

# Deerwalk Aptitude Test (DAT) | August 26, 2019

## Instruction

All questions are compulsory.

There are four major sections in this paper - English, Mathematics, Science and IQ.

The marks wise distribution of each of the section is as follows

Section	Subject	Marks	Time [Suggested ]
A	English	20	45 Minutes
B	Mathematics	25	45 Minutes
C	Science (Physics)	25	45 Minutes
D	IQ	10	15 Minutes

You are advised to spend the suggested time.

Please darken the most appropriate answer in the provided answer sheet.

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## Section A - English

### Paragraph I

Global strategies to control infectious disease have historically included the erection of barriers to international travel and immigration. Between 29 and 50 countries are reported to have introduced border restrictions on HIV-positive foreigners, usually those planning an extended stay in the country.

The country with the broadest policy of testing and excluding foreigners is the United States. The U.S. policy has been sharply criticized by national and international organizations as being contrary to public health goals and human-rights principles. The Immigration and Nationality Act requires the Public Health Service to list “dangerous contagious diseases” for which aliens can be excluded from the United States. By 1987 there were seven designated diseases—five of them sexually transmitted and two non-venereal. On June 8, 1987, in response to a Congressional direction in the Helms Amendment, the Public Health Service added HIV infection to the list of dangerous contagious diseases.

A just and efficacious travel and immigration policy would not exclude people because of their serologic status unless they posed a danger to the community through casual transmission. We support well-funded programs to protect the health of travelers infected with HIV through appropriate immunizations and prophylactic treatment and to reduce behaviors that may transmit infection.

We recognize that treating patients infected with HIV who immigrate to the United States will incur costs for the public sector. It is inequitable, however, to use cost as a reason to exclude people infected with HIV, for there are no similar exclusionary policies for those with other costly chronic diseases, such as heart disease or cancer.

Rather than arbitrarily restrict the movement of a subgroup of infected people, we must dedicate ourselves to the principles of justice, scientific cooperation, and a global response to the HIV pandemic.

1. The authors of the passage conclude that,
  - a. it is unjust to exclude people based on their serological status without the knowledge that they pose a danger to the public.
  - b. U.S. regulations should require more stringent testing to be implemented at all major border crossings.
  - c. it is the responsibility of the public sector to absorb costs incurred by treatment of immigrants infected with HIV.
  - d. the HIV pandemic is largely overstated and that, based on new epidemiological data, screening immigrants is not indicated.
2. It can be inferred from the passage that
  - a. more than 3 million HIV-positive people have sought permanent residence in the United States.
  - b. countries with a low seroprevalence of HIV have a disproportionate and unjustified concern over the spread of AIDS by immigration.
  - c. the United States is more concerned with controlling the number of HIV-positive immigrants than with avoiding criticism from outside its borders.
  - d. current law is meeting the demand for prudent handling of a potentially hazardous international issue.

3. The word “prophylactic” as used in the passage can best be defined as
- medicinal
  - protective
  - judicious
  - costly
4. Before the Helms Amendment in 1987, seven designated diseases were listed as being cause for denying immigration. We can conclude from the passage that
- the authors agree fully with this policy but disagree with adding HIV to the list.
  - the authors believe that sexual diseases are appropriate reasons for denying immigration but not non-venereal diseases.
  - the authors disagree with the amendment.
  - the authors believe that non-venereal diseases are justifiable reasons for exclusion, but not sexually transmitted diseases.
5. In referring to the “costs” incurred by the public, the authors apparently mean
- financial costs.
  - costs to the public health.
  - costs in manpower.
  - costs in international reputation.

#### Paragraph II

“A writer’s job is to tell the truth,” said Hemingway in 1942. “I only know what I have seen,” was a statement which came often to his lips and pen. What Hemingway had personally done, or what he knew unforgettably by having gone through one version of it, was what he was interested in telling about. This is not to say that he refused to invent freely. But he always made it a sacrosanct point to invent in terms of what he actually knew from having been there.

The primary intent of his writing, from first to last, was to seize and project for the reader what he often called “the way it was.” This is a characteristically simple phrase for a concept of extraordinary complexity. At the core of the concept, however, one can invariably discern the operation of three aesthetic instruments: the sense of place, of fact, and of scene.

The first of these, obviously a strong passion with Hemingway, is the sense of place. Few writers have been more place-conscious. Few have so carefully charted out the geographical groundwork of their novels while managing to keep background so conspicuously unobtrusive. Few, accordingly, have been able to record more economically and graphically... the way it is when at around six o’clock of a Spanish dawn, you watch the bulls running from the corrals at the Puerta Rochapea through the streets of Pamplona towards the bullring.

“When I woke it was the sound of the rocket exploding that announced the release of the bulls from the corrals at the edge of town. Down below the narrow street was empty. All the balconies were crowded with people. Suddenly a crowd came down the street. They were all running, packed close together. They passed along and up the street toward the bullring and behind them came more men running faster, and then some stragglers who were really running. Behind them was a little bare space, and then the bulls, galloping, tossing their heads up and down. It all went out of sight around the corner. One man fell, rolled to the gutter, and lay quiet. But the bulls went right on and did not notice him. They were all running together.”

This landscape is as morning-fresh as a design in India ink on clean white paper. First is the bare white street, seen from above, quiet and empty. Then one sees the first packed clot of runners. Behind these are the thinner ranks of those who move faster because they are closer to the bulls. Then the almost comic stragglers, who are “really running.” Brilliantly behind these shines the “little bare space,” a desperate margin for error. Then the clot of running bulls—closing the design, except of course for the man in the gutter making himself, like the designer’s initials, as inconspicuous as possible.

6. According to the author, Hemingway's primary purpose in telling a story was
  - a. to construct a well-told story that the reader would thoroughly enjoy.
  - b. to construct a story that would reflect truths that were not particular to a specific historical period.
  - c. to begin from reality but to allow his imagination to roam from "the way it was" to "the way it might have been."
  - d. to report faithfully reality as Hemingway had experienced it.
  
7. From the author's comments and the example of the bulls (paragraph 4), what was the most likely reason for which Hemingway took care to include details of place?
  - a. He felt that geography in some way illuminated other, more important events.
  - b. He thought readers generally did not have enough imagination to visualize the scenes for themselves.
  - c. He had no other recourse since he was avoiding the use of other literary sources.
  - d. He thought that landscapes were more important than characters to convey "the way it was."
  
8. One might infer from the passage that Hemingway preferred which one of the following sources for his novels and short stories?
  - a. Stories that he had heard from friends or chance acquaintances
  - b. Stories that he had read about in newspapers or other secondary sources
  - c. Stories that came to him in periods of meditation or in dreams
  - d. Stories that he had lived rather than read about
  
9. Consider all of the choices and select all that apply.

It has been suggested that part of Hemingway's genius lies in the way in which he removes himself from his stories in order to let readers experience the stories for themselves. Which of the following elements of the passage support this suggestion?

  - a. The comparison of "the designer's initials" to the man who fell and lay in the gutter (end of the last paragraph) during the running of the bulls
  - b. Hemingway's stated intent to project for the reader "the way it was" (opening of the second paragraph)
  - c. Hemingway's ability to invent fascinating tales from his own experience
  - d. Hemingway's capacity of not being able to convey message he intended to.
  
10. From the passage, one can assume that which of the following statements would best describe Hemingway's attitude toward knowledge?
  - a. One can learn about life only by living it fully.
  - b. A wise person will read widely in order to learn about life.
  - c. Knowledge is a powerful tool that should be reserved only for those who know how to use it.
  - d. Experience is a poor teacher.

Sentence Completion:

11. With his sub-four minute mile Bannister broke a psychological barrier, and inspired thousands of others to attempt to overcome seemingly \_\_\_\_ hurdles.
  - a. insurmountable
  - b. inane
  - c. trivial
  - d. traumatic

12. The student was extremely foolhardy; he had the \_\_\_\_ to question the senior professor's judgment.
- wisdom
  - temerity
  - interest
  - trepidation
13. All good comic writers use humor to \_\_\_\_, not to side-step the problems of human behavior.
- amuse
  - avert
  - juxtapose
  - confront
14. The revolution in art has not lost its steam; it \_\_\_\_ on as fiercely as ever.
- trudges
  - meanders
  - edges
  - rages
15. Taking antibiotics for a viral infection may, it is true, be \_\_\_\_ ; however, in certain cases a course of these drugs can actually ward off opportunistic bacterial infections.
- justified
  - enough
  - recommended
  - ineffective

Word Analogies:

16. coif : hair :: \_\_\_\_\_ : musical
- shower
  - close
  - praise
  - score
17. particular: fussy :: \_\_\_\_\_ : subservient
- meek
  - above
  - cranky
  - uptight
18. \_\_\_\_\_ : horse :: board : train
- stable
  - shoe
  - ride
  - mount
19. tureen : \_\_\_\_\_ :: goblet : wine
- napkin
  - soup
  - spoon
  - pilsner

20. pill : bore :: core : \_\_\_\_\_
- a. center
  - b. mug
  - c. bar
  - d. placebo

### Section B –Physics

1. Transformer is a device which is used to change the magnitude of

- a. DC voltage
- b. AC voltage
- c. both (a) and (b)
- d. none of these

2. The speed of electromagnetic radiation in vacuum is

- a.  $\mu_0 \epsilon_0$
- b.  $\sqrt{\mu_0 \epsilon_0}$
- c.  $\frac{1}{\mu_0 \epsilon_0}$
- d.  $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$

3. Which of the following cannot be explained on the basis of wave nature of light?

- i. Polarization
- ii. Optical activity
- iii. Photoelectric effect
- iv. Compton Effect

- a. (iii) and (iv)
- b. (ii) and (iii)
- c. (i) and (iii)
- d. (ii) and (iv)

4. The energy of a photon of wavelength  $\lambda$  is

- a.  $hc\lambda$
- b.  $\frac{hc}{\lambda}$
- c.  $\frac{\lambda}{hc}$
- d.  $\frac{\lambda h}{c}$

5. In a full wave rectifier circuit operating from 50 Hz mains frequency, the fundamental frequency in the ripple would be

- a. 50 Hz
- b. 25 Hz
- c. 100 Hz
- d. 70.7 Hz

6. The truth table given below represents

Input		Output
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

- a. AND-gate
  - b. OR-gate
  - c. NOR-gate
  - d. NAND-gate
7. A charged oil drop is suspended in uniform field of  $3 \times 10^4 V/m$  so that it neither falls nor rises. The charge on the drop (take the mass of the charge  $9.9 \times 10^{-15} kg$  and  $g = 10 m/s^2$ ) will be
- a.  $3.3 \times 10^{-18} C$
  - b.  $3.2 \times 10^{-18} C$
  - c.  $1.6 \times 10^{-18} C$
  - d.  $4.8 \times 10^{-18} C$
8. Electric potential at any point is  $V = -5x + 3y + \sqrt{15}z$ , then the magnitude of the electric field is
- a.  $3\sqrt{2}$
  - b.  $4\sqrt{2}$
  - c.  $5\sqrt{2}$
  - d. 7
9. An energy source will supply a constant current into the load, if its internal resistance is
- a. zero
  - b. non-zero but less than the resistance of the load
  - c. equal to the resistance of the load
  - d. Very large as compared to the load resistance.
10. The radius of motion of a charged particle orbiting in a magnetic field is
- a.  $\frac{mB}{qv}$
  - b.  $\frac{mv}{qB}$
  - c.  $\frac{mq}{Bv}$
  - d.  $\frac{qv}{mB}$
11. The main use of studying a hysteresis curve for a given material is to estimate the
- a. Current loss
  - b. Power loss
  - c. Voltage loss
  - d. Hysteresis loss

12. Lenz's law applies to
- electrostatics
  - lenses
  - electromagnetic induction
  - cinema slides
13. According to the Hook's law of elasticity, if stress is increased, the ratio of stress to strain
- Increases
  - Decreases
  - becomes zero
  - remains constant
14. Heat given to a body, which raises its temperature by  $1^{\circ}\text{C}$  is
- water equivalent
  - temperature gradient
  - thermal capacity
  - specific heat
15. When heat is given to gas in an isothermal change, the result will be
- external work done
  - rise in temperature
  - increase in internal energy
  - external work done and also rise in temperature
16. At 0 K, which of the following properties of a gas will be zero?
- kinetic energy
  - Potential energy
  - vibration energy
  - density
17. The length of a second pendulum at the surface of earth is 1m. The length of second pendulum at the surface of moon, where 'g' is  $1/6^{\text{th}}$  that of earth's surface is
- $1/6$  times
  - 6 times
  - $1/36$  times
  - 36 times
18. The frequency of tuning fork is 256. It will not resonant with a fork of frequency
- 256
  - 512
  - 738
  - 768
19. When a student looks into a plane mirror, she sees a virtual image of herself. However, when she looks into a sheet of paper, no such image forms. Which light phenomenon occurs at the surface of the paper?
- regular reflection
  - diffuse reflection
  - polarization
  - resonance

20. When a body is taken from poles to equator on the earth, its weight
- increases
  - decreases
  - remains same
  - zero
21. The antiparticle of an electron is:
- Positron
  - Proton
  - Alpha partial
  - Beta partial
22. If the kinetic energy of a body becomes four times of its initial value, then new momentum will
- becomes twice its initial value
  - become thrice its initial value
  - become four times its initial value
  - remain constant
23. Dimension of impulse are same as that of
- force
  - momentum
  - energy
  - acceleration
24. Which of the following is constant in a projectile motion?
- Horizontal component of the velocity
  - Vertical component of the velocity
  - Velocity of projection
  - All of these
25. A car moves along straight line, whose equation of motion is given by  $s = 12t + 3t^2 - 2t^3$ , where 's' is in meters and 't' in seconds. The velocity of the car at the start will be
- 7m/s
  - 9m/s
  - 12 m/s
  - 16m/s

### Section C– Mathematics

1. If A and B are two sets and  $\Delta$  is the symmetric difference of A and B, then
- $A \Delta B = (A-B) \cup A$
  - $A \Delta B = (A-B) \cup B$
  - $A \Delta B = (A+B) \cup (A-B)$
  - $A \Delta B = (A-B) \cup (B-A)$
2. If A, B and C are three subsets of the universal set U, then the associative law is
- $A \cup (B \cap C) = (A \cup B) \cap C$
  - $A \cup (B - C) = (A - B) \cup C$
  - $A \cup B \cup C = A \cup (B \cap C)$
  - $(A \cup B) \cup C = (A \cup B \cup C)$

3. Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  and  $g: \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $f(x) = 2x + 1$  and  $g(x) = 3x - 1$ , then the value of  $g(f(2))$  is
- 12
  - 14
  - 16
  - 18
4. If  $7 \sin^2 x + 3 \cos^2 x = 4$ , then the general solution is given by
- $n\pi \pm \frac{\pi}{3}$
  - $n\pi \pm \frac{\pi}{6}$
  - $n\pi \pm \frac{\pi}{2}$
  - $n\pi \pm \frac{\pi}{4}$
5. If  $a, b, c$  are in H.P. then  $2a - b, b, 2c - b$  are in
- A.P.
  - G.P.
  - H.P.
  - None of the above
6. The sum  $1 + \frac{3}{2} + \frac{5}{4} + \frac{7}{8} + \dots$  to infinity, is
- $\frac{1}{2}$
  - 2
  - 4
  - 6
7. For the matrix  $A = \begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}$ , then  $\text{adj } A$  is,
- $\begin{bmatrix} 2 & 4 \\ 3 & 1 \end{bmatrix}$
  - $\begin{bmatrix} -2 & 4 \\ 3 & -1 \end{bmatrix}$
  - $\begin{bmatrix} 2 & -4 \\ -3 & 1 \end{bmatrix}$
  - $\begin{bmatrix} 3 & -4 \\ -1 & 2 \end{bmatrix}$
8. If  $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$  then the transpose of  $AB$  is given by
- $\begin{bmatrix} 6 & 10 \\ 14 & 20 \end{bmatrix}$
  - $\begin{bmatrix} 6 & 14 \\ 10 & 20 \end{bmatrix}$
  - $\begin{bmatrix} 10 & 6 \\ 14 & 20 \end{bmatrix}$
  - $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
9. For what value of  $k$ ,  $x + 3$  is a factor of  $3x^2 + kx + 6$ ?
- 8
  - 9
  - 11
  - 15

10. Square roots of  $-7 + 24i$  are

- a.  $\pm(3 + 4i)$
- b.  $\pm(3 - 4i)$
- c.  $\pm(4 - 3i)$
- d.  $\pm(4 + 3i)$

11.  $1 + w + w^2 =$

- a.  $w$
- b.  $-w$
- c.  $0$
- d.  $1$

12. The value of  $m$  for which the straight lines  $y = x + 1$ ,  $y = 2(x + 1)$  and  $y = mx + 3$  are concurrent, is

- a.  $-1$
- b.  $2$
- c.  $3$
- d.  $-3$

13. The acute angle between the two lines  $x - 3y - 6 = 0$  and  $y = 2x + 5$  is

- a.  $15^\circ$
- b.  $30^\circ$
- c.  $45^\circ$
- d.  $60^\circ$

14. Radius of the circle  $x^2 + y^2 + 4x - 6y + 4 = 0$ , is

- a.  $2$
- b.  $3$
- c.  $4$
- d.  $5$

15. Two equations of the lines represented by  $x^2 - 5xy + 4y^2 = 0$  are,

- a.  $x + 4y = 0$  and  $x - y = 0$
- b.  $x - 4y = 0$  and  $x + y = 0$
- c.  $x + 4y = 0$  and  $x + y = 0$
- d.  $x - 4y = 0$  and  $x - y = 0$

16. The value of  $\lim_{x \rightarrow 4} \frac{x^3 - 64}{x^2 - 16}$  is

- a.  $2$
- b.  $4$
- c.  $6$
- d.  $16$

17. The value of  $\lim_{x \rightarrow \infty} \frac{\sin x}{x}$  is

- a.  $\infty$
- b.  $0$
- c.  $1$
- d. None of the above

18. A function  $f(x)$  is defined as  $f(x) = \begin{cases} x^2 - 1 & \text{for } x < 3 \\ 2kx & \text{for } x \geq 3 \end{cases}$ . The value of  $k$  so that  $f(x)$  is continuous at  $x = 3$ , is
- $\frac{4}{3}$
  - $\frac{-4}{3}$
  - $\frac{3}{4}$
  - $\frac{-3}{4}$
19. The function  $f(x) = \frac{(x+1)}{(x-2)(x-3)}$  is discontinuous at
- 2 and 3
  - 2 and 3
  - 2 and -3
  - 2 and -3
20. The derivative of  $\sin x$  is
- $\operatorname{cosec} x$
  - $\cos x$
  - $1/\operatorname{cosec} x$
  - $1/\cos x$
21. What will be the derivative of  $2x^2 + 3x - 6$ ?
- $2x+3$
  - $4x-3$
  - $3x+4$
  - None of the above
22.  $\int \frac{1}{x} \cos(\log x) dx =$
- $\cos(\log x) + c$
  - $-\cos(\log x) + c$
  - $\sin(\log x) + c$
  - $-\sin(\log x) + c$
23.  $\int x \sin x dx =$
- $\cos x + x \sin x + c$
  - $-\cos x + x \sin x + c$
  - $\sin x - x \cos x + c$
  - $\sin x + x \cos x + c$
24.  $\int_0^1 x e^x dx =$
- 1
  - 1
  - 0
  - 2
25. In how many ways 7 men and 7 women can sit on a round table such that no two women sit together:
- $(7!)^2$
  - $7! \times 6!$
  - $(6!)^2$
  - $7!$

## Section D – IQ

1. Look at this series: 2, 1, (1/2), (1/4), ... What number should come next?

- a. (1/3)
- b. (1/8)
- c. (2/8)
- d. (1/16)

2. Which word does NOT belong with the others?

- a. inch
- b. ounce
- c. centimeter
- d. yard

3. Odometer is to mileage as compass is to

- a. speed
- b. hiking
- c. needle
- d. direction

4. SCD, TEF, UGH, \_\_\_\_\_, WKL

- a. CMN
- b. UJI
- c. VIJ
- d. IJT

5. Mara runs faster than Gail.

Lily runs faster than Mara.

Gail runs faster than Lily.

If the first two statements are true, the third statement is

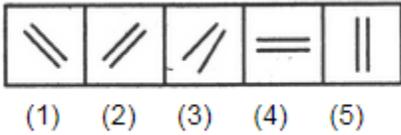
- a. true
- b. false
- c. uncertain
- d. Certain

6. What will come in place of the question mark on the basis of their position in the above arrangement?

KQ : R3 ; LB: ?

- a. EI
- b. E@
- c. 8I
- d. None of these

7. Choose the figure which is different from the rest.



- a. 1
- b. 2
- c. 3
- d. 4 & 5

8. Choose the word which is different from the rest.

- a. Hangar
- b. Platform
- c. Dock
- d. Park

9. Ignorance : Education : : Disease : ?

- a. Hospital
- b. Doctor
- c. Medicine
- d. Nurse

10. Which word does NOT belong with the others?

- a. parsley
- b. basil
- c. dill
- d. mayonnaise