MATHEMATICS
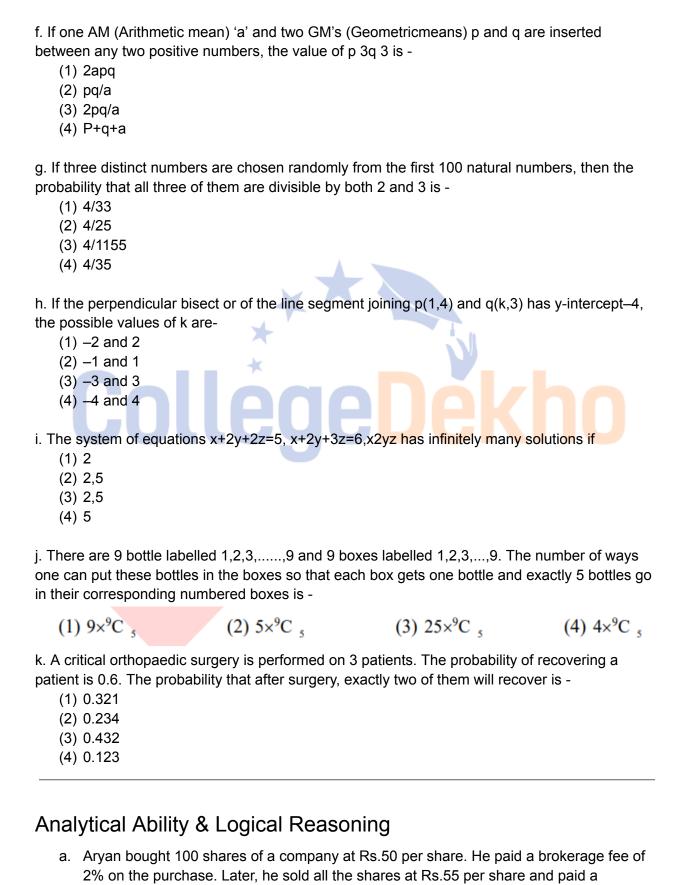
a. How much work is required to slide and create for a distance of 25 m along the loading dock by passing with a 180N force, where the dock is at an angle of 45o from the horizontal?

(1) 3.18198×103 J
(2) 3.18198×102 J
(3) 3.4341×103 J
(4) 3.4341×104 J

b. The value of m for which the volume of the parallel pipe is 4 cubic units whose three edges are represented by a = mi+j+ k, b= i–j+ k, c = i+ 2j– k is

(1) –1
(2) 1
(3) 0
(4) –2

c. A committee of 5 is to be chosen from a group of 9 people. The probability that a certain married couple will either serve together or not at all is -

(1) 5/9
(2) 1/2
(3) 2/3
(4) 4/9

d. Among the given numbers below, the smallest number will be which will be divided by 9,10,15 and 20 leaving the remaining 4,5,10 and 15, respectively

(1) 85
(2) 265
(3) 535
(4) 355

e. A speaks truth in 40% and B in 50% of the cases. The probability that they contradict each other while narrating some incidents:
(1) 2/3
(2) 1/4
(3) 1/2
(4) 1/3

f. If one AM (Arithmetic mean) 'a' and two GM's (Geometricmeans) p and q are inserted between any two positive numbers, the value of p 3q 3 is -
(1) 2apq
(2) pq/a
(3) 2pq/a
(4) P+q+a

g. If three distinct numbers are chosen randomly from the first 100 natural numbers, then the probability that all three of them are divisible by both 2 and 3 is -
(1) 4/33
(2) 4/25
(3) 4/1155
(4) 4/35

h. If the perpendicular bisect or of the line segment joining p(1,4) and q(k,3) has y-intercept–4, the possible values of k are-
(1) –2 and 2
(2) –1 and 1
(3) –3 and 3
(4) –4 and 4

i. The system of equations x+2y+2z=5, x+2y+3z=6,x2yz has infinitely many solutions if
(1) 2
(2) 2,5
(3) 2,5
(4) 5

j. There are 9 bottle labelled 1,2,3,.......,9 and 9 boxes labelled 1,2,3,...,9. The number of ways one can put these bottles in the boxes so that each box gets one bottle and exactly 5 bottles go in their corresponding numbered boxes is -

(1) $9 \times {}^9C_5$ (2) $5 \times {}^9C_5$ (3) $25 \times {}^9C_5$ (4) $4 \times {}^9C_5$

k. A critical orthopaedic surgery is performed on 3 patients. The probability of recovering a patient is 0.6. The probability that after surgery, exactly two of them will recover is -
(1) 0.321
(2) 0.234
(3) 0.432
(4) 0.123

Analytical Ability & Logical Reasoning

a. Aryan bought 100 shares of a company at Rs.50 per share. He paid a brokerage fee of 2% on the purchase. Later, he sold all the shares at Rs.55 per share and paid a

brokerage fee of 2% on the sale. What is Aryan's net profit percentage on his investment?

(1) 6%
(2) 5.5%
(3) 6.1%
(4) 5.69%

b. Four friends, Aditi, Bharat, Chandan, and Deepika went to a restaurant for dinner. Each of them ordered a different dish from the menu: pizza, pasta, burger, and salad. Additionally, each friend ordered a different drink: cola, lemonade, orange juice, and water. Based on the following clues, determine the combination of friend, dish, and drink: Aditi didn't order pizza or cola. Bharat ordered salad but not lemonade. Chandan ordered pasta. Deepika didn't order a burger or orange juice. Aditi ordered orange juice. Who ordered the burger and what drink did they order?

(1) Aditi, orange juice
(2) Bharat, water
(3) Chandan, lemonade
(4) Deepika, cola

c. In the following question, three statements and three conclusions are given. Statements: 1. All students are intelligent. 2. No intelligent person is lazy. 3. Some lazy people are poor. Conclusions: 1. No student is lazy. 2. Some poor people are not intelligent. 3. All poor people are lazy. Find out the most appropriate conclusion(s) from the following options.

(1) Only conclusions 1 and 2 follow
(2) Only conclusion 1 follows
(3) Only conclusion 2 follows
(4) Only conclusions 2 and 3 follow
d.Rajesh will not go to the concert if Rakesh goes.

d. Rakesh will go to the concert if his dog barks three times.
Based only on the information above, which of the following must be true?
   1. Rakesh will not go to the concert unless Rajesh goes.
   2. If Rajesh doesn't go to the concert, then Rakesh will go.
   3. If Rakesh's dog barks three times, then Rajesh will not go to the concert.
   4. If Rakesh's dog does not bark three times, then Rakesh will not go to the concert.

e. In a tournament, many teams participated. All teams in the tournament have 5 to 15 players. If a team has more than 10 players, then they have reversible t-shirts.
Based only on the information above, which of the following must be true?
   1. Teams that have 13 players have reversible t-shirts.
   2. Teams that have 12 players do not have reversible t-shirts.
   3. Teams with 8 players do not have reversible t-shirts.

4. Only people on teams can have reversible t-shirts.

COMPREHENSION

a. Directions: A, B, C, D, E, F, and G are traveling in three different vehicles. There are at least two passengers in each vehicle – Swift, Creta, and Nexon – and only one of them is a male. There are two engineers, two doctors, and three teachers among them.

(i) C is a lady doctor, and she does not travel with the pair of sisters A and F.
(ii) B, a male engineer, travels with only G, a teacher, in a Swift.
(iii) D is a male doctor.
(iv) Two persons belonging to the same profession do not travel in the same vehicle.
(v) A is not an engineer and travels in a Creta.
(vi) The pair of sisters A and F travels in the same vehicle.

Question: What is F's profession?
1. Doctor
2. Data inadequate
3. Engineer
4. Teacher

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Question: In which vehicle does C travel?
1. Swift
2. Data inadequate
3. Nexon
4. Creta

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Question: Which of the following represents the three teachers?
1. Data inadequate
2. G, B, F
3. G, E, A
4. G, E, F

d. Directions: A, B, C, D, and E are five different integers. When written in ascending order of values, the difference between any two adjacent integers is 8. D is the greatest, and A the least. B is greater than E but less than C. The sum of the integers is equal to E.

Question: The value of A is:
1. –18
2. –17
3. None of these
4. –15

Computer Awareness

a. The quotient, if the binary number 11010111 is divided by 101, is:
1. 101011
2. 101010
3. 101101
4. 111001

b. Which of the following components is used to establish a communication link between a CPU and the peripheral devices to transfer data?
1. Memory address register
2. Instruction register
3. Memory data register
4. Index register

c. A computer system has a 16-bit wide address/data bus that uses RAM chips of 4K × 8-bit capacity. The number of RAM chips needed to provide a memory capacity of 64 Kbytes is:
1. 32
2. 16
3. 64
4. 8

d. The primary purpose of cache memory in a computer system is:
1. To manage input and output operations between the CPU and peripherals.
2. To temporarily store frequently accessed data and instructions for faster access by the CPU.
3. To permanently store data and programs.

4. To provide additional storage space when the main memory is full.

e. Which of the following does not affect CPU performance?
1. Cache size
2. Number of cores
3. Amount of RAM
4. Clock speed

f. A CPU generates 32-bit virtual addresses. The page size is 4 KB. The processor has a translation look-aside buffer (TLB) that can hold a total of 128-page table entries and is 4-way set associative. The minimum size of the TLB tag is:
1. 11 bits
2. 15 bits
3. 13 bits
4. 20 bits

General English

Choose the correct combination of prepositions to complete the sentence:
"The cat jumped ___ the table ___ the chair."
1. on, from
2. off, in
3. into, beside
4. onto, towards

The company's growth in revenue surprised analysts.
1. Erratic
2. Gradual
3. Stagnant
4. Exponential

Identify the word that means the same as "ostentatious":
1. Lavish
2. Simple
3. Modest
4. Unassuming

Write the antonym for 'Inscrutable':
1. Comprehensible
2. Mysterious
3. Opaque
4. Obscure

Choose the best option that indicates the change of voice for the sentence given below:
"Did Alice invite you?"
1. Were you invited by Alice?
2. Was Alice invited you?
3. Had you invited Alice?
4. Did you invited by Alice?

Which of the following is an essential element of a technical report?

1. Anecdotes and personal opinions
2. Statistical data and analysis
3. Creative storytelling
4. Emotional appeals

Select the correct meaning of 'Peruse':
1. Continue
2. Pursue
3. Examine
4. Rescue

Which sentence demonstrates correct preposition usage?
1. I prefer coffee over tea.
2. He is interested on learning new languages.
3. They were surprised of the sudden announcement.
4. She arrived to the party at 8 PM.

Select the appropriate synonym for 'coercive':
1. Gentle
2. Forceful
3. Corrective
4. Merciful

What does the idiom "jump on the bandwagon" mean?
1. To join a popular trend or activity
2. To criticize something unfairly
3. To repair a vehicle
4. To start a business