

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

1. Workout the following:

$$(a) \int \frac{dx}{(2x+3)\sqrt{x^2+3x+2}} \quad (15)$$

$$(b) \int \frac{dx}{x(a+bx^n)} \quad (16\frac{2}{3})$$

$$(c) \int \frac{\sin 2x dx}{(a+b \cos x)^2} \quad (15)$$

2. (a) Obtain a reduction formula for  $\int \sin^m x \cos^n x dx$  and then use the formula to evaluate  $\int \sin^3 x \cos^2 x dx$ . (17)

$$(b) \text{ Evaluate } \lim_{n \rightarrow \infty} \left\{ \left(1 + \frac{1}{n^2}\right)^{\frac{2}{n^2}} \left(1 + \frac{2^2}{n^2}\right)^{\frac{4}{n^2}} \left(1 + \frac{3^2}{n^2}\right)^{\frac{6}{n^2}} \dots \left(1 + \frac{n^2}{n^2}\right)^{\frac{2n}{n^2}} \right\} \text{ using definite integrals.} \quad (12)$$

(c) Find the approximate value of  $\int_1^3 \log x dx$ , by using trapezoidal rule with 6 equal sub-intervals. (17 $\frac{2}{3}$ )

3. (a) Evaluate the improper integral  $\int_0^{\infty} \frac{1}{\sqrt{x}(x+1)} dx$ . (16 $\frac{2}{3}$ )

$$(b) \text{ Show that } \int_0^{\pi/2} \frac{d\phi}{\sqrt{1 - \frac{1}{2} \sin^2 \phi}} = \frac{[\Gamma(\frac{1}{4})]^2}{4\sqrt{\pi}}. \quad (15)$$

(c) Find the area of the region that is inside the cardioid  $r = 4 + 4 \cos \theta$  and outside the circle  $r = 6$ . (15)

4. (a) Find the area enclosed by the semi-cubical parabola  $y^3 = x^2$  and its chord joining  $(-1, 1)$  and  $(8, 4)$ . (15)

(b) Determine the perimeter of the cardioid  $r = 2(1 - \cos \theta)$ . (16 $\frac{2}{3}$ )

(c) Find the area of the surface that is generated by revolving the portion of the curve  $y = x^2$  between  $x = 1$  and  $x = 2$  about the y-axis. (15)

Contd ..... P/2

**MATH 163/ME****SECTION – B**

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

5. (a) Find the differential equation of the family of curves,  $y = e^x(A \cos x + B \sin x)$ , where A and B are arbitrary constants. **(15)**
- (b) Solve:  $\frac{dy}{dx} = \frac{x+2y-3}{2x+y-3}$ . **(16 $\frac{2}{3}$ )**
- (c) Solve:  $(x^2 + y^2 + 1)dx - 2xydy = 0$ . **(15)**
6. (a) Solve:  $\sec^{-1}\left(\frac{dy}{dx}\right) = x + y$ . **(15)**
- (b) Solve:  $\frac{dy}{dx} - y \sec x = y^2 \sin x \cos x$ . **(16 $\frac{2}{3}$ )**
- (c) A body at a temperature of  $50^\circ$  F is placed outdoors where the temperature is  $100^\circ$  F. If after 5 minutes the temperature of the body is  $60^\circ$  F, find (i) how long it will take the body to reach a temperature of  $75^\circ$  F and (ii) the temperature of the body after 20 minutes. **(15)**
7. (a) Find a differential operator that annihilates the function **(16 $\frac{2}{3}$ )**  
 $f(x) = 7x^3 - 5 + 3x^2e^{-2x} + 3\sin 2x$  and hence solve the differential equation  
 $y''' + 4y'' + 4y' = f(x)$  by undetermined coefficients.
- (b) Solve:  $\frac{d^2y}{dx^2} - y = \cosh x \cos x$ . **(15)**
- (c) Solve:  $x^2 \frac{d^2y}{dx^2} - 3x \frac{dy}{dx} + 5y = x^2 \sin(\ln x)$ . **(15)**
8. (a) Solve:  $xy'' + (x-1)y' - y = 0$  by the method of factorization operator. **(16 $\frac{2}{3}$ )**
- (b) Solve:  $y \frac{d^2y}{dx^2} - \left(\frac{dy}{dx}\right)^2 = y^2 \ln y$ . **(16)**
- (c) Determine the convergence or divergence of the series:  $\sum_{k=1}^{\infty} \frac{4k^2 - 2k + 6}{8k^7 + k - 8}$ . **(14)**
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**SECTION – A**

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

1. (a) Mention the basic raw materials of ceramic industries with their essential properties. (8)  
 (b) Classify the ceramic products with examples on the basis of the degree of vitrification. (8)  
 (c) Describe the manufacturing process of porcelain giving flowsheet. (10)  
 (d) How do you conserve energy in ceramic industries? (9)
  
2. (a) Describe the physical and chemical properties of glass. (10)  
 (b) Write the fundamental chemical reactions occurring in the glass manufacturing furnace. (7)  
 (c) Write short notes on the following: (any three). (4×3=12)  
 (i) Optical glass (ii) Finishing of glass materials (iii) Photosensitive glass (iv) Glass gall (v) Safety glass.  
 (d) Discuss the prospect of glass industries in Bangladesh. (6)
  
3. (a) What are the raw materials of activated carbon? Describe the manufacturing process of activated carbon with flowsheet. (3+8=11)  
 (b) How do you manufacture carbon brush? Mention some of its important uses. (6)  
 (c) What do you mean by carryover? Discuss the various causes of priming and techniques of minimization of priming. (3+3+2=8)  
 (d) What type of difficulties arises if the scale deposits on the surface of the boiler? Explain the different causes of scale formation in the boiler. (10)
  
4. (a) How corrosion control can be achieved by the following techniques? (15)  
 (i) Using sacrificial anode (ii) Impressed current cathodic protection (iii) Anodic protection.  
 (b) Discuss the following methods of applying metal coatings which have been using since its prehistoric period for the prevention of corrosion. (16)  
 (i) Hot-dip process (ii) Electroplating (iii) Metal cladding (v) Cathode sputtering.  
 (c) How dissolved oxygen and carbondioxide can be removed from the aqueous environments by chemical treatment? (4)

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**SECTION – B**

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

5. (a) What are the available forms of plastics? (6)  
(b) Give classification of plastics formed by condensation polymerization. (7)  
(c) Describe the preparation of the following plastics with reactions (any two). Mention their uses. (12)  
(i) Polyester, (ii) Epoxy resin, (iii) Polyvinylacetal  
(d) Describe thermal and electrical properties of plastics. (10)
6. (a) Give the preparation of monomer of nylon 66 and describe the manufacturing process of nylon 66 with flow sheet and reactions. (6+10=16)  
(b) Write short notes on the following (any three): (12)  
(i) Orlon, (ii) Dynel, (iii) Cuprammonium rayon, (iv) Methods of spinning.  
(c) Discuss the important properties of Natural and Synthetic fibres. (7)
7. (a) What are the sources of Natural Rubber? (6)  
(b) Write the structure and name of monomers, polymers and co-polymers of Rubber. (12)  
(c) Describe the properties and importance of Rubber. (12)  
(d) What do you mean by vulcanization of Rubber? (5)
8. (a) Define corrosion and distinguish it from erosion. Corrosion is nothing but the electrochemical cell reaction— justify the statement. (3+5=8)  
(b) How would you classify atmosphere on the basis of marked differences in corrosion? (7)  
(c) Explain why? (4×5=20)  
(i) The corrosion rate within the pH range 4-10 is not dependent on pH.  
(ii) The corrosion rate in well aerated soil is less than poorly aerated soil.  
(iii) The effect of different salts on the rate of under water corrosion is different.  
(iv) The corrosion rate in some natural de-aerated environments is found to be abnormally high.
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**SECTION-A**

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

1. (a) What do you understand by 'Computer Hardware' and 'Computer Software'? List the minimum number of hardware and software components required to build a workable PC. (9)
- (b) Define 'Computing Environment' with examples. Why is the sense of computing environment necessary for a programmer? (6)
- (c) Mention the major steps that are followed to solve a real-world problem using a computer programming language. Which of these steps are common to all programming Language? (10)
- (d) What do you understand by a computer programming Language? How are they classified? (10)
  
2. (a) Make a comparison between a compiled Language and an interpreted Language. (6)
- (b) Briefly discuss the scope and lifetime of a variable in C programming Language with examples. (9)
- (c) Differentiate between 'stack' and 'heap' segments of program memory. Using 'malloc ( )' function, show how memory for 10 integer types variables can be allocated a C program. Also state how these variables can be accessed after allocation in the program. (12)
- (d) What are the two argument types that a 'main ( )' function can take? How are these arguments supplied during execution? Explain with examples. (8)
  
3. (a) Write down the output from the following code segments and explain in one or two sentences. (6)
- (i) 

```
int main ( ) {
    float gpa1 = 2.20;
    double gpa2 = 2.20;
    if (gpa1 == gpa2)
        printf ("You failed");
    else
        printf ("You Passed");
    return 0 ;
}
```

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**Contd ... Q. No. 3 (a)**

```
(ii) int x = 1; (6)
Switch (x) {
    case 1 : printf("1");
    case 2 : printf("2");
    default : printf("O");
}
```

```
(iii) char *message = "C Programming"; (8)
printf("%s\n", message);
printf("%s\n", & message[0]);
printf("%s\n", & message[2]);
printf("%s\n", & message +2);
printf(message);
```

(b) Write a C function which will receive an array using a pointer type argument and the size of the array using an integer type argument from the calling function and then returns the sum of all the elements of the array to the calling function. (15)

4. (a) What are the main elements of an object Oriented Programming (OOP) Language? Explain the four pillars of OOP with examples. (12)

(b) Convert the following program (8)

Written in C into C++ program constructs in C-like style.

```
# include <stdio.h>
int main ( ) {
    float x = 10.0 ;
    float y ;
    scanf ("%f",&y) ;
    printf ("%f", x + y) ;
    return 0 ;
}
```

(c) Write a C++ program in OOP style with a class named 'Geometry' which will have two private variables of float type, a constructor function which will initialize those two variables, a destructor function, which will print "Good-bye" upon object destruction two public functions one to calculate and return the area and another to return the perimeter of a rectangle. Then create an object of the 'Geometry' class type in the 'main( )' function print the area and perimeter values. (15)

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**SECTION-B**

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

5. (a) Write a C-program that will take two 3×3 matrices as input in the 'main ( )' function and passes them to an user defined function where they will be added and then transposed. Finally, print the transposed matrix. (13)

(b) Write a C-program using recursion which generates the first n-th members of the Fibonacci series.

[ Fibonacci series : 0 1 1 2 3 5 8 13 21 ..... ] (11)

(c) Read the code carefully and answer the following questions –

```
#include <stdio.h>
#include <conio.h>
int sum (int a, int b);
void main (void)
{
int x = 2, y = 3, z;
z = sum (x, y);
printf ("%" d\n", z);
int sum (int a, int b)
int c;
c = a + b;
return a;
}
```

(i) What do you understand by the function prototype- int sum (int a, int b);

(ii) Is such prototyping always necessary?

(iii) What will be the output of the code given above? (11)

6. (a) Explain the following two statements =

i. (\* ptr) ++

ii. \* ptr ++

where ptr is a pointer to an integer. (7)

(b) Explain the difference between call-by-value and call-by-reference. Write a C-program to swap the contents of two float type variables using call-by-reference method. (10)

(c) Write a C-program using pointer to determine the length of a string without using the strlen ( ) function defined in <string.h>. (8)

(d) Write a program using pointer to read an array of integers and print its elements in reverse order. The array size should be 5, and the values must be taken as input from the keyboard. (10)

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7. (a) Differentiate between arrays & structure. (9)
- (b) Define a structure that contains the name, number of units & price per unit of 3 different items of a grocery store. Write a C-program that will take the details (name, number of units & price per unit) as input from the keyboard and print a categorized bill with total price at the bottom section. (13)
- (c) Write a C-program using structure that takes as input from keyboard the 3 class test marks of a 5 student along with their names and student numbers and prints their details according to their student numbers. (13)
8. (a) In the C-drive of a computer there is a file named "Cgpalist.txt" which contains the roll numbers and cgpa (separated by a tab) in two columns, of each student in a class of 60 students.
- Write a C-program to:-
- (i) read all the data from the file.
- (ii) sort the roll numbers according to the cgpa and create a merit list in a text file named "meritlist.txt" of the same drive of the computer containing roll number, cgpa & merit position (separated by tabs). [Please mentions the purpose of each segment/section of your program with comments] (30)
- (b) Write appropriate declaration/initialization statements for each of the following:
- (i) structure containing an array of integer
- (ii) An array of structures (5)
-



**SECTION – A**

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

1. (a) What is damped oscillation? Write down the differential equation of a damped oscillator. Solve it to obtain an expression for the displacement in the case of a damped oscillatory motion. Discuss the effect of damping on the natural frequency of an oscillator. (27)
- (b) The initial displacement of a damped harmonic oscillator of mass 2.5 kg and damping constant 2.8 kg/s is 0.025 m. Find the time taken for the amplitude reduced to 10% of its initial value. Find the mean lifetime of the oscillation. (8)
2. (a) What is phase velocity? Find the relation between group velocity and phase velocity. When does the group velocity become equal to the phase velocity? (7)
- (b) Two oscillating bodies of masses  $m_1$  and  $m_2$  are connected by a spring on a horizontal frictionless surface. Show that their relative motion can be represented by the oscillation of a single body having reduced mass  $\mu$ . (20)
- (c) Two masses 2.5 kg and 3.5 kg are connected by a spring. Find the oscillation frequency of the two body system. Given that the extension of the spring is 2 cm for the applied force of 2.5 N. (8)
3. (a) What are reverberation and reverberation time? On what factors it depend? (5)
- (b) What are the assumptions of Sabines? Deduce expressions for growth and decay of intensities of sound in a room and hence find as expression for the reverberation time. (22)
- (c) Find the reverberation time of a room of 6 m wide, 10 m long and 4 m high and contains 60 wooden seats. There are 60 people in the room. Absorption co-efficient of room (wall, floor and ceiling) is 0.03. Absorbing power per person = 0.4 Sabines and per wooden seat = 0.2 Sabines. (8)
4. (a) State Heisenberg uncertainty principle. A measurement establishes the position of a proton with a accuracy of  $\pm 1.0 \times 10^{-11}$  m. Find the uncertainty in the proton's position 1s later. Assume  $v \ll c$ . (10)
- (b) Write down the required characteristics of wavefunction  $\Psi$ . Prove that  $\Psi_{(x,t)}^* \Psi_{(x,t)}$  is necessarily real and either positive or zero. (10)
- (c) Deduce the Schrödinger wave equation for a free particle moving in a field of constant potential  $V_0$ . (15)

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**SECTION – B**

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

5. (a) Explain the energy eigenfunction for an electron that is strongly bound to its atomic nucleus. Draw schematically the allowed energy levels for different n-values. (15)
- (b) Draw schematically the wavefunction  $\Psi$  and the probability function  $\Psi^*\Psi$  for an electron in a potential well (consider  $n = 1$  to 5). What conclusions can be drawn from these diagrams? (10)
- (c) Derive the infinite square well energy quantization law, directly from the de-Broglie relation  $p = \frac{h}{\lambda}$ , by fitting an integral number of half de-Broglie wavelengths  $\frac{\lambda}{2}$  into the width 'a' of the well. (10)
6. (a) Write down some fundamental postulates of statistical mechanics. (5)
- (b) Distinguish between Bose-Einstein and Fermi-Dirac distribution functions. Show schematically a comparison of the three statistical distribution functions considering that the functions give the probability of occupancy of a state of energy  $\epsilon$  at the absolute temperature T. (20)
- (c) What is Fermi energy? Find the Fermi energy in copper on the assumption that each copper atom contributes one free electron to the electron gas. The density of copper is  $8.94 \times 10^3 \text{ kg/m}^3$  and its atomic mass is 63.5 u. (10)
7. (a) Explain lens aberrations: (i) coma and (ii) curvature. (10)
- (b) Two coaxial thin convergent lenses of focal lengths  $f_1$  and  $f_2$  are separated by a distance d in air. Determine an expression for the equivalent focal length (f) of the combination. (15)
- (c) Two thin convex lenses of focal lengths 20 cm and 5 cm are placed 30 cm apart. If their equivalent focal length is 6.67 cm, find the position of principal points. (10)
8. (a) What do you mean by aplanatic lens? Mention some ways to minimize spherical aberration in lens. (8)
- (b) Show that spherical aberration can be minimized significantly by using two plano-convex lens separated by a distance equal to the difference in their focal lengths. (10)
- (c) Show that achromatism in lens can not be achieved by taking a combination of two lenses of same dispersive power. (10)
- (d) Calculate the focal length of a convex lens of crown glass (dispersive power 0.012) and a concave lens of flint glass (dispersive power 0.020) so that when placed in contact they form an achromatic converging combination of focal length 30 cm. (7)
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**SECTION – A**

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

1. (a) Define demand function. (5)
- (b) What are the factors that influence the shifting of the demand curve? (10)
- (c) How would you derive the market demand curve of a commodity? Explain graphically. (10)
- (d) What are the main determinants of supply? (10)
2. (a) Define Income elasticity of demand and price elasticity of demand. (10)
- (b) Show that price elasticity of demand varies from zero to infinity along any straight line demand curve. Explain graphically. (15)
- (c) From the following table calculate elasticity of demand if you move from point B to C and explain what you understand from the result. (10)

POINT	$P_x$	$Q_y$
A	500	120
B	600	150
C	700	180

3. (a) What is an indifference curve? Explain the properties of an indifference curve. (15)
- (b) Explain consumer's equilibrium with the help of budget line and indifference curve. (10)
- (c) From the following budget line and the utility function, calculate the amount of two commodities that maximize satisfaction. What is the maximum amount of satisfaction? (10)

$$4000 = 25X + 35Y$$

$$U = 400X^{0.6}Y^{0.7}$$

4. (a) How is price determined in an economy Under competition? What will happen to the price and quantity due to simultaneous change in demand and supply? (15)

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**Contd... Q. No. 4**

(b) From the following demand and supply functions, calculate equilibrium price and quantity and show the result in a graph. (20)

$$P = 0.50 Q + 150$$

$$P = -0.40 Q + 300$$

- (i) What will happen to the equilibrium price and quantity if government imposes a unit tax of Tk. 2 per unit?
- (ii) What will happen if government gives a subsidy of Tk. 3 per unit?
- (iii) Describe the change in equilibrium. Show the equilibrium coordinates on the same graph.

**SECTION – B**

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

5. (a) Explain the Gross domestic Product as the Yardstick of an Economy's performance. (10)  
(b) Discuss the circular flow of income and expenditure in a two sector economy. (15)  
(c) Briefly explain the various difficulties in the measurement of national income of a country. (10)
  6. (a) What do you mean by Monopoly and how it arises? (10)  
(b) Write the Monopoly's Price setting strategies. (10)  
(c) Briefly discuss a single price monopoly's output and price decision. (15)
  7. (a) Write the meaning of economic development as a new economic view. (10)  
(b) Briefly write about the Kuznet's six characteristics of modern economic growth. (10)  
(c) Discuss the common characteristics of developing countries like Bangladesh. (15)
  8. (a) Define the perfect competition and write down its characteristics. (10)  
(b) Briefly discuss the firm's output decision in a perfect competition. (15)  
(c) Shortly write about the firm's shutdown point in a perfect competition market. (10)
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**SECTION – A**

There are **FOUR** questions in this section. Answer any **THREE** questions, including **Q. No. 1** as compulsory.

1. (a) Explain with reference to the context any two of the following: (15)
- (i) 'Challenge is challenge. Go on'.
  - (ii) And my whole life, every white man's life in the East, was one long struggle not to be laughed at.
  - (iii) At the sight of the flames and the irresistible course of the fire, the boys broke into shrill, excited cheering.
- (b) Answer any one of the following questions: (15)
- (i) What, according to you, should be the role of the colonized against the oppression of the colonizer? Discuss in the light of the story "Shooting an Elephant".
  - (ii) What is Maugham's view about philosophy? Elucidate with a special reference to "The Use of Philosophy".
- (c) Answer any three of the following: (15)
- (i) Which character of the story "Fire on the Mountain" do you like most and why?
  - (ii) "He was as much a stranger to the stars as were his innocent customers"— who is the person and why is it said about him?
  - (iii) What does the elephant stand for in "Shooting an Elephant"?
  - (iv) Why was the king's story inserted in "The Use of Philosophy"?
  - (v) Depict the climax scene of the story "An Astrologer's Day".
2. (a) Recast and correct any ten of the following sentences: (15)
- (i) "Alright", said he, "that's the end".
  - (ii) We had a large amount of students on hand for the rally.
  - (iii) This idea does not make Hasan enthused.
  - (iv) Rian considered the matter farther.
  - (v) When Alif came in, he set down on the big sofa.

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**Contd... Q. No. 2(a)**

- (vi) Lima suspicioned that something was amiss.
- (vii) Sarah gave a poor alibi for not doing her homework.
- (viii) They are going to fix the broken machine.
- (ix) I met a mutual friend of ours yesterday.
- (x) Robindranath Tagore occupies a most unique place in Bangla literature.
- (xi) His clothes is certainly expensive.
- (xii) The highwayman held the roofer up.

(b) Give the meaning of and make sentences with any ten of the following words: (15)

Accessory, accost, blizzard, congestion, cogent, divulge, exorbitant, flatter, induce, merger, prevail, prevalent.

3. (a) Amplify any one of the following ideas: (30)

- (i) To anyone who wishes to amend his life there is no time like the present.
- (ii) Great talkers are never great doers.

4. Write a precis of the following passage with a suitable title: (30)

Life is full of struggle. A life is a some totalities of time. A man needs to gain certain qualities to lead a normal and ideal life. No life is bed of roses whether it is rich or poor. A rich man has a particular way to lead his life, similarly a poor man has so to live his life. To be poor or rich, one requires to struggle, because when a man becomes rich, he has to undergo hard labour. Similarly when a man becomes poor he has to put up with the pains of hard labour. He has to work under the control of powerful person. The type of struggle of the rich and the poor varies. The rich struggle to be unequal and the poor struggle to be equal. The clash of equality and inequality is eternal. So, it must be accepted. As the class arises, our life becomes struggling. Whether we are rich or poor, we never remain still. We struggle to survive. Even the merest butterfly struggles for its life. In this sense, almost all of us struggle to earn bread and butter. As a result, we have no time to look at the important element of the universe created by God. A few of us manage time sacrificing worldly desire to invent and discover something necessary for the whole world. They do it by struggling harder. As a whole, everything in this universe is struggling to get its demand fulfilled.

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**SECTION – B**

There are **FOUR** questions in this section. Answer any **THREE** questions, including **Q. No. 5** as compulsory.

5. Read the passage carefully and answer the questions that follows: **(45)**

People think of poverty as a great evil and it seem to be an accepted belief that if people had plenty of money they would be happy and useful and get more out of life. As a rule, there is more genuine satisfaction in life and more obtained from life in a humble cottage of the poor men than in the palaces of the rich. I always pity the sons and daughters of rich men who are attended by servants and have governesses at a later stage; at the same time, I am glad to think they do not know what they have missed.

It is because I know how sweet and happy and pure the home of honest poverty is, how free from perplexing cares and from social envies and jealousies — how loving and united members are in the common interest of supporting the family. It is for these reasons that from the ranks of the poor so many strong eminent self-reliant men have always sprung and must always spring. If you read the best of the immortals, who were born not to die, you will find that most of them have been born poor.

Questions:

- (a) What is the accepted belief about poverty? Do you support it? If not, why?
- (b) Why does the author feel pity for the sons and daughters of rich men?
- (c) How, according to the author, is the home of the honest poverty?
- (d) How does the author congratulate poor man's house?
- (e) Write down the meaning of the following words as used in the passage:  
Eminent, genuine, governess, perplexing, self-reliant, spring, immortal, obtain, humble.

6. (a) What is a report? Briefly discuss the frontmatter of a report/ **(10)**

(b) As the manager of a cellular phone company you have received a letter complaining of recurrent network failure. Draft a reply expressing regret and assuring immediate action. **(10)**

- (c) Write phonetic transcription of the following words (any five): **(10)**

Point, watch, stone, thought, anger, television.

7. (a) What is copyright notice of a report? **(5)**

(b) Write a short essay on any one of the following topics: **(15)**

- (i) Women's participation in the development process;
- (ii) Bangladesh in the 2020;
- (iii) Fashion: Its Impact on Youngsters.

(c) Write a dialogue between two students of your department about the necessity of English courses offered by the Dept. of Humanities, BUET. **(10)**

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8. (a) Transform the following sentences as directed (any five): **(10)**
- (i) Life and hope are inseparable (Complex).
  - (ii) His offence was unpardonable. (Complex).
  - (iii) The fog being very dense, the steamer sailed at less than half speed.  
(Compound).
  - (iv) We must hurry and we shall escape the rain. (Simple)
  - (v) I saw a wounded bird. (Complex).
  - (vi) Can you tell me when he will arrive? (Simple)
- (b) What should be the language of a business letter and why? **(5)**
- (c) Write short notes on any three of the following: **(15)**
- (i) Topic sentence;
  - (ii) Diphthongs;
  - (iii) Routine Reports;
  - (iv) Journalistic Formula.

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(i)