

# GATE 2020

## Civil Engineering

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



**Set-1**

1. It is a common criticism that most of the academicians live in their\_\_\_\_\_. So, they are not aware of the real-life challenges.  
 A. Ivory towers      B. Homes  
 C. Glass palaces      D. Big flats

**Ans.** A

**Sol.** "If you define someone as living in an ivory tower", it means that they have no knowledge or experience of the practical problems people face in everyday life.

It is a common criticism that most academicians live in their ivory tower, so they are not aware of the real-life challenges. So, option A is the correct answer.

2. His hunger for reading is insatiable. He reads indiscriminately. He is most certainly a/an \_\_\_\_\_ reader.  
 A. all-round      B. voracious  
 C. wise      D. precocious

**Ans.** B

**Sol. Voracious:** shows excessive eagerness, hunger and excitement towards anything.

**All-round:** able to do many different things well, versatile

**Precocious:** (used about children) having developed certain abilities and ways of behaving much younger than usual.

**Wise:** having or showing experience, knowledge, and good judgment

A **voracious** reader shows **excessive eagerness and excitement in reading.**

Here, although the sentence 'His hunger for reading is insatiable, he reads indiscriminately' refers to the unbiasedness and all-encompassing nature of the reader,

the word 'voracious' is a most suitable fit for the blank than the other options.

His hunger for reading is insatiable, he reads indiscriminately. He is most certainly a/an voracious reader.

Hence, option B is the correct answer.

3. Select the word that fits the analogy Fuse : Fusion :: Use : .....  
 A. User      B. Uses  
 C. Usage      D. Using

**Ans.** C

**Sol.** Fusion is the **noun form** of Fuse.

Usage is the **noun form** of Use.

4. If 0, 1, 2, ..... 7, 8, 9 are coded as O, P, Q, ....., V, W, X, then 45 will be coded as  
 A. TS      B. SS  
 C. ST      D. SU

**Ans.** C

**Sol.**

0	1	2	3	4	5	6	7	8	9
O	P	Q	R	S	T	U	V	W	X

So, 45 → ST

5. The sum of two positive numbers is 100. After subtracting 5 from each number, the product of the resulting numbers is 0. One of the original numbers is.  
 A. 95      B. 85  
 C. 80      D. 90

**Ans.** A

**Sol.** Let one positive number be = a and other positive number = 100 - a  
 product of number after subtracting 5 from each number = (a - 5) × (95 - a) = 0  
 ⇒ either a = 5 or a = 95

So, the original numbers are 5 and 95.

From, the options given 95 is the answer.

6. The American psychologist Howard Gardner expounds that human intelligence can be sub categorized into multiple kinds, in such a way that individuals differ with respect to their relative competence in each kind. Based on this theory, modern educationists insist on prescribing multi-dimensional curriculum and evaluation parameters that enable development and assessment of multiple intelligences.

Which of the following statements can be inferred from the given text?

- A. Howard Gardner insists that the teaching curriculum and evaluation needs to be multi-dimensional.
- B. Modern educationists want to develop and assess the theory of multiple intelligences.
- C. Modern educationists insist that the teaching curriculum and evaluation needs to be multi-dimensional.
- D. Howard Gardner wants to develop and assess the theory of multiple intelligences.

**Ans.** C

**Sol.** Option C is correct because this can be inferred from "modern educationists insist on prescribing multi-dimensional curriculum." An explanation for other options are given below:

It is mentioned in the paragraph that modern educationists insist on multi-dimensional curriculum and evaluation parameters, not Howard Gardner. So, options A and D are incorrect.

Option B is incorrect as modern educationists insist on prescribing multi-dimensional curriculum," meaning modern educationists are using the theory – but we cannot infer if they want to develop it.

7. Five friends P, Q, R, S and T went camping. At night, they had to sleep in a row inside the tent. P, Q and T refused to sleep next to R since he snored loudly. P and S wanted to avoid Q as he usually hugged people in sleep. Assuming everyone was satisfied with the sleeping arrangements, what is the order in which they slept?

- A. RSPTQ
- B. SPRTQ
- C. QTSPR
- D. QRSPT

**Ans.** A

**Sol.** Option A is the only arrangement where given conditions are met.

In option B & C, R is sleeping next to P

In option D, R is sleeping next to Q.

**Alternate Thinking:**

Given that P, Q and T refused to sleep next to R since he snored loudly. It means R should be placed on either of the corners, and S should be just adjacent to him. It also means that P, T and Q must come together. So, we can eliminate options B, C and D.

The remaining option (A) is the correct answer.

8. Insert seven numbers between 2 and 34, such that the resulting sequence including 2 and 34 is an arithmetic progression. The sum of these inserted seven numbers is.

- A. 124
- B. 130
- C. 120
- D. 126

**Ans.** D

**Sol.** As per the given question, the sequence of given AP is, 2 \_\_\_\_\_ 34

In this sequence first term (a) = 2

Last term ( $t_n$ ) = 34

So, as per the relation,

$$t_n = a + (n - 1) d$$

$n \rightarrow$  number of terms

$d \rightarrow$  common difference

$$34 = 2 + (9 - 1) d$$

$$d = 4$$

So, the A.P. becomes, 2, 6, 10, 14, 18, 22, 26, 30, 34

Sum of 7 terms between 2 to 34 is 126

9. The unit's place in  $26591749^{110016}$  is

- A. 6                                      B. 1  
C. 3                                      D. 9

**Ans.** B

**Sol.** The unit digit in the power of 9 can be found by,

$$9^1 = 9 \rightarrow \text{unit digit is } 9$$

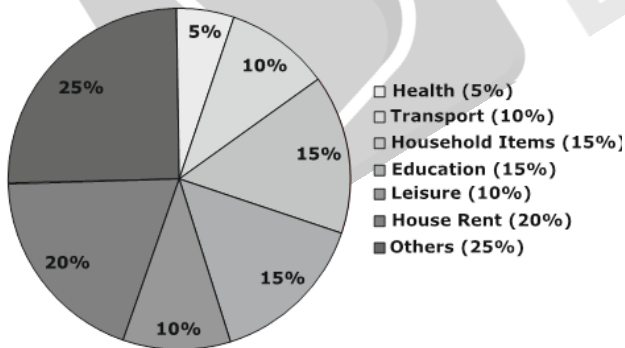
$$9^2 = 81 \rightarrow \text{so, unit digit is } 1$$

$$9^3 = 729 \rightarrow \text{unit digit is } 9$$

$$9^4 = 6561 \rightarrow \text{unit digit is } 1$$

So, from the above sequence, if the power of 9 is even the unit digit will be 1. and if power of 9 is odd then the unit digit will be 9. As per the question, the power here is even (110016), So unit digit will be 1.

10. The total expenditure of a family, on different activities in a month, is shown in the pie-chart. The extra money spent on education as compared to transport (in percent) is



- A. 50                                      B. 100  
C. 33.3                                    D. 55

**Ans.** A

**Sol.** Extra money spent on education as compared

$$\begin{aligned} \text{to transport} &= \left( \frac{15 - 10}{10} \right) \times 100 \\ &= 50\% \end{aligned}$$

**Set-2**

1. Rescue teams deployed \_\_\_\_\_ disaster hit areas combat \_\_\_\_\_ a lot of difficulties to save the people.

- A. with, with                              B. in, with  
C. with, at                                    D. to, to

**Ans.** B

**Sol.** Deployed means Extended or spread out.

Deployed **in** disaster-hit areas is the correct usage.

Combat means battle, fight, conflict etc.

Combat **with** is the right usage.

Correct option: B

2. Select the most appropriate word that can replace the underlined word without changing the meaning of the sentence:

Now-a-days, most children have a tendency to belittle the legitimate concerns of their parents.

- A. Disparage                                B. Begrudge  
C. Reduce                                    D. Applaud

**Ans.** A

**Sol.** Disparage: to talk critically about someone ;to say that somebody/something is of little value or importance; Depreciate.

Begrudge: Envy, Resent

Reduce: To reduce or reduce one's quantity, value, size, etc.

Applaud: Praise someone for their work.

Belittle means make somebody or the things he/she does, seem unimportant or not very good.

So from the above given meanings only "Disparage" has similar meaning as "Belittle". Thus option A is the correct answer.

3. Select the word that fits the analogy:  
 Partial : Impartial :: Popular : \_\_\_\_\_  
 A. Dispopular                  B. Impopular  
 C. Unpopular                  D. Mispopular

**Ans. C**

**Sol.** Partial : Impartial :: Popular : Unpopular  
 Impartial is an antonym of partial.  
 Similarly unpopular is an antonym of popular.

4. After the inauguration of the new building, the Head of the Department (HoD) collated faculty preferences for office space. P wanted a room adjacent to the lab. Q wanted to be close to the lift. R wanted a view of the playground and S wanted a corner office. Assuming the everyone was satisfied, which among the following shows a possible allocation?

A.

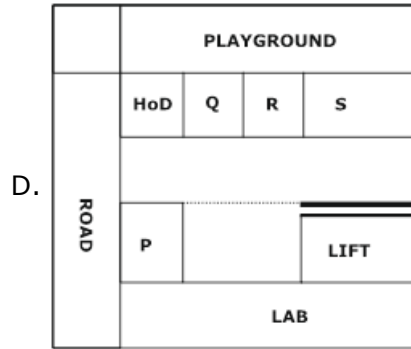
	PLAYGROUND			
ROAD	s	R	P	HoD
	Q			LIFT
LAB				

B.

	PLAYGROUND			
ROAD	HoD	S	R	Q
	P			LIFT
LAB				

C.

	PLAYGROUND			
ROAD	s	R	HoD	Q
	P			LIFT
LAB				



**Ans. C**

**Sol.** Given conditions:

P wants a room adjacent to the lab.

Q wants to be close to the lift.

R wants a view of the playground and S wants a corner office.

Option A is incorrect: Q is not close to the lift.

Option B is incorrect: P's room is not adjacent to lab and Q is not close to the lift.

Option D is incorrect: Office of S is not at corner.

Option C is the only arrangement where all the conditions are successfully fulfilled.

Hence option C is the correct answer.

5. If  $f(x) = x^2$  for each  $x \in (-\infty, \infty)$ ,

then  $\frac{f(f(f(x)))}{f(x)}$  is equal to \_\_\_\_\_.

- A.  $(f(x))^4$                   B.  $(f(x))^2$   
 C.  $(f(x))^3$                   D.  $f(x)$

**Ans. C**

**Sol.**  $F(x) = x^2$

$$f(f(x)) = fofo(x) = (x^2)^2 = x^4$$

$$f(f(f(x))) = fofofo(x) = (x^4)^2 = x^8$$

$$\frac{f(f(f(x)))}{f(x)} = \frac{fofofo(x)}{f(x)} = \frac{x^8}{x^2}$$

$$= x^6 = (x^2)^3 = (f(x))^3$$

Hence, option C is the correct answer.

6. Nominal interest rate is defined as the amount paid by the borrower to the lender for using the borrowed amount for a specific period of time. Real interest rate calculated on the basis of actual value (inflation-adjusted), is approximately equal to the difference between nominal rate and expected rate of inflation in the economy. Which of the following assertions is best supported by the above information?
- A. Under low inflation, real interest rate is low and borrowers get benefited.
  - B. Under high inflation, real interest rate is low and lenders get benefited.
  - C. Under high inflation, real interest rate is low and borrowers get benefited.
  - D. Under low inflation, real interest rate is high and borrowers get benefited.

**Ans.** C

**Sol.** According to the paragraph  
Real Rate of Interest = Nominal rate of interest - expected rate of inflation.  
**Under High Inflation:-** The expected rate of inflation is also high which means the **real rate of interest is low**. In this condition, **borrowers** will have to pay less interest which will **benefit** them but the **lender will suffer loss** due to lower interest.  
Hence Option C is the correct answer.  
Under Low Inflation:- The expected rate of inflation is also low which means the **real rate of interest is high**. In this condition, **borrowers** will suffer loss due to high rate of interest but the **lender will be benefitted** due to higher interest.

7. For the year 2019, which of the previous year's calendar can be used?
- A. 2013
  - B. 2014
  - C. 2012
  - D. 2011

**Ans.** A

**Sol.** A year has 365 days, except a leap year, which has 366 days.  
 $365 \text{ days} = 52 \text{ weeks} + 1 \text{ day.}$   
 $366 \text{ days} = 52 \text{ weeks} + 2 \text{ days.}$   
So, for a normal year, the next year's calendar will shift by one day and for a leap year, the next year's calendar will shift by two days.  
Assuming 2019 starts on a Sunday.  
2018: Saturday  
2017: Friday  
2016: Wednesday (Since 2016 is a leap year)  
2015: Tuesday  
2014: Monday  
2013: Sunday

8. The ratio of 'the sum of the odd positive integers from 1 to 100' to 'the sum of the even positive integers from 150 to 200' is \_\_\_\_\_.
- A. 45 : 95
  - B. 1 : 2
  - C. 50 : 91
  - D. 1 : 1

**Ans.** C

**Sol.** Sum of the odd positive integers from 1 to 100  
 $= 1 + 3 + 5 \dots + 99$   
No. of terms = 50,  
First term = 1; Last term = 99  
Therefore, Sum =  $50 \times (1+99)/2 = 2500$   
Sum of the even positive integers from 150 to 200

$$= 150 + 152 + 154 + \dots + 198 + 200$$

No. of terms = 26

First term = 150; Last term = 200

$$\text{Therefore, Sum} = 26 \times (150 + 200) / 2 = 4550$$

$$\text{ratio} = 2500 / 4550 = 50 / 91$$

9. In a school of 1000 students, 300 students play chess and 600 students play football. If 50 students play both chess and football, the number of students who play neither is \_\_\_\_\_.

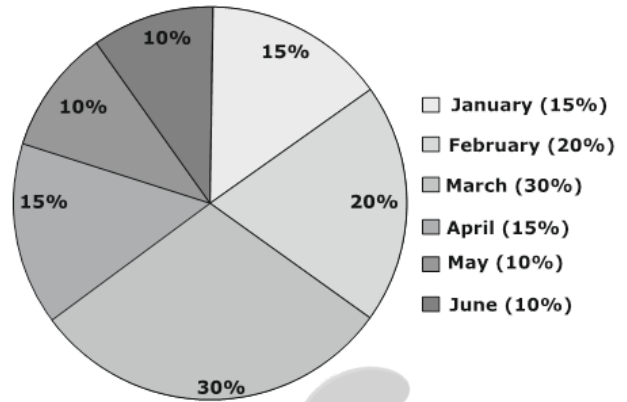
- A. 150
- B. 200
- C. 100
- D. 50

Ans. A

Sol. Total students in the school  $N(S) = 1000$   
 Number of students play chess  $N(C) = 300$   
 Number of students play football  $N(F) = 600$   
 Number of students play both chess and football  $N(C \& F) = 50$   
 $N(S) = N(C) + N(F) - N(C \& F) + N(\text{none})$   
 $1000 = 300 + 600 - 50 + N(\text{none})$   
 $N(\text{none}) = 150$   
 So, 150 students play neither chess nor football.

10. The monthly distribution of 9 Watt LED bulbs sold by two firms X and Y from January to June 2018 is shown in the pie-chart and the corresponding table. If the total number of LED bulbs sold by two firms during April-June 2018 is 50000, then the number of LED bulbs sold by the firm Y during April-June 2018 is \_\_\_\_\_.

Percentage of 9 Watt LED bulbs sold by the firms X and Y from January 2018 to June, 2018



Month	Ratio of LED bulbs sold by two firms (X : Y)
January	7 : 8
February	2 : 3
March	2 : 1
April	3 : 2
May	1 : 4
June	9 : 11

- A. 8750
- B. 8250
- C. 27600
- D. 11250

Ans. C

Sol. LED Bulbs sold

$$y_{\text{April}} = \frac{2}{5} \times 15 = 6\%$$

$$y_{\text{May}} = \frac{4}{5} \times 10 = 8\%$$

$$y_{\text{June}} = \frac{10}{20} \times 11 = 5.5\%$$

LED Bulb sold by y during April-June

$$= 6 + 8 + 5.5 = 19.5\%$$

Total LED bulbs sold by x and y is 35% of the value = 50000

LED Bulb sold by y during April - June

$$= \frac{19.5}{35} \times 50000 = 27587.14$$

$$= 27600$$

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