BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2013-2014

Sub : **MATH 181** (Differential and Integral Calculus)

Full Marks : 210   Time : 3 Hours

The figures in the margin indicate full marks.

Symbols have their usual meaning.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Discuss the continuity and differentiability of the function   **(20)**

$$f(x) = \begin{cases} x^2 \sin \dfrac{1}{x} & x \neq 0 \\ 0 & x = 0 \end{cases} \quad \text{at } x = 0$$

   (b) If $y = \sin\left(a \sin^{-1} x\right)$, find $(y_n)_0$.   **(15)**

2. (a) State Euler's theorem. If $u = \sin^{-1}\left(\dfrac{x^2 + y^2}{x + y}\right)$ then show that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = \tan u$.   **(10)**

   (b) Show that the semi-vertical angle of the right cone of the given total surface (including area of base) and maximum volume is $\sin^{-1}\left(\frac{1}{3}\right)$.   **(15)**

   (c) Evaluate $\lim\limits_{x \to \infty} \left(x + e^x\right)^{2/x}$.   **(10)**

3. (a) Show that the radii of curvature at the origin for the curve $x^3 + y^3 = 3axy$ are each equal to $\frac{3a}{2}$.   **(20)**

   (b) Prove that the asymptotes of the curve $(x^2 - y^2)y - 2ay^2 + 5x - 7 = 0$ form a triangle of area a^2.   **(15)**

4. (a) State Lagranges Mean Value theorem. In the Mean Value theorem   **(10)**

$$f(h) = f(0) + hf'(0) + \frac{h^2}{2!}f''(\theta h), \quad 0 < \theta < 1,$$

   find the value of θ, when $h = 1$ and $f(x) = (1 - x)^{5/2}$.

   (b) Find the Pedal equation of the ellipse $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$.   **(10)**

   (c) Find the subtangent and subnormal to the curve $y = c \cosh\left(\dfrac{x}{c}\right)$.   **(15)**

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SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Workout the following:

    (a) $\int \dfrac{dx}{\sqrt{x(1+x)^5}}$ **(11)**

    (b) $\int \dfrac{\cos x}{5 + 7\cos^2 x}\, dx$ **(12)**

    (c) $\int (x+2)\sqrt{x^2 + 2x + 1}\, dx$ **(12)**

6. (a) Evaluate the following: **(8+10)**

    (i) $\displaystyle\int_0^{16} \dfrac{x^{1/4}}{1 + x^{1/2}}\, dx$ (ii) $\displaystyle\int_0^{\frac{\pi}{4}} \ln(1 + \tan x)\, dx$

  (b) Obtain a reduction formula for $I_n = \int e^{ax} \cos^n x\, dx$ and hence find $\int e^x \cos^6 x\, dx$.   **(17)**

7. (a) Prove that $\dfrac{\beta(m, n+1)}{n} = \dfrac{\beta(m+1, n)}{m} = \dfrac{\beta(m, n)}{m+n}$.   **(17)**

  (b) Find the length of the arc of the parabola $y^2 = 4ax$ cut off by line $3y = 8x$.   **(18)**

8. (a) Find the area of the segment cut off from the curve $y^2 = 2x$ by the line $y = 4x$.   **(18)**

  (b) Find the volume of the solid formed by revolving the curve $r = a(1 - \cos\theta)$ about the initial line.   **(17)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2013-2014

Sub : CHEM 117 (Chemistry I)

Full Marks : 210   Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) What are the factors which affect the rate of reactions? Discuss the energy of activation and rates of reaction with the help of Arrhenius equation. **(12)**

   (b) Derive the integrated rate equation for the second order reaction, $A + B \rightarrow P$. **(10)**

   (c) Discuss the rate of reversible reaction, $A \rightleftharpoons B$. **(5)**

   (d) The half-life for the first order reaction **(8)**

   $$2N_2O_5 (g) \rightarrow 4\ NO_2 (g) + O_2 (g) \text{ is } 2.40 \text{ h at } 30°C$$

   (i) Calculate the rate constant for this reaction at 30°C.

   (ii) Starting with 2.0 g of N_2O_5 (g), how much of it remains after 9.60 h?

   (iii) What time is required for 0.018 M N_2O_5 (g) to decrease to 0.01 M?

2. (a) What are the factors which affect the enthalpy change of a system? **(6)**

   (b) What do you understand by the term internal energy of a system? How is it related to the enthalpy of the system? **(11)**

   (c) Derive thermodynamically Kirchoff's equation of heat of reaction at variable temperature. **(10)**

   (d) The bond enthalpy of H_2 (g) is 436 kJ/mol and that of N_2 (g) is 941.3 kJ/mol. Calculate the average bond enthalpy of a N-H bond in NH_3 (g). **(8)**

   $$\Delta H_f (NH_3) = -46.0 \text{ kJ/mol}$$

3. (a) What is polymer? Describe polymerization reaction with examples. **(10)**

   (b) Discuss the basic concept of colour. What are the relations between colour and constitution? **(10)**

   (c) List the factors that can shift the position of an equilibrium and that can change the equilibrium constant. **(6)**

   (d) A mixture of 0.50 mol H_2 (g) and 0.50 mol I_2 (g) was placed in a 1.0 L reaction vessel at 430°C. The equilibrium constant, K_c for the reaction H_2 (g) $+ I_2$ (g) $\rightleftharpoons$ 2 HI (g) is 54.3 at this temperature. Calculate the concentrations of H_2, I_2 and HI at equilibrium. **(9)**

CHEM 117 (NAME)

4. (a) State and explain Raoult's law. Plot vapor pressures of solutions showing Roult's law and define 'ideal' and 'non ideal' solutions. **(6+4+4)**

(b) Equal numbers of moles of two soluble substances, substance A and substance B, are placed into separate 1.0 L samples of water.

(i) The water samples are cooled. Sample A freezes at –0.50°C, and sample B freezes at –1.0°C. Explain how the solutions can have different freezing points. **(5)**

(ii) If you were to add an additional 1.0 kg of water to solution B. What would be the new freezing point of the solution? **(4)**

(iii) What concentration of substances A an B would result in both solutions having a freezing point of –0.25°C? Assume that i = 1 for substance A. Given that K_b and K_f for water are 0.512 °C/m and 1.858 °C/m, respectively. (Where i is the Van't Hoff factor) **(5)**

(c) Maltose, $C_{12}H_{22}O_{11}$, is a sugar produced by malting (sprouting) grain. A solution of maltose at 25°C has an osmotic pressure of 5.50 atm. What is the molar concentration of maltose? **(7)**

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Derive the de Broglie's equation. Show that de Broglie's equation is applicable only for microscopic particles and has no significance for macroscopic particles. **(4+6=10)**

(b) Write a note on "Sommerfeld's atomic model". **(10)**

(c) Explain Heisenberg's uncertainty principle. How does it influence the concept of the electron? **(4+5=9)**

(d) Calculate the frequency of the line in the emission spectrum of hydrogen when the atoms of the gas contain electrons in the 3rd energy level. **(6)**

6. (a) How does the size of atoms very from left to right in a period and on descending a group in the periodic table? What are the reasons for these changes? **(2+10=12)**

(b) Explain why the electron affinity of Be, Mg, and noble gases are zero and those of nitrogen and phosphorus are very low? **(8)**

(c) Arrange CH_3^-, OH^-, NH_2^- and F^- ions in the increasing order of their basic nature. Justify your answer with reasons. **(9)**

(d) Explain: XeF_2 is linear while SF_2 molecule is not. **(6)**

CHEM 117 (NAME)

7. (a) The pH of a solution can readily be obtained with the help of a pH-meter, which measures the cell potential and relates it with the pH. Construct a cell using a standard zinc electrode and a hydrogen electrode. Derive an expression that relates the cell potential to pH. Given that the standard electrode reduction potential for $Zn^{2+}_{(aq)}/Zn_{(s)}$ is

-0.76 V.   **(4+7)**

(b) Using standard electrode potentials, calculate the standard free energy change at 25°C for the reaction   **(8+2)**

$$Zn\ (s) + 2\ Ag^+\ (aq) \rightarrow Zn^{2+}\ (aq) + 2\ Ag\ (s)$$
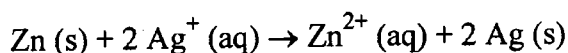
standard reduction potential for $Zn^{2+}_{(aq)}/Zn_{(s)}$ is -0.76 V and for $Ag^+_{(aq)}/Ag_{(s)}$ is 0.80

Comment on the spontaneity of the cell reaction from the free energy change.

(c) Do you think it would be possible to construct the following voltaic cell?   **(4+3)**

$$Pt\,|\,H_2\ (g)|\,H^+\ (aq)\,\|\,Br_2\ (l)|\,B_r^-\ (aq)\,Pt$$
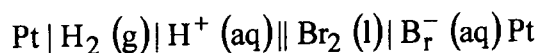
Given that the standard electrode reduction potential for Br_2 (l) | B_r^- (aq) is 1.07 V. Write the overall cell reaction.

(d) What is meant by the self-ionization of water? Why the pH of pure water is expected to be 7?   **(3+4)**

8. (a) Draw the phase diagram of water and level all the phases, equilibria and the triple point. Calculate the degrees of freedom for all these positions.   **(6+3)**

(b) Carbon disulfide, CS_2 is a volatile, flammable liquid. It has a vapor pressure of 400.00 mm Hg at 28°C. The boiling point of CS_2 is 46.5°C. What is the heat of vaporization of this substance?   **(7)**

(c) What is molecular orbital theory? Explain the formation of oxygen molecule on the basis of molecular orbital theory. Arrange O_2, O_2^+, O_2^- and O_2^{2-} in the increasing order of the stability, bond length and bond dissociation energy.   **(2+6+4)**

(d) What is inert pair effect? Explain with reference to Sn and Pb compounds.   **(7)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2013-2014

Sub : **NAME 117** (Hydrostatics and Stability)

Full Marks : 210   Time : 3 Hours

The figures in the margin indicate full marks.

Assume reasonable value for any missing data.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. A ship has a launching weight of 5800 tonnes, the C.G. being 8 m abaft the mid-length, and the fore-poppet 70 m before the mid-length. Construct a launching diagram from the following data: **(35)**

Mid-length abaft. A.E. of ground ways (m)	0	6	12	18	24
Buoyancy in tonnes	2560	3190	3840	4530	5330
C.B. abaft A.E. of ground ways (m)	40	43	48	53	56.5

Also find:

   (i) Distance of mid-length abaft the after end of the ground ways when the stern lifts.

   (ii) Force on fore poppets when the stern lifts.

   (iii) Reserve moment against tipping.

   (iv) Distance travelled when the ship fully afloat.

2. (a) Why is the ship hull divided into a number of watertight compartments? Describe the ways to calculate the floodable length of ship.   **(18)**

   (b) A box shaped vessel 60 m long, 10 m wide, 3 m draft. C.G. is 2.5 m above the keel. If a forward compartment of length 8 m is bilged, calculate the new drafts at aft perpendicular and forward perpendicular.   **(17)**

3. (a) Prove that for a cambered slipways the draft at aft perpendicular after travelling distance 'x' will be: **(20)**

$$T_A = -h + x\beta + L\alpha - \frac{x(l-x)}{2R} + \frac{L_2 x}{R}$$

   where, α = slope of underside of keel of ship

   β = slope of ground ways

   h = height of underside of keel at F.P. above the water level

   L = length between perpendiculars

   R = radius of the cambered ways

   l = length of camber

   L_1 = distance between fore poppet and F.P.

   L_2 = distance between fore poppet and A.P.

Contd P/2

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Contd ... Q. No. 3

(b) A vessel having length 45 m, breadth 10 m and depth 6 m is floating in salt water at a draft 4 m forward and aft. Initial metacentric height is 0.6 m. Calculate the dynamical stability to 20 degrees heel. Consider the vessel is box-shaped. **(15)**

4. (a) Prove that due to the pressure of free water surface, the initial metacentric height of the ship is reduced by $\dfrac{i}{\nabla}$, where i is the moment of inertia of the free surface and ∇ is the displacement of the ship. **(17)**

(b) Write a short note on the following: **(18)**

      (i) Inclining Experiment

      (ii) IMO stability criteria and wind heeling criteria for passenger ships.

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Define Stable, Unstable and Neutral equilibrium of a ship. What is the difference between heel and list? Explain with sketches. **(15)**

(b) Will a homogeneous log 6m × 3m × 3m and relative density 0.4 float in fresh water with a side perpendicular to the waterline? If not, what will be the angle of loll? **(10)**

(c) Prove that, **(10)**

Midship section coefficient × Prismatic coefficient = Block coefficient

6. (a) Prove that the area between four equidistant consecutive ordinates can be calculated by the following: **(15)**

$$\frac{3}{8} h (a + 3b + 3c + d)$$

where, the symbols have their usual meaning.

(b) A ship is floating upright in salt water on an even keel at 7 m draft. The TPC'S are as follows: **(20)**

Draft	m	1	2	3	4	5	6	7
TPC	tonnes	60	60.3	60.5	60.5	60.5	60.5	60.5

The volume between the outer bottom and 1 m draft is 3044 cu.m. and it's center of gravity is 0.5 m above the keel. Find the ship's KB.

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7. (a) Prove that $BM = \dfrac{I}{\nabla}$, where symbols have their usual meaning. **(15)**

(b) Construct the metacentric diagram for a box-shaped vessel 64 m long, 10 m beam and 6 m deep for even keel drafts at 0.5 m intervals between the light draft 1 m and the load draft 5 m. Also from the diagram find: **(20)**

        (i) The minimum KM and the draft at which it occurs and

        (ii) The BM at 3.5 m

8. (a) Show that for a wall sided vessel inclined to an angle 'θ'. **(15)**

$$GZ = \sin\theta \left(GM + \frac{1}{2} BM \tan^2\theta\right)$$

where GM and BM refers to the upright condition value.

(b) A box-shaped vessel 65 m × 12 m × 8 m has KG 4 m and is floating in salt water upright on an even keel at 4 m draft. Calculate the moments of statical stability at heel of **(20)**

        (i) 5 degrees and

        (ii) 25 degrees

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2013-2014

Sub : **PHY 113** (Structure of Matter, Electricity, Magnetism and Modern Physics)

Full Marks : 210   Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Define electric field $\vec{E}$ for a point charge Q.   **(4)**

    (b) Calculate the magnitude of electric field $\vec{E}$ for an electric dipole at point P at a perpendicular distance r from the center of the dipole.   **(12)**

    (c) Draw schematically $\vec{E}(r)$ as a function of distance r for a point charge and an electric dipole in a same plane.   **(4)**

    (d) Using Gauss's law, obtain expressions for electric field $\vec{E}$ at point P a distance r from the center of a uniformly charged conducting sphere of radius R in case of   **(15)**

    (i) Outside (r > R)

    (ii) Inside (r < R) and

    draw a schematically $\vec{E}(r)$ as a function of distance r.

2. (a) What is a dielectric material?   **(4)**

    (b) Show that when the space between the plates of a parallel plate capacitor is filled with a material of dielectric constant k, Gauss's law of electrostatics becomes $\epsilon_0 \oint k\vec{E} \cdot \vec{dS} = q$, where the symbols have their usual meaning.   **(15)**

    (c) State and explain Biot-Savart law.   **(4)**

    (d) A conducting circular loop of radius R is carrying current I. Using Biot-Savart law find the magnitude of magnetic field $\vec{B}$ at the center of the loop.   **(12)**

3. (a) Write down the four Maxwell's equations of electromagnetism. Mention the physical significance of any two of them.   **(10)**

    (b) What is magnetic levitation or Maglev? Mention some ways you can levitate an object. Explain briefly one of those.   **(13)**

    (c) The charged particles originated from solar wind are deflected by earth's magnetic field and produce Aurora. Explain briefly about "Aurora".   **(12)**

PHY 113 (NAME)

4. (a) Explain inertial and non-inertial frame of reference. **(6)**

(b) Derive an expression for the fringe number in Michelson-Morley experiment. **(22)**

(c) Show that at low speed ($v \ll c$), relativistic kinetic energy of a moving particle reduces to classical one. **(7)**

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) What are the basic differences between Compton effect and the Photo-electric effect? **(5)**

(b) Light of wavelength 4200 Å is incident on (i) Sodium surface of work function 4.5 eV and (ii) Potassium surface of work function 2 eV. Calculate the maximum velocity of the emitted electrons in each case. **(10)**

(c) Draw a schematic diagram of a Nuclear Reactor. Briefly explain the various components of a Nuclear Reactor. **(20)**

6. (a) Write a short note on atomic bomb. **(8)**

(b) Explain the origin of nuclear force due to which protons and neutrons stay together into the nucleus. **(20)**

(c) How long will it take for a sample of Radium to decrease to 18%, of its initial mass? (half-life of Radium is 20 years). **(7)**

7. (a) Describe crystal structure of CsCl. Find the expression of packing factor of CsCl structure and calculate packing factor considering the ionic radii of Cs^+ and Cl^- as 1.7 Å and 1.81 Å respectively. **(18)**

(b) Write down the properties of ionic bond and metallic bond. Why metallic bond is known as unsaturated bond? **(17)**

8. (a) Distinguish between (i) metal and semiconductor, (ii) n-type and p-type semiconductor, (iii) Edge dislocation and screw dislocation. **(21)**

(b) Consider a plane in a crystal which intercepts at 3a, 5b and 2c along x, y and z-axes respectively. Find out the Miller indices of the plane. If a = 3.43 Å, b = 5.72 Å and c = 2.63 Å, find out the interplanar spacing between two such parallel planes. **(14)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2013-2014

Sub : **HUM 111** (English)

Full Marks : 140   Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**,

including **Q. No. 1** as compulsory.

1. (a) Explain with reference to the context any <u>one</u> of the following: **(8)**

     (i) '... The geniuses of all ages and of all lands speak different languages, but the same flame burns in them all. ...'

     (ii) '... I suppose you have come here to free them, and I will help you. ...'

   (b) Answer any <u>one</u> of the following: **(10)**

     (i) Is the title of the story "The Diamond Necklace" justified? Comment.

     (ii) What, according to you, is the ultimate meaning of life, happiness and success? Discuss in light of the story "The Bet".

   (c) Answer any <u>three</u> of the following questions: **(12)**

     (i) What is "Moly"? Who gave it to whom and why?

     (ii) Who is Mrs. Forestier? What is her role in the story?

     (iii) "... To live anyhow is better than not at all" — who said this, when and why?

     (iv) What does "Circe" symbolize in the story "Circe's Garden"?

     (v) What short of physical change came over the lawyer at the end of his confinement?

2. Recast and correct any <u>ten</u> of the following sentences: **(20)**

     (i) If and when the carpenter comes, tell him to finish the job.

     (ii) Due to the weather, the flight is late.

     (iii) Ayan or Lamia are to complete the lesson.

     (iv) The electrician turned the motor up.

     (v) Luna can't help but think that Lina must be mistaken.

     (vi) The little boy took cookies, cake and also coke.

     (vii) Mrs. Safia was formerly a directress of a multi-national company.

     (viii) Raima is speaking in regards to the topics discussed in the class.

     (ix) Suravi never sees none of her old friends any more.

     (x) The actors are going to repeat the performance again.

     (xi) The widow woman was seeking employment.

     (xii) The garden behind the house is their's.

3. (a) Give the meanings of any <u>ten</u> of the following words: **(10)**

     Take pride in, Get across, Wither, Speck, Recluse, Prop, Intrepid, Hypothesis, Incessant, Facile, Extol, Dungeon.

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Contd ... Q. No. 3

(b) Make sentences with any <u>ten</u> of the following words: **(10)**

Take after, Muster up, Put off, Thrifty, Strain, Rebut, Proprietor, Mumble, Incisive, Incidental, Dubious, Diminutive.

4. Write a precis of the following passage with a suitable title: **(20)**

All the virtues depend on the one virtue of perseverance. It is lack of perseverance, not lack of ability, that is the cause of most of the sad failures that stain the history of mankind. It is because men do not persevere in overcoming one difficulty at a time, that they fail. Instead of sticking to one aim in life until it is realized, they hesitate, get discouraged at every small rebuff, change from one aim to another, and so create for themselves such a series of difficulties as can never be overcome by human power. Hence they fail to accomplish anything. Even a small stream will carve out for itself a deep and wide channel simply by constantly flowing. Without perseverance, all the other virtues are like the deceitful fairy gold of the fairy-tales, which turns to worthless stones when you try to use it as money in the shops.

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 5**
and any other **TWO** from the rest.

5. Read the following passage carefully and answer the questions given below: **(30)**

Is it possible to persuade mankind to live without war? War is an ancient institution which has existed for at least six thousand years. It was always wicked and usually foolish but in the past the human race managed to live with it? Modern ingenuity has changed this. Either Man will abolish war, or war will abolish Man. For the present, it is nuclear weapons that cause the gravest danger, but bacteriological or chemical weapons may, before long offer as ever greater threat, if we succeed in abolishing war. To do this, we need to persuade mankind to look upon international questions in a new way, not as contests offer, in which the victor goes to the side which is most skillful in massacre, but by arbitration in accordance with agreed principles of law. It is not easy to change age-old mental habits, but is what must be attempted. There are those who say that the adoption of this or that ideology would prevent war, I believe this to be a profound error. All ideologies are based upon dogmatic assertions which are at least doubtful, and at worst, totally false. Their adherents believe in them so fanatically that they are willing to go to war in support of them.

HUM 111 (NAME)

The movement of world opinion during the past two years has been very largely such as we can welcome. It has become a commonplace that nuclear war be avoided. Of course very difficult problems remain in the international sphere; but the spirit in which they are being approached is a better one than it was some years ago. It has begun to be thought even by the powerful men who decide whether we shall live or die, that negotiations should reach agreement even if both sides do not find these important conflict now a days is not between East and West, but between Man and the H-bomb.

Questions:

(i) Give an appropriate title to the passage and justify it.

(ii) What is the author's view on modern war?

(iii) What does the author say about ideology?

(iv) According to the passage, what should be done to abolish war?

(v) What will happen if we fail to abolish war?

(vi) Give the meanings of the following words as used in the passage:

Ingenuity, assertions, ideology, dogmatic, negotiations.

6. (a) Suppose you are the chief engineer of a firm. Draft a suitable complaint letter about having received sub-standard and defective goods from your suppliers. (Provide other details from your own). **(10)**

(b) Write phonetic transcriptions of the following words: (Any five) **(10)**

stone, pleasure, colonel, about, thunder, enrich

7. (a) Write a dialogue between two parents over their concern about the repeatedly changed schedule of public examination. **(10)**

(b) Write a short essay on any <u>one</u> of the following topics: **(10)**

(i) Words: some Heal some Hurt

(ii) Tolerance: A key to healthy social life

(iii) Environmental Disaster

8. (a) Transform the following sentences as directed: (Any five) **(10)**

(i) The war is over and silence prevails. (Simple)

(ii) After I finished the works, I went shopping. (Compound)

(iii) Be diligent, and you will succeed. (Complex)

(iv) When I was absent, some new resolution had been adopted. (Simple)

(v) The rainbow glimmers and rain disappears. (Complex)

(vi) By his pleasant manners he gained many friends. (Compound)

(b) Write short notes on any <u>two</u> of the following: **(10)**

(i) The Diphthongs

(ii) Process of Communication

(iii) Components of Front Matter of a report