BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA
L-1/T-1   B. Sc. Engineering Examinations 2021-2022
Sub : **NAME 117** (Hydrostatics and Stability)
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**.
Assume reasonable value for missing data if any.

1. (a) Find the area, tonnes per centimeter, center of flotation and the transverse inertia of the waterplane defined by the following half ordinates (m), which are 15.00 m apart.   **(26)**

    0.26, 2.99, 8.32, 12.87, 16.38, 17.55, 17.94, 17.81, 16.64, 13.78, 8.32, 2.47 and 0.26

    If the displacement is 70,000 tonnes, what is the value of BM?

    (b) Define lightweight, deadweight and displacement.   **(9)**

2. (a) A ship has a main body defined by the waterplane areas given below.   **(20)**

Waterline	1	2	3	4
Area (m^2)	123	110	87	48

    The waterlines are 0.50 m apart. In addition, there is an appendage having a volume of displacement of 10 m^3 with a center of volume 0.10 m below No. 4 waterline. What are the volume of displacement and the position of vertical center of Buoyancy (VCB)?

    (b) A rectangular box of Length, L, Breadth, B and Depth, D floats at a uniform draught, T. Deduce expressions for KB, BM and KM in terms of principal dimensions. If the breadth is 9.00 m, what must be the draught for the metacenter to lie in the waterplane?   **(15)**

3. (a) What do you understand by the term 'Metacenter'? What is the significance of the positions of the center of gravity and the metacenter in relation to stability?   **(10)**

    (b) A small craft is floating in an enclosed dock. Then: **(10)**

    (i) Two bulks of timber floating in the dock are lifted on to the craft;

    (ii) A large stone in the craft is dumped into the dock.

    State whether the water depth in the dock will increase, decrease or remain the same in each case. Does your answer depend upon the density of the water?

    (c) A ship of 100.00 m length floats in seawater at a draught of 4.00 m forward and 4.73 m aft. Data for the ship is: **(15)**

    Tonnes per centimeter = 12

    Center of floation is 4.10 m aft of amidships

    Moment to change train 1 m = 3700 tonnes

    Where should a weight of 50.00 tonnes be added to bring the ship to even keel? What is the new even keel draught?

NAME 117

4. (a) When and why is an inclining experiment carried out? Discuss how it is carried out and the steps taken to ensure accurate results. **(15)**

(b) What do you understand by an Angle of Loll? Derive the expression for righting lever of a wall-sided vessel. **(20)**

SECTION – B

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

Symbols have their usual meaning. Assume reasonable value for any missing data.

5. (a) A ship 135 m long, 18 m beam and 7.6 m draught has a displacement of 14000 tonne. The area of the load water plane is 1925 m^2 and the area of the immersed midship section 130 m^2. Calculate: **(10)**

(i) C_W (ii) C_M (iii) C_B (iv) C_P

(b) A box-shaped vessel floating in salt water has the following particulars: **(25)**

L = 45 m   B = 10 m   D = 6 m

d = 4 m (F and A)   GM = 0.6 m

Calculate the dynamical stability to 20 degrees heel.

6. A vessel of constant rectangular cross-section is 45.73 m long, 10.67 m beam, and floats on an even-keel draught of 1.83 m in salt water. Find the effect of this on the initial stability using the lost-buoyancy and added-weight methods of calculation. Take value of KG before bilging is 1.83 m. **(35)**

7. (a) Explain the following terms: **(9)**

(i) Heel (i) List (iii) Trim

(b) The data for a rectangular vessel is given below: **(26)**

L = 100 m   B = 15 m

d = 7.5 m (even keel)   KG = 4 m

The vessel floats in salt water and has a continuous center line bulkhead which is water tight. Find the list if a compartment amidships, which is 15 m long and is empty, is bilged on one side.

8. (a) A ship has a displacement of 3000 tonnes. On the vessel is a rectangular double-bottom tank 15 m long and 8 m wide. This tank is partially filled with ballast water having a density of 1.025 t/m^3. If the GM_T without free surface effects is 0.18 m, calculate the virtual loss in GM_T and the final GM_T when the double bottom tank has: **(30)**

(i) No divisional bulkheads fitted

(ii) One transverse bulkhead fitted at mid-length

(iii) One longitudinal bulkhead fitted on center line of the tank

(iv) Two longitudinal bulkheads fitted giving three equal divisions.

(b) Based on the calculation of 8(a) above, comments on the effectiveness of transverse and longitudinal bulkhead on stability of this ship. **(5)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2021-2022

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

Full Marks : 210   Time : 3 Hours

The figures in the margin indicate full marks.

Symbols used 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   **(12)**

$$f(x) = \begin{cases} 1; & x < 0 \\ 1 + \sin x; & 0 \le x < \dfrac{\pi}{2} \\ 2 + \left(x - \dfrac{\pi}{2}\right)^2; & x \ge \dfrac{\pi}{2} \end{cases} \text{ at the point } x = \dfrac{\pi}{2}.$$

(b) By $\delta - \varepsilon$ definition, show that $\lim\limits_{x \to 3}\left(2x^3 - 3x^2 - 18x + 29\right) = 2$.   **(11)**

(c) State Leibnitz's theorem. If $y = \sin\left(a\sin^{-1} x\right)$, then compute y_{n+2} and $(y_n)_0$.   **(12)**

2. (a) Evaluate: $\lim\limits_{x \to 0}\left(\dfrac{\sin x}{x}\right)^{1/x^2}$.   **(12)**

(b) Expand the function $\cos x$ in power of x with reminder R_n in Schlomilch-Roche's form.   **(11)**

(c) Verify that $f(x) = \dfrac{-2x + 3}{5x - 2}$ satisfies the hypotheses of the Mean-Value Theorem on the interval $[1, 4]$, and find all values of c in that interval that satisfy the conclusion of the theorem.   **(12)**

3. (a) State Euler's theorem of homogeneous functions. If H is a function of x, y, z of degree n and if $u = \left(x^2 + y^2 + z^2\right)^{-(n+1)/2}$, compute   **(12)**

$$\frac{\partial}{\partial x}\left(H\frac{\partial u}{\partial x}\right) + \frac{\partial}{\partial y}\left(H\frac{\partial u}{\partial y}\right) + \frac{\partial}{\partial z}\left(H\frac{\partial u}{\partial z}\right).$$

(b) Find the angle of intersection of the curve: $x^2 - y^2 = 2a^2$ and $x^2 + y^2 = 4a^2$.   **(11)**

(c) If the tangent to the curve $\sqrt{x} + \sqrt{y} = \sqrt{a}$ at any point on it cuts the two axes at P and Q, show that OP + OQ = a, where, O is the origin.   **(12)**

MATH 181/NAME

4. (a) A mango grower finds that a mango tree produces, on an average, 400 mangoes per year, if no more than 16 trees are planted in a unit area. For each additional three planted per unit area, the grower finds that the yield decreases by 20 mangoes per tree. How many trees should be the grower plant per unit area so as get maximum yield? **(12)**

(b) Find the points on the parabola $(x = at^2, y = 2at)$ at which the radius of the curvature is equal to its latus rectum. **(11)**

(c) Find all the asymptotes of the curve $x^3 - 2y^3 + 2x^2y - xy^2 + y(x - y) + 1 = 0$. **(12)**

SECTION – B

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

5. Evaluate the following:

(a) $\int \dfrac{\cos^3 x}{e^{3x}} \, dx$ **(11)**

(b) $\int \sin^4 x \cos^2 x \, dx$ **(12)**

(c) $\int \dfrac{x^2 + x - 1}{x^3 + x^2 - 6x} \, dx$ **(12)**

6. (a) Find the reduction formula for $\int \dfrac{dx}{\left(1 + x^2\right)^n}$ and hence find $\int \dfrac{dx}{\left(1 + x^2\right)^3}$. **(12)**

(b) Evaluate $\lim\limits_{n \to \infty} \left(\dfrac{n}{n^2 + 1^2} + \dfrac{n}{n^2 + 2^2} + \dfrac{n}{n^2 + 3^2} + \dots + \dfrac{1}{2n} \right)$. **(12)**

(c) Prove that $\Gamma\left(\dfrac{1}{2}\right) = \sqrt{\pi}$. **(11)**

7. (a) Determine whether $\int_0^3 \dfrac{dx}{x - 1}$ converges or diverges. **(11)**

(b) Evaluate $\int_0^2 x \sqrt[3]{8 - x^3} \, dx$. **(12)**

(c) Find the arc length of the spiral $r = e^{3\theta}$ between $\theta = 0$ and $\theta = 2$. **(12)**

8. (a) Find the area of the region that lies inside the cardiod $r = 2 + 2\cos\theta$ and outside the circle $r = 3$. **(11)**

(b) Find the area of the surface that is generated by revolving the portion of the curve $x = \sqrt{9 - y^2}$ between $y = -2$ and $y = 2$ about the y-axis. **(12)**

(c) Use cylindrical shell method to find the volume of the solid generated when the region R under $y = x^3$ over the interval $[0, 3]$ is revolved about the line $y = -2$. **(12)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2021-2022

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

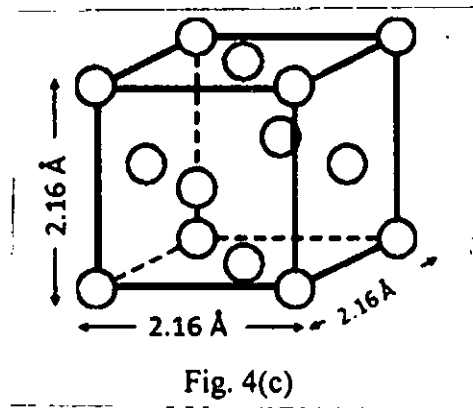There are **FOUR** questions in this section. Answer any **THREE** questions.

Symbols have their usual meanings.

1. (a) Obtain an expression for relativistic energy (E) of a particle having rest mass (m_0)and relativistic momentum (p). **(10)**

(b) Derive an expression for the relativistic kinetic energy of a particle and show that at lower speed it reduces to the classical expression. **(17)**

(c) Find the momentum of an electron in keV/c whose kinetic energy is equal to its rest energy of 511 keV. **(8)**

2. (a) What is photoelectric effect? Explain Einstein's photoelectric equation. **(8)**

(b) Show that the change in wavelength of an X-ray photon during Compton scattering is independent of the wavelength of incident photon. On which condition the greatest wavelength change occur? **(19)**

(c) A beam of X-rays is scattered by a target. At 45° from the beam direction the scattered X-rays have a wavelength of 2.2 pm. What is the wavelength of the X-rays in the direct beam? **(8)**

3. (a) Show that the density of nuclear matter is independent of mass number. Obtain an estimate of the nuclear density. **(10)**

(b) What are the essential components of a nuclear reactor? Describe the function of each of these components. **(17)**

(c) A counter rate meter is used to measure the activity of a radioactive sample. At a certain instant, the count rate was recorded as 4750 count per minute. Five minutes later, the count rate recorded was 2700 counts per minute. Compute (i) the decay constant and (ii) the half-life of the radioactive sample. **(8)**

PHY 113/NAME

4. (a) Define the terms Bravais lattice and lattice parameters in a crystal. Distinguish between primitive and non-primitive unit cells. **(12)**

(b) Draw the unit cells of orthorhombic structure. Deduce the expression of theoretical density of a cubic crystal. What will be the change in this expression for an orthorhombic structure? **(13)**

(c) A unit cell of potassium (K) is shown in the Fig. 4(c). Identify the structure of K and hence calculate (i) the nearest neighbor distance, (ii) atomic radius and (iii) the atomic packing factor of this structure. Here the circles represent lattice points. **(10)**

Fig. 4(c)

SECTION – B

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

5. (a) Define planar density of a crystal. Compare the planar densities for (100), (110) and (111) crystallographic planes of a simple cubic and a body centered cubic crystals. **(12)**

(b) Explain why X-rays are useful for analysis of crystal structure. Deduce Bragg's law of X-ray diffraction. **(16)**

(c) The Bragg angle of 2nd order X-ray diffraction from the (111) plane of a cubic crystal is 46.58°. The lattice constant of the crystal is 3.67 Å. Apply the Bragg's law of X-ray diffraction to calculate the wavelength of X-ray. **(7)**

6. (a) Write short notes on– (i) Substitutional defects, (ii) Stacking fault, (iii) Forbidden energy gap. **(12)**

(b) Write down the properties of an ionic crystal. Explain the dependence of potential energy with the interatomic spacing in a NaCl crystal and hence establish the expression of potential energy per ion pair at the equilibrium separation between the ions in the crystal. **(16)**

(c) Consider an ionic crystal in which the repulsive potential energy varies as r^{-9}, where r is the separation between two ions. The Madelung constant of the crystal is 1.748 and the equilibrium separation between the ions is 2.63 Å. Calculate the potential energy per ion pair at the equilibrium separation (r_0) between the ions in the crystal. (Express your result in eV unit). **(7)**

PHY 113/NAME

7. (a) What is an equipotential surface? Explain why two equipotential surfaces cannot intersect. **(8)**

(b) Derive an expression for electric potential at a point P due to an electric dipole as shown in the Fig. 7(b). Discuss the special cases: **(21)**

    (i) When the point P lies on the axial line of the dipole on the side of the positive charge

    (ii) When the point P lies on the axial line of the dipole on the side of the negative charge

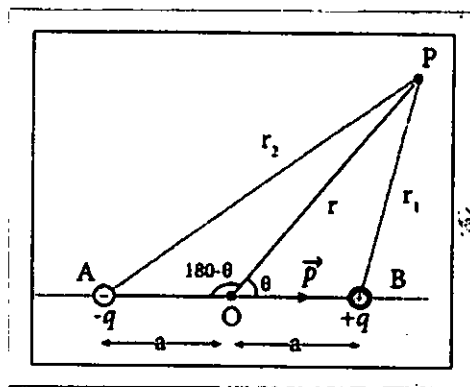   (iii) When the point P lies on the equatorial line of the dipole

Fig. 7(b)

(c) Five particles of equal negative charges of -4×10^{-9} C are placed around a circle of radius 20 cm. Calculate the electric potential at the center of the circle. **(6)**

8. (a) State and explain Faraday's law of electromagnetic induction. **(6)**

(b) Obtain an expression for the growth and decay of the current of an inductor in an LR circuit. What is the time constant of the circuit? Also, explain the nature of the time-current curves if the time constant varies. **(19)**

(c) The current in a circuit changes from 25 A to zero in 4 ms. If the average induced emf is 360 V, what is the coefficient of self-induction of the circuit? How much energy was initially stored in the magnetic field of the inductor? **(10)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2021-2022

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 kind of information does a wave function, ψ, give about an electron in an atom? What is the significance of ψ^2? **(10)**

   (b) Explain radial probability distribution curves for 3s, 3p and 3d orbitals. Also draw the shapes of these orbitals showing all the angular and radial nodes. **(15)**

   (c) How do line spectra differ from continuous spectra? Why does an atom produce a line spectra? **(10)**

2. (a) Define shielding and effective nuclear charge. Explain the connection between the two with suitable examples. **(10)**

   (b) The ionsphere lies about 100 km above Earth's surface. This layer consists mostly of NO, O_2, and N_2, and photoionization creates NO^+, O_2^+, and N_2^+. (i) Use MO theory to compare the bond orders of the molecules and ions. (ii) Does the magnetic behavior of each species change when its ion forms? **(15)**

   (c) What do you mean by 'Inert pair effect'? Explain why $PbCl_2$ is more stable than $PbCl_4$. **(10)**

3. (a) Which of the following triatomic ions would you expect to be linear and which would you expect to be V shaped? Suggest approximate bond angles for (i) BrF_2^+, (ii) BrF_2^-. **(10)**

   (b) Discuss the basic principle of HSAB concept. What are the basic characteristics of hard and soft species? The solubility of the silver halides in water runs as: **(15)**

     $AgF > AgCl > AgBr > AgI$

   Justify the pattern by 'Hard and Soft Acid-Base' theory.

   (c) Why the dipole moment of NH_3 is greater than NF_3? Explain. **(10)**

4. (a) The size of the transition metal atoms decreases slightly from left to right in the periodic table. What factors must be considered in explaining this decreases? In particularly, why does the size decreases at all, and why is the decreases so gradual? **(10)**

   (b) How the magnetic properties of transition metal complexes can be explained on the basis of CFT? Discuss with at least two examples. **(15)**

   (c) Complexes of Co (III) like $[Co\,(NH_3)_6]^{3+}$ and $[Co(en)_3]^{3+}$ are orange-yellow while $[CoF_6]^{3-}$ and $Co[(H_2O)_6]^{3+}$ are blue in color. Explain. **(10)**

CHEM 117/NAME

SECTION – B

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

5. (a) Explain the fact (8+7=15)

    (i) Gold used in ornaments are solid solution.

    (ii) Scale formation in boiler pipe is a consequence of solubility of CO_2 in water.

    (b) Bends, the decompression sickness, is a medical condition for scuba divers. Relate this with the effect of pressure on the solubility of gas in liquid. (12)

    (c) Explain that the relative solubility of ionic solids in water can be decided from the knowledge of hydration enthalpy and lattice energy. (8)

6. (a) An aqueous solution of sugar or glucose will boil at a temperature higher than pure water at atmospheric pressure. Explain the fact with your knowledge of vapor pressure lowering due to adding non-volatile and non-electrolyte solute in the solvent. (15)

    (b) Identify the conditions with suitable examples when van't Hoff factor, i, (i) is equal to one (ii) less than one, and (iii) greater than one. (12)

    (c) Antifreeze consists of ethylene glycol-a non-volatile and nonelectrolyte solvent. Calculate the boiling and freezing points of a 25.0 mass % ethylene glycol solution in water. Use the normal boiling and freezing points of water at 1 atm pressure. [K_b = 0.51 °C/m, K_f = 1.86 °C/m]. (8)

7. (a) Show that the concentrations linearly vary with time for a zero-order reaction; consequently, the reaction rate is independent of the time. Explain the fact. (15)

    (b) for a typical consecutive reaction, the reaction profile depends on the rate constants of the consecutive steps. Sketch the typical reactions profiles and justifies the statement. (12)

    (c) Define the energy of activation for a reaction. Suppose the energy of activation is zero. Calculate the rate constant at 300K if the rate constant, k = 1.6 × 10^6 s^{-1} at 280 K. (8)

8. (a) Draw the phase diagram of sulfur. (15)

    (i) Identify two-phase and three-phase equilibriums that exist in the diagram.

    (ii) Show that the existence of monoclinic sulfur is not possible if a metastable equilibrium is formed.

    (iii) A four-phase equilibrium is not possible in the sulfur system – justify.

    (b) Draw a typical congruent melting system for components A and B where the freezing point of A is greater than that of B. Explain the formation of the eutectic systems in the diagram. How can you differentiate the congruent melting point and eutectic point? (12)

    (c) From the phase diagram, explain the principle of freeze drying. (8)

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-1   B. Sc. Engineering Examinations 2021-2022

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

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

It is a great point to enlarge the range of studies which a university professes, even for the sake of the students; and though they cannot pursue every subject which is open to them, they will be the gainers by living among those and under those who represent the whole circle. This I conceive to be the advantage of a seat of universal learning, considered as a place of education. An assemblage of learned men, zealous for their own sciences, and rivals of each other, are brought, by familiar intercourse and for the sake of intellectual peace, to adjust together the claims and relations of their respective subjects of investigation. They learn to respect, to consult, to aid each other. Thus is created a pure and clear atmosphere of thought, which the student also breathes, though in his own case he only pursues a few sciences out of the multitude. He profits by an intellectual tradition, which is independent of particular teachers, which guides him in his choice of subjects, and duly interprets for him those which he chooses. He apprehends the great outlines of knowledge, the principles on which it rests, the scale of its parts, its lights and its shades, its great points and its little nuances, as he otherwise cannot apprehend them. Hence his education is called "Liberals". A habit of mind is formed which lasts through life, of which the attributes, are freedom, equitableness, calmness, moderation, and wisdom; or which are termed as philosophical habits. This then I would assign as the special fruit of the education furnished at a University, as contrasted with other places of teaching or models of teaching. This is the main purpose of a University in its treatment of its students.

Questions:

(a)   How does a University offer an overall gain to students?

(b)   How does an intellectual peace develop?

(c)   How does a student learn to promote an interaction between different fields of knowledge?

(d)   What is "Liberal" education? What is its impact on students?

(e)   How is a University different from other places of learning?

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

professes, conceive, assemblage, multitude, apprehends.

HUM 111/NAME

2. (a) You have received some products in a damaged condition form your suppliers. Now write a letter of complaint emphasizing the need of greater care in complying with the order (Provide necessary details from your own.). **(10)**

(b) Write phonetic transcription of the following words: (Any Five) **(10)**

Basic, enrich, page, thank, son, reach.

3. (a) Write a dialogue between two teachers about their views of the changing behaviour of students now-a-days. **(10)**

(b) Write an essay on any ONE of the following topics: **(10)**

(i) A Healthy Academic Environment

(ii) My Favourite Pastime

(iii) Words: Some Heal Some Hurt

4. (a) Transform the following sentences as directed: (Any Five) **(10)**

(i) His success is almost certain (Complex).

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

(iii) Suhana kept her promises (Compound).

(iv) I called her, but she did not answer (Simple).

(v) The child went to her mother dancing (Compound).

(vi) Speak the truth and I shall pardon you (Simple).

(b) Write short notes on any TWO of the following: **(10)**

(i) Components of a formal report

(ii) The Diphthongs

(iii) Principles of writing a business letter

SECTION – B

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

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

(i) "But we can't possibly have a garden-party with a man dead just outside the front gate."

(ii) "I renounce the two million of which I once dreamed as of paradise and which now I despise."

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

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

(ii) How is death portrayed at the end of the story "The Garden Party"? Is Laura shocked by what she sees? Why or why not?

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Contd.... for Q. No. 5

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

    (i)   Who is Mrs. Frestier? What is her role in the story?

    (ii) "But, mother, do you really think it's a good idea?" — Who told this and why?

    (iii) What was the Banker's reaction after reading the letter?

    (iv) How did the astrologer solve the problems of his customers?

    (v) Do you agree with the lawyer that "To live anyhow is better than not at all?" — Give reasons for your answer.

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

    (i)   This is from my wife and I.

    (ii) You have to pay custom at the airport.

    (iii) The clergy was invited for the party.

    (iv) The boy studied when his father came home from work.

    (v) We enjoyed at the party.

    (vi) The best does not lack integrity.

    (vii) I shall see the brakes whether they work well.

    (viii) We had gone to that place yesterday.

    (ix) A third of the city are unemployed.

    (x) I asked them what were they doing.

    (xi) Less than fifty students attended the class.

    (xii) He was absent in the meeting.

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

    Concord, endeavor, disseminate, glitter, lullaby, persuade, skeptical, terminate, vanity, ramble, holocaust, obsolete.

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

    Speak out, versatile, substitute, resolute, pensive, keen, imply, rectify, succinctly, baptize, flicker, exposition

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

A keen sense of humor is the hall mark of culture. When a person can crack a joke on himself, he raises himself at one in the estimation of his friends. There are people who can throw jokes at others, but never take one thrown against them. This one way traffic is not really a high sense of good humor. It is the essence of hamper that there should be give and takes in the process good humor is often the test of tolerance. A fanatic is incapable of good humor. He is tearing others to pieces fearing of getting himself torn all the time. Good humor defeats itself, if there is malice in it, or is indulged in to hurt others. A joke should never hurt otherwise it is no joke at all. A joke should make the person who makes it and the person who has to take it, laugh together. That is why tolerance and culture are the sources of every good joke.