

# PGDBA 2017

## INSTRUCTIONS FOR WRITTEN TEST

1. The duration of the test is **3** hours. The test will have a total of **50** questions carrying 150 marks. Each of these questions will be Multiple-Choice Question (**MCQ**).
2. Each correct answer to a question will result in **three (3) marks**, unattempted question will result in **zero (0) mark** and wrong answer to a question will result in **minus one (-1) mark**.
3. There will be 15 questions on **Verbal Ability**, 5 questions on **Logical Reasoning**, 5 questions on **Data Interpretation and Data Visualization** and 25 questions on **Quantitative Aptitude**.
4. Calculator, charts, graph sheets, tables or gadgets are **NOT** allowed in the examination hall.

## SYLLABUS

**VERBAL ABILITY:** Reading & Comprehension; Grammar/correction of sentences.

**LOGICAL REASONING:** Logical connectives, Statements and Conclusions, Matching and sequences.

**DATA INTERPRETATION AND DATA VISUALIZATION:** Data driven questions (pie charts, graphs, trends).

**QUANTITATIVE APTITUDE:** Sets, combinatorics, Algebra (solutions of quadratic equations, inequalities, simultaneous linear equations, binomial theorem, series, AP, GP, HP, matrices), Euclidean geometry, Coordinate geometry (lines, circles, conic sections), Trigonometry (triangles, trigonometric identities, heights and distances), Calculus (functions, limits, continuity, derivative, maxima & minima, methods of integration, evaluation of areas using integration).

## SAMPLE QUESTIONS

**VERBAL ABILITY**

Q.1 The word “toyed” has been used in the following sentences in four different ways. Choose the option corresponding to the sentence in which the usage of the word is incorrect or inappropriate.

- (A) The author toyed with the idea of ending his comic novel on a tragic note.
- (B) The batsman toyed with his bat as he waited for the new bowler to come in.
- (C) All the nursery children were toyed up for their play break.
- (D) He was not hungry and he toyed with his food till the end.

Q.2 Consider the following phrases:

- i. I see even this postmodern moment as being situated within the larger processes of modernization and rationalization.
- ii. which have been proceeding on a world scale since the 17<sup>th</sup> century and
- iii. as opposed to the retreat to small narratives and local knowledge
- iv. which have truly become global realities in our own

To form a complete sentence, the correct order of the phrases above is:

- |                    |                    |
|--------------------|--------------------|
| (A) iii, ii, i, iv | (B) iii, i, ii, iv |
| (C) i, ii, iv, iii | (D) i, iii, ii, iv |

Instructions for Questions 3 and 4: Read the passage and answer the questions that follow:

Stories bring us together. We can talk about them and bond over them. They are shared knowledge, shared legend, and shared history; often, they shape our shared future. Stories are so natural that we don't notice how much they permeate our lives. And stories are on our side: they are meant to delight us, not deceive us—an ever-present form of entertainment.

That's precisely why they can be such a powerful tool of deception. When we're immersed in a story, we let down our guard. We focus in a way we wouldn't if someone were just trying to catch us with a random phrase or picture or interaction. “He has a secret” makes for a far more intriguing proposition than “He has a bicycle”. In those moments of fully immersed attention, we may absorb things, under the radar, that would normally pass us by or put us on high alert. Later, we may find ourselves thinking that some idea or concept is coming from our own brilliant, fertile minds, when, in reality, it was planted there by the story we just heard or read.

In his book “Actual Minds, Possible Worlds,” Jerome Bruner, a central figure in the cognitive revolution in psychology, proposes that we can frame experience in two ways: propositional and narrative. Propositional thought hinges on logic and

formality. Narrative thought is the reverse. It is personally convincing and emotional.

In fact, Bruner argues, narrative thinking is responsible for far more than its logical, systematic counterpart. It's the basis of myth and history, ritual and social relations. Even scientists construct narratives. There is no scientific method without the narrative thread that holds the whole enterprise together. Stories make things more plausible, more convincing, and attract more funding. Rightly or wrongly, a research proposal with a compelling narrative arc stands out.

What kind of person do you need to be to make up a story that your child is dying so that you can get a free lift home? For one thing, you need to have an intimate grasp of the workings of human psychology—you have to understand that this story, above any other, will elude scrutiny even when the facts that justify it are sparse. A father or mother who asks for a free ride home to see a dying child stands above reproach. No one questions their story. I might refuse money to a man who says that his car broke down; I might question him, ask to see his stalled vehicle, or offer him a ride to a petrol station. But I'm unlikely to refuse if the man says that he is trying to make it to his sick child. I can dismiss your hard logic, but not how you feel. Give me a list of reasons, and I can argue with it. Give me a good story, and I can no longer quite put my finger on what, if anything, should set off my alarm bells. When the psychologists Melanie Green and Timothy Brock decided to test the persuasive power of narrative, they found that the more a story transported us into its world, the more we were likely to believe it—even if some details didn't quite mesh.

Q.3 Why, according to the author, do stories bring people together?

- (A) People everywhere talk about the same story and that enables bonding between people in different countries.
- (B) People can bond over stories that are deceptive and this helps them to forget their failures.
- (C) Stories are a form of entertainment and people want to believe a good story because it makes them happy.
- (D) Stories shape our future and this enables people who share the same destinies to bond quickly.

Q.4 How can an author use stories to deceive a reader?

- (A) A deceptive fact or idea can be cleverly hidden in a gripping story that distracts our minds.
- (B) Clever use of words and phrases alters the reader's mind and turns falsehood into reality.
- (C) When we are really immersed in a story we often mistake a bicycle for a car because the author tells us that a main character was learning to balance the wheels of his vehicle.
- (D) Readers often like a story so much that they send it to another publisher as their own story and publishers are often deceived by this.

**LOGICAL REASONING**

Q.5 Let  $F_1$  and  $F_2$  be sentences given by

$F_1$ : Ravi cannot be a good student unless he is smart and his father supports him.

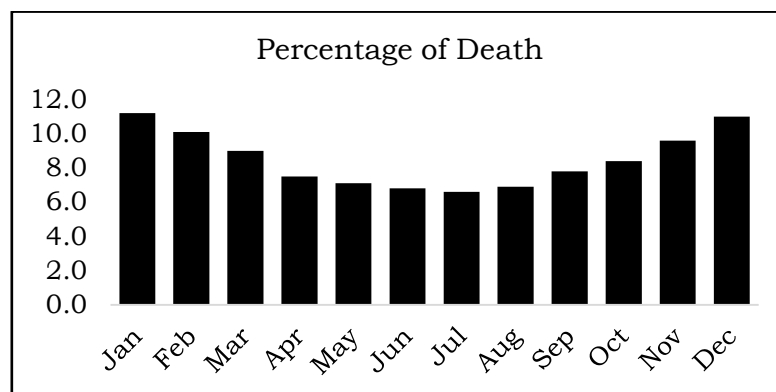
$F_2$ : Ravi is a good student only if his father supports him.

Then which of the following statements is true?

- (A) Both  $F_1$  and  $F_2$  are logical consequences of each other.
- (B) Neither  $F_1$  nor  $F_2$  are logical consequences of each other.
- (C)  $F_1$  is a logical consequence of  $F_2$ .
- (D)  $F_2$  is a logical consequence of  $F_1$ .

**DATA INTERPRETATION AND DATA VISUALIZATION (Q.6 and 7)**

The following graph represents percentage of deaths due to heart diseases in a year.



Q.6 In which month the percentage of death is minimum

- (A) April
- (B) July
- (C) October
- (D) December

Q.7 In how many months the percentage is below 8%

- (A) 2
- (B) 4
- (C) 6
- (D) 8

**QUANTITATIVE APTITUDE**

Q.8 Ten distinct balls are put into nine indistinguishable boxes so that no box is empty. The number of ways of placing these balls is

- (A) 9 (B) 10 (C) 45 (D) 90

Q.9 Let  $x, y$  and  $z$  be distinct numbers that are in geometric progression (G.P.), and  $7x, 3y$  and  $-z$  be in arithmetic progression (A.P.). Then the common ratio of the G.P. is

- (A) 7 (B) 4 (C)  $-4$  (D)  $-7$

Q.10 Let  $PQ$  and  $RS$  be two vertical poles with horizontal distance of 30 meters. The pole  $PQ$  subtends a right angle at the top  $R$  of the second pole  $RS$  and the angle of elevation from  $R$  to the top  $P$  of the first pole is  $60^\circ$ . The length of the pole  $PQ$ , in meters, is

- (A)  $40\sqrt{3}$  (B)  $50\sqrt{3}$  (C)  $60\sqrt{3}$  (D)  $\frac{40}{\sqrt{3}}$

Q.11 The value of the integral

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sqrt{\left(\frac{1 - \cos x}{1 + \cos x}\right)} dx$$

is equal to

- (A) 0 (B)  $2 \log_e 2$  (C)  $\pi$  (D)  $\frac{1}{2} \log_e 2$

Q.12 Let  $f(x) = \left[ x^2 - \frac{1}{4} \right]$  for  $-\frac{1}{2} \leq x \leq 1$ , where  $[y]$  denotes the greatest integer less than or equal to  $y$  for  $y \in \mathbb{R}$ . Then which of the following is a correct statement?

(A)  $f$  is discontinuous exactly at one point in the interval  $\left[ -\frac{1}{2}, 1 \right]$

(B) The range of  $f$  is  $\{-1, 0, 1\}$

(C)  $f$  is constant in the interval  $\left[ -\frac{1}{4}, \frac{3}{4} \right]$

(D)  $\int_{-\frac{1}{2}}^1 |x| f(x) dx = -\frac{1}{4}$

Q.13 The points on the parabola  $3y = x^2$ , which are nearest to the point  $(0,2)$ , are

- (A)  $\left(\sqrt{\frac{3}{2}}, \frac{1}{2}\right), \left(-\sqrt{\frac{3}{2}}, \frac{1}{2}\right)$  (B)  $\left(1, \frac{1}{3}\right), \left(-1, \frac{1}{3}\right)$   
 (C)  $\left(\frac{2}{\sqrt{3}}, \frac{4}{9}\right), \left(-\frac{2}{\sqrt{3}}, \frac{4}{9}\right)$  (D)  $(\sqrt{6}, 2), (-\sqrt{6}, 2)$

Q.14 With eleven distinct consonants and five distinct vowels, how many distinct six letter words can be formed if middle two positions are occupied by vowels (may be repeated) and first two and last two positions are occupied by consonants (all distinct)?

- (A) 168000 (B) 178000 (C) 188000 (D) 198000

Q.15 The product of the real solutions  $x$  of the equation  $x^2 + 4|x| - 4 = 0$  is

- (A) 4 (B) -4 (C)  $-4(\sqrt{2} - 1)^2$  (D)  $4(\sqrt{2} - 1)^2$

Q.16 If the coefficient of  $x^{12}$  in the expansion of  $(x^3 + 1)^m$  is 210, then the coefficient of  $x^{15}$  is

- (A) 252 (B) 272 (C) 282 (D) 292

Q.17 The value of

$$\sum_{n=0}^{\infty} \frac{{}^nC_0 + {}^nC_1 + \dots + {}^nC_n}{{}^nP_n}$$

is

- (A)  $2e - 1$  (B)  $e^2 - 1$  (C)  $e^2 + 1$  (D)  $e^2$

Q.18 The curve  $y = \frac{3}{2}\sqrt{x}$ ,  $x \geq 0$ ; the  $x$ -axis; the lines  $x - 1 = 0$  and  $x - 4 = 0$  form a closed region  $\mathfrak{R}$  in the first quadrant. A straight line  $y = mx$  divides the region  $\mathfrak{R}$  into two parts of equal area. Then the value of  $m$  is

- (A)  $\frac{1}{3}$  (B)  $\frac{2}{5}$  (C)  $\frac{6}{17}$  (D)  $\frac{7}{15}$

Q.19 If  $[a]$  denotes the greatest integer less than or equal to  $a$  for  $a \in \mathbb{R}$ , then the value of the integral

$$\int_0^{1.7} [x^2] dx$$

is equal to

- (A)  $2.4 + \sqrt{2}$  (B)  $2.4 - \sqrt{2}$  (C)  $2.4 + \frac{1}{\sqrt{2}}$  (D)  $2.4 - \frac{1}{\sqrt{2}}$

Q.20 Which of the following functions is differentiable at  $x = 0$ ?

- (A)  $e^{-|x|} - |x|$  (B)  $e^{|x|} + |x|$  (C)  $|x| - e^{|x|}$  (D)  $|x| - e^{-|x|}$

Q.21 Let the function  $f$  be given by

$$f(x) = \begin{cases} -(x-1)^4; & x \leq 2 \\ (x-3)^3; & x > 2. \end{cases}$$

Then local extrema of  $f$  exist at

- (A)  $x = 1$  and  $x = 3$  (B)  $x = 1$  and  $x = 2$   
(C)  $x = 2$  and  $x = 3$  (D)  $x = 1, x = 2$  and  $x = 3$

Q.22 The points in the  $xy$ -plane, which satisfy the equation

$$\sqrt{(x-1)^2 + (y+2)^2} = \sqrt{(x+3)^2 + (y-2)^2}$$

lie on

- (A) a straight line (B) a circle  
(C) a parabola (D) an ellipse

Q.23 If  $f: \mathbb{R} \rightarrow \mathbb{R}$  be a continuous function satisfying  $f(x) + f(3-x) = 4$ , then

$$\int_0^3 f(x) dx$$

is equal to

- (A) 3 (B) 4 (C) 6 (D) 8

Q.24 Let  $P$  and  $Q$  be two distinct nonempty sets. Then  $(P \cup Q)^c \cup (P^c \cap Q)$  equals

- (A)  $P^c$  (B)  $Q^c$  (C)  $P^c \cup Q^c$  (D)  $\emptyset$

### Answer Keys

Q. No.	Key	Q. No.	Key	Q. No.	Key
01	C	09	D	17	D
02	B	10	A	18	D
03	C	11	B	19	B
04	A	12	D	20	C
05	D	13	A	21	B
06	B	14	D	22	A
07	C	15	C	23	C
08	C	16	A	24	A

