length and placed at corner of 16 meters × 30 meters field. The robot is facing diagonally opposite corner and reaches the diagonally opposite corner in 15 seconds. What is the speed of robot?
(a) 1 m/s (b) 2 m/s
(c) 3 m/s (d) 4 m/s

67. What is the sum of integers from 113 to 113113, which are divisible by 7?
(a) 16143
(b) 113113
(c) 16159
(d) 913952088

68. Given $\frac{(\sqrt{x+4}+\sqrt{x-10})^2}{(x+4)-(x-10)}=\frac{5}{2}$, find the value of x

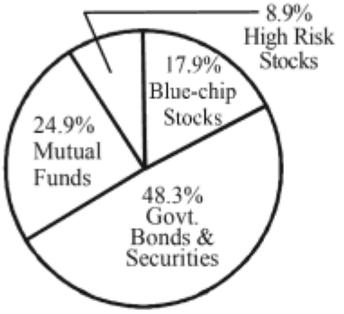
69. In a class of 50 students, 23 speak English, 15 speak Hindi and 18 speak Punjabi. 3 speak only English and Hindi, 6 speak only Hindi and Punjabi and 6 speak only English and Punjabi. If 9 can speak only English, then how many students speak all the three languages?

70. If $x=\frac{4ab}{a+b}$, then the value of $\frac{x+2a}{x-2a}+\frac{x+2b}{x-2b}$ is equal to

71. Out of 80 students in a class, 25 are studying commerce, 15 mathematics and 13 physics. 3 are studying commerce and mathematics, 4 are studying mathematics and physics and 2 are studying commerce and physics. 1 student is studying all the three subjects together. How many students are not studying any of the three subjects?

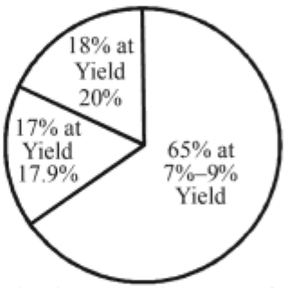
DIRECTIONS (Qs. 72-74): *Study the diagrams given below and then answer the questions that follow:*

Total Investment Profile



Govt. Bonds & Securities

Municipal Bonds



72. Approximately, how much money belonging to the investment portfolio was invested in state-issued bonds from the total investment of 11.5 crore?

73. Which of the following earned the least amount of money for the investment portfolio ?
   (a) Municipal Bonds
   (b) State issued Bonds
   (c) Government bonds & Securities
   (d) Cannot be determined from the given information.

74. Which of the following was the greatest?
   (a) The amount of money invested in Municipal Bonds which yielded between 7% and 9%.
   (b) The amount of money invested in state-issued bonds.
   (c) The amount of money invested in High Risk Stocks.
   (d) The amount of money invested in Municipal Bonds which yielded over 9%.

ANALYTICAL AND LOGICAL REASONING

75. Royal Bengal Tiger: India : : Snow Leopard:
   (a) Srilanka (b) Pakistan
   (c) Afghanistan (d) Bangladesh

76. A new species lays exactly 120 out of which 50% are male and 50% are female. The female insect hatch and grow in a span of 20 days to lay eggs by themselves. On 1st April 2018, an insect laid 120 eggs. Find how many eggs will be hatched (approx.) by the end of May 2018?
   (a) 12960 (b) 1269000
   (c) 12690000 (d) None of these

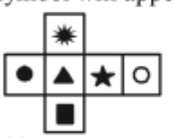
77. A + B means A is sister of B. A/B means A is son of B. A = B means A is brother of B, A @ B means A is father of B. Which of the following shows M is grandson of P?
   (a) P = B @ M + N @ s
   (b) L @ M @ N = K / P
   (c) M / T + J = L @ P
   (d) P @ B = S @ M = N

78. India is written as 95491, then Japan is written as _____.
   (a) 11175 (b) 11715
   (c) 11705 (d) None of these

79. Rahul asked Shyam to find N such that $N! > 10^N$ and must be the smallest integer. Shyam calculates and finds N is between 10 to 15, but he then asks his friends Sohan who says it is between 16 to 20. Then Shyam asks his neighbour Suresh who says it is between 21 to 25. Then he asks his cousin Sonal who says it is between 26 to 31. Who is correct?
   (a) Rahul (b) Suresh
   (c) Shyam (d) None of these

80. If 1st June 2013 is Saturday then 1st June 1981 is _____.
   (a) Monday (b) Saturday
   (c) Sunday (d) Thursday

81. The following figure is folded to form a block. Which symbol will appear on the opposite of ▲?



   (a) ● (b) ★
   (c) ○ (d) ■

82. Find the missing number in the given number table.

6	2	5	4
4	1	3	2
152	7	98	?

   (a) 42 (b) 60
   (c) 56 (d) None of these

83. Vijay's grandfather has an old Cuckoo clock. It takes 5 seconds for the "Cuckoo clock" to chime 5 Cuckoos. How long will it take to chime 10 Cuckoos?
   (a) 10 (b) 11.25
   (c) 15 (d) None of these

84. A person wants a house such that all sides of the house face North. He should build the house _____.
(a) On the South Pole (b) On the equator
(c) On the North Pole (d) On the Cancer line

85. Find the missing number from the below options.
19 78 20
25 144 47
16 ? 13
(a) 96 (b) 76 (c) 58 (d) 29

86. **Statement:** Since 2018, the bulk of India's population has comprised of young working people– much more than the dependent population - children below 5 years of age and old people above 65 years of age. This trend will continue for the next 55 years.
Courses of Action:
I. There will be a huge increase in the GDP of the country.
II. According to a report by UNFPA, this population will be able to contribute effectively if good health facilities, education and proper infrastructure are provided to the whole population.
(a) Only I follow
(b) Only II follow
(c) Both I and II follow
(d) Neither I nor II follow

87. A clock gains 10 minutes a day. The clock was corrected at 6:00 am. What will be the correct time when the clock shows 11:00 am following day?
(a) 10 : 50 AM (b) 10 : 45 AM
(c) 10 : 48 AM (d) 10 : 25 AM

88. A doctor gives Vishal 3 pills to take with a gap of 30 minutes. What is the minimum time by which Vishal will get rid of his pain?
(a) 1 hr 30 min (b) 30 min
(c) 45 min (d) 60 min

89. Mobile manufacturing company 6 staff members packed 6 mobiles in 6 minutes. The management wants 60 mobiles to be packed in 60 minutes. How many staff members in total are required?
(a) 60 (b) 10
(c) 6 (d) None of these

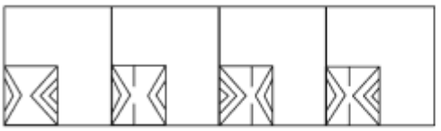
90. Ornithologist : Bird :: Herpetologist:
(a) Reptiles (b) Mammals
(c) Fish (d) None of these

91. Amar consumed 100 laddoos from Monday to Friday. Each day, he consumed 6 more laddoos than the previous day. How many laddoos did he consume on Wednesday?
(a) 15 (b) 20
(c) 25 (d) None of these

92. Find the correct term of the following series.
0, 1, 2, 5, 20, 25, ?, 157
(a) 150 (b) 125
(c) 130 (d) None of these

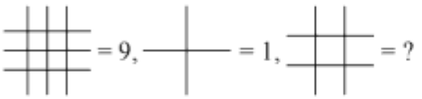
93. Which answer figure will complete the pattern in the question figure ?
Question figure:

Answer figures:



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

94. Find the correct choice.



(a) 5 (b) 8
(c) 4 (d) None of these

95. Kishore says, "that man's father is my father's son". How is the man related to Kishore?
(a) Brother (b) Son
(c) Father (d) Grand Father

96. How many times does the letter 'A' appear from 0 to 100?
(a) 79 (b) 87
(c) 68 (d) None of these

97. Population of Timbaktoo (2 years ago) is 125000. Due to natural calamities people started migrating. So, population decreased at the rate of 4% per annum. How many migrated from his town in past 2 years?
(a) 98000 (b) 96000
(c) 9600 (d) 9800

DIRECTIONS (Qs. 98-100): *Five movies – Do Bighaq Jameen, Sholay, 3 idiots, Chak de, Aanand – screening on Monday to Friday in any order. Movie screened on Friday remains till Sunday. Screening of Do Bigha Jameen and Chak de should not be first and last day. Chak de should be followed by Aanand. Sholay is immediately after Do Bigha Jameen. There is a one movie between Sholay and 3 idiots.*

98. Which movies was screended on Friday?
(a) Chak de (b) Sholay
(c) Aanand (d) 3 idiots

99. Sholay was screened on which day?
(a) Tuesday (b) Wednesday
(c) Friday (d) Monday

100. 3 idiot was screened on which day?
(a) Friday (b) Tuesday
(c) Thursday (d) Monday

DIRECTIONS (Qs. 101-103): *Study the following information carefully and answer the given questions:*

Seven cars P, Q, R, S, T, Y, and X are parked in a linear row facing north in such a way that no two cars parked with each other of according to alphabetical order (for ex- P is not parked with Q, Q is not parked with P and R and so on).

Some cars either of Petrol or some are Diesel variant. Y is third to the left of P. More than three cars are parked between the petrol cars. T is second to the right of Q. X is a diesel car and parked at one of the extreme end. R is a diesel car and parked forth to the right of S. All the cars are arranged in ascending order according to the distance covered by them from left to right. Car Q covers 37 km and Car R cover 50 km. X is to the right of T. Y is of Diesel variant car and no petrol variant car parked next to it.

101. Which among the following are petrol cars?
(a) S and T (b) P, Y, Q
(c) P and S (d) P, Y, S, Q

102. What can be the distance covered by car y?
(a) 55 km (b) 73 km (c) 27 km (d) 41 km

103. Which among the following cars are parked at extreme ends?
(a) S, T (b) X, Q (c) X, S (d) S, Q

104. There are nine members in a family i.e. M, N, O, X, Y, Z, I, J, and Q. There are four females and three married couples. M is paternal uncle of I. J has only 2 children. K is daughter-in-law of N. O is married to N. X and Y are sons of O. Y is not married. Z is married to J. N is son-in-law of J. Z is a male member.
How N's sister in law is related to J's brother in law?
(a) Niece (b) Nephew
(c) Son (d) Daughter

DIRECTIONS (Qs. 105-107): *Study the following information carefully and answer the question given below:*

There are six boys i.e. Rahul, Mohit, Vikas, Gopi, Ayush and Aditya who all are of different weight. No two persons have same weight. Only two persons are lighter than Rahul. Mohit is heavier than Rahul but lighter than Vikas and Gopi. Aditya is heavier than Ayush but lighter than Gopi. Gopi is not the heaviest. The weight of 2nd heaviest person is 230 kg and the weight of lightest is 128 kg.

105. How many persons are heavier than Rahul?
(a) One (b) Two (c) Three (d) Four

106. If the sum of weight of Ayush and Rahul is 262 and the sum of weight of Gopi and Mohit is 426, then what is the sum of weight of Rahul and Mohit?
(a) 343 (b) 340 (c) 330 (d) 300

107. Which among the following person is the 3rd heaviest?
(a) Rahul (b) Mohit (c) Vikas (d) Gopi

DIRECTIONS (Qs. 108-110): *Study the following information carefully and answer the questions given below:*

Nine persons are sitting in a row. Some of them are facing North and some are facing South. C sits 2nd from one of the extreme ends. Two persons sit between C and D. M sits 3rd to the left of D. N sits 2nd to the right of M. Immediate neighbors of M faces opposite to M. O sits 2nd to the right of N. P is an immediate neighbor of O. Persons sitting in an extreme end are facing opposite direction to each other. C sits 2nd to the right of O.
P and C doesn't face North. Q sits 2nd to the left of B. A doesn't face south.

108. How many persons are sitting between C and M?
(a) Two (b) Three (c) Five (d) Four

109. Who among the following pair of persons are sitting at extreme end?
(a) M-B (b) B-A (c) C-P (d) C-A

110. How many persons are facing South?
(a) Two (b) Three (c) Four (d) Five

ANSWERS WITH EXPLANATIONS

1. (c) According to first paragraph "Two years after the World Health Organization labeled air pollution a global "public health emergency", and the House of Commons environment committee used the same phrase to describe the situation in the UK, new evidence shows that breathing unsafe air causes a loss of intelligence, particularly in the over-64s. "
2. (c) Both (I) and (II) are correct.
3. (d) Ample: enough or more than enough; plentiful.
4. (d) Option (d) correctly gives the meaning of the line given in bold.
5. (b) Timid: showing a lack of courage or confidence; easily frightened. The line "Government analysis shows clean air zones to be by far the most effective measure in reducing nitrogen oxides" is positive and next line uses 'but' which means it is in contrast with the given sentence. Hence, 'timid' is grammatically and contextually correct.
6. (b) The first paragraph of the passage is about the ways to establish a consistent saving habit through various ways and the second paragraph further gives a smarter way to save through the use of certificates of deposit (CDs). Hence, option (b) is the correct theme of the passage.
7. (c) The tone of writing in the passage is Didactic because the author tries to teach or instruct through his writing.
8. (d) Before the blank it is given that CDs usually offer higher interest rates, which is a positive phrase. Further, 'but' is used which means that next part of sentence will be something contradictory. Hence, 'penalties' will the correct word.
9. (a) In C, "a large chain of fast food restaurants" has been talked about and its owner in the early stage of the business. Hence, C is starting sentence of the given paragraph. Sentence D follows C because D follows the idea expressed in the C. hence option (a) is correct answer choice. The logical and correct order of the sentences of the given paragraph should be- CDBA

10. (b) **In sentence 1** the word to be used is "censure" meaning 'an official reprimand'. "Censure" is not a meaningful word.
In sentence 2, "censor" meaning 'an official or official body who examines materials (as publications or films) for objectionable matter'.
Hence, the correct answer is option (b).

11. (d) Statement II has tense inconsistency. The word 'lived' is in past tense, hence, 'associate' in the same sentence should be 'associated'(in simple past as well).
Statement III again has tense inconsistency. The word 'seem' should become 'seemed' to go with 'were' and 'visited' in the same sentence.
Statement IV is incorrect and we need to rephrase it. We may either change 'effort' to 'efforts' or change it to 'an effort'. So, Statements I and IV are correct.
Hence, the correct answer is option (d).

12. (b)

13. (a) Abnegation means the action of renouncing or rejecting something.

14. (d) 'Abjure' means to promise to reject a belief or a way of behaving. So, option (d) acquire is a correct. All other options mean to reject, deny or given up.

15. (a) Lingua franca a language that is adopted as a common language between speakers whose native languages are different. So option a is correct

16. (d) Petulant means being childishly sulky or ill-tempered . Friendliness and ill-temper are opposite traits. The term "amiable" means being friendly and pleasant-mannered. Hence, Option (d) is correct.

17. (a) Exacerbate is to make something that is already bad even worse:

18. (a) 19. (b) 20. (a) 21. (b)

22. (a) All other words except (a) have prefix. Distemper is a viral disease of some animals, especially dogs, causing fever, coughing, and catarrh.

23. (d) Hyperbole is the use of exaggeration as a rhetorical device or figure of speech. It may be used to evoke strong feelings or to create a strong impression, but is not meant to be taken literally. Hyperboles are exaggerations to create emphasis or effect. In the above sentence "a thousand times " indicates exaggeration.

24. (a) Servile means having or showing an excessive willingness to serve or please others. While imperious means arrogant and domineering. Hence option (a) is correct.

25. (b)

26. (a) Diaphanous means very thin and easy to see through.

27. (b) 28. (a)

29. (c) Alliteration is the repetition of the beginning sounds of neighboring words. In the given sentence " Neeta _____ notebooks" "N" repeats four times.

30. (b) Adjectives are words used to modify nouns. Here the adjective hiding modifies the noun place.

31. (c) 32. (b) 33. (a) 34. (a)

35. (b) $$\sqrt{\frac{\left(3\frac{1}{4}\right)^4-\left(3\frac{1}{3}\right)^4}{\left(3\frac{1}{4}\right)^2-\left(4\frac{1}{3}\right)^2}}$$

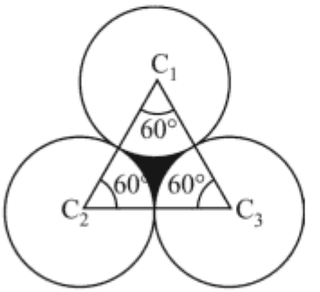
$$=\sqrt{\frac{\left\{\left(3\frac{1}{4}\right)^4+\left(4\frac{1}{3}\right)^2\right\}\left\{\left(3\frac{1}{4}\right)^2-\left(4\frac{1}{3}\right)^2\right\}}{\left(3\frac{1}{4}\right)^2-\left(4\frac{1}{3}\right)^2}}$$

$$=\sqrt{\left(3\frac{1}{4}\right)^2+\left(4\frac{1}{3}\right)^2}=\sqrt{\left(\frac{13}{4}\right)^2+\left(\frac{13}{3}\right)^2}$$

$$=13\sqrt{\left(\frac{1}{4}\right)^2+\left(\frac{1}{3}\right)^2}=13\sqrt{\frac{(3)^2+(4)^2}{(3)^2(4)^2}}$$

$$=13\times\frac{5}{12}=\frac{65}{12}=5\frac{5}{12}$$

36. (b) Three circles of center C_1, C_2 and C_3 of radius 1 cm each are drawn such that they touch each other.



$C_1C_2 = C_2C_3 = C_3C_1 = 2$ cm
$\therefore \Delta C_1C_2C_3$ is an equilateral triangle.
Now, Area of shaded portion
$= \text{Area of } \Delta C_1C_2C_3 - 3 \times \text{Area of sector } C_1$

$$=\frac{\sqrt{3}}{4}\times(2)^2-3\times\frac{60^\circ}{360^\circ}\times\pi(1)^2$$

$$=\sqrt{3}-\frac{\pi}{2}$$

$$=\left(\frac{2\sqrt{3}-\pi}{2}\right)\text{cm}^2.$$

37. (b) Let the speed of two trains are A m/sec. and B m/sec. (here $A > B$)
Now, when moving in opposite direction, then

$$(A+B)\times 20 = 150+150$$

$$(A+B)=\frac{300}{20}$$

$$\Rightarrow \quad A+B=15 \qquad ...(i)$$

when moving in same direction, then

$$(A-B)\times 40 = 150+150$$

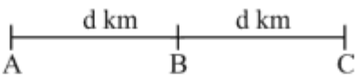
$$(A-B) = \frac{300}{40} = 7.5 \qquad ...(ii)$$

From (*i*) and (*ii*), we get that

$$A = \frac{15+7.5}{2} = 11.25 \text{ m/sec.}$$

Hence, speed of faster train = 11.25 m/sec.

38. (c)



Let distance from point A to B = Point B to C = *d* km.

Time to go from A to B = $\frac{d}{40}$ hr.

Time to go from B to C = $\frac{d}{10}$ hr.

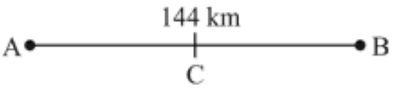
Time to come from C to A via B = $\frac{2d}{24} = \frac{d}{12}$ hr.

$$\text{Average speed} = \frac{4\times d}{\frac{d}{40}+\frac{d}{10}+\frac{d}{12}}$$

$$= \frac{4\times 120}{3+12+10}$$

$$= \frac{4\times 120}{25} = 19.2 \text{ km/hr.}$$

39. (c)



Let Rohan and, Rahul meets at point C, any where between point A and B. They meets affer *t* hours.

Distance covered by Rohan in *t* hours = 8*t* km

Distance covered by Rahul in 1st hours = (3 + 1) km

Distance covered by Rahul in 2nd hours = (3 + 2) km

Distance covered by Rahul in 3rd hours = (3 + 3) km

Distance covered by Rahul in t^{th} hours = (3 + *t*) km

Total distance covered by Rahul

$$= (3+1)+(3+2)+(3+3)+...+(3+t)$$

$$= \left\{3t+\frac{t(t+1)}{2}\right\} \text{ km}$$

Sum of distance travelled by Rohan and Rahul = 144

$$8t+3t+\frac{t(t+1)}{2} = 144$$

$$t^2+23t = 288$$

$$\Rightarrow \quad t^2-23t-288 = 0$$

$$(t+32)(t-9) = 0$$

$$\Rightarrow \qquad t = 9, -32$$

$$\therefore \qquad t = 9 \text{ hour}$$

[neglecting the negative sign]

Now, Distance travelled by Rohan in 9 hours

$$= 8\times 9 = 72 \text{ km}$$

$\therefore$ Distance AC = 72km

Hence, Rohan and Rahul will meet at midway of A and B.

40. (d) $(1!)^{1!}+(2!)^{2!}+(3!)^{3!}+...+(100!)^{100!}$

$(1)^1+(1\times 2)^{1\times 2}+(1\times 2\times 3)^{1\times 2\times 3}+(1\times 2\times 3\times 4)^{1\times 2\times 3\times 4}+(1\times 2\times 3\times 4\times 5)^{1\times 2\times 3\times 4\times 5}+...+(100!)^{100!}$

Sum of unit digits

$$= 1+4+6+6+0...+0 = 17$$

Hence, units place digit = 7

41. (a) 10 books on Mechanics can be arrange in following ways.

$-M_1-M_2-M_3-M_4-M_5-M_6-M_7-M_8-M_9-M_{10}-$

It quantum physics are placed at my vacent place (marked by '–') then no two quantum physics books will be placed together.

Number of ways $^{11}C_8 = \frac{11\times 10\times 9}{3\times 2} = 165$

42. (a) Let four sections in the exam are S_1, S_2, S_3 and S_4. Each sections have certain cut off marks that students have to score atleast to pass that section. In order to pass the exam, students have to score more than each sectional cut off individually.

Here, each section have two choices.

Pass → Those who score more than cut off

or fail → Those who score less than cut off

Total number of choices

$$= 2\times 2\times 2\times 2 = 16$$

Number of choice, in which student get passed by clearing each sectional cut off

$$= 1\times 1\times 1\times 1 = 1$$

Hence, number of ways in which student get fail

$$= 16-1 = 15$$

43. (c) Number of letters in the word 'POTICA' = 6

Number of vowels = 3 i.e. (A, I, O)

when vowel occupy add position i.e. 1st, 3rd and 5th remaining letters of the word (C, P, T) occupy even position i.e. 2nd, 4th and 6th.

$\therefore$ Total number of arrangement

$$= 3!\times 3!$$

$$= 6\times 6 = 36$$

44. (b) Let perimeter of Square = Perimeter of Circle = Perimeter of Hexagon = Perimeter of Octagon = 264 cm

Side of square $= \frac{264}{4} = 66$ cm

Area of square $= (66)^2 = 4356$ cm^2

Radius of circle $= \frac{264 \times 7}{2 \times 22} = 42$ cm

Area of circle $= \frac{22}{7} \times 42 \times 42 = 5544$ cm^2

Side of hexagon $= \frac{264}{6} = 44$ cm

Area of hexagon $= 6 \times \frac{\sqrt{3}}{4} \times (44)^2 = 5029.73$ cm^2

Side of octagon $= \frac{264}{8} = 33$ cm

and Area of octagon of side $(a) = 2a^2(1+\sqrt{2})$

here $a = 33$ cm

$\therefore$ Area $= 2(33)^2(1+\sqrt{2})$

$= 2 \times 1089(1 + 1.414)$

$= 5257.7$ cm^2

Decreasing order of area are

Circle (5544) > Octagon (5257.7) > Hexagon (5029.73) > Square (4356)

45. (c) Total number of chocolates.

= 3 kitkat + 2 five stars + 3 Bar one

= 8

Number of way of selecting three chocolates out of

$8 = {}^8C_3 = 56$

Number of ways of selecting 3 chocolates out of 5 chocolates (i.e. 2 Five star + 3 Bar one) such that no kitkat chocolate being selected

${}^5C_3 = 10$

Number of ways of selecting 3 chocolates such that atleast one of them is kitkat.

$= 56 - 10 = 46$

46. (a) Difference in C.I. and S.I. for a period of 2 year

$= P\left(\frac{r}{100}\right)^2$,

where P = Amount, r = Rate of interest

$P\left(\frac{6}{100}\right)^2 = 114$

$P = \frac{114 \times (100)^2}{(6)^2} = ₹31667$

47. (a) Let $y = \log a + \log\left[\frac{a^2}{b}\right] + \log\left[\frac{a^3}{b^2}\right] + ... \log\left[\frac{a^n}{b^{n-1}}\right]$

$= \log a + \log a^2 - \log b + \log a^3 - \log a^2 + ...$

$\log a^n - \log b^{n-1}$

$= \log a + \log a^2 + \log a^3 + ... \log a^n -$

$[\log b + \log b^2 + ... \log b^{n-1}]$

$y = (\log a + 2\log a + 3\log a + ... n\log a)$

$-(\log b + 2\log b + 3\log b + ... (n-1)\log b)$

$y = (1 + 2 + 3 + ... + n)\log a - (1 + 2 + 3 + ... n - 1)\log b$

$= \frac{n(n+1)}{2}\log a - \frac{(n-1)n}{2}\log b$

$= \frac{n}{2}\left[\log a^{(n+1)} - \log b^{(n-1)}\right]$

$= \frac{n}{2}\left[\log \frac{a^{(n+1)}}{b^{(n-1)}}\right]$

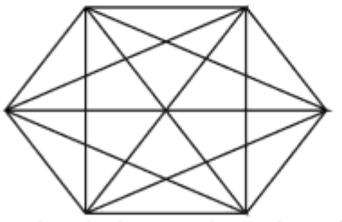
$y = \log\left[\frac{a^{(n+1)}}{b^{(n-1)}}\right]^{n/2}$

48. (c) Given expression: $-7xy^2z^3a^2b^2$

Co-efficient of $z^3 = \frac{-7xy^2z^3a^2b^2}{z^3} = -7xy^2a^2b^2$

49. (c) Number of sides in a hexagon = 6

Number of diagonals = 9



by counting the intersection points of the given fig., we get total intersection points = 6 + 9 + 4 = 19

50. (a) From cosine formula

$\cos(\angle BAC) = \frac{AB^2 + AC^2 - BC^2}{2.AB.AC}$

$\cos(60°) = \frac{c^2 + b^2 - a^2}{2.b.c}$

$\frac{1}{2} = \frac{b^2 + c^2 - a^2}{2bc}$

$a^2 = b^2 + c^2 - bc$

51. (c) Volume of wood used in the box
$= 20 \times 14 \times 10 - (20 - 2 \times 0.5)(14 - 2 \times 0.5)(10 - 2 \times 0.5)$
$= 2800 - 19 \times 13 \times 9$
$= 577\ \text{cm}^3$
ATQ, weight of 577 cm^3 of wood = 3.462 kg

$\therefore$ weight of 1 cm^3 of wood $= \dfrac{3.462}{577}$ kg = 6 gram

52. (d) $(5!)^{5!} + (10!)^{10!} + (50!)^{50!} + (100!)^{100!}$
$(1 \times 2 \times 3 \times 4 \times 5)^{1\times2\times3\times4\times5} + (9! \times 10)^{10!} + (49! \times 5 \times 10)^{50!} + (99! \times 100)^{100!}$
$= (12 \times 10)^{5!} + (9! \times 10)^{10!} + (49! \times 5 \times 10)^{50!} + (99! \times 100)^{100!}$
Now, $(10)^{5!} = (10)^{120}$ is a number that have 120 zeroes
$(10)^{10!}$ is a number that have more than 120 zeroes at the end.
$(10)^{50!}$ is a number that have more than 120 zeroes at the end.
and $(100)^{100!}$ is a number that have more than 120 zeroes at the end.
So, number of zeroes at the end of the sum = 120.

53. (b) Let Mitesh finish a work in n days then Ritesh finish the same work in $(n - 30)$ days
ATQ,

$$2 \times \frac{1}{n} = \frac{1}{(n-30)}$$

$$2(n-30) = n$$

$\Rightarrow \quad n = 60$

So, Mitesh finish the work in 60 days
and Ritesh finish the work in 30 days
Time taken by them to finish the work, while working together

$$= \frac{60}{2+1} = \frac{60}{3} = 20 \text{ days}$$

54. (c) After replacing 6 litres of milk by water, the container contains $(x - 6)$ litres milk and 6 litres water.
Ratio of Milk : Water = $(x - 6) : 6$
Again, Mohan replaced 6 litres of mixture by 6 litres of water.
So, quantity of milk remains

$$= (x-6) - 6 \times \frac{(x+6)}{x}$$

$$= \frac{(x+6)^2}{x}$$

$$\text{Quantity of water} = 6 - 6 \times \frac{6}{x} + 6$$

$$= \frac{12}{x}(x-3)$$

ATQ,

$$\frac{(x-6)^2}{x} : \frac{12}{x}(x-3) :: 9 : 16$$

$$\frac{(x-6)^2}{12(x-3)} = \frac{9}{16}$$

$$4(x-6)^2 = 27(x-3)$$

$$4x^2 - 75x + 225 = 0$$

$$(4x-15)(x-15) = 0$$

$\therefore \qquad x = 15$ litres.

55. (b) Speed of train (without halt) = 60 km/hr.
Speed of train (with halt) = 50 km/hr.
Let, train moves for distance 300 km
then, difference in time of travel

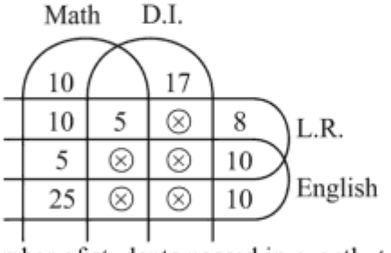
$$= \frac{300}{5} - \frac{300}{6}$$

$= 6 - 5 = 1$ hours

In 6 hours train halt 6 equal time interval, so, each halt time

$$= \frac{1 \times 60}{6} = 10 \text{ minutes}$$

Sol. (56–59):



56. (c) Number of students passed in exactly two subjects
$= 10 + 5 + 25 + 10 = 50$
Number of students passed in exactly three subjects
$= 5$
$\therefore$ Number of students passed in atleast two subjects
$= 50 + 5 = 55$

57. (b) 10 students passed in both Math and L.R. but not in other subjects.

58. (d) Number of students did not qualified in any sections
$= 100 - (10 + 17 + 8 + 10 + 10 + 10 + 25 + 5 + 5)$
$= 0$
Hence, all have passed in atleast any subject.

59. (c) 17 students have passed in D.I. section.

60. (d) Approx production of rice in year

$$1949 - 50 = 127890 \times \frac{11}{10} \approx 140679$$

61. (b) Production of rice in 1969 – 70

$$= 112325 \times \frac{6}{5} = 134790$$

Production of rice in 1979 – 80

$$= 213465 \times \frac{4}{3} = 284620$$

Difference in production

$$= 284620 - 134790$$
$$= 149830$$

62. (b) Approx production in 1959 – 60

$$= 201924 \times \frac{5}{6} = 168270$$

63. (c) Value A fills bathtub in 10 hours
Value B fills bathtub in 15 hours
L.C.M. of 10 and 15 = 30

$$\text{Work done by value A in 1 hour} = \frac{30}{10} = 3 \text{ units}$$

$$\text{Work done by value B in 1 hour} = \frac{30}{15} = 2 \text{ units}$$

Let value B was open for t hours
then, $3 \times 8 + 2 \times t = 30$
$24 + 2t = 30$
$t = 3$ hours
Hence, valve B was open for 3 hours.

64. (c) Let number of students in n, where n is a two digits prime number, whose both digits are also prime.
Again minimum earning of student is x, then maximum earning of the student is $(x + 45)$.
Now, total stipend of n students = $50n$
and total stipend of minimum and maximum earning students
$= x + x + 45$
$= (2x + 45)$
Total earning of remaining students
$= 50n - (2x + 45)$
ATQ,
Average stipend of reamining students
$= 50 - 1 = 49$
Total earning of remaining students
$= 49(n - 2)$
$\therefore \quad 50n - (2x + 45) = 49(n - 2)$
$2x - n = 53$
$n = 2x - 53$
As, $42 \le x \le 47$
for $x = 45$,
$x = 2 \times 45 - 53 = 90 - 53 = 37$
Here '37' is a prime number, also its two digits 3 and 7 are prime.
So, number of students = 37.

65. (a) Let total number of circuit board manufactured by Robot A, B and C = 100
$\therefore$ Number of circuit board manufactured by A = 25
Number of circuit board manufactured by B = 35
Number of circuit board manufactured by C = 40
Number of faulty circuit board manufactured by A

$$= 25 \times \frac{5}{100} = 1.25$$

Number of faulty circuit board manufactured by B

$$= 35 \times \frac{4}{100} = 1.40$$

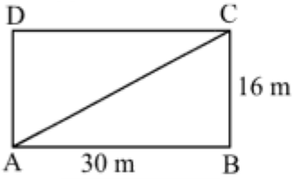
Number of faulty circuit board manufactured by C

$$= 40 \times \frac{2}{100} = 0.8$$

Total faulty circuit board
$= 1.25 + 1.4 + 0.8 = 3.45$
Probability for selecting a faulty circuit board

$$= \frac{3.45}{100} = 0.0345$$

66. (b) Let ABCD is a 16×30 m^2 rectangular field and a robot of length 4 m is placed at corner A facing towards the diagonally opposite corner C.



Now $AC = \sqrt{(AB)^2 + (BC)^2}$
$= \sqrt{(30)^2 + (16)^2}$
$= 34$ m
Length to be covered by robot in 15 sec
$= 34 - 4 = 30$ m

$$\text{Speed of the robot} = \frac{30}{15} = 2 \text{ m/sec.}$$

67. (d) Integers between 113 and 113113 which are divisible by 7 are 119, 126, 133, ..., 113113
This is an A.P. series with first term $a = 119$
Common difference $d = 7$
Last term $b = 113113$
Let n is the number of terms of this series, then form
$b = (n - 1)d + a$
$113113 = 119 + (n - 1)7$

$$(n - 1) = \frac{113113 - 119}{7} = 16142$$

$\therefore \quad n = 16143$
Sum of series of A.P.

$$= \frac{n}{2}[a + b]$$
$$= \frac{16143}{2}[119 + 113113]$$
$$= 913952088$$

68. $(\frac{263}{20})$

$$\frac{(\sqrt{x+4}+\sqrt{x-10})^2}{(x+4)-(x-10)}=\frac{5}{2}$$

$$\text{or } \frac{(x+4)+(x-10)+2\sqrt{x^2-6x-40}}{14}=\frac{5}{2}$$

$$\text{or } 2x+2\sqrt{x^2-6x-40}=35+6$$

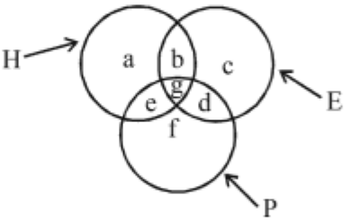
$$\text{or } (2x-41)=-2\sqrt{x^2-6x-40}$$

$$\text{or } (2x-41)^2=4(x^2-6x-40)$$

$$\text{or } 4x^2+1681-164x=4x^2-24x-160$$

$$\text{or } 140x=1841 \text{ or } x=\frac{263}{20}$$

69. (5) We have, $b+c+g+d=23$ .....(i)



Now, $a+b+g+e=15$ .....(ii)

and $e+f+g+d=18$ .....(iii)

(given) $b=3, d=6, e=6, c=9$

putting these value in (i) we get the required result, $g=5$.

70. (2) Given, $x=\frac{4ab}{a+b} \Rightarrow \frac{x}{2a}=\frac{2b}{a+b}$

Applying componendo and dividendo, we get

$$\frac{x+2a}{x-2a}=\frac{2b+a+b}{2b-a-b}=\frac{a+3b}{b-a} \text{ ..... (i)}$$

Also, $\frac{x}{2b}=\frac{2a}{a+b}$

Applying componendo and dividendo, we get

$$\frac{x+2b}{x-2b}=\frac{2a+a+b}{2a-a-b}=\frac{3a+b}{a-b} \text{ ..... (ii)}$$

From (i) & (ii),

$$\frac{x+2a}{x-2a}+\frac{x+2b}{x-2b}=\frac{a+3b}{b-a}+\frac{3a+b}{a-b}$$

$$=\frac{1}{b-a}[a+3b-3a-b]=\frac{2(b-a)}{(b-a)}=2$$

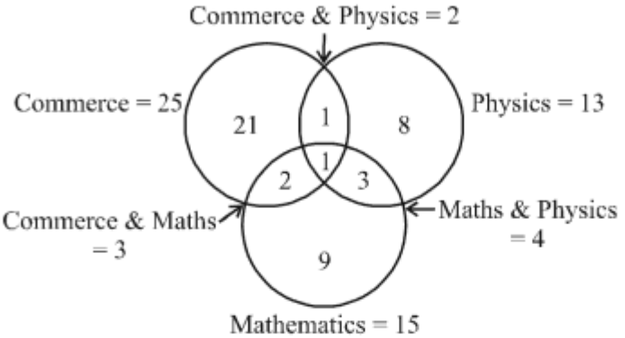
71. (35) Total students = 80

Commerce students = 25

Mathematics students = 15

Physics students = 13

We can draw the venn diagram as follows



Total students studying at least one subject

$= 21+1+2+1+9+3+8=45$

Students who are not studying any of three subjects

$= 80-45=35$

72. (13876590)

Investment in Govt. Bonds & Securities

= 48.3% of ₹ 11.05 crore = ₹ 5,33,71,500

Investment in State-issued Bonds

26% of ₹ 5,33,71,500 = ₹ 1,38,76,590

73. (b) Earning from Municipal Bonds = ₹ 2.988 crore

Earning from State-issued Bonds = ₹ 1.3876 crore

Earning from Govt. Bonds & Securities = ₹ 5.337 crore

74. (a) Investment in Municipal Bonds = 5,33,71,500 × 56%

= ₹ 29888040

(a) Amount invested in Municipal Bonds

(7%-9%) = 65% of 2,98,88,040 = ₹ 1,94,27,226

(b) Investment in State-issued Bonds = ₹ 1,38,76,590

(c) Investment in High Risk Stocks = ₹ 98,34,500

(d) Investment in Municipal Bonds (above 9%)

= 35% of 2,98,88,040 = ₹ 1,04,60,814

75. (c) The Bengal Tiger is world's charismatic megafauna ranks among the biggest wild cats. It is national animal of both India and Bangladesh. Like that, the snow Leopard is the national animal of Afghanistan. They are known the most beautiful and spiritual medium sized wild cat.

76. (d) (None of these) 12960000.

On 1st April 2018, Species hatch 120 eggs. In those 60 are male and 60 are female eggs. These 60 female egg again hatch 60 × 120 = 7200 eggs, of which 3600 are male and 3600 are female.

Again, on 10th May 2018, 3600 female eggs hatch 3600 × 60 = 216000 female eggs and equal number (216000) of male eggs.

On 30th May 2018, these 216000 female eggs hatch 216000 × 60 = 1296000 eggs.

77. (d) A + B : A is sister of B.

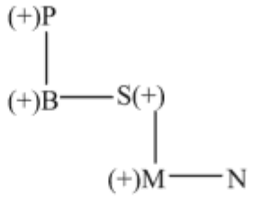
A/B : A is son of B.

A = B : A is brother of B.

A @ B : A is father of B.

Now, P @ B = S @ M = N.

P is father of B, who is brother of S and S is father of M and M is brother of N.



Hence, M is grandson of P.

78. (b) I N D I A

$\rightarrow$ Code $\rightarrow$ 9, 5 (1 + 4), 4, 9, 1.

9 14 4 9 1

Letter's position

Like that,

J A P A N

10 1 16 1 14

Letter's position

$\rightarrow$ Code $\rightarrow$ 1(1 + 0), 1, 7(1 + 6), 1, 5(1 + 4)

Hence, code of 'JAPAN' is '11715'.

79. (b) $10! = 3628800 < 10^{10}$

For $10 < N < 15$, $N! < 10^N$

For $16 < N < 20$, $N! < 10^N$

But for $20 < N < 25$, $N! > 10^N$

Hence, Suresh is correct.

80. (a) We know that year that have same calender have interval of +6 years, +11 years, +11 years.

So, 1981 have same calender year as 1987, 1998, 2009, 2015.

Now, number of days between 1st June 2015 and 1st June 2013 = 365 + 365.

Again, number of odd days in a non-leap year = 1.

$\therefore$ Number of odd days from 1st June 2013 to 1st June 2015 = 2.

Hence, 1st June 2015 = 1st June 1981 = Monday.

81. (c)

82. (c)

6	2	5	4
4	1	3	2
$6^3 - 4^3$ $= 216 - 64$ $= 152$	$2^3 - 1^3$ $= 8 - 1$ $= 7$	$5^3 - 3^3$ $= 125 - 27$ $= 98$	$4^3 - 2^3$ $= 64 - 8$ $= 56$

83. (b) Time to chime 1st Cuckoo, $t = 0$.

Time to chime 5 Cuckoos, $t = 5$ sec.

So, in 5 sec., 4 Cuckoos chime.

Time to chime 1 Cuckoo $= \frac{5}{4}$ sec.

Time to chime 10 Cuckoos

$$= \frac{5}{4} \times (10 - 1)$$

$$= \frac{5}{4} \times 9 = 11.25 \text{ sec.}$$

84. (a) South pole is a point on the earth, that exist at the South end of the earth. So, every point with respect to South point exist to its North.

Hence, a house on the South pole faces towards North with all sides.

85. (c)

19	$78 = (19 + 20) \times 2$	20
25	$144 = (25 + 47) \times 2$	47
16	$58 = (16 + 13) \times 2$	13

86. (b) Only II follow.

87. In 24 hours clock gain = 10 minutes.

In 1 hour clock gain $= \frac{10}{24}$ minutes.

Time interval between 6:00 AM and 11:00 AM (following day)

$$= 24 + (11 - 6) = 29 \text{ hours}$$

$$\therefore \text{ Clock gain} = 29 \times \frac{10}{24} \approx 12 \text{ minutes}$$

So, correct time 11:00 – 12 minutes = 10:48 AM.

88. (d) At time $t = 0$ sec., Vishal took first pill.

At time $t = 30$ sec., he took second pill.

and at time $t = 60$ sec., he took third pill.

89. (c) 6 mobiles are packed in 6 minutes by 6 staff.

So, 1 mobile is packed in 6 minutes by 1 staff.

$\therefore$ 60 mobiles are packed in 60 minutes by 6 staff.

Trick: $\frac{n_1 . w_1}{d_1} : \frac{n_2 . w_2}{d_2}$

$$\frac{6 \times 6}{6} = \frac{60 \times n_2}{60}$$

$\therefore \quad n_2 = 6$

90. (a) Ornithology is the branch of Zoology that concerns the study of birds. Like that Herpetology is the branch of Zoology that concerned with the study of amphibians and reptiles.

91. (b) Let Amar consymed x ladoos on Monday.

Tuesday he consumed $(x + 6)$ ladoos.

On Wednesday he consumed $(x + 12)$ ladoos.

Sum of all Ladoos = 100

$\therefore \quad x + (x + 6) + (x + 12) + (x + 18) + (x + 24) = 100.$

$$5x + 60 = 100$$

$$x = \frac{40}{5} = 8$$

Number of ladoos consumed by Amar on Wednesday

$$= x + 12 = 8 + 12 = 20$$

92. (a)

0	1	2	5	20	25	[150]	157
	+1	×2	+3	×4	+5	×6	+7

93. (d)

94. (c)  = 9 (Number of intersection point)

$\therefore$  = 4 (Number of intersection point)

95. (b) My father's son means, himself or his brother. Now, that man's father is my father's son.
Hence, man is his son.

96. (d) If we write number 1–100 in word like one, two, three, four ... hundred. We see that letter 'A' appears no where.
In writing all counting number, letter 'A' appears first in write 'thousand'.

97. (d) Population of Timbaktoo (2 years ago) = 125000.
Rate of decrease = 4%
Decrease in population in first year

$$= 125000 \times \left(\frac{4}{100}\right) = 5000$$

Population in first year
$= 125000 - 5000 = 120000$
Decrease in population in second year

$$= 120000 \times \frac{4}{100} = 4800$$

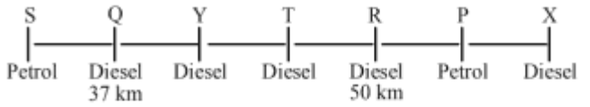
$\therefore$ Total migration $= 5000 + 4800 = 9800$

Sol. (98-100):
Based on the given information, we get that:

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Movies	3 Idiots	DO Bigha Jameen	Sholay	Chak de	Aanand

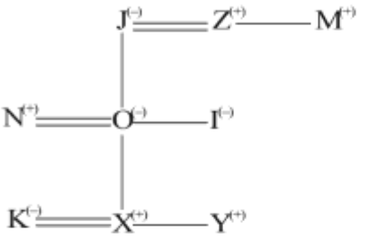
98. (c) Aanand movie was screened on Friday.
99. (b) Sholay was screened on Wednesday.
100. (d) 3 Idiots was screened on Monday.

Sol. (101-103) :



101. (c) 102. (d) 103. (c)

104. (a)



N's sister in law is niece of J's brother in law.

Sol.(105-107) :
Vikas > Gopi (230kg) > Mohit > Rahul > Aditya > Ayush (128kg)

105. (c)

106. (c) Sum of weight of Ayush + Rahul = 262 kg.
We have Ayush weight = 128 kg
Hence Rahul weight = 262 – 128
= 134 kg
And
Sum of weight of Mohit + Gopi = 426 kg
we have Gopi = 230 kg
Hence Mohit weight = 426 – 230
= 196 kg
So, (Rahul + Mohit weight) = (134 + 196) kg = 330 kg

107. (b)

Sol.(108-110):

108. (c) 109. (b) 110. (c)