CPC - Aptitude Assignment 1

- Deadline: 10 January 2022, Monday, 5PM IST
- Submission Link will be sent across later
- Submit handwritten solution, properly scanned, in pdf format, with name and roll number on all pages.
- Detailed solution is mandatory for Quantitative Aptitude and Data Interpretation Section.

Quantitative Aptitude

(Recommended time: 45 minutes)

1. It is given that (2^36 +1) is divisible by N. Which of the following is also divisible by N?
   A. 2^18 - 1
   B. 2^72 - 1
   C. 2^12 - 1
   D. 2^24 - 1

2. Find the smallest 7 digit number divisible by 19
   A. 1000008
   B. 9999985
   C. 1000019
   D. 1900000

3. Find the unit digit of 1! + 2! + 3! ….. 101!..
   A. 0
   B. 3
   C. 1
   D. 7

4. How many different numbers of the form 25y171x are divisible by 8
   A. 9
   B. 10
   C. 20
   D. 5

5. If given 2 numbers are 36% and 12% of a third number. What percentage is first of the second?

A. 33.33
B. 300
C. 30
D. 20

6. If the prices of fuel have increased by 15%, By what percentage approximately will consumption decrease to keep the cost same?

A. 13
B. 15
C. 16
D. 17

7. A family spends 1/4th of the total budget on food. If expenditure on food is expected to rise by 20 %. By what percent will their total budget increase if the rest of the expenditure remains constant.

A. 20
B. 5
C. 4
D. 7

8. The radius of a sphere increases by 20% of its original value. By what percentage did the Surface area increase?

A. 44
B. 20
C. 5
D. Same as before

9. Find the value of X which satisfies the given expression [log2 + log(4x+1)] = [log(x+2) +1]

A. 6
B. 7
C. -6
D. -9

10. Find the value of log [8. (63)(^⅓)]. Given x = log2, y = log3, z = log7.

A. 4x + (2/3)y + (1/3)z
B. 2x + (1/3)y + (1/3)z
C. 3x + (2/3)y + (1/3)z
D. X + (2/3)y + (1/3)z

11. The domain of the function f(x) = log7 {log3 {log5 (20x - x^2 - 91)}} is:

A. (7, 13)
B. (8, 12)
C. (7, 12)
D. (12, 13)

12. (log4 x^2) (x log27 8) (logx 23) is equal to?

A. 2x
B. 5x
C. 3x
D. 1

13. x varies directly as (y^2 + z^2). At y = 1 and z = 2, the value of x is 15. Find the value of z, when x = 39, and y = 2?

A. 2
B. 3
C. 4
D. None of the above

14. A precious stone weighing 35 grams worth Rs. 12250 is accidentally dropped and gets broken into two pieces having weights in ratio of 2:5. If the price varies as the square of the weight, then find the loss incurred.

A. Rs. 5050
B. Rs. 5500
C. Rs. 6500
D. Rs. 5000

15. In a Co-ed school there are 15 more girls than boys. If the number of girls is increased by 10% and the number of boys is increased by 16%, there would be 9 more girls than boys. What is the number of students in the school?

A. 265
B. 200
C. 180
D. 285

16. A mixture contains milk and water in the ratio 5:1. On adding 5 litres of water, the ratio of milk to water becomes 5:2. The quantity of milk in the mixture is:

A. 17 litres
B. 24 litres
C. 25 litres

D. 18 litres

17. If the compound interest on a certain sum for 2 years is Rs. 21. What could be the simple interest?

A. Rs. 18
B. Rs. 24
C. Rs. 20
D. Rs. 27

18. A sum of money placed at compound interest doubles itself in 3 years. In how many years will it amount to 8 times itself?

A. 8 years
B. 12 years
C. 14 years
D. 9 years

19. If the difference between simple interest and compound interest on some principal amount at 20% per annum for 3 years is Rs. 48, then the principal amount must be?

A. Rs. 375
B. Rs. 350
C. Rs. 325
D. Rs. 400

20. Find the compound interest on Rs. 64000 for 1 year at the rate of 10% per annum compounded quarterly (to the nearest integer).

A. 8000
B. 7000
C. 8500
D. None of the Above

Verbal Ability

(Recommended time: 20 minutes)

1. Saunter : Stroll ::

A. Perambulate : walk
B. Gyrate : twist
C. Amble : path
D. Baby carriage : walk

2. In all ……. Harsh will get the job.

A. Likelihood
B. Odds
C. Candidates
D. Options

3. For some politicians, charm is a mere……adopted to get votes and ……criticism.

A. prerequisite, distort
B. affectation, alleviate
C. tool, inflict
D. ruse, condone

4. Choose the most logical order of sentences from among the four given to construct a coherent paragraph

a. Widely publicised tables of income levels of all countries indicate that when incomes are higher, the greater is the contribution made by the manufacturing industry.
b. Countries which have little or no industry are invariably poor.
c. The lesson is clear: to overcome poverty and backwardness, a country must industrialise.
d. Industrialisation is seen as the key to growth and a prerequisite for development.

A. cbad
B. dcba
C. dabc
D. cabd

5. Choose the grammatically correct option

A. China has a very high trade surplus because it is a manufacturing-centric economy
B. China has a very high trade surplus since they are a manufacturing-centric economy
C. China has a very high trade surplus because they are a manufacturing-centric economy
D. China has a very high trade surplus since it is a manufacturing-centric economy

6. In the following question, you have to identify the correct sentence/s

a. The Seven Horses hotel in Singapore is much great.
b. He just doesn't live in the genuine world.

c. This briefcase is made of authentic leather.
d. She is a very genuine person.

A. a, b, d
B. b, d
C. c only
D. d only

Reading Comprehension:

A new US study has warned that adolescents who take performance enhancing anabolic steroids are more likely to have adverse neural and behavioural consequences, like aggression and moodiness because of the steroids effect on the underdeveloped brain and the nervous system. The study, by Northeastern University in the US, centred around a brain chemical called serotonin, which is linked to mood. Lower levels of serotonin are associated with depression and aggression. For the study, experiments were carried out on a strain of Syrian hamsters. This breed has similar neurological circuitry to humans, so experts felt it might be a good model for humans in this respect. The hamsters were given a high dose of anabolic steroids over the course of a month—which corresponded to five years, repeated dosage in humans. The researchers found that the hamsters were more aggressive than those not given steroids and these aggressive tendencies were mellowed if Prozac—a drug which boosts serotonin "uptake"—was given. However, subsequent analysis showed significantly lower than normal serotonin levels in the neural connections of the hamster's brains. This suggests there may be a longer-term effect of taking steroids while the brain is still developing. Professor Richard Melloni, who helped run the study, was quoted as saying by BBC: "We know testosterone or steroids affect the development of serotonin nerve cells, which, in turn, decreases serotonin availability in the brain. The serotonin neural system is developing during adolescence and the use of anabolic steroids during this critical period appears to have immediate neural and behavioural consequences."

7. Why do adolescents develop neural disorders?
A. The effect of steroids hampers the growth of the brain.
B. Prozac, if taken in excess by adolescents, makes them aggressive.
C. Due to a decrease in the level of serotonin in the blood.
D. Steroids affect the underdeveloped brain more.
E. None of these.

8. Which of the following sentences is true, according to the passage?
   A. Adolescents are more likely to have neural and behavioural disorders.
   B. Depression and aggression are caused by a lower intake of serotonin.
   C. Those taking steroids are likely to face long-term neural and behavioural implications.
   D. Higher serotonin intake is good for brain function.
   E. None of these.

9. The drug that boosts serotonin uptake is _____ .
   A. Prozac.
   B. Melanin.
   C. Erythrocytes.
   D. Penicillin.
   E. None of these.

10. Upon which breed of mammals were the experiments carried out?
   A. Sicilian gangsters.
   B. Italian hamsters.
   C. Syrian hamsters.
   D. Adolescents.
   E. None of these.

Data Interpretation/ Logical Ability

(Recommended time: 20 minutes)

1) Rickets is related to Children in the same way as Osteomalacia is related to _____?

(a) Adults (b)Infants (c) Humans (d) Mothers

2) Find out the wrong number in the given series.
64, 24, 31, –32, –81, –174

(a) 24 (b) 31 (c) –32 (d) –81

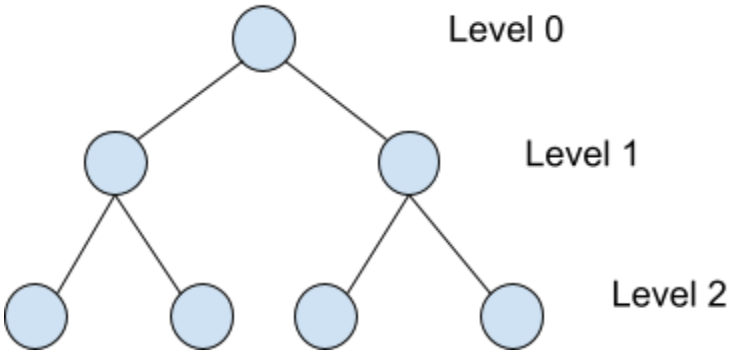
3) Which letter should be the eleventh letter to the left of the eighth letter from the right, if the first half of the english alphabet is reversed?

(a) D (b) F (c) E (d) I

4) What is the next term in the following series?
6,15,35,77,143,__

(a) 164 (b) 182 (c) 221 (d) 247

Direction for Questions 5 to 7: In the ancient game of “placing the numbers on a tree branch” a sequence of numbers is provided to an individual participant and he is then asked to place the numbers in the branches of a hanging tree with the first number forming the top most node of the tree (and this node is called the root of the tree) and the subsequent numbers are placed in the left subtree if the number is smaller than the number at the root or in the right subtree, if the number is greater than the number in the root. A node is denoted by an oval and has to include a number in it. Each node at a level can be viewed as a tree itself and the same rule applies to it as well. For every node, if a number is greater than the number at the node, then it must be in the nodes to its right and if the number be smaller than the number at the node, then it must be in the nodes to its left. New numbers must obey the rule of all nodes above itself. Numbers shall not repeat themselves in the nodes and in case a number appears which has already appeared earlier in the tree it has to be placed on the right most of its possible positions.



Given is a sequence of numbers and an empty tree. Fill the numbers in the appropriate nodes. The sequence is given in order and starts from 58

58, 62, 18, 38, 30, 74, 14, 22, 66, 18, 82, 70, 38, 58, 22

5) What are the numbers at level 2?
(a) 14, 22, 30 (b) 14, 38, 74
(c) 14,38,58,74 (d) 18, 38,66, 82

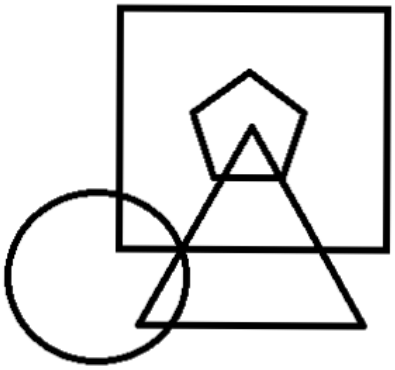
6) What is the sum of the numbers at level 3?
(a) 180 (b) 136
(c) 216 (d) 84

7) How many nodes are at the 4th level?
(a) 4 (b) 3
(c) 1 (d) 2

8) When I see a Romantic movie I have a good dream.
(A) I saw a Romantic movie.
(B) I did not see a Romantic movie.
(C) I did not have a good dream.
(D) I had a good dream.

(a) AC (b) AD (c) BC (d) CB

Direction for Questions 9 & 10:



The Square stands for Hindi-speaking people, Pentagon for French-speaking, Triangle for English-speaking and Circle for German-speaking people.

9) In the above diagram, which one of the following statements is true ?
   (a) All French-speaking people speak German.
   (b) All French-speaking people speak English.
   (c) All German-speaking people speak English and Hindi.
   (d) All French-speaking people speak Hindi also.

10) In the above diagram, which one of the following statements is not true ?
   (a) German-speaking people cannot speak French.
   (b) No French-speaking people can speak German.
   (c) Some French-speaking people can speak Hindi and English but not German.
   (d) Some Hindi-speaking people can speak French, English and German as well.