

PGDBA 2025

VARC

Section: Verbal ability and Comprehension

Question: The passage below is accompanied by five questions. Based on the passage, choose the best answer for each question.

Yet after three decades of freedom, most South Africans say they are dissatisfied with democracy and would ditch elected governments if an autocrat could do a better job. There is more socialising across racial boundaries, but the share of South Africans saying race relations have improved since 1994 has fallen sharply since 2010.

After steady progress in the first 15 years, most South Africans—and therefore, since they are 81% of the population, most black citizens—no longer see their lives getting better. On average, incomes have stagnated since 2008, unemployment has risen from around 20% to more than 30%, and power and water cuts have become more frequent. Corruption has seeped into every layer of the state. Only 15% of 257 municipalities get clean audits from the relevant watchdog. It is hard to be thankful for democratic freedoms when you are jobless and living in your grandmother's house.

Alas, a fatalistic explanation has taken root among academics, commentators and left-wing politicians. This view holds that the deal struck in the early 1990s to end apartheid was a sham: it won black people political rights, but not economic freedom. Mandela, in other words, was a sell-out who ushered in a "new apartheid" in which a black elite was co-opted by whites.

There are many reasons why this is wrong. First, it gives too little credit to Mandela's courage and canniness. He was a skilful politician who stuck to his red lines, winning majority rule while avoiding civil war. Anyone who spends 27 years in prison for his cause is an unusual sort of sell-out.

It also ignores the good the African National Congress (ANC) did with its newly won power. Under Trevor Manuel, the finance minister from 1996 to 2009, sensible macroeconomic policies underpinned steady annual GDP growth averaging 3.3%, more than double the rate of the next 14 years. Using the proceeds, ANC-led governments replaced millions of

shacks and mud huts with decent homes that have water and electric lights. Welfare benefits made poverty less grinding.

Another reason is that fatalism allows the ANC to shirk responsibility for its worst decisions. Corruption, glossed over by Mandela and Thabo Mbeki, his successor, exploded under Jacob Zuma, President from 2009 to 2018. Cadre deployment, whereby civil servants are appointed on the basis of fealty to the ANC, not merit, has eviscerated bureaucratic capacity. In another case of ideological folly, the ANC has increasingly pursued policies that focus on the redistribution of wealth in ways that actually hinder its creation. These include so-called "black economic empowerment" policies and boosting the bargaining power of unions. The ANC's own policies are the reason why South Africa is still a society where perhaps a quarter of people live well and the rest are desperately poor.

The danger over the next 30 years is that politics becomes ever more zero-sum. Populist parties are race-baiting and exploiting poverty. But there is also a resilience to South African politics, forged in the fight for liberty. Apartheid left a wariness of racially or tribally charged politics. The transition helped entrench consensus and pragmatism. Elections have brought some accountability: the ANC now has a majority in only two of the eight largest urban areas. Democracy may have been a disappointment so far. But, in 2024 as in 1994, it offers the potential for renewal. That is Mandela's enduring gift.

Q.1 Which of the following statement is true as per the passage?

- A. The end of Apartheid has facilitated values like consensus and pragmatism.
- B. Cadre deployment by the ANC has enhanced the state's bureaucratic capacity.
- C. In South Africa perhaps a one-fourth of people are poor and three-fourth live well.
- D. Under Trevor Manuel South Africa was an economic disaster.

[Option A is Correct](#)

Q.2 Which of the following statements is not accurate as per the passage?

- A. The end of apartheid meant economic freedom for blacks.
- B. South Africans are showing lesser inclination towards democracy.
- C. In some quarters, Mandela is seen as the progenitor of a "new apartheid".
- D. south Africans are showing preferences toward autocracy.

[Option A is Correct](#)

Q.3 Which of the following statements is not correct as per the passage?

- A. Populist parties are leveraging poverty.**
- B. The number of South Africans believing in improved race relations have dwindled since 2010**
- C. There is less socialising across racial divide.**
- D. Mandela managed to avoid civil war**

Option C is Correct

Q.4 Which of the following statements is not true as per the passage?

- A. Mandela spent 27 years in prison fighting apartheid.**
- B. South Africans have a pronounced preference of democracy.**
- C. Nelson Mandela, Thabo Mbeki and Jacob Zumba, have all been presidents of South Africa.**
- D. For the current left-wing politicians Mandela was a sell-out.**

Option B is Correct

Q.5 Which of the following statements is correct as per the passage.

- A. The African National Congress has dominance in a large number of the largest urban**
- B. In the immediate aftermath of the end of apartheid, poverty became more grinding for most black citizens.**
- C. South Africans politics is totally shorn of resilience.**
- D. 'Black economic empowerment' is an instance of an ideological folly.**

Option D is Correct

Question: The passage below is accompanied by five questions. Based on the passage, choose the best answer for each question.

Motivational quotes. Videos of Steve Jobs saying absolutely anything. Clips of a baby elephant being rescued from a river. You do not have to scroll for long on LinkedIn, a networking site ostensibly for people at work, to find "inspirational" content. There may be people who need only to read "We cannot become what we want by remaining what we are" written in a nice font to feel amped up on a Monday morning. But there will be just as many who want to snigger or vomit. For bosses interested in how to motivate the people around them, there are better options than searching for quotes by Paulo Coelho.

At some level, advice on how to inspire employees is silly. It's usually either blindly obvious – be good at your job, be passionate about the work, make the people on your teams feel valued – or jarringly inauthentic. But

much more practical insights can be found in a forthcoming book called *Inspire*, by Adam Galinsky, an academic at Columbia Business School.

Take, for example, the importance of vivid imagery as a way of bringing an organisation's purpose to life. Lots of firms use a succession of tediously abstract words to convey their goal: "change", "innovate", "connect" and so on. The result is less a mission than a mood board. Mr Galinsky cites an experiment by Andrew Carton of the University of Pennsylvania and his co-authors that showed the effect of more concrete language. In it, teams were asked to design toys and given a vision statement to guide their behaviour. Teams who were handed a statement with more visual language – to create toys that "...make wide-eyed kids laugh and proud parents smile" – produced more engaging toys than teams who were given something more generic.

Mr. Galinsky also points to the power of counterfactual thinking to inspire a sense of meaning. In research he conducted with Laura Kray of the University of California, Berkeley and other co-authors, participants were asked to reflect on important events in their lives, such as their choice of college. Some were also asked to think about how things would have turned out if this event had not taken place. This group attributed greater meaning to the event in question, whether because they concluded fate had played a part in it or because it forced them to think through its consequences more explicitly. This type of counterfactual thinking can also be used to strengthen employees' ties to firms:

prompting people to imagine a world in which their company does not exist seems to increase a sense of attachment.

Perhaps the most striking idea in Mr. Galinsky's book is that, instead of bosses motivating people from above, individuals can do it for themselves. One example is a piece of research he conducted with Julian Fromberck from the Chinese University of Hong Kong and other co-authors. In this study some Swiss citizens who had newly registered with a government employment agency were asked to undertake a ten-to-fifteen-minute exercise in which they reflected on values that mattered to them. They were three times more likely to find a job than those who did not do the exercise.

Q.6 What is the main point the author is trying to make about motivational content on LinkedIn?

- A. It is now mostly the product of AI generated content and lacks authenticity.**
- B. It is generally helpful and effective for boosting morale.**
- C. It is often cliched, inauthentic, and less effective than other methods.**
- D. It is a valuable resource for managers seeking to inspire their teams.**

[Option C is Correct](#)

Q.7 According to Adam Galinsky's research, what is the impact of using vivid imagery in organizational communication?

- A. It makes the message more memorable and engaging, leading to better results.**
- B. It is only effective when combined with motivational quotes and proper direction.**
- C. It has little to no effect on how people perceive the message.**
- D. It makes the message less abstract and easier to interpret.**

Option A is Correct

Q. 8 How does counterfactual thinking contribute to a sense of meaning, according to the research mentioned in the passage?

- A. By making people reflect on their past choices.**
- B. By distracting people from their current problems and fostering affection towards the company.**
- C. By helping people appreciate certain outcomes of past events, whether by fate or deliberate action.**
- D. By encouraging people to dwell on negative possibilities.**

Option C is Correct

Q. 9 An appropriate title for this passage could be

- A. Vivid Imagery to Inspire People**
- B. How to inspire People**
- C. A Review of Adam Gallinsky's 'Inspire'**
- D. Why People Turn to Linkedin for Inspiration**

Option B is Correct

Q. 10 What is the "Most Striking Idea" in Mr. Galinsky's book, as highlighted by the author?

- A. The power of individuals to motivate themselves through reflection.**
- B. The importance of top-down motivational from managers.**
- C. The need for more inspirational quotes in the workplace to boost productivity.**
- D. The benefits of using vivid imagery indtead of abstact language in mission statements.**

Option A is Correct

Q. 11 The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and choose that sequence from the options below.

- 1. Kukla argues that "it is appropriate to categorize a condition as a disease when it serves legitimate strategic goals to at least partially medicalize that condition, and when the condition is pathological from inside the epistemology and metaphysics of medicine".**
- 2. Therefore, it is essential to be mindful of what the aim is when it comes to labelling a condition as "serious" in a given context.**
- 3. Such an approach allows for the evolution of the concept and consideration of contextual aspects.**
- 4. Seriousness is an inherently subjective term and is shaped by each person's unique circumstances.**

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

[Option C is Correct](#)

Q.12 The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and choose that sequence from the options below.

- 1. Video is also an efficient medium for instruction – more precise, in many ways, than the written word.**
- 2. Americans who recently cooked turkeys for Thanksgiving can testify that "golden brown" to one cook may look underdone to another and even burnt to a third.**
- 3. The fact that social media have caused interest in food to rise as fast as home-baked bread should not come as a surprise.**
- 4. Everyone has to eat, and cooking is a common hobby.**

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

[Option D is Correct](#)

Q. 13 The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and choose that sequence from the options below.

- 1.** Yet, as the threat from climate change grows more urgent, it faces job losses in the fossil-fuel sectors that made it rich.
- 2.** The country mines its vast resources of everything and exports them.
- 3.** To make up for that and to stave off industrial decline, Australia is spending billions to build green industries.
- 4.** Digging and shipping have turned Australia into one of the world's richest nations.

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

Option B is Correct

Q. 14 Fill in the blank with the correct word/expression.

There is a wry sense of _____ in the crucible of the world's semiconductor Industry.

- A.** Enhancement
- B.** Enthusiasm
- C.** Elevation
- D.** Deja vu

Option D is Correct

Q. 15 Fill in the blank with the correct word/expression.

The play had a _____ ending.

- A.** Climatic
- B.** Culminating
- C.** Concluding
- D.** Climactic

Option D is Correct

DILR

Section: Logical Resoning

Q.1 Several children sit around a circular table, on which lies a collection of 100 pastries. They proceed to take pastries, after which it turns out that each child has taken either 6 fewer or 3 times as many pastries as the child to their left. Which of the following is true?

- A. The number of pastries taken by at least one child is a multiple of 3.**
- B. The sum of pastries taken by all children must be even.**
- C. Every child must take at least 6 pastries.**
- D. the number of children must be a multiple of 3.**

Option A is Correct

Q. 2 Let x be equal to $(2x - 2y)$, where x is a positive integer and let y be the sum of its digits. Then, which of the following is true?

- A. The number of digits in x must be greater than or equal to 4.**
- B. x must be a 2 digit number.**
- C. x must be a 1 digit number.**
- D. x must be a 3 digit number.**

Option B is Correct

Q. 3 There are 1504 roses kept in a basket. Alice and Bob take it in turns removing either 3 or 5 roses from the basket, with Alice going first, until no more moves are possible. The last player to remove the roses wins. Which of the following is true?

- A. We don't have enough data to conclude anything.**
- B. There exists a strategy for Bob which guarantees him to win the game.**
- C. No strategy exists for either Bob or Alice which can assure either of them for winning this game.**
- D. There exists a strategy for Alice which guarantees her to win this game.**

Option B is Correct

Q. 4 Several children sit around a circular table, on which lies a collection of 100 pastries. They proceed to take pastries, after which it turns out that

each child has taken either 6 fewer or 3 times as many pastries as the child to their left. Which of the following is true?

- A. Pastry being left or not on the table is completely random.
- B. No pastry will be left on the table.
- C. Whether any pastry is left or not depends on the number of children.
- D. Some pastries must be left on the table.

[Option D is Correct](#)

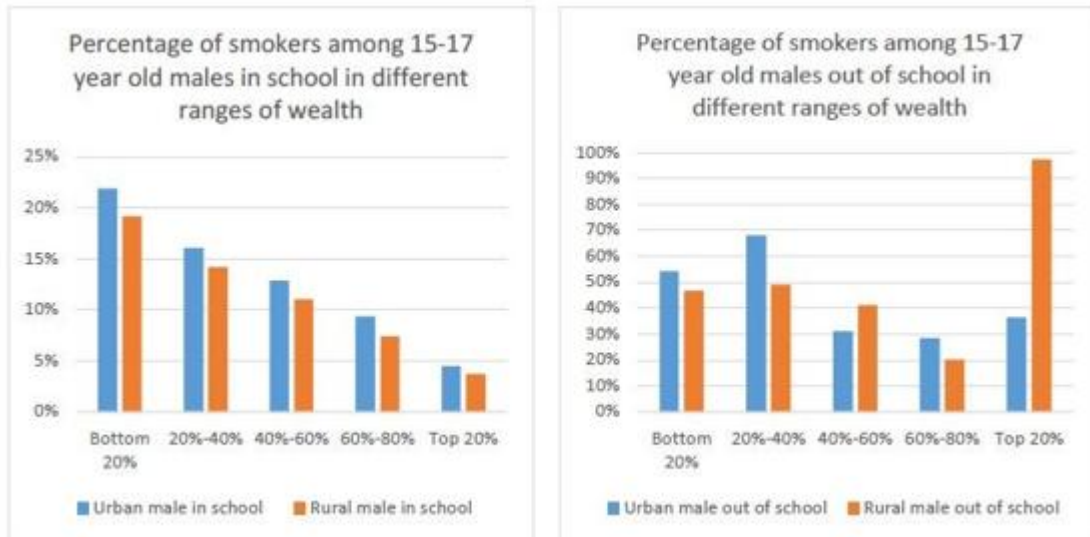
Q. 5 Several children sit around a circular table, on which lies a collection of 100 pastries. They proceed to take pastries, after which it turns out that each child has taken either 6 fewer or 3 times as many pastries as the child to their left. If the number of children is n , then, what can be said about the sum of pastries taken?

- A. It must be a multiple of $6n$.
- B. It must be divisible by 3.
- C. It must be a multiple of n .
- D. It must be less than 50.

[Option B is Correct](#)

Section: Data Interpretation and Data Visualization

Q. 1 The accompanying chart shows the Percentage of smokers among 15-17 year old urban and rural males in different ranges of household wealth quintile, according to the National Family Health Survey (2015-16). The data are reported separately for males who were continuing in school at the time of the survey, and those who were out of school at that time.



The percentage of smokers among the urban males exceeded that among the rural males by more than 5 % among

- A. "Out of school" males in the 40%-60% quintile range of wealth.
- B. "In school" males in the 40%-60% quintile range of wealth.
- C. "Out of school" males in the bottom 20% quintile range of wealth.
- D. "In school" males in the 60%-80% quintile range of wealth.

Option D is Correct

Q. 2 The table below summarizes some aspects of international public opinion survey results complied by the Chicago Council of Global Affairs in 2007.

Country	Trust in the United States to act responsibly in the world:			If China's economy were to grow to be as large as the US economy, that would be:			
	Not at all/ not very much	No answer	A great deal/ somewhat	Mostly positive	Mostly negative	Both equally	No answer
Mexico				38%	33%	16%	13%
Argentina	84%	5%	11%	34%	14%	29%	23%
Peru	80%	3%	17%				
USA				9%	33%	54%	4%
Armenia	58%	3%	39%	31%	12%	37%	20%
Ukraine	37%	14%	49%	30%	12%	27%	31%
Poland	32%	17%	51%	22%	21%	34%	23%
Russia	73%	7%	20%	22%	24%	34%	20%
France	72%	0%	28%	20%	29%	46%	5%
Iran				60%	12%	15%	13%
Israel	16%	3%	81%	27%	17%	41%	15%
Indonesia	64%	4%	32%				
China	59%	6%	35%				
Thailand	56%	24%	20%	34%	10%	25%	31%
South Korea	53%	1%	46%				
India	52%	9%	39%	28%	31%	20%	21%
Australia	40%	1%	59%				
Philippines	13%	2%	85%	26%	17%	42%	15%

In which aspect of public opinion is the response in India the most extreme in comparison with other countries represented in the above table?

- A. Mostly positive views on China's economy growing to match the size of US economy.
- B. Little or no trust in the United States to act responsibly in the world.
- C. Some degree of trust in the United States to act responsibly in the world.
- D. Mostly negative views on China's economy growing to match the size of US economy.

Option D is Correct

Q. 3 The table below summarizes the results of an experiment that had led to a landmark publication by W.S. Jevons in Nature in 1871. Jevons had conducted 1027 trials tossing an "uncertain number" of uniform black beans into a box and immediately attempted to guess the number "without the least hesitation". He had also recorded the actual number on each occasion.

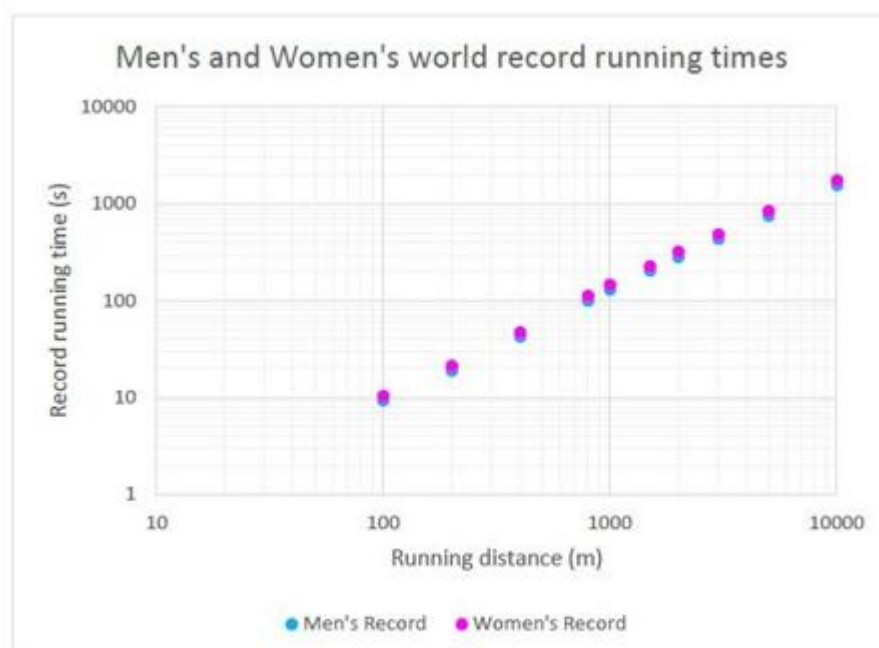
Actual number	Guessed number														Column total
	3	4	5	6	7	8	9	10	11	12	13	14	15		
3	23													23	
4		65												65	
5			102	4	1									107	
6			7	120	20									147	
7				18	113	25								156	
8					30	76	28	1						135	
9					2	24	76	18	2					122	
10						6	37	46	16	2				107	
11						1	11	19	26	12				69	
12							1	4	17	19	3	1		45	
13									7	11	6	1	1	26	
14									2	3	3	4	2	14	
15										2	1	6	2	11	
Row total	23	65	109	142	166	132	153	88	70	49	13	12	5	1027	

The count of actual numbers for which overestimates happened more frequently than underestimates was

- A. 10
- B. 3
- C. 5
- D. 2

Option B is Correct

Q. 4 The accompanying chart shows scatter plots of men's and women's worlds record times for various outdoor running distances, recognized by the International Association of Athletics Federations (IAAF) as of 17 November, 2017. Both the axes are log scale.



After studying this chart, an analyst draws the following conclusions.

C1. Men's world record times are approximately proportional to the running distances.

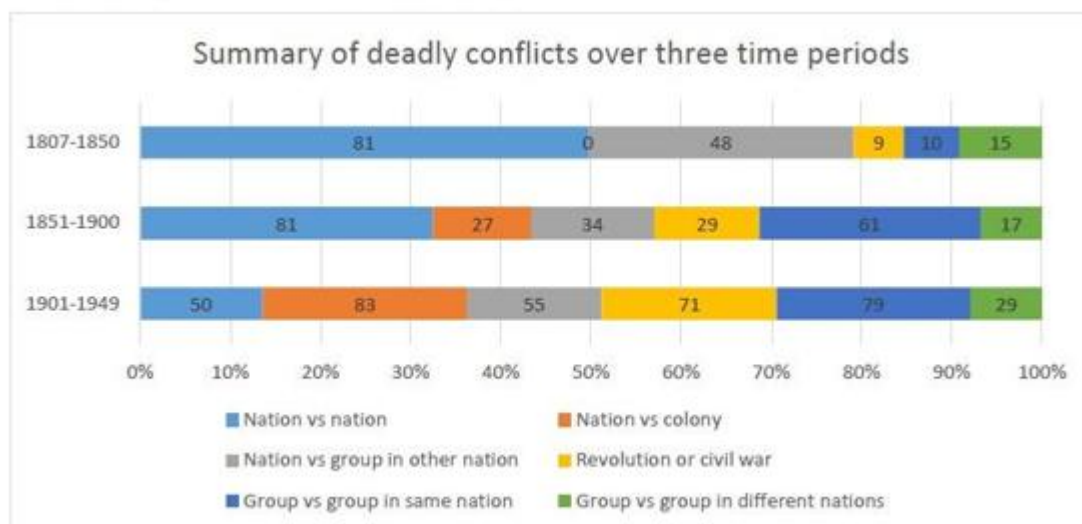
C2. The difference between the women's and men's world record times is about the same for every distance category.

Identify the correct conclusion(s).

- A. Both C1 and C2 are correct.
- B. Only C2 is correct.
- C. Only C1 is correct.
- D. Neither C1 nor C2 is correct.

Option D is Correct

Q. 5 The composite bar chart given below is summary of the Statistics of Deadly Quarrels by Lewis Fry Richardson (1960), which is one of the earlier attempts at quantification of historical conflict behavior. The data set contains 779 dyadic conflicts that cover a time period from 1807 to 1949. The conflicts are grouped by the start year into three periods and are classified into the following categories: Nation vs Nation, Nation vs Colony, Revolution or Civil war, Nation vs group in other nation, Group vs Group in same nation, Group vs Group in different nations.



After studying this chart, an analyst draws the following conclusions.

C1. The share of nation vs colony conflicts increased steadily over the successive periods of time

C2. The number of conflicts involving nations as a party decreased steadily over the successive periods of time

Identify the correct conclusion(s).

- A. Only C1 is correct.
- B. Only C2 is correct.
- C. Neither C1 nor C2 is correct.
- D. Both C1 and C2 are correct.

Option A is Correct



Quantitative Aptitude

Q.1 The number of solutions of the equation $\tan x + \sec x = 2 \cos x$ lying in the interval $\left[0, \frac{\pi}{4}\right]$ is

- A. 1
- B. 3
- C. 15
- D. 10

Option A is Correct

Q. 2 Rakesh can solve 90 percent of the problems given in the book and Rohit can solve 75 percent. Then the probability that at least one of them will solve a problem selected at random from the book is

- A. $\frac{29}{40}$
- B. $\frac{37}{40}$
- C. $\frac{39}{40}$
- D. $\frac{31}{40}$

Option C is Correct

Q.3 The value of the limit $\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \right)^{\frac{\sin x}{x - \sin x}}$ is

- A. e^2
- B. $\frac{1}{e}$
- C. $\frac{1}{e^2}$
- D. 0

Option B is Correct

Q.4 The maximum value of $\frac{\sqrt{3}}{2} \cos(\pi + \alpha) + (\sqrt{3} + \sqrt{5}) \sin(\pi + \alpha) + \frac{1}{2}$ is

- A. $\frac{1}{2} (\sqrt{35 + 8\sqrt{15} + 1})$
- B. $\frac{1}{2} (\sqrt{35 + 8\sqrt{7} + 1})$

- C. $\frac{1}{2}(\sqrt{35 + 8\sqrt{11 + 1}})$
D. $\frac{1}{2}(\sqrt{35 + 8\sqrt{13 + 1}})$

Option A is Correct

Q.5 The area bounded by the curves $y = |x - 1|$ and $y = 3 - |x|$ is

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

Option B is Connect

Q. 6 If $\int e^{\tan^2 x} \sin 4x \, dx = ae^{\tan^2 x} \cos^b x + k$, where a, b , and k are real constants, then the value of a^{2b} is

- A. 64
B. 256
C. 81
D. 729

Option B is Correct

Q. 7 Let \mathbb{Z} denote the set of all integers. Let $S = \{a \in \mathbb{Z} : a^2 + 3a - 10 \leq 0\}$ and $T = \{b \in \mathbb{Z} : -9 \leq 2b - 1 \leq 5\}$. Then the number of elements in the set $S \cap T$ is

- A. 10
B. 4
C. 8
D. 7

Option D is Correct

Q. 8 Consider the word SUCCESS. Let E be the event that the word is rearranged so that the three S's come consecutively. Then the probability of the event E is

- A. $\frac{1}{7}$
B. $\frac{2}{7}$
C. $\frac{5}{7}$

D. $\frac{3}{7}$

[Option A is Correct](#)

Q. 9 Out of 7 women and 5 men, a committee of three members is to be formed in such a way that at least one member is a women. In how many different ways can it be done ?

- A. 210
- B. 110
- C. 250
- D. 105

[Option A is Correct](#)

Q. 10 Let α be a real number. Suppose the straight line $x + y = \alpha$ is a tangent to the ellipse $\frac{x^2}{9} + \frac{y^2}{16} = 1$. Then the value of α is

- A. ± 8
- B. ± 10
- C. ± 6
- D. ± 5

[Option D is Correct](#)

Q. 11 The number of three-digit numbers that are divisible by 9 is

- A. 99
- B. 100
- C. 108
- D. 81

[Option B is Correct](#)

Q. 12 The focal point of the parabola $(y - 1)^2 = 12(x - 2)$ is

- A. (1, 2)
- B. (2, 1)
- C. (5, 2)
- D. (5, 1)

[Option D is Correct](#)

Q. 13 Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be a twice differentiable function such that $f''(x) = -f(x)$, $g(x) = f'(x)$. Let $h(x) = ((f(\frac{x}{25}))^2 + (g(\frac{x}{25}))^2)^{\frac{1}{3}}$. If $h(7) = 9$, then $h(2)$ is

- A. 9
- B. 25
- C. 2
- D. 7

[Option A is Correct](#)

Q. 14 Let $[x]$ denote the largest integer less than or equal to x . The real roots of the equation $[x]^2 - 2x - [x] + 3 = 0$ are lying in the interval

- A. $[3, 4]$
- B. $[1, 3]$
- C. $[0, 1]$
- D. $[-2, 0]$

[Option B is Correct](#)

Q. 15 Let a, b, c be real numbers such that $a \neq 1, b \neq 1, c \neq 1$. Consider the system of linear equations $x = a(y + z)$, $y = b(z + x)$, and $z = c(x + y)$, if it has a non-zero solution, then the value of $\frac{a}{1+a} + \frac{b}{1+b} + \frac{c}{1+c}$ is

- A. 1
- B. 0
- C. 2
- D. -1

[Option A is Correct](#)

Q. 16 If $I = \int_0^{\frac{\pi}{2}} \frac{1}{1 + \sin x} dx$, then $\int_0^{2\pi} \frac{x^2 \cos x}{(1 + \sin x)^2} dx$ is

- A. $2\pi I$
- B. $-\pi^2$
- C. $2\pi I - \pi^2$
- D. $\pi^2 - 2\pi I$

[Option C is Correct](#)

Q. 17 In how many different ways can the letters of the word FORMULATE be arranged so that the vowels occupy only the odd positions?

- A. 12000

- B. 576
- C. 14400
- D. 2880

[Option C is Correct](#)

Q. 18 Let n be a positive integer. The coefficient of x^n in the binominal expansion of $(1 + x)(1 - x)^n$ is

- A. $(-1)^{n-1}n$
- B. $(-1)^n(1 - n)$
- C. $(-1)^{n-1}(n - 1)^2$
- D. $n - 1$

[Option B is Correct](#)

Q. 19 Let α, β be two real numbers. Let $f(x) = \begin{cases} \frac{1 - \cos 4x}{x^2} + \beta, & \text{if } x < 0, \\ \alpha, & \text{if } x = 0, \\ \frac{\sqrt{x}}{\sqrt{16 + \sqrt{x} - 4}}, & \text{if } x > 0. \end{cases}$

If $f(x)$ is continuous at $x = 0$, then the value of $\alpha + \beta$ is

- A. -4
- B. 8
- C. -8
- D. 4

[Option B is Correct](#)

Q. 20 Let $M_j = \begin{bmatrix} 1 & 0 & \sqrt{2j+1} \\ -1 & 1 & 0 \\ -\sqrt{2j+1} & 1 & 0 \end{bmatrix}$, where $j = 0, 1, \dots, 24$.

Then the value of $\sum_{j=0}^{24} \det(\text{adj}(M_j))$ is

- A. 21400
- B. 21200
- C. 22100
- D. 14400

[Option C is Correct](#)

Q. 21 A curve $y = f(x)$ passing through $(1, 2)$ has the slope of its tangent at $(x, f(x))$ is $2x + 1$. Then the area bounded by the curves $y = f(x)$, $y = 0$, and $x = 1$ is

- A. $\frac{1}{6}$
- B. 6
- C. $\frac{5}{6}$
- D. $\frac{6}{5}$

[Option C is Correct](#)

Q. 22 There are 25 stations between Howrah and Kharagpur. A train is to stop at 3 stations of these 25 stations. What is the probability that no two of these 3 stations are consecutive ?

- A. $\frac{55}{100}$
- B. $\frac{77}{100}$
- C. $\frac{66}{100}$
- D. $\frac{88}{100}$

[Option B is Correct](#)

Q. 23 Let PQ be a tower with P on the ground. The acute angle of elevation of Q from a point R on the ground is α such that $\cos \alpha = \frac{5}{\sqrt{29}}$ and $PR = 200$ meters. The acute angle of elevation of Q from another point S on the line PR is β with $PS = 80$ meters. Then the value of β is

- A. $\frac{\pi}{6}$
- B. $\frac{\pi}{4}$
- C. $\frac{\pi}{3}$
- D. $\frac{\pi}{2}$

[Option B is Correct](#)

Q. 24 Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function defined as $f(x) = 2 - e^{x-1}$. Set $F(x) = \int_0^x f(t) dt$, for $x > 0$. Then pick the correct option.

- A. $f(x)$ has local minimum at $x = 1$

- B. $f(x)$ has no local maximum
- C. $F(x)$ has local minimum at $x = 1 + \log_e 2$
- D. $F(x)$ has no local maximum

Option B is Correct

Q. 25 Let PQR be a triangle with $PQ = r, QR = p, RP = q$ and $\theta = \angle RPQ$. If the area of the triangle PQR is $p^2 - (q - r)^2$, then the value of $\tan\left(\frac{\theta}{2}\right)$ is

- A. $\frac{1}{2}$
- B. $\frac{3}{4}$
- C. $\frac{5}{4}$
- D. $\frac{1}{4}$

Option D is Correct

[IMPORTANT NOTE: Detail text solution will be available in free CBT format on www.onlypgdbaprep.in along with Free video solution.]