

Deerwalk Aptitude Test (DAT)

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	Science (Physics)	25	45 Minutes
C	Mathematics	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.

Section A - English

Paragraph - Kennedy Speech

The following passage is adapted from President John F. Kennedy's 1962 speech, which has come to be called "We Choose to Go to the Moon." Kennedy delivered the speech at Rice University in Texas.

- 01** We meet at a college noted for knowledge, in a city noted for progress, in a State noted for strength, and we stand in need of all three, for we meet in an hour of change and challenge, in a decade of hope
- 05** and fear, in an age of both knowledge and ignorance. The greater our knowledge increases, the greater our ignorance unfolds....
No man can fully grasp how far and how fast we have come, but condense, if you will, the 50,000 years
- 10** of man's recorded history in a time span of but a half-century. Stated in these terms, we know very little about the first forty years, except at the end of them advanced man had learned to use the skins of animals to cover them. Then about ten years ago, under this
- 15** standard, man emerged from his caves to construct other kinds of shelter. Only five years ago man learned to write and use a cart with wheels. Christianity began less than two years ago. The printing press came this year, and then less than two months ago, during this
- 20** whole fifty-year span of human history, the steam engine provided a new source of power.
Newton explored the meaning of gravity. Last month electric lights and telephones and automobiles and airplanes became available. Only last
- 25** week did we develop penicillin and television and nuclear power, and now if America's new spacecraft succeeds in reaching Venus, we will have literally reached the stars before midnight tonight.
This is a breathtaking pace, and such a pace
- 45** overcome with answerable courage.
If this capsule history of our progress teaches us anything, it is that man, in his quest for knowledge and progress, is determined and cannot be deterred. The exploration of space will go ahead,
- 50** whether we join in it or not, and it is one of the great adventures of all time....
This generation does not intend to founder in the backwash of the coming age of space. We mean to be a part of it—we mean to lead it. For the eyes
- 55** of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with
- 60** weapons of mass destruction, but with instruments of knowledge and understanding.
Yet the vows of this nation can only be fulfilled if we in this nation are first.... In short, our leadership in science and in industry, our hopes for peace
- 65** and security, our obligations to ourselves as well as others, all require us to make this effort ... to become the world's leading space-faring nation.
We set sail on this new sea because there is new knowledge to be gained, and new rights to be won,
- 70** and they must be won and used for the progress of all people....
There is no strife, no prejudice, no national conflict in outer space as yet. Its hazards are hostile to us all. Its conquest deserves the best of all mankind,

30 cannot help but create new ills as it dispels old, new ignorance, new problems, new dangers. Surely the opening vistas of space promise high costs and hardships, as well as high reward. So it is not surprising that some would have us

35 stay where we are a little longer to rest, to wait. But this city of Houston, this State of Texas, this country of the United States was not built by those who waited and rested and wished to look behind them. This country was conquered by those who moved

40 forward—and so will space. William Bradford, speaking in 1630 of the founding of the Plymouth Bay Colony, said that all great and honorable actions are accompanied with great difficulties, and both must be enterprised and

75 and its opportunity for peaceful cooperation may never come again. But why, some say, the moon? Why choose this as our goal? And they may well ask why climb the highest mountain? Why, thirty-five years ago, fly the Atlantic? Why does

80 Rice play Texas?¹ We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and

85 measure the best of our energies and skills....

1. What is Kennedy's purpose for giving this speech?
 - a. To present a chronology of human achievements
 - b. To explain the threat that other countries pose to the United States
 - c. To encourage students to support the United States in the race to reach the moon
 - d. To promote increased funding for NASA and space exploration
2. Which choice provides the best evidence for the answer to the previous question?
 - a. Lines 8-11 ("No man ... half-century")
 - b. Lines 46-49 ("If this ... deterred")
 - c. Lines 49-51 ("The exploration ... all time")
 - d. Lines 81-85 ("We choose ... skills")
3. As used in line 44, "enterprised" most nearly means
 - a. undertaken.
 - b. funded.
 - c. promoted.
 - d. determined.
4. What does Kennedy suggest about the motivations of other countries attempting to reach the moon?
 - a. They wish to embarrass the United States by reaching the moon first.
 - b. They are trying to advance technology for the good of humanity.
 - c. They want to use the moon for hostile military actions.
 - d. They lack the scientific knowledge to accomplish their goals.
5. Which choice provides the best evidence for the answer to the previous question?
 - a. Lines 24-28 ("Only last ... tonight")
 - b. Lines 29-31 ("This is ... new dangers")
 - c. Lines 58-61 ("We have ... understanding")
 - d. Lines 68-71 ("We set ... all people")
6. As used in line 52, "founder" most nearly means
 - a. begin.
 - b. innovate.
 - c. dissolve.
 - d. sink.

7. According to Kennedy, what is true of progress?
 - a. It creates new problems as it solves old ones.
 - b. It was minimal until the invention of written language.
 - c. It must be accomplished cooperatively with other countries.
 - d. It leads to an increase in global hostilities.

8. The statement in lines 63-67 ("In short, ... space-faring nation") is important to the overall argument in its suggestion that
 - a. the monetary rewards for space exploration are too great to pass up.
 - b. the U.S. military will never use space for strategic operations.
 - c. the United States is better equipped than other nations to ensure that space remains a peaceful frontier.
 - d. the space race is an opportunity to solidify the position of the United States as a military superpower.

9. Based on the information in the passage, to what group can Kennedy's audience best be compared?
 - a. Soldiers who were drafted for service and bravely served their country
 - b. Farmers who have worked in the field for months and now see their harvest
 - c. Students who are studying and preparing for graduation
 - d. Pioneers who are about to embark on a difficult but important journey

10. Kennedy most likely included paragraphs 2 and 3 in order to
 - a. persuade the audience to fund the race to the moon.
 - b. frame space exploration as a logical next step in human progress.
 - c. warn of the potential hazards of technological advances.
 - d. encourage audience members to be leaders of their generation.

Sentence Completion:

11. She hadn't eaten all day, and by the time she got home she was _____.
 - a. blighted
 - b. confutative
 - c. ravenous
 - d. ostentatious

12. The movie offended many of the parents of its younger viewers by including unnecessary _____ in the dialogue.
 - a. vulgarity
 - b. verbosity
 - c. vocalizations
 - d. garishness

13. His neighbors found his _____ manner bossy and irritating, and they stopped inviting him to backyard barbeques.
 - a. insentient
 - b. magisterial
 - c. reparatory
 - d. restorative

14. Steven is always _____ about showing up for work because he feels that tardiness is a sign of irresponsibility.
 - a. legible
 - b. tolerable
 - c. punctual
 - d. literal

15. Candace would _____ her little sister into an argument by teasing her and calling her names.
 - a. advocate
 - b. provoke
 - c. perforate
 - d. lamente

Word Analogies:

16. bird : nest ::
a. dog : doghouse
b. squirrel : tree
c. beaver : dam
d. cat : litter box
17. dalmatian : dog ::
a. oriole : bird
b. horse : pony
c. shark : great white
d. ant : insect
18. doctor : hospital ::
a. sports fan : stadium
b. cow : farm
c. professor : college
d. criminal : jail
19. cub : bear ::
a. piano : orchestra
b. puppy : dog
c. cat : kitten
d. eagle : predator
20. tenet : theologian ::
a. predecessor : heir
b. hypothesis : biologist
c. recluse : rivalry
d. arrogance : persecution

Section B –Physics

1. Which of the following has the dimensions of pressure?
a. $[MLT^{-2}]$
b. $[ML^{-1}T^{-2}]$
c. $[ML^{-2}T^{-2}]$
d. $[M^{-1}L^{-1}]$
2. The horizontal range and the maximum height of a projectile are equal. The angle of projection of the projectile is
a. $\theta = \tan^{-1}\left(\frac{1}{4}\right)$
b. $\theta = \tan^{-1}(4)$
c. $\theta = \tan^{-1}(2)$
d. $\theta = 45^{\circ}$
3. The potential energy of a system increases if work is done
a. Upon the system by a non-conservative force
b. By the system against a conservative force
c. By the system against a non-conservative force
d. Upon the system by a conservative force

4. In pure rolling, velocity of constant point is
 - a. ωr
 - b. $> \omega r$
 - c. $< \omega r$
 - d. zero

5. When the distance between earth and sun is halved, the duration of year will become
 - a. More
 - b. Less
 - c. Can't be determined
 - d. None of the above

6. The maximum time period of any simple pendulum on the earth is
 - a. 180.5
 - b. 100 min
 - c. 90.5
 - d. 84.5 min

7. The presence of gravitational field is required for the heat transfer by
 - a. Stirring liquids
 - b. Conduction
 - c. Natural convection
 - d. Radiation

8. Amount of heat required to raise the temperature of a body through 1K is called
 - a. Specific heat
 - b. Thermal capacity
 - c. Water equivalent
 - d. Entropy

9. In a cyclic process, work done by the system is
 - a. Zero
 - b. More than the heat given to system
 - c. Equal to heat given to system
 - d. Independent of heat given to system

10. The absolute zero is the temperature, at which
 - a. All substances exist in solid state
 - b. Water freezes
 - c. Molecular Motion ceases
 - d. None of these

11. Newton's formula for the velocity of sound in gases is
 - a. $v = \sqrt{P/\rho}$
 - b. $v = \sqrt{\rho/P}$
 - c. $v = \sqrt{\rho/2P}$
 - d. $v = \sqrt{2P/\rho}$

12. Pressure variation of mechanical wave depends upon intensity as
 - a. \propto Intensity
 - b. Independent of Intensity
 - c. $\propto \frac{1}{\text{Intensity}}$
 - d. None of the above

13. When a ray of light enters a glass slab from air
- Its wavelength decreases
 - Its wavelength increases
 - Its frequency increases
 - Neither its wavelength nor its frequency changes
14. In optical fibres, propagation of light is due to
- Diffraction
 - Total internal reflection
 - Reflection
 - Refraction
15. The minimum value of charge on any charged body may be
- $1.6 * 10^{-19} \text{ Coulomb}$
 - 1 coulomb
 - $1 \mu\text{C}$
 - $4.8 * 10^{-12} \text{ Coulomb}$
16. A parallel plate capacitor is given a charge Q. If the separation between the plates is doubled, its capacity will be
- Unchanged
 - Zero
 - Doubled
 - Halved
17. The best instrument for accurate measurement of emf of a cell
- Potentiometer
 - Meter bridge
 - Voltmeter
 - Ammeter & voltmeter
18. In electrolysis, the conduction of electricity is due to
- Free electrons
 - Bound electrons
 - Ions
 - Atoms
19. A moving conductor coil produces an induced emf. This is in accordance with
- Lenz's Law
 - Coulomb's law
 - Faraday's law
 - Ampere's law
20. Photoelectron emission rate is a direct function of radiation
- Frequency
 - Speed
 - Intensity
 - Energy
21. When highly energetic cathode rays strike a heavy target of high melting point, then the rays produced are
- X-rays
 - γ -rays
 - α -rays
 - β -rays

22. In a transistor circuit, the emitter – base circuit of a n-p-n transistor is always
- Reverse biased
 - Neutral biased
 - Forward biased
 - Not biased
23. The output of OR gate is 1
- If both inputs are zero
 - If either or both inputs are 1
 - Only if both inputs are 1
 - If either input is zero
24. Which is not the fundamental particle?
- Up
 - Down
 - Electron
 - Proton
25. De-Broglie wavelength λ associated with neutrons is related with absolute temperature T as
- $\lambda \propto T$
 - $\lambda \propto \frac{1}{T}$
 - $\lambda \propto \frac{1}{\sqrt{T}}$
 - $\lambda \propto T^2$

Section C– Mathematics

- Assuming p is true, q is true and r is false, find the truth value of $q \wedge (r \rightarrow p)$;
 - True
 - False
 - Both
 - None
- If $S = [-3,2)$ and $T = [-2,3]$ then the value of $S \Delta T$ is;
 - $[-3,-2)$
 - $[2,3]$
 - $[-3,3]$
 - $[-3,-2) \cup [2,3]$
- The solution of $6-5x-x^2 \leq 0$ is given by,
 - $(-\infty,-6]$
 - $[-6,1]$
 - $[1, \infty)$
 - $(-\infty,-6] \cup [1, \infty)$
- Find the base of the exponential function if it passes through (2,25);
 - 2
 - 1
 - 0
 - 5

5. Find the sum of infinite series given by $3+\sqrt{3}+1\dots$;
- sum doesn't exist
 - $4+\sqrt{3}$
 - $\frac{9+3\sqrt{3}}{2}$
 - $\frac{1}{\sqrt{3}}$
6. If $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$, then $A^{100} = ?$
- $\begin{bmatrix} 100 & 100 \\ 0 & 100 \end{bmatrix}$
 - $100A$
 - $\begin{bmatrix} 1 & 100 \\ 0 & 1 \end{bmatrix}$
 - $100I$
7. If $a+ib = \sqrt{\frac{1+i}{1-i}}$, then what is the value of a^2+b^2 ;
- i
 - 1
 - $-i$
 - -1
8. For what value of n the equation $2x^2 + 6x + 3n = 0$ will have reciprocal roots;
- $n = 0$
 - $n = \frac{1}{2}$
 - $n = \frac{3}{2}$
 - $n = \frac{2}{3}$
9. $\sin^{-1} z + \cos^{-1} z$ is equivalent to?
- 1
 - 0
 - π
 - $\frac{\pi}{2}$
10. If $\sin \alpha - \cos \alpha = -\sqrt{2}$ then α is;
- $2n\pi \pm \frac{\pi}{4}$
 - $2n\pi + \frac{\pi}{4}$
 - $2n\pi$
 - $2n\pi - \frac{\pi}{4}$
11. If $a = 3, b = 4, c = 5$ then what is the value of $\cos \frac{A}{2}$;
- $\frac{3}{\sqrt{10}}$
 - $\frac{\sqrt{3}}{10}$
 - $\sqrt{\frac{3}{10}}$
 - $\frac{3}{10}$

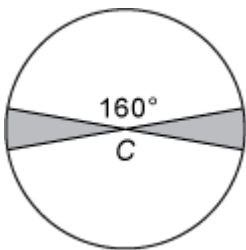
12. In the equation slope-intercept form $y = mx+c$, what does c means?
- y-intercept
 - x-intercept
 - slope of the line
 - angle made by the line
13. Find the equation of the bisectors of the angle between the lines represented by $2x^2-6xy-y^2 = 0$;
- $x^2-xy+y^2 = 0$
 - $-x^2+xy-y^2 = 0$
 - $x^2+xy-y^2 = 0$
 - $x^2+xy+y^2 = 0$
14. Which one of the following is required condition for tangency of a straight line to a circle $x^2+y^2 = a^2$;
- $c = a\sqrt{1 + m^2}$
 - $c = -a\sqrt{1 + m^2}$
 - $a = \pm c\sqrt{1 + m^2}$
 - $c = \pm a\sqrt{1 + m^2}$
15. If vertex = $(-1,1)$ and directrix $y = 3$ then equation of parabola is;
- $x^2-2x-8y+7 = 0$
 - $x^2+2x-8y+7 = 0$
 - $x^2-2x+8y+7 = 0$
 - $x^2+2x+8y-7 = 0$
16. If $\vec{a} = (2, 1)$ and $2\vec{a} - \vec{b} = (4, 7)$ then \vec{b} is given by ;
- $(8, 9)$
 - $(0, 5)$
 - $(0, -5)$
 - $(-4, -12)$
17. Which one of the following has uniform marks distribution;
- Student A with $\bar{x} = 84, \sigma^2 = 16$
 - Student B with $\bar{x} = 92, \sigma^2 = 25$
 - Student C with $\bar{x} = 95, \sigma^2 = 36$
 - Student D with $\bar{x} = 80, \sigma^2 = 9$
18. A coin is tossed successively 3 times then what is the probability of getting at most 2 heads;
- $\frac{3}{8}$
 - $\frac{4}{8}$
 - $\frac{7}{8}$
 - $\frac{2}{8}$
19. Which one of the following isn't in indeterminate form;
- $\frac{0}{0}$
 - ∞^0
 - 0^0
 - 0^∞

20. For what value of k the function $f(x) = \begin{cases} \frac{\sin 5x}{3x}, & \text{if } x \neq 0 \\ k, & \text{if } x = 0 \end{cases}$ is continuous at $x = 0$;
- $\frac{3}{5}$
 - 1
 - 0
 - $\frac{5}{3}$
21. If $y = e^{-x+e^{x+e^{x+\dots\infty}}}$ then $\frac{dy}{dx} = ?$
- $\frac{1+y}{y}$
 - $\frac{y}{y-1}$
 - $\frac{1-y}{y}$
 - $\frac{y}{1-y}$
22. Which one of the following is indefinite integral of $\frac{e^x(\log(\sin e^x))}{\tan e^x}$ with respect to x;
- $\frac{1}{2}\log(\sin e^x) + c$
 - $\frac{1}{2}e^x[(\log(\sin e^x))]^2 + c$
 - $\frac{1}{2}[(\log(\sin e^x))]^2 + c$
 - $\log(\sin e^x)^2 + c$
23. To find approximate root of non-linear equation, which one of the following rule is given by Newton Raphson's method ;
- $x_{n+1} = x_n + \frac{f(x_n)}{f'(x_n)}$
 - $x_n = x_{n+1} - \frac{f(x_{n+1})}{f'(x_{n+1})}$
 - $x_n = x_{n+1} + \frac{f'(x_{n+1})}{f(x_{n+1})}$
 - $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$
24. According to bisection method any non-linear function $f(x)$ will have at least one root in $[a, b]$ if ;
- $f(a).f(b) > 0$
 - $f(a)+f(b) < 0$
 - $f(a).f(b) < 0$
 - $f(a)+f(b) > 0$
25. Trapezoidal rule for given integral is derived from;
- Arithmetic
 - Algebra
 - Geometry
 - Trigonometry

Section D – IQ

- At the baseball game, Henry was sitting in seat 253. Marla was sitting to the right of Henry in seat 254. In the seat to the left of Henry was George. Inez was sitting to the left of George. Which seat is Inez sitting in?
 - 251
 - 254
 - 255
 - 256

2. In a certain code, COMPUTER is written as DNNOVSFQ, which word be written as CQBHO?
- BROD
 - DPCGP
 - BRADN
 - BLADE
3. A goes for her morning walk at 6 O'clock towards sun for 2 km, then she turns to her right and walks 3 km. She again turns to her left and walks 2 km, finally she turns to her left to walk another 6 km. In which direction is she moving and at what distance from the last turn, she is standing?
- 6 Km, East
 - 9Km, East
 - 6Km, North
 - 9Km, North
4. S is older than R and M is younger than K. P is younger than M but older than S. Who is the youngest?
- S
 - R
 - P
 - M
5. What is the number of triangles that can be formed whose vertices are the vertices of an octagon but have only one side common with that of octagon?
- 64
 - 32
 - 24
 - 16
6. The figure below shows a circle with center C and radius 6. What is the sum of the areas of the two shaded regions?



- 6π
 - 4.5π
 - 4π
 - 3π
7. Choose the correct option.
- Statement:
 All birds are trees.
 Some hens are birds.
- Conclusion I - Some birds are hens.
 Conclusion II - All hens are trees.
- If only conclusion I follows.
 - If only conclusion II follows.
 - If neither I nor II follow.
 - If both I and II follow.

8. Breeze : Cyclone :: Drizzle : _____ ?
- Tsunami
 - Storm
 - Flood
 - Downpour
9. The average age of a husband and a wife is 23 years when they were married five years ago but now the average age of the husband, wife and child is 20 years (the child was born during the interval). What is the present age of the child?
- 1 year
 - 2 years
 - 3 years
 - 4 years
10. A box contains 3 blue marbles, 4 red, 6 green marbles and 2 yellow marbles. If three marbles are picked at random, what is the probability that they are all blue?
- $1/455$
 - $2/455$
 - $1/91$
 - $4/455$