Deerwalk Aptitude Test (DAT) – BSc CSIT

Instruction
All questions are compulsory.

There are three major sections in this paper - English, Mathematics, Science and IQ. Each question carries 1 mark.
The marks wise distribution of each of the section is as follows:

Section	Subject	Marks	Time [Suggested]
A	English	20	20
B	Mathematics	20	35
C	Science (Physics)	20	35
D	Science (Chemistry)	20	35
E	IQ	20	20

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

Reading Comprehension

(This passage is extracted from an international education magazine.)

Both distance-learning courses and traditional courses provide important but different experiences for college students. On the one hand, there are many advantages to distance- learning courses. One of the most important benefits is the opportunity to attend class at your convenience. This is very important for students who hold full-time jobs since they can choose to take their classes on a schedule that allows them to continue working. Another advantage is the chance to complete assignments at your own pace. For students who can work more quickly than their classmates, it is possible to earn more credits during the semester. A huge advantage to international students is the option of listen to lectures more than once.

On the other hand, there are advantages to attending a traditional class. The structured environment is benevolent, especially for students who are not as highly motivating. In addition, it is more likely that you will develop a personal relationship with the teacher, an advantage not only for the course but also after the course when you need a recommendation. By seeing you and talking with you face-to-face, the teacher will remember you better. It is also easier to get an immediate response to questions because you only have to raise your hand instead of sending e-mail and waiting for an answer. Last, the opportunity for study groups and friendships is different and more personal when you sit in the same room.

Given all the advantages of both types of courses, I think that students would be wise to register for distance-learning courses and traditional classroom courses during their college experiences. By participating in distancing during learning courses, they can work independently in classes that may be more difficult for them, repeating the lectures on computer at convenient times. By attending traditional classes, they can get to know the teachers personally and will have good references when they need them. They will also make friends in the class. By sharing information with other students, they can organize their schedules for the following semester, choosing the best classes and including both distance-learning and traditional courses.

1. Which of the following could be the best topic for paragraph 2?
    a. Benefits of distance learning
    b. Benefits of traditional classes
    c. Advantages and disadvantages of distance learning
    d. Advantages and disadvantages of traditional classes

2. How is distance learning a boon to students?
    a. Students can listen to lectures from distant seats.
    b. Students can keep working even when the classes are going on.
    c. Students can have teacher's personal phone numbers without difficulty.
    d. It provides students opportunity to attend class on their convenience.

3. Based on the information from the passage, students can benefit from their teachers in the way except:
    a. Developing personal relationship with their teachers
    b. Being remembered by their teachers
    c. Getting one-to-one tuition
    d. Being motivated personally

4. What are the advantages of tradition scenario classes?
    a. It allows students to go to faculty member's home for a recommendation letter.
    b. Students get easy notes from teachers.
    c. It allows you to raise hand against your faculty members.
    d. It allows face-to-face learning with the faculty members.

5. On the second paragraph, the word 'benevolent' is closest in meaning to:
    a. Funny and entertaining
    b. Encouraging
    c. Offering knowledge
    d. Advantageous

6. Who can benefit from distance-learning?
    a. Students who hold full time jobs and war to pursue their studies
    b. Students who hold full-time jobs
    c. Students who wish to study easy course
    d. Students who are from international

7. Which of the following logic is not the evidence mentioned for the benefits of distance learning?
    a. Students get personal touch to their teachers
    b. Students can complete their assignment in their own pace
    c. Students can continue their jobs and study
    d. Students get more motivated

8. How do students taking distance-learning courses learn difficult content?
    a. By repeating the lectures on computer at convenient times.
    b. By independently working
    c. By attending traditional classes when they are free
    d. By making friends and finding some teachers in their local areas.

9. In the given passage, the last paragraph serves the purpose of:
    a. Introducing the writer's concept
    b. Showing a good comparison between distance learning and traditional classroom
    c. A synthesis of the writer's ideas
    d. An advice to the students

10. How do students get answer of any confusing concepts in a distance-learning mode?
    a. Taking a private tuition.
    b. Doing group study and having friendship with many people.
    c. Sending e-mail and waiting for an answer.
    d. Consulting internet content

Sentence Completion

11. The …….with which a statement is conveyed is frequently more important to the listener in determining the intended meaning than the actual word …… For example, a compliment, when delivered sarcastically, will be perceived by the receiver as fairly insulting.
    a. Inflection—implied
    b. Pitch—repudiated
    c. Accuracy—utilized
    d. Insertion—stated

12. Science and religion each have core tenets that are considered …….; however, because some scientific tenets are in conflict with some religious ones, these tenets cannot all be correct.
    a. Historic
    b. Axiomatic
    c. Empirical
    d. Disputable

13. Oscar Wilde's The Importance of Being Earnest satirizes the …….nature of upper crust British society; its characters take trivial concerns seriously while thoughtlessly dismissing important ones.
    a. Insincere
    b. Insignificant
    c. Shallow
    d. Unusual

14. George was a mercurial character; one moment he was optimistic about his prospects, and the next he was …….
    a. Immoral
    b. Hopeful
    c. Witty
    d. Morose

15. Growing up in a wealthy suburb, she felt quite the ……..as she began her first job as a llama caretaker on a rural farm.
    a. Neophyte
    b. Curator
    c. Cultivator
    d. Agronomist

Word Analogy

16. Feral: Tame
    a. rancid: rational
    b. repetitive: recurrent
    c. nettlesome: annoying
    d. ephemeral: immortal

17. Freud is to psychology as Einstein is to:
    a. philosophy
    b. sociology
    c. physics
    d. anthropology

18. Calculus is to mathematics as anatomy is to:
    a. biology
    b. chemistry
    c. physics
    d. geology

19. Phobic: Fearful
    a. finicky: thoughtful
    b. cautious: emotional
    c. asinine: silly
    d. envious: desiring

20. Dominance: Hegemony
    a. furtherance: melancholy
    b. romance: empathy
    c. independence: autonomy

d. tolerance: philanthropy

-Section B– Mathematics

1. The probability of getting two Sundays on a leap year is

   a. $\frac{1}{7}$ b. $\frac{4}{15}$ c. $\frac{3}{5}$ d. $\frac{2}{7}$

2. The principal value of $tan^{-1}(tan3\pi/5)\ is$

   a. $2\pi/5$ b. $-2\pi/5$ c. $3\pi/5$ d. $-3\pi/5$

3. If A is skew symmetric matrix then A^2 is

   a. Skew symmetric
   b. Symmetric
   c. Null
   d. cannot be determined

4. If $A \cap B = \phi$ then which of the following is not true?

   a. $A \subseteq \underline{B}$ b. $B \cap \underline{A} = B$ c. $A \cup \underline{B} = \underline{B}$ d. all of these

5. The value of $3^{\frac{1}{3}}.3^{\frac{1}{9}}.3^{\frac{1}{27}}\ldots\ldots\infty$ is equal to

   a. 3 b. $\frac{1}{3}$ c. $\sqrt{3}$ d. ∞

6. if $\left|\vec{a}\times\vec{b}\right|=27$, $\left|\vec{a}\right|=9$ and $\left|\vec{b}\right|=5$, then find $\vec{a}.\ \vec{b}$ is equals to

   a. 12 b. 24 c. 36 d. 48

7. The equation of ellipse with latus rectum 3 and eccentricity is $\frac{1}{\sqrt{2}}$ is

   a. $x^2+4y^2=4$ b. $x^2+2y^2=9$ c. $3x^2+4y^2=9$ d. $2x^2+y^2=1$

8. In how many ways the word "GEOGRAPHY" can be arranged so that the vowels most always be together?

   a. 2520 b. 2530 c. 15130 d. 15120

9. Which of the following is true?

   a. $b_{xy} = 1\ \&\ b_{yx} = -1$
   b. $b_{xy} = -1\ \&\ b_{yx} = 1$
   c. $b_{xy} = -1\ \&\ b_{xy} = -1$
   d. a & b both

10. The number of terms on the expansion $(x^2 + 2xy + y^2)^{25}$ is

a. 26 b. 51 c. 25 d. 16

11. If A=30^0, B = 45^0 and c=$6(\sqrt{3} - 1)$, then value of b is

a. $6(\sqrt{3} + 1)$ b. $6(\sqrt{3} - 1)$ c. 12 d. 6

12. The value of $\lim_{x\to\infty} \frac{log(2x^2+5)}{log(3x^3-4)}$ is equals to

a. $\frac{2}{3}$ b. $\frac{3}{2}$ c. $\frac{1}{7}$ d. $\frac{3}{5}$

13. The radius of a spherical ball is increasing at the rate of 1.5cm/sec. At what rate is the surface area of the ball increasing when the radius is 2cm?

a. $24\pi m^2/sec$ c. $9\pi m^2/sec$

b. $16\pi m^2/sec$ d. $12\pi m^2/sec$

14. The mean weight of 150 students in a certain class is 60 kg. The mean weight of the boys in the class is 70kg and that of the girls is 55kg, then the number of boys and girls in the class are

a. 100 & 50 b. 75 & 75 c. 60 & 90 d. 50 &100

15. The derivative of e^{x^x} is equal to which of the following

a. $e^{x^x}.x^x(1 + logx)$ c. $x^x(1 + logx)$

b. $e^{x^x}(1 + logx)$ d. $x^{x-1}(1 + logx)$

16. If $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$ then $\vec{a}.\vec{b}$ is equals to

a. 1 b. $\frac{1}{2}$ c. 0 d. 2

17. What is the general solution of $sin^2\theta$-2cosθ+$\frac{1}{4}$=0?

a. $2\pi n \pm \frac{\pi}{3}$ b. $2\pi n \pm \frac{\pi}{4}$ c. $2\pi n \pm \frac{2\pi}{3}$ d. $\pi n \pm \frac{\pi}{3}$

18. The solution of $\int \frac{sin2x}{(sinx+cosx)^2}$ dx is

a. $\frac{1}{1+tanx}$+c b. x+$\frac{1}{1+tanx}$ +c c. x-$\frac{1}{1+tanx}$+c d. $\frac{1}{(1+tanx)^2}$+c

19. If an integrating factor of a linear differential equation is sinx, then value of P is

a. cosx b. tanx c. cotx d. sinx

20. If $z=\frac{\sqrt{3}+i}{\sqrt{3}-i}$, then amplitude of z is

a. $\frac{\pi}{3}$ b. $\frac{\pi}{3}$ c. $\frac{\pi}{2}$ d. 0

-Section C– Science (Physics)

1. Radius of gyration of a uniform rod of length L about an axis through its middle is

a. $\frac{L}{\sqrt{2}}$ b. $\frac{L}{\sqrt{3}}$ c. $\frac{L}{\sqrt{12}}$ d. $\frac{L}{\sqrt{8}}$

2. The man goes 10 km/h east and 20 km/h north. Find the relative velocity

a. 22.46 km/h b. 22.36 km/h c. 24.36 km/h d. 22.56 km/h

3. Which is not the unit of length

a. Paesec b. Light Year c. Debye d. Angstrom

4. In Simple Harmonic Motion, the kinetic energy is minimum at

a. mean position
b. at a distance of $\frac{A}{2}$
c. extreme position
d. at a distance of $\frac{A}{4}$

5. At what condition, the following substance will expand on heating & cooling?

a. Water at 0^0C
b. Water at 4^0C
c. Ice at 0^0C
d. Semiconductor

6. At what height from the earth, does g becomes $\frac{g}{2}$

a. 0.5 R b. 0.414 R c. 0.7 R d. R

7. When the temperature of the gas is increased, its viscosity

a. Remains constant
b. decrease
c. increase
d. first increase then decrease

8. The rate of loss of heat from a hot body depends on

a. The temperature of the body
b. The thermal capacity of the body
c. The temperature of the surrounding

d. The excess temperature of the body over the surrounding

9. In which process, does the internal energy of the system remains constant?
   a. Adiabatic b. Isochoric c. Isobaric d. Isothermal

10. If the radius of a conducting wire is doubled, its specific resistance is

    a. Doubled
    b. becomes 4 times
    c. constant
    d. becomes one fourth

11. As an empty vessel is filled with water, its frequency will
    a. Increase
    b. Decrease
    c. Remain unchanged
    d. Not predictable

12. By which process, radio waves can be detected but not light waves in a closed room?
    a. Reflection b. Refraction c. Interference d. Diffraction

13. When the glass rod is rubbed on the silk, the glass acquires a positive charge. This is due to
    a. Additional of an electron
    b. Removal of an electron
    c. Additional of a proton
    d. Removal of a proton

14. For the minimum deviation of light inside the prism, the angle of emergence should be equal to
    a. Angle of prism
    b. Angle of incidence
    c. Angle of refraction
    d. Angle of deviation

15. Lenz's law follows the law of conservation of
    a. Charge b. Momentum c. Mass d. energy

16. In a good conductor, the energy gap between the conduction band and valance band is
    a. Zero b. Narrow a. Wide b. Infinite

17. Which wavelength of light falls under the visible wavelength?
    a. $900\ A^{\circ}$ b. $640\ A^{\circ}$ c. $640\ nm$ d. $900\ A^{\circ}$

18. The capacitive resistance for DC is
    a. Infinity b. One c. Zero d. Very small

19. Hydrogen atom does not emit X-rays because
    a. Its energy level are too close to each other
    b. Its energy levels are too far from each other
    c. It is too small
    d. It has a single electron

20. Which of the earthquake waves is the first recorded on the seismograph?
    a. P-waves
    b. Rayleigh waves
    c. S-waves
    d. Love waves

-Section D – Science (Chemistry)

1. The unit of rate constant for the second-order reaction is
    a. $L^{-1}mol\ s^{-1}$
    b. $Lmol^{-1}s^{-1}$
    c. $l^{2}mol^{-2}s^{-1}$
    d. s^{-1}

2. Which of the following is true about the ionization constant of a weak acid?
    a. It is always less than 1.
    b. It is always greater than 1.
    c. It can be either less than or greater than 1.
    d. It is equal to 1.

3. The volume of water necessary to be added to N/2 HCl in order to prepare 500 cc of N/10 solution is:
    a. 100 cc b. 300 cc c. 400 cc d. 200 cc

4. Hess's law of constant heat summation is an application of
    a. Entropy
    b. Kirchhoff's Law
    c. First Law of Thermodynamics
    d. Second law of thermodynamics

5. The element having highest electron affinity in modern periodic table is
    a. Fluorine b. Chlorine c. Bromine d. Iodine

6. Two lone pairs of electrons and two bond pair of electrons are present in
    a. NH_3 b. BF_3 c. H_2O d. CO_2

7. No two electrons in an atom can have same set of four quantum numbers". This rule is stated by
    a. Hund's rule
    b. Aufbau's principle
    c. Pauli's exclusion principle
    d. Heisenberg's uncertainty principle

8. Hot air balloon floats in the air. It is based on
    a. Boyle's Law
    b. Charles' Law
    c. Graham's Law
    d. Avogadro's Law

9. Radioactive isotope of hydrogen is
    a. Protium b. deuterium c. tritium d. none of these

10. Which of the following parts of IUPAC name indicates carbon chain in compound?
    a. Prefix b. Suffix c. Word root d. Both a and b

11. Copper is manufactured from
    a. Copper pyrite b. Galena c. Haematite d. Sphalerite

12. During extraction of iron from hematite, the limestone acts as;
    a. Reducing agent b. Gangue c. Flux d. Slag

13. If the compound has all of the following groups present, which is considered a major functional group?
    a. –COOH b. -CHO c. -OH d. -C≡C-

14. Which of the following is not the characteristics of transition metals?
    a. show variable oxidation state
    b. act as a catalyst
    c. act as a catalyst
    d. have completely filled d-orbitals

15. Vital Force Theory was proposed by
    a. Wohler a. Kolbe b. Berzelius c. Baeyer

16. When a compound reacts with KCN followed by hydrolysis, it gives acetic acid. The compound is:
    a. CH_3CH_2OH b. CH_3Cl c. C_2H_5Cl d. CH_3COCl

17. Which of the following alcohol gives ketone on oxidation?
    a. Primary b. Secondary c. Tertiary d. Vinyl alcohol

18. When an alkyl halide reacts with sodium alkoxide to form symmetrical as well as

unsymmetrical ether. This reaction is called,

a. Hoffmann's reaction
b. Reimer-Tiemann's reaction
c. Kolbe's reaction
d. Williamson's reaction

19. A radioactive substance remains 1/8th of its original mass after 96 days. What is the half-life period of the radioactive substance?

a. 16 days b. 44 days c. 32 days d. 40 days

20. Nitric acid is manufactured commercially by

a. Haber's process
b. Contact process
c. Ostwald's process
d. Down's process

-Section E – IQ

1. After covering Five-eighth of my Journey, I find that I have travelled 60 km. How much Journey is left?

a. 40 b. 80 c. 36 d. 27

2. What is the 100th letter of the series ABBCCCDDDD ---?

a. *I* b. J c. K d. N

3. Tanya is older than Eric.
Cliff is older than Tanya.
Eric is older than Cliff.
If the first two statements are true, the third statement is

a. True b. False c. Invalid question d. Uncertain

4. If today is Saturday, what day will it be in 500 days?

a. Friday b. Saturday c. Sunday d. Tuesday

5. How many integers are there between 100 and 1000 all of whose digits are odd?

a. 90 b. 100 c. 125 d. 150

6. Hari, Kiran and Ganesh have a total of Rs. 390.Hari has 5 times as much as Ganesh, and Kiran has ¾ as much as Hari. How much money does Kiran have?

a. 40 b. 78 c. 150 d. 200

7. If BIRD is written as 2-9-18-4, then how is CROW written in that code?

a. 3-17-26-22
b. 3-18-15-23
c. 3-19-16-24
d. 3-18-16-23

8. Rima ranks ninth from the top and thirty eighth from the bottom in a class. How many students are there in the class?
   a. 46 b. 47 c. 48 d. 49

9. In January, the value of a stock increased by 25%, and in February, it decreased by 20%. How did the value of the stock at the end of February compare with its value at the beginning of January?
   a. It was less
   b. It was the same
   c. It was 5% greater
   d. It was more than 5% greater

10. All roses are flowers. Some flowers are red. Therefore, some roses are red. This conclusion is:
    a. True
    b. False
    c. Uncertain
    d. Cannot be determined

11. It takes Martin 1/2 hour to get washed and changed before school. It takes him 1/4 of an hour to go downstairs and eat breakfast. It takes him 1 and 1/4 hours on the bus to school. How much time does it take Martin to get ready and get to school?
    a. 2 hours
    b. 1 1/2 hours
    c. 2 1/2 hours
    d. 1 3/4 hours

12. Which number should replace the question mark in the following sequence? 2, 6, 12, 20,?
    a. 30 b. 28 c. 26 d. 32

13. In a certain code, 'CAT' is written as '3120'. How is 'DOG' written in that code?
    a. 4157 b. 4175 c. 4517 d. 4571

14. If BUTWAL is coded UWLUWL, TANSEN is coded as ASNASN, then how is POKHARA written in that code?
    a. OHRPKAA b. OHAOHA c. PAKHOR d. KAPKAP

15. Which of the following is not a primary color in the RGB color model?

    a. Red b. Green c. Blue d. Yellow

16. A cube has all its faces painted red. If it is then cut into 27 smaller cubes of equal size, how many of these smaller cubes will have exactly two faces painted?

    a. 0 b. 8 c. 12 d. 24

17. Which of the following phenomena is responsible for the reddish appearance of the Sun at sunrise and sunset?
    a. Reflection of light
    b. Refraction of light
    c. Diffraction of light
    d. Scattering of light

18. Which of the following protocols is used to securely browse a website?

    a. HTTP b. FTP c. HTTPS d. SMTP

19. Which of the following is an IP address?
    a. 192.168.0.1
    b. www.example.com
    c. 08:00:27:00:9F:68
    d. FTP

20. Which device is used to connect multiple computers within a local area network (LAN)?

    a. Router b. Modem c. Switch d. Firewall

Answer

English

1. B	2. D	3. C	4. D	5. D	6. B	7. A	8. A	9. C	10. C
11. A	12. B	13. C	14. D	15. A	16. D	17. C	18. A	19. C	20. C

Mathematics

1. A	2. B	3. B	4. C	5. A	6. A	7. A	8. A	9. A	10. B
11. A	12. B	13. C	14. D	15. A	16. D	17. C	18. A	19. C	20. C

Science (Physics)

1. C	2. B	3. C	4. C	5. B	6. B	7. C	8. D	9. D	10. D
11. C	12. D	13. B	14. A	15. C	16. C	17. A	18. A	19. A	20. A

Science (Chemistry)

1. B	2. A	3. C	4. C	5. B	6. C	7. C	8. B	9. C	10. C
11. A	12. C	13. A	14. D	15. A	16. D	17. B	18. D	19. C	20. C

IQ

1. A	2. C	3. B	4. C	5. D	6. B	7. B	8. B	9. A	10. C
11. A	12. B	13. A	14. D	15. D	16. C	17. C	18. C	19. C	20. C