

GATE 2016

Civil Engineering

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



Set-1

1. Out of the following four sentences, select the most suitable sentence with respect to grammar and usage:

- A. Since the report lacked needed information, it was of no use to them.
 B. The report was useless to them because there were no needed information in it.
 C. Since the report did not contain the needed information, it was not real useful to them.
 D. Since the report lacked needed information, it would not had been useful to them.

Ans. A

Sol. Since the report lacked needed information, it was of no use to them is most suitable options.

2. A rewording of something written or spoken is a _____.

- A. paraphrase B. paradox
 C. paradigm D. paraffin

Ans. A

Sol. Paraphrase – To express something in different words so that it becomes easy for the listener to understand.

Paradox – A statement which sounds logical, but proves to be illogical when investigated.

Paradigm – A way of looking or thinking (perception) about something.

Paraffin – A flammable substance used in candles, polishes, etc.

So, A is the correct choice.

3. Archimedes said, "Give me a lever long enough and a fulcrum on which to place it, and I will move the world."

The sentence above is an example of a _____ statement.

A. figurative

B. collateral

C. literal

D. figurine

Ans. A

Sol. Here, we are talking about figure of speech. So, figurative is figure of speech meaning: Use of metaphoric meaning of words to explain your thoughts instead of literal use of them.

4. If 'relftaga' means carefree, 'otaga' means careful and 'fertaga' means careless, which of the following could mean 'aftercare'?

- A. zentaga B. tagafer
 C. tagazen D. relffer

Ans. C

Sol. 'taga' and 'care' are a matching pair in every combination.

So, 'taga' surely represents 'care'.

Also, note here that the second half of the word in encoded value refers to the first half of the word in the decoded value.

So, 'fer' represents 'less', 'relf' represents 'free' and 'o' represents 'ful'.

Going by checking the options, the answer would be tagazen, i.e., C.

5. A cube is built using 64 cubic blocks of side one unit. After it is built, one cubic block is removed from every corner of the cube. The resulting surface area of the body (in square units) after the removal is _____

- A. 56 B. 64
 C. 72 D. 96

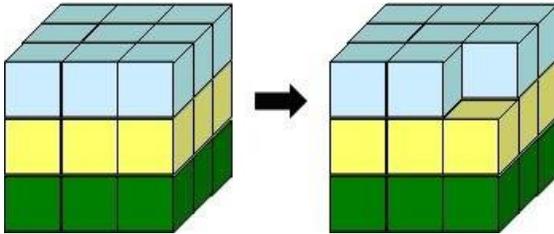
Ans. D

Sol. Four blocks are needed for each direction (totally 3 directions) to build a bigger cube containing 64 blocks. So area of one side of the bigger cube

$$= 4 \times 4 = 16 \text{ units}$$

There are 6 faces so total area = $6 \times 16 = 96$ units

When cubes at the corners are removed they introduce new surfaces equal to exposes surfaces so the area of the bigger cube does not change from 96.



6. A shaving set company sells 4 different types of razors, Elegance, Smooth, Soft and Executive.

Elegance sells at Rs. 48, Smooth at Rs. 63, Soft at Rs. 78 and Executive at Rs. 173 per piece. The table below shows the numbers of each razor sold in each quarter of a year.

Quarter/ Product	Elegance	Smooth	Soft	Executive
Q1	27300	20009	17602	9999
Q2	25222	19392	18445	8942
Q3	28976	22429	19544	10234
Q4	21012	18229	16595	10109

Which product contributes the greatest fraction to the revenue of the company in that year?

- A. Elegance B. Executive
C. Smooth D. Soft

Ans. B

Sol. Revenue from Elegance
 $= (27300 + 25222 + 28976 + 21012) \times \text{Rs. } 48 = \text{Rs. } 4920480$
 Revenue from Smooth = $(20009 + 19392 + 22429 + 18229) \times \text{Rs. } 63 = \text{Rs. } 5043717$
 Revenue from Soft = $(17602 + 18445 + 19544 + 16595) \times \text{Rs. } 78 = \text{Rs. } 5630508$

Revenue from Executive
 $= (9999 + 8942 + 10234 + 10109) \times \text{Rs. } 173 = \text{Rs. } 6796132$

Total Revenue = Rs. 22390837

Fraction of Revenue for Elegance = 0.219

Fraction of Revenue for Smooth = 0.225

Fraction of Revenue for Soft = 0.251

Fraction of Revenue for Executive = 0.303

Thus B is correct Ans.

7. Indian currency notes show the denomination indicated in at least seventeen languages. If this is not an indication of the nation's diversity, nothing else is.

Which of the following can be logically inferred from the above sentences?

- A. India is a country of exactly seventeen languages.
 B. Linguistic pluralism is the only indicator of a nation's diversity.
 C. Indian currency notes have sufficient space for all the Indian languages.
 D. Linguistic pluralism is strong evidence of India's diversity.

Ans. D

Sol. A is incorrect as it cannot be inferred that exactly 17 languages are there, because the statement says that there are atleast 17 languages on the currency note.

B is incorrect because of the word 'only' in the option, which is too strong to be inferred.

C is incorrect as it says 'space for all Indian languages', but the number of languages in India is not mentioned in the question.

D is correct as it can be easily inferred from the statement.

8. Consider the following statements relating to the level of poker play of four players P, Q, R and S.
 I. P always beats Q

- II. R always beats S
- III. S loses to P only sometimes
- IV. R always loses to Q

Which of the following can be logically inferred from the above statements?

- (i) P is likely to beat all the three other players
 - (ii) S is the absolute worst player in the set
- A. (i) B. only (ii)
 C. (i) and (ii) D. neither (i) nor (ii)

Ans. D

Sol. All three can Beat S, but S loses to P only sometimes.

So, (ii) can not be inferred from the given statements.

Defeating in Poker is not transitive. P beats Q. Q beats R and R beats S. Yet S loses to P only sometimes, meaning that S mostly wins against P.

So we can not logically infer that P is likely to beat R.

- 9.** If $f(x) = 2x^7 + 3x - 5$ which of the following is a factor of $f(x)$?
- A. $x^3 + 8$ B. $(x - 1)$
 C. $(2x - 5)$ D. $(x + 1)$

Ans. B

Sol. from the option (b) substitute $x = 1$ in

$$2x^7 + 3x - 5 = 0$$

$$2(1)^7 + 3(1) - 5 = 0$$

$$5 - 5 = 0$$

So $(x - 1)$ is a factor of $f(x)$

Alternative way:

Factors by grouping

$$: (x - 1)(2x^6 + 2x^5 + 2x^4 + 2x^3 + 2x^2 + 2x + 5)$$

- 10.** In a process, the number of cycles to failure decreases exponentially with an increase in load. At a load of 80 units, it takes 100 cycles

for failure. When the load is halved, it takes 10000 cycles for failure. The load for which the failure will happen in 5000 cycles is_____ .

- A. 40.00 B. 46.02
 C. 60.01 D. 92.02

Ans. B

Sol. From the data given we approximate

$$\text{load} = \frac{\text{exponent}}{\log(\text{cycles})}$$

$$80 = \frac{x}{\log(100)} = x = 160$$

$$40 = \frac{x}{\log(10000)} = x = 160$$

$$\text{load} = \frac{160}{\log 5000} = 43.25$$

So closest answer is 46.02

Note: We have done an approximation.

Set-2

- 1.** He turned a deaf ear to my request.
 What does the underlined phrasal verb mean?
- A. ignored B. appreciated
 C. twisted D. returned

Ans. A

Sol. 'turned a deaf ear' means ignored

- 2.** Choose the most appropriate set of words from the options given below to complete the following sentence . _____ , _____ is a will, _____ is a way.
- A. Wear, there, their
 B. Were, their, there
 C. Where, there, there
 D. Where, their, their

Ans. C

Sol. Where there is a will there is a way. It is a quotation

3. $(x\% \text{ of } y) + (y\% \text{ of } x)$ is equivalent to _____.
- A. 2 % of xy B. 2 % of $(xy/100)$
C. $xy\%$ of 100 D. 100 % of xy

Ans. A

Sol. $x\%$ of $y = \frac{x}{100}y = \frac{xy}{100}$

$y\%$ of $x = \frac{y}{100}x = \frac{xy}{100}$

$(x\% \text{ of } y) + (y\% \text{ of } x) = \frac{2}{100}xy = 2\% \text{ of } xy$

4. The sum of the digits of a two digit number is 12. If the new number formed by reversing the digits is greater than the original number by 54, find the original number.
- A. 39 B. 57
C. 66 D. 93

Ans. A

Sol. Let the original number be xy
 y ---unit digit of

$x + y = 12$ -----(1)

$10y + x = 10x + y + 54$

$9x - 9y = -54$ -----(2)

Solving (1) & (2) we get, $x = 3$ and $y = 9$

So the number is 39

5. If I were you, I _____ that laptop. It's too much expensive.
- A. won't buy B. shan't buy
C. wouldn't buy D. would buy

Ans. C

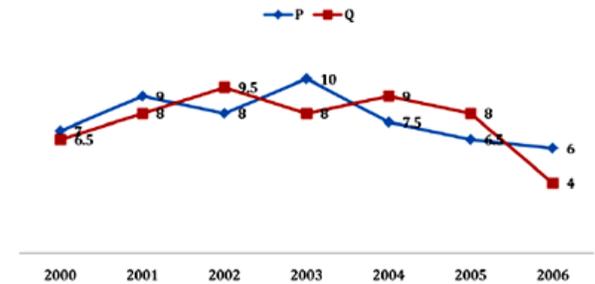
Sol. In if clause 'were' is in the past tense so the so main clause should be in the conditional clause (past tense).

If I were you, I **wouldn't buy** that laptop. It's too much expensive.

Therefore 'C' is the best answer

6. Two finance companies, P and Q, declared fixed annual rates of interest on the amounts invested with them. The rates of interest

offered by these companies may differ from year to year. Year-wise annual rates of interest offered by these companies are shown by the line graph provided below



If the amounts invested in the companies, P and Q, in 2006 are in the ratio 8:9, then the amounts received after one year as interests from companies P and Q would be in the ratio:

- A. 2:3 B. 3:4
C. 6:7 D. 4:3

Ans. D

Sol. let the deposited money in the company P is $8x$
And the deposited money in the company Q is $9x$
Interest after one year from the

company P = $8x \left(\frac{6}{100} \right)$

Interest after one year from the

company Q = $9x \left(\frac{4}{100} \right)$

Ratio of Interest $\frac{8x \times 6}{9x \times 4} = \frac{4}{3}$

7. Today, we consider Ashoka as a great ruler because of the copious evidence he left behind in the form of stone carved edicts. Historians tend to correlate greatness of a king at his time with the availability of evidence today.

Which of the following can be logically inferred from the above sentences?

- A. Emperors who do not leave significant sculpted evidence are completely forgotten.
- B. Ashoka produced stone carved edicts to ensure that later historians will respect him.
- C. Statues of kings are a reminder of their greatness.
- D. A king's greatness, as we know him today, is interpreted by historians

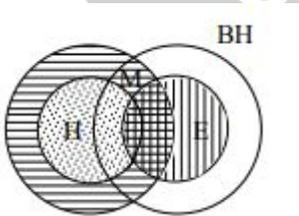
Ans. D

Sol. 'Today, historians correlate greatness of a king at his time with the availability of evidence.' This statement leads to the best inference i.e. option 'D'

- 8.** Fact 1: Humans are mammals.
Fact 2: Some humans are engineers.
Fact 3: Engineers build houses.
If the above statements are facts, which of the following can be logically inferred?
- I. All mammals build houses.
 - II. Engineers are mammals.
 - III. Some humans are not engineers.
- A. II only. B. III only.
C. I, II and III. D. I only.

Ans. B

Sol. From given facts, the following venn diagram is possible.



- H = Humans
- M = Mammals
- E = Engineers
- BH = Build houses ∴

From above diagram, we can clearly say statement III is true.

- 9.** A square pyramid has a base perimeter x, and the slant height is half of the perimeter. What is the lateral surface area of the pyramid?
- A. x^2
 - B. $0.75x^2$
 - C. $0.50x^2$
 - D. $0.25x^2$

Ans. D

Sol. Lateral surface area of the square pyramid

$$A = a\sqrt{a^2 + 4h^2} \quad \begin{matrix} 4a \rightarrow \text{perimeter} \\ h \rightarrow \text{height} \\ l \rightarrow \text{slanting height} \end{matrix}$$

$$F = \left(\frac{a}{2}\right)^2 + h^2 \Rightarrow h^2 = \left(F - \frac{a^2}{4}\right)$$

$$A = a\sqrt{a^2 + 4\left(F - \frac{a^2}{4}\right)} = a \cdot 2l$$

$$A = 2al = 2 \times \frac{P}{4} \times \frac{P}{2} = 0.25P^2 = 0.25x^2$$

- 10.** Ananth takes 6 hours and Bharath takes 4 hours to read a book. Both started reading copies of the book at the same time. After how many hours is the number of pages to be read by Ananth, twice that to be read by Bharath? Assume Ananth and Bharath read all the pages with constant pace.

- A. 1
- B. 2
- C. 3
- D. 4

Ans. C

Sol. Ananth covers $\frac{1}{6}$ of the book in 1 hour.
Bharath covers $\frac{1}{4}$ of the book in 1 hour

$$\frac{\left(\frac{1}{6}\right)X}{\frac{1}{4}} = 2 \Rightarrow X = 3 \text{ hrs}$$
