

GATE 2017

Computer Science & IT

▶ **General Aptitude**
(Question With Solution
Set-1 & 2)

SET-1

1. "The hold of the nationalist imagination on our colonial past is such that anything inadequately or improperly nationalist is just not history"

Which of the following statements best reflects the author's opinion?

- A. Nationalists are highly imaginative.
 B. History is viewed through the filter of nationalism.
 C. Our colonial past never happened.
 D. Nationalism has to be both adequately and properly imagined.

Ans. B

- Sol.** In author's opinion, it is clearly visible that history is viewed through the filter of nationalism.

It says that we try to overlook facts of history which is not in favour of our nationalism interest.

So, **the answer is B.** history is viewed through nationalism.

2. Find the number in the following such that it is a perfect cube of some number.

- A. 24 B. 27
 C. 32 D. 36

Ans. B

- Sol.** $3 \times 3 \times 3 = 27$

3. The probability that a k-digit number does NOT contain the digits 0,5, or 9 is-

- A. 0.5^k B. 0.6^k
 C. 0.7^k D. 0.9^k

Ans. C

- Sol.** Total Possibilities $= (10)^k$, because every digit has 10 options from 0 to 9.

Possibility of not containing any digit 0,5,9 $= (7)^k$, now every digit has 7 options.

Asked probability $= (7)^k / (10)^k = (0.7)^k$

Hence Answer is C.

4. The expression $\frac{(x+y) - |x-y|}{2}$ is equal to

- A. the maximum of x and y
 B. the minimum of x and y
 C. 1
 D. None of the above

Ans. B

- Sol.** If $x > y$; then $|x-y| = x-y$

$$\text{Exp} = \frac{x + y - (y - x)}{2} = y_{\min}$$

If $x < y$; then $|x-y| = -(x-y) = y-x$

$$\text{Exp} = \frac{x + y - (y - x)}{2} = x_{\min}$$

The expression $\frac{(x+y) - |x-y|}{2}$ is equal to minimum of x & y.

5. Six people are seated around a circular table. There are at least two men and two women. There are at least three right-handed persons. Every woman has a left-handed person to her immediate right. None of the women are right-handed. The number of women at the table is?

- A. 2
 B. 3
 C. 4
 D. Cannot be determined

Ans. A

Sol. 3 Right handed person.

- Every Person is left handed.
- Immediate right to woman is left handed person.
- As already given every woman is left handed. So, given 3 Right handed Person actually man.

- So at this moment we have two choices
1) 3 Right handed man 2) 2 Left handed man

We need 1 more person to make total 6 person and that person may be either

- Woman with left handed. or
- Man with either left handed or right handed.

Case-1

Let us suppose that a person is a woman.

- 3 Right handed Men
- 3 Left Handed Women

Case-2

- 3 Right handed Men.
- 2 Left handed Women.
- 1 Left-handed Man.

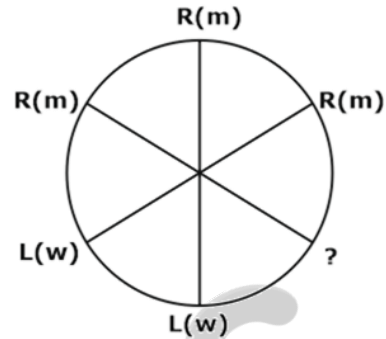
Case-3

- 3 right-handed person (men)
- 2 left-handed women
- 1 right-handed man

This case is also not possible, as W__ - for this place we don't have any left-handed person. So this arrangement is not valid.

Conclusion : Out of six people, 3 place definitely occupied by right handed people as atleast 2 women are there so these two will sit adjacently. Now as only one seat is left it

will be occupied by a left handed man because on right side of this seat is sitting an right handed man.



Therefore, answer should be 2 women.

- 6.** Arun, Gulab, Neel and Shweta must choose one shirt each from a pile of four shirts coloured red, pink, blue and white respectively. Arun dislikes the colour red and Shweta dislikes the colour white. Gulab and Neel like all the colours. In how many different ways can they choose the shirts so that no one has a shirt with a colour he or she dislikes?

- A. 21
- B. 18
- C. 16
- D. 14

Ans. D

Sol. Total possibilities = $4! = 24$.

No. of ways 'Arun chooses red' or 'Shweta chooses white'

$$= (\text{no. of ways 'Arun chooses red'})$$

$$+ (\text{no. of ways 'Shweta chooses white'})$$

$$- (\text{no. of ways 'Arun chooses red' and 'Shweta chooses white'})$$

$$= 6 + 6 - 2 = 10$$

$$\text{required} = 24 - 10 = 14$$

- 7.** Research in the workplace reveals that people work for many reason _____.

- A. money beside
- B. beside money
- C. money besides
- D. besides money

Ans. D

Sol. Research in the workplace reveals that people work for many reason besides money.

Grammatically, besides is an adverb or a preposition, and beside a preposition. Beside means next to. As a preposition, besides means in addition to or apart from. As an adverb, besides means as well or furthermore.

Here, we use "besides" as a preposition meaning "in addition to" "besides money" is correct choice.

8. After Rajendra chola returned from his voyage to Indonesia, he ____ to visit the temple in Thanjavur.

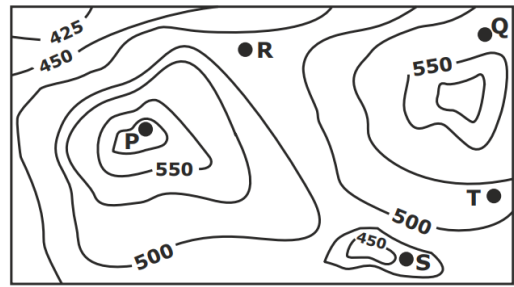
- A. was wishing
- B. is wishing
- C. wished
- D. had wished

Ans. C

Sol. After Rajendra chola returned from his voyage to Indonesia, he wished to visit the temple in Thanjavur

By rule : when the main clause is in the past or past perfect tense, the subordinate clause must be in the past or past perfect tense

9. A contour line joins locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25m intervals in this plot. If in a flood, the water level rises to 525m, which of villages P, Q, R, S, T get submerged?



- A. P,Q
- B. P,Q,T
- C. R,S,T
- D. Q,R,S

Ans. C

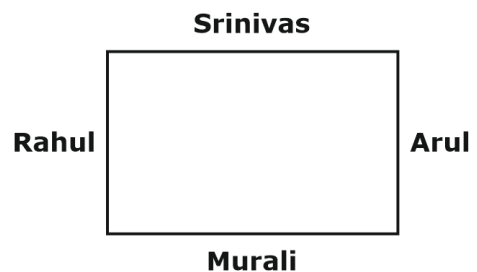
Sol. The given contour is a hill station, the peak point of this hill station is P, it is under a contour of 550. At floods, the water level is 525m. So, the village of R, S and T are under a contour of 500. Therefore, these villages are submerged.

10. Rahul Murali, Srinivas and Arul are seated around a square table. Rahul is sitting to the left of Murali. Srinivas is sitting to the right of Arul. Which of the following pairs are seated opposite each other?

- A. Rahul and Murali
- B. Srinivas and Arul
- C. Srinivas and Murali
- D. Srinivas and Rahul

Ans. C

Sol. Assume, they are looking to the center of circular table, then the possible arrangement is:



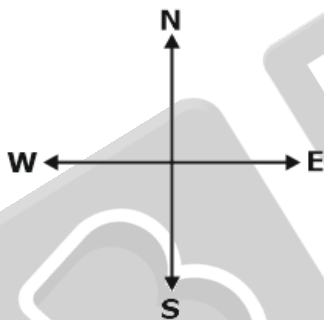
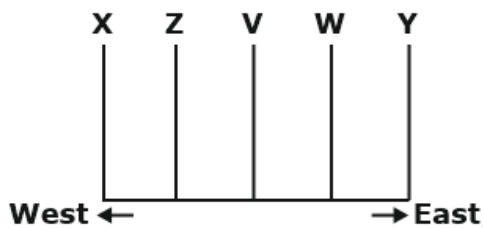
SET-2

1. There are five buildings called V, W, X, Y and Z in a row (not necessarily in that order). V is to the west of W. Z is to the East of X and the West of V. W is to the West of Y. Which is the building in the middle?

A. V B. W
C. X D. Y

Ans. A

Sol. From the given data, the following is formed



∴ The building 'V' is in the middle

2. A test has twenty questions worth 100 marks in total. There are two types of questions, multiple choice questions are worth 3 marks each and essay questions are worth 11 marks each. How many multiple choice questions does the exam have?

A. 12 B. 15
C. 18 D. 19

Ans. B

Sol. Total marks in the test = 100

For multiple choice questions = 3 marks

For essay questions = 11 marks

Option (A)

Marks for multiple choice questions = 12×3
= 36

Marks for essay type questions = $100 - 36 = 64$

64 is not divisible by 11

∴ Option (A) is not correct.

Option (B)

Marks for multiple choice questions = 15×3
= 45

Marks for essay type questions = $100 - 45 = 55/11 = 11$

Essay type questions are 5 No's

∴ Option (B) is correct

Option (C)

Marks for multiple choice questions = 18×3
= 54

Marks for essay type questions = $100 - 54 = 46$

46 is not divisible by 11

∴ Option (C) is not correct.

Option (D)

Marks for multiple choice questions = 19×3
= 57

Marks for essay type questions = $100 - 57 = 43$

46 is not divisible by 11

∴ Option (D) is not correct.

3. Choose the option with words that are not synonyms.

A. aversion, dislike

B. luminous, radiant

C. plunder, loot

D. yielding, resistant

Ans. D

Sol. The following are synonyms to each other:

- 1) aversion, dislike
- 2) luminous, radiant
- 3) plunder, loot

Or

Yield means to give in and resistance means to not give in.

Rest are all synonyms.

Hence, (D) is correct.

4. X is a 30 digit number starting with the digit 4 followed by the digit 7, then the number X^3 will have

- | | |
|--------------|--------------|
| A. 90 digits | B. 91 digits |
| C. 92 digits | D. 93 digits |

Ans. A

Sol. $X = 4.7777... \times 10^29 = 4.7777... \times 10^{29}$ ($7 > 29$)

It can be written

$$\text{as } X = 4.7777... \times 10^{29} = 4.7777... \times 10^{29}$$

$$X^3 = (4.7777... \times 10^{29})^3 = (4.7777...)^3 \times 10^{87} = (4.7777... \times 10^{29})^3 = (4.7777...)^3 \times 10^{87}$$

Now, even if we round up $4.7777... > 4.7777...$ to $5 > 5$, we could represent $5^3 = 125 > 5^3 = 125$ into 3 digits.

So, We can say $(4.7777...)^3 > (4.7777...)^3$ also has $3 > 3$ digits before the decimal point.

So, $X^3 > X^3$ requires $3 + 87 = 90 > 3 + 87 = 90$ digits.

5. Given the following binary number in 32-bit (single precision) IEEE-754 format:

00111110011011010000000000000000

The decimal value closest to this floating-point number is-

- | | |
|--------------------------|--------------------------|
| A. 1.45×10^1 | B. 1.45×10^{-1} |
| C. 2.27×10^{-1} | D. 2.27×10^1 |

Ans. C

Sol. Sign = 0

= +ve

AE = BE - Bias

= $01111100 - 01111111$

AE = 11111101

Here sign of AE is negative so take two's complement of AE = 00000011

Mantissa: Normal Mantissa = 1.M = 1.1101101

Data = 1.1101101×2^{-3}

Hence answer is 2.27×10^{-1}

6. There are 3 red socks, 4 green socks and 3 blue socks. You have to choose 2 socks. The probability that they are of the same color is?

- | | |
|--------|---------|
| A. 1/5 | B. 7/30 |
| C. 1/4 | D. 4/15 |

Ans. D

Sol. Ways to collect both Red = 3C_2

Ways to collect both Green = 4C_2

Ways to collect both Blue = 3C_2

Total Ways = ${}^{10}C_2$

$P(\text{Socks of Same Color}) = \frac{{}^3C_2 + {}^4C_2 + {}^3C_2}{{}^{10}C_2}$

= $\frac{3 + 6 + 3}{45}$

= $\frac{4}{15}$

7. "We lived in a culture that denied any merit to literary works, considering them important only when they were handmaidens to something seemingly more urgent - namely ideology. This was a country where all gestures, even the most private, were interpreted in political terms."

The author's belief that ideology is not as important as literature is revealed by the word:

- A. 'culture'
- B. 'seemingly'
- C. 'urgent'
- D. 'political'

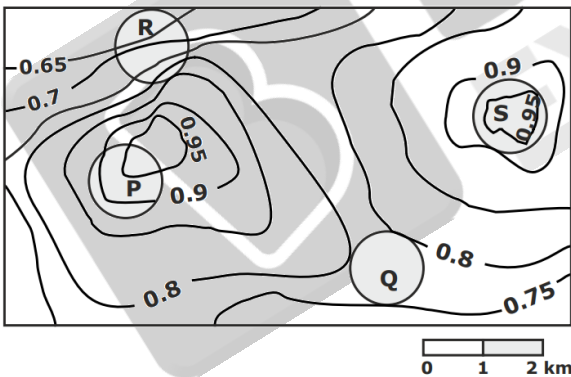
Ans. B

Sol. Seemingly means external appearance as distinguished from true character—means it is not actually what it looks like.

"considering them important only when they were handmaidens (means assisting or helping) to something seemingly more urgent" means it looks like urgent but in real it is not so urgent.

So, ideology is not as important as literature, is revealed by the word "seemingly".

- 8.** An air pressure contour line joins locations in a region having the same atmospheric pressure. The following is an air contour plot of a geographical region. Contour lines are shown at 0.05 bar intervals in this plot.



If the possibility of a thunderstorm is given by how fast air pressure rises or drops over a region, which of the following regions is most likely to have a thunderstorm?

- A. P
- B. Q
- C. R
- D. S

Ans. C

Sol.

Region	Air pressure difference
P	$0.95-0.90=0.05$
Q	$0.80-0.75=0.05$
R	$0.85-0.65=0.20$
S	$0.95-0.90=0.05$

In general thunder storms are occurred in a region where suddenly air pressure changes (i.e.,) sudden rise (or) sudden fall of air pressure. From the given contour map in 'R' region only more changes in air pressure. So, the possibility of a thunder storms in this region.

So option C. is correct.

- 9.** Saturn is ____ to be seen on a clear night with the naked eye.
- A. enough bright
 - B. bright enough
 - C. as enough bright
 - D. bright as enough

Ans. B

Sol. Saturn is bright enough to be seen on a clear night with the naked eye

- 10.** There are three boxes, one contains apples, another contains oranges and last one contains both apples and oranges. All three are known to be incorrectly labelled. You are permitted to open just one box and then pull out and inspect only one fruit. Which box would you open to determine the contents of all three boxes?
- A. The box labelled 'Apples'
 - B. The box labelled 'Apples and Oranges'
 - C. The box labelled 'Oranges'
 - D. Cannot be determined

Ans. B

Sol. lets assume:

box 1 is labelled Oranges (O)

box 2 is labelled Apples (A)
box 3 is labelled Apples and Oranges (A+O)
and that ALL THREE BOXES ARE LABELLED INCORRECTLY"

Pick a fruit from box 1,

1) if you pick an Orange:

- box 1's real label can only be O or A+O
- box 1's current label is O
- since ALL LABELS ARE INCORRECT then box 1's real label can not be O
- box 1's new label should then be A+O by elimination
- since ALL LABELS ARE INCORRECT
- box 2's label is changed to O
- box 3's label is changed to A
- SOLVED

2) if you pick an Apple:

- box 1's real label can only be A or A+O
- box 1's current label is O
- since ALL LABELS ARE INCORRECT then box 1's real label can not be O
- this still leaves us with the choice between label A and label A+O - which would both be correct
- FAILURE

Solution: The trick is to actually pick a fruit from the A+O labeled box

Pick a fruit from box 3:

1) if you pick an Orange:

- box 3's real label can only be O or A
- box 3's current label is A+O
- since ALL LABELS ARE INCORRECT then box 3's real label can not be A+O
- box 3's new label should then be O by elimination
- since ALL LABELS ARE INCORRECT
- box 1's label is changed to A
- box 2's label is changed to A+O
- SOLVED

2) if you pick an Apple:

- box 3's real label can only be O or A
- box 3's current label is A+O
- since ALL LABELS ARE INCORRECT then box 3's real label can not be A+O
- box 3's new label should then be A by elimination (not O)
- since ALL LABELS ARE INCORRECT
- box 1's label is changed to A+O
- box 2's label is changed to O
- SOLVED
