DWIT College
Deerwalk Institute of Technology
School of Computer Science and Information Technology

B.Sc.CSIT Entrance Test 2012

TOTAL TIME: 2 Hours 15 Minutes.

DATE: September 14, 2012.

Please read the instructions carefully.

Attempt all questions of each section. You have 5 sections to complete within the allocated time.

The five sections comprise of Chemistry (15), Physics (15), Mathematics (25), and English (45). The English is broken into two sections A and B. Section of English has 15 marks objective questions 10 marks reading comprehension. Section B of English has 12 topics out of which you have to pick up any two. These free essays carry 10 marks each.

Please do not write anything on the question paper.

ENGLISH – SECTION A (25 Multiple choice questions) [1 x 25]

1. I know Sam will get Kerry ..... his clothes.
   (a) wash (b) to wash (c) washed

2. My teacher made me ..... a lot.
   (a) write (b) to write (c) wrote

3. My mother got me ..... the clothes.
   (a) wash (b) to wash (c) washed

4. His teasing made the dog ..... him.
   (a) bite (b) biting (c) to bite

5. Sita was made .....her room.
   (a) clean (b)cleaning (c) to clean

6. When I saw them, they .....
   (a) are dancing (b) have been dancing (c) were dancing

7. Before the policeman came, the thief …….
   (a) run away (b) runs away (c) had run away

8. We generally …… to school in the morning.
   (a) went (b) go (c) have gone

9. The number of student in this college …….. increased.
   (a) has (b) have

10. Meat : Vegetarian : : Liquor : ?
    (a) Insane (b) Introvert (c) Teetotaler (d) Foolish

11. Head : Cap :: Finger : ?

    (a) Glove (b) Thimble (c) Nail (d) Thumb

12. Everything is O.K ……?

    (a) isn't they (b)aren't they (c) isn't it (d) it

13. Someone loves fishing……..?

    (a) doesn't they (b) don't they (c) do they

14. Unless you …….....…….her she won't come to the party

    (a) would invite (b) would have invited (c)invite

15. Had I been there, ……you

    (a)I would have helped (b) would help (c) I will help

Reading Comprehension

The Deerwalk Pipeline

The Deerwalk pipeline starts at the frozen edge of the Arctic Ocean. It stretches southward across the largest and northernmost district in Nepal, ending at a remote ice-free seaport village nearly800 miles from where it begins. It is massive in size and extremely complicated to operate. The steel pipe crosses windswept plains and endless miles of delicate tundra that tops the frozen ground. It weaves through crooked canyons, climbs sheer mountains, plunges over rocky crags, makes its way through thick forests, and passes over or under hundreds of rivers and streams. The pipe is 4 feet in diameter, and up to 2 million barrels (or 84 million gallons) of crude oil can be pumped through it daily.

Resting on H-shaped steel racks called "bents", long sections of the pipeline follow a zigzag course high above the frozen earth. Other long sections drop out of sight beneath spongy or rocky ground and return to the surface later on. The pattern of the pipeline's up-and-down route is determined by the often harsh demands of the arctic and subarctic climate, the tortuous lay of the land, and the varied compositions of soil, rock, or permafrost

(permanently frozen ground). A little more than half of the pipe line is elevated above the ground. The remainder is buried anywhere from 3 to 12 feet, depending largely upon the type of terrain and the properties of the soil.

One of the largest in the world, the pipeline cost approximatelyRs8 billion and is by far the biggest and most expensive construction project ever undertaken by private industry. In fact, no single business could raise that much money, so 8 major Nepali oil companies formed a consortium in order to share the costs. Each company controlled oil rights to particular shares of land in the oil fields and paid into the pipeline-construction fund according to the size of its holdings. Today, despite enormous problems of climate, supply shortages, equipment breakdowns, labor disagreements, treacherous terrain, a certain amount of mismanagement, and even theft, the Deerwalk pipeline has been completed and is operating.

QUESTIONS

16. The passage primarily discusses the pipeline's
    (a) operating costs
    (b) employees
    (c) consumers
    (d) construction

17. The word "it" in the sentence "It is massive in size and extremely complicated to operate." Refers to
    (a) pipeline
    (b) ocean
    (c) state
    (d) village

18. According to the passage, 84 million gallons of oil can travel through the pipeline each
    (a) day
    (b) week
    (c) month
    (d) year

19. The phrase "Resting on" in the sentence "Resting on H-shaped steel racks called "bents"….."is closest in meaning to
    (a) Consisting of
    (b) Supported by
    (c) Passing under
    (d) Protected with

20. The author mentions all of the following as important in determining the pipeline's route EXCEPT the
    (a) climate
    (b) lay of the land itself
    (c) local vegetation
    (d) kind of soil and rock

21. The word "undertaken" in the sentence"…most expensive construction project ever undertaken by private industry…" is closest in meaning to

(a) removed
(b) selected
(c) transported
(d) attempted

22. How many companies shared the costs of constructing the pipeline?
    (a) 3
    (b) 4
    (c) 8
    (d) 12

23. The word "particular" in the sentence "Each company controlled oil rights to particular shares of land in the oil fields ……." is closest in meaning to
    (a) peculiar
    (b) specific
    (c) exceptional
    (d) equal

24. Which of the following determined what percentage of the construction costs each member of the consortium would pay?
    (a) How much oil field land each company owned
    (b) How long each company had owned land in the oil fields
    (c) How many people worked for each company
    (d) How many oil wells were located on the company's land

25. According to the passage the pipeline <u>does not</u> pass through which of the following?
    (a) Mountains
    (b) Canyons
    (c) Busy Streets
    (d) Forests

SECTION B

Please go through each of the topics carefully and select two of them. Write an essay, free writing; on the topic you have selected not exceeding 800 words. Minimum limit is 300 words. Please be aware that you will have to write TWO essays.

Attempt any two. **[2 x 10]**

(Minimum - 300 words. Maximum - 500 words**)**

1. DWIT - Why I did not apply on time?
2. The place I always wanted to go
3. Touchscreen phones - they are a nuisance.
4. The most memorable day in life so far
5. My favorite Nepali Author and why?
6. Objective questions vs subjective questions : Which one you prefer and why
7. The worst day in my life
8. Breakfast, Lunch and Dinner.
9. The best place I have ever been
10. Campus chief for a day

11. Bill Gates or Steve Jobs or Einstein – who's the genius?

Mathematics

[1 x 25]

1. $-4 \leq X \leq -1$ *implies*
   (a) $|2x+5| < 3$ (b) $|x+5| \leq 1$ (c) $|2x+5| \leq 1$ (d) $|2x+5| \leq 3$

2. The range of $y = \sqrt{16 - x^2}$ for the real number is
   (a) $[-4, 4]$ (b) $[0, 4]$ (c) $[-4, 0]$ (d) none

3. The distance between the parallel lines $y = 2x + 4$ and $6x - 3y = 5$ is
   (a) $\frac{1}{\sqrt{45}}$ (b) $\frac{17}{\sqrt{45}}$ (c) 17 (d) $\sqrt{45}$

4. For what value of K the equations $x^2+Kxy+2y^2+3x+5y+2=0$ may represent a line pair
   (a) $\frac{9}{2}$ or 3 (b) 3 (c) $\frac{9}{2}$ (d) $\frac{9}{2}$ or 2

5. If -1,2,2 are the direction ratio of a line then its direction are
   (a) $(-\frac{1}{3}, \frac{2}{3}, \frac{1}{3})$ (b) $(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3})$ (c) $(\frac{1}{3}, \frac{2}{3}, \frac{-2}{3})$ (d) none

6. The maximum and the minimum value of the function f(x,y) = 9x+40y, Subject to $y-x \geq 1$, $y-x \leq 3$, $2 \leq x \leq 5$ is
   (a) 365 & 138 (b) 365 & 128 (c) 138 & 128 (d) 365 & 108

7. A matrix $\begin{bmatrix} 0 & K+2 \\ 5 & 0 \end{bmatrix}$ is a skew symmetric matrix if K = ?
   (a) -3 (b) -7 (c) -5 (d) -2

8. If A = $\begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$ *then* A^{-1} *is*
   (a) $\frac{-1}{2}A$ (b) A (c) $-A$ (d) $\frac{1}{19}A$

9. If A & B are square matrices than $|AB| =$
   (a) $|A|$ (b) $|B|$ (c) $|A||B|$ (d) none

10. The value of the determinant $\begin{vmatrix} 1+a_1 & a_2 & a_3 \\ a_1 & 1+a_2 & a_3 \\ a_1 & a_2 & 1+a_3 \end{vmatrix}$ is
    (a) $1 + a_1 + a_2 + a_3$ (b) $a_1a_2a_3$ (c) 0 (d) none

11. The system of equation kx-2y = 0; x+3y = 0 has a unique solution then
    (a) $K \neq -\frac{2}{3}$ (b) K= -2/3 (c) K = 0 (d) K = 2/3

12. The conjugate of the complex number $\frac{1-i}{1+i}$ *is*
    (a) $2i$ (b) $1-i$ (c) $-i$ (d) i

13. The argument of $(2+2i)$ *is*
    (a) $\frac{\pi}{4}$ (b) $-\frac{\pi}{4}$ (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{3}$

14. For what value of K the quadratic equation $4x^2 - 7x + K = 0$ has the reciprocal roots
    (a) -4 (b) 3 (c) 1 (d) 4

15. If the roots of the equation $x^2 + ax + c = 0$ differ by 1 then a^2 =
    (a) $4C + 1$ (b) $1 - 4C$ (c) $4C$ (d) $-4C$

16. $\lim_{x\to\infty} \sqrt{x}\,(\sqrt{x} - \sqrt{x-a})$ *is*
    (a) $\frac{a}{2}$ (b) $\frac{1}{2}$ (c) 0 (d) ∞

17. The point of discontinuity of the function $f(x) = \frac{3x-1}{x^3-5x^2+6x}$ are
    (a) $x = 0,1,2$ (b) $x = 0,2,3$ (c) $x = 0,2,-3$ (d) *zero*

18. $\lim_{x\to 0} \frac{a^x - b^x}{x}$ *is*
    (a) $Log\ (a/b)$ (b) $log\ (ab)$ (c) ∞ (d) 1

19. If $y = \tan^{-1}\frac{2x}{1-x^2}$ than $\frac{dy}{dx}$ =
    (a) $\frac{2}{1+x^2}$ (b) $\frac{2}{1-x^2}$ (c) $\frac{2x}{1+x^2}$ (d) $\frac{1}{1+x^2}$

20. The derivative of $e^{5x}.sin6x$ *is*
    (a) $Sin6x + Cos6x$ (b) $5Cos6x + Sin6x$ (c) $e^{5x}(5Sin6x + 6Cos6x)$ (d) *none*

21. $\int sin^2x.dx$ is
    (a) $(2x - sin2x) + K$ (b) $sin2x + K$ (c) $\frac{1}{4}(2x - sin2x) + K$ (d) *none*

22. $\int \sqrt{e^x - 1}\ .e^x dx$ *is*
    (a) $e^x - 1$ (b) $(e^x - 1)^{3/2}$ (c) $\frac{2}{3}(e^x - 1)^{3/2} + C$ (d) *none*

23. The value of $\int_0^{\sqrt{3}/2} \frac{1}{\sqrt{1-x^2}} dx$ is

(a) $\pi/4$ (b) $\pi/3$ (c) $-\pi/3$ (d) $\pi/2$

24. If $<A = 45^0$, $<B = 60^0$ than a : c =
(a) 2:1 (b) $2:\sqrt{3}$ (c) 1 : 2 (d) $2 : \sqrt{3} + 1$

25. Sum to n terms of the series :
4+44+444+.....
(a) $\frac{40}{81}(10^n - 1) - \frac{4n}{9}$ (b) $\frac{40}{81}(10^n - 1)$ (c) $\frac{40}{81}(10^n - 1) - \frac{4}{9}$

(d) 0

Chemistry **[1 x 15]**

1. A gas have formula $[CO]_x$. its vapour density is 70. the value of x is
(a) 2 (b) 3 (c) 6 (d) 5

2. Size of the nucleus is
(a) 10^{-15}cm (b) 10^{-13}cm (c) 10^{-10} cm (d) 10^{-8} cm

3. The bonds present in the $[Cu(NH_3)_4]SO_4$ are
(a) ionic (b) covalent (c) co-ordinate (d) all

4. An oxide of iodine (I=127) contains 25.4gm of iodine for 8gm of O . It formula could be
(a) I2O3 (b) I2O (c)I2O5 (d) I_2O_7

5. The maximum amount of $BaSO_4$ ppt on mixing 20ml of 0.5M $BaCl_2$ with 20ml of 1M H_2SO_4 is
(a) 0.25 mole (b) 0.5 mole (c) 1 mole (d) 0.01mole

6. Electrolysis of aqueous HCl solution produces
(a) H_2 gas at anode (b) H_2 gas at cathode

(c) Cl_2 at cathode (d) Cl_2 and O_2 at the anode

7. The amount of sodium deposited by 5amp current for 10 minutes from fused NaCl is
(a) 0.715 gm (b) 71.5 gm (c) 5.17gm (d) 0.517gm

8. The rate constant of an exothermic reaction follows

(a) exponential increase with increase of temperature

(b) exponential decrease with increase of temperature

(c) linear increase with increase in temperature

(d) linear decrease with increase in temperature

9. In which of the following case reaction goes fastest to completion?
(a) $K=10^3$ (b) K=10 (c) K=1 (d) K=1/10

10. Which of the following is least soluble?
    (a) MnS(ksp=10^{-16}) (b) FeS(ksp=10^{-19}) (c) PtS(10^{-73}) (d) NiS(ksp=10^{-12})

11. The elements of light group are also known as
    (a) s-block element (b) p block element (c) d block element
    (d) f block element

12. Diaspore is
    (a) $Al_2O_3H_2O$ (b) $Al_2O_32H_2O$ (c) Al_2O_3 (d) $Al_2O_33H_2O$

13. In Boschs process which gas is utilized for the production of
    (a) producer gas (b) water gas (c) coal gas (d) none of these

14. When sodium is heated inflame it gives
    (a) golden yellow color (b) crimson color (c) brick color (d) violet color

15. Calcium carbide on hydrolysis gives
    (a) $CaO+H_2$ (b) $Ca(OH)_2$ only (c) $Ca(OH)_2+H_2$ (d) none

Physics **[1 x 15]**

1. The component of a vector is

(a) always less than its magnitude

(b) always greater than its magnitude

(c) always equal to its magnitude

(d) none of above

2. If the tension in the cable supporting an elevator is equal to the weight of the elevator, the elevator may be

(a) going up with increasing speed

(b) going down with increasing speed

(c) going up with uniform speed

(d) none of above

3. If earth stops rotating, the apparent value of g on its surface will

(a) increase (d) decease (c) remain same (d) increase at some place and remain same at some other places

4. An aluminum sphere is dipped into water at 29^0c. if the temperature increased than force of buoyancy

(a) increases (b) decreases (c) remains constant (d) may increase or decrease depending on radius of sphere

5. Specific heat capacity of a body depends on

(a) heat given (b) temperature raised (c) mass of body (d) material of body

6. The drop of oil is spread on a water surface; it displays beautiful colors in day light due to

(a) dispersion (b) reflection (c) polarization (d) interference

7. A lens made by material of refractive index 1.2 has both surfaces convex, when it is dipped in water of refractive index 1.33, then it will act as

(a) converging lens of greater focal length (b) diverging lens (c) a rectangular glass slab

(d) a prism

8. The change in frequency due to Doppler Effect dons not depend on

(a) speed of the source (b) speed of observer (c) frequency of the source

(d) distance between sour and observer

9. when a positive charge is brought near a hollow metal cube then,

(a) cube is positively charged

(b) cube is negatively charged

(c) interior is positively charged and exterior negatively charged

(d) Interior is charge free and non uniform charge distribution on surface

10. When two capacitors, each having capacitance C and breakdown voltage V, are joined in series the breakdown voltage of the combination will be

(a) V (b) 2V (c) V/2 (d) 4V

11. As the temperature of metallic conductor is increased, the ratio of resistivity to conductivity

(a) increases (b) decreases (c) remains constant (d) may increases or decreases

12. The magnetic susceptibility is negative for

(a) paramagnetic substance (b) diamagnetic substance (c) ferromagnetic substance

(d) para and ferromagnetic substance

13. The peak voltage of a 220 V ac source is

(a) 220V (b) 155V (c) 311 V (d) 440 V

14. The energy of a photon of characteristic x-ray from a Coolidge tube comes from

(a) KE of striking electron (b) KE of free electrons of target (c) KE of ions of target

(d) atomic transition of the target

15. Electron volt is the unit of

(a) power (b) Potential difference (c) charge (d) energy