Disclaimer - This data may not be accurate as it is based on memory of test takers. This will be a precise tool for students to understand the type of questions to expect in Numerical Ability, Verbal Ability and Mathematics Sections in upcoming slots.

We wish you All the Very Best for your GATE-2018.

Section-I: General Ability

1. If pqr $\neq 0$, and $p^{-x} = \frac{1}{q}, q^{-y} = \frac{1}{r}, r^{-z} = \frac{1}{p}$ then product of xyz is

(A) -1 (B) $\frac{1}{pqr}$ (C) 1 (D) pqr

Key: (C)

Sol: $p^{-x} = \frac{1}{q}$

$$\Rightarrow \left(r^z\right)^x = \frac{1}{q}\left[\because r^{-z} = \frac{1}{p} \Rightarrow p = r^z\right] \Rightarrow r^{xz} = \frac{1}{q}$$

$$\Rightarrow \left(q^y\right)^{xz} = \frac{1}{q}\left[\because q^{-y} = \frac{1}{r} \Rightarrow r = q^y\right] \Rightarrow q^{xyz} = q^1 \Rightarrow xyz = 1$$

2. Find the missing value in the following sequence

2, 12, 60, 240, 720, 1440, ______, 0

(A) 2880 (B) 1440 (C) 720 (D) 0

Key: (B)

Sol:

$$2 \xrightarrow{\times 6} 12 \xrightarrow{\times 5} 60 \xrightarrow{\times 4} 240 \xrightarrow{\times 3} 720 \xrightarrow{\times 2} 1440 \xrightarrow{\times 1} 1440 \xrightarrow{\times 0} 0$$

So option is B

3. In a party, 60% of the invited guest are males and 40% are female, if 80% of the invited guest attended the party and if all the invited female guests attended then what would be the ratio of males to females among the attendees is in the party?

(A) 2:3 (B) 1:1 (C) 3:2 (D) 2:1

Key: (B)

Sol: Given that, No. of invited male guests = 60

No. of invited female guests = 40

Total no. of invited people = 100 [60+40].

Given, Out of 100; all 40 female guests are attended.

Total no.of attended guests = 80.

$\therefore$ No.of attended male guests = 80-40 = 40.

$\therefore$ The required ratio = 40 : 40 $(\therefore$All females attended party$)$ =1:1. So option (B)

4. Consider a 6 sided dice with 4 green faces and two red faces is rolled for 7 times Find the best combination

(A) 3 Green + 4 Red (B) 4 Green + 3 Red (C) 5 Green+ 2 Red (D) 6 Green + 1 Red

Key: (C)

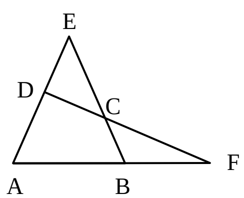
Sol: 4-Green; 2-Red

$$P(\text{Green faces}) = \frac{4}{6} = \frac{2}{3} = 0.67$$

$$P(\text{Red faces}) = \frac{2}{6} = \frac{1}{3} = 0.33$$

$$\Rightarrow \text{Best combination} \rightarrow 5\ \text{Green} + 2\ \text{Red}$$

$$(\therefore \text{Probability of getting faces is more than double the probability of getting Red faces})$$

5. 

$\angle DEC + \angle BFC =$ _______

(A) $\angle BCD - \angle BAD$ (B) $\angle BAD + \angle BCF$

(C) $\angle BAD + \angle BCD$ (D) $\angle BCD + \angle ADC$

6. A _________ investigation can sometimes yield new facts, but typically organized ones are more successful

(A) Meandering (B) Timely (C) Consistent (D) Systematic

Key: (A)

7. The area of a square is ‘d’. What is the area of the circle which has the diagonal of the square as it’s diameter?

(A) πd (B) πd^2 (C) $\frac{1}{4}\pi d^2$ (D) $\frac{1}{2}\pi d$

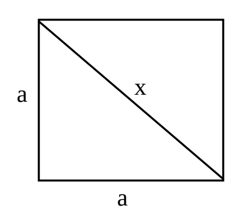
Key: (D)

Sol: Given, Area of square is d.

Let us assume that the side of square as 'a'

$\therefore a^2 = d \Rightarrow d = a^2$

Given that diameter of circle = diagonal of the square = $\sqrt{2}a$



$\left[\text{diagonal } x = \sqrt{a^2 + a^2} = \sqrt{2}a\right]$

$$\therefore \text{Radius of circle} = \frac{\sqrt{2}a}{2} = \frac{a}{\sqrt{2}}$$

$$\therefore \text{The area of circle} = \pi\left(\frac{a}{\sqrt{2}}\right)^2 = \frac{\pi}{2}a^2 = \frac{\pi}{2}d \quad (\because a^2 = d)$$

So option is (D).

8. The smallest natural number which when divided either by 20 or by 42 or by 76 leaves a reminder of 7 in each case

(A) 3047 (B) 6074 (C) 7987 (D) 63847

Key: (C)

Sol: The smallest number when divided by 20, 42, 76 and leaves a remainder '7' in each case

$= \text{LCM}(20, 42, 76) + 7 = 7980 + 7 = 7987$

9. "From where are they bringing their books''. Fill in the blanks

______ bringing ____ books from _____

(A) Their , they're, there (B) they're, Their, there.

(C) There, their, they're, (D) They're, There, their,

Key: (B)

10. In appreciative of social improvement completed in a town, a wealthy philanthropist decided to give gift of Rs. 750 to each male senior citizen and Rs. 1000 for female senior citizens. There are total 300 senior citizens and $8/9^{\text{th}}$ of total men and $2/3^{\text{rd}}$ of total women claimed the gift. What is amount of money need to pay?

(A) 15000 (B) 200000 (C) 115000 (D) 151000

Key: (D)

Sol: Let us assume that

No. of men = x (senior citizen)

$\therefore$ no. of women = 300 – x (senior citizen) ($\because$ total no.of senior citizen = 300)

$\therefore$ The amount of money need to paid

$$= \frac{8x}{9} \times 750 + \frac{2}{3}(300 - x) \times 1000$$

$$= \left(\frac{8x}{3}\right) \times 250 + \left(200 - \frac{2x}{3}\right)1000$$

$$= \frac{2000\,x}{3} + 200000 - \frac{2000x}{3}$$

$$= 2,00,000$$

Section-II: Technical

1. Consider the matrix P whose only Eigen vectors are the multiples of $\begin{bmatrix}1\\4\end{bmatrix}$.

   Consider the following statements

   I. P does not have an inverse

   II. P has a repeated Eigen value.

   III. P cannot be diagonalized

   Which of the following Option is Correct?

   (A) I & II (B) Only II (C) I & III (D) II & III

Key: (D)

Sol: Given eigen Vector of P are multiples of $\begin{bmatrix}1\\4\end{bmatrix}$.

$\Rightarrow$ P is 2×2 matrix with repeated non Zero eigen values

$\Rightarrow$ P is non $-$ singular matrix $\Rightarrow P^{-1}$ exists

P cannot be diagonalized

Since P has dependent eigen vectors

2. Let G be an finite group of 84 elements. The size of a largest possible proper subgroup of G is __________

3. Consider the matrix

   $A = UV^T$. where $U = \begin{bmatrix}1\\2\end{bmatrix}, V = \begin{bmatrix}1\\1\end{bmatrix}$. Find the largest Eigen value of is _____

Key: (3)

Sol: $A = UV^T \Rightarrow A = \begin{bmatrix}1\\2\end{bmatrix}\begin{bmatrix}1 & 1\end{bmatrix} = \begin{bmatrix}1 & 1\\2 & 2\end{bmatrix}$

$\therefore$ The characteristic equation of A is

$\lambda^2 - 3\lambda = 0 \Rightarrow \lambda(\lambda-3) = 0 \Rightarrow \lambda = 0; \lambda = 3$ $\therefore$ The largest Eigen value of A is 3.

4. Let N $\rightarrow$ set of natural numbers ,

   P: Set of rational numbers (+, -)

   Q: Set of functions from {0,1} to N

   R: Set of functions from N to {0,1}

   S: Set of finite subsets of N

   Which of the sets above are countable

   (A) Q &S (B) P&S (C) P&R (D) PQ&S

Key: (A)

Sol: Since, Set P is having rational numbers which are countless, by verifying the options Option A does not contain P. Hence, Option A is correct.

5. $\int_0^{\pi/4} x\cos\left(x^2\right)dx =$ _______

Key: (0.289)

Let $x^2 = t$	If $x = 0 \Rightarrow t = 0$
$\Rightarrow 2xdx = dt \Rightarrow xdx = \frac{dt}{2}$	$x = \frac{\pi}{4} \Rightarrow t = \frac{\pi^2}{16}$

$$\int_0^{\pi/4} x\cos\left(x^2\right)dx = \int_0^{\pi^2/16} \cos t\, dt/2 = \frac{1}{2}\left[\sin t\right]^{\pi^2/16} = \frac{1}{2}\left[\sin\left(\frac{\pi^2}{16}\right)\right] \simeq 0.289.$$

6. Temperature in Delhi, Guwahati is given in the table below with high, medium and low

	HD	MD	LD
HG	0.4	0.48	0.12
MG	0.1	0.65	0.25
LG	0.01	0.5	0.49

From table P (HD/HG) = 0.4
P (LD/HG) = 0.12
P (HG) = 0.2
P (MG) = 0.5
P (LG) 0.3

What is the probability of Guwahati has high temperature than Delhi.

Key: (0.245-0.25)

Sol: Guhwati has high temperature than Delhi in the following cases:

	Guwahati	**Delhi**
i	High	Medium
ii	High	Low
iii	Medium	Low

$\therefore$ The required probability $= P\left[HG \cap MD\right] + P\left[HG \cap LD\right] + P\left[MG \cap LD\right]$

$\Rightarrow$ P [Guwahati has high temperature than Delhi]

$$= P(HG).P\left(\frac{MD}{HG}\right) + P(HG)P\left[\frac{LD}{HG}\right] + P(MG)P\left[\frac{LD}{MG}\right]$$

$$\left[\because P(A \cap B) = P(A)P(B/A)\right]$$

$$= 0.2 \times 0.48 + 0.2 \times 0.12 + 0.5 \times 0.25 = 0.245$$

Subject wise Analysis-

CS-2018 Gate Analysis			
	1 Mark	**2 Mark**	**Total**
General Aptitude	5	5	10
Digital	2	2	4
Data Structures and Algorithms	4	6	10
Database Management Systems	2	2	4
Computer Organization and Architecture	3	6	9
Theory of Computation	2	3	5
Computer Networks	3	2	5
Operating Systems	2	2	4
Compiler Design	0	2	2
Discrete Mathematics	4	2	6
Engineering Mathematics	3	3	6

GATE-2018 Paper was more or less in same line with GATE -2017 paper. There was some changes in weightage across sections. This year we saw Computer Organization and Architecture had more questions than last year. Students of other streams can expect such changes in their streams as well. We expect cutoff to remain same like GATE-2017.