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UNIVERSITY OF DAR ES SALAAM: COLLEGE OF ENGINEERING AND TECHNOLOGY.
FIRST YEAR EXAMINATION FOR THE DEGREE OF BSc. ENGINEERING.

CL 111- COMMUNICATION SKILLS FOR ENGINEERS.
Date: 7th January 2008.
Time Allowed: 2 Hours.

1. This paper consists of three printed pages.
2. Read carefully the instructions for each question before you start writing your answers.
3. Answer all questions.
4. All answers must be written in the answer booklet provided.

SECTION ONE: (GRAMMAR AND TECHNICAL COMMUNICATION)

Question 1.
Select from the given list appropriate discourse markers to fill the gaps (numbered 1- 10) in the text that follows. (Some items may be used more than once). **To answer this question, write numbers 1-10 and next to each number write the discourse marker suitable for the corresponding gap in the text.**

List

But, for example, so that, however, therefore, but also, because.
Although, such as, moreover, whereas, not only, in fact.
Consequently, as well as, rather than, in addition.

Text.
We can think of the weight of a body as acting at one point, which is known as the body's center of gravity. A body will always act as if it's mass were concentrated at its center of gravity 1….it's center of gravity need not be within the body itself. The center of gravity of some regular shapes …2. … a cube, can be found by inspection. It is easy to make such regular shapes stand upright; …3. …, a cylinder will stand on its base. If a body is to stand upright, the line of action of its weight which passes through its center of gravity must act through the base. …4. …, if a rectangular solid is placed on one face its weight will act through the center of the base, and 5……the solid will stand upright. If the solid is tilted slightly, the line of action of its weight will move towards the edge of the base …6.. it will still fall within the base. If the solid is tilted further, a line drawn vertically downwards from its center of gravity will fall outside the base, 7….. the solid will topple over. If a body returns to its original position after a slight disturbance it is said to be stable, 8... ..if a body moves into a new position after a slight disturbance it is said to be unstable. …9... unstable structures can be dangerous, they have to be stabilized. For instance, cranes are normally stabilized by a large counterweight which ensures that the total mass of the crane and its load always acts through the crane's base.10… .., cranes have a warning device which operates when the safe load is exceeded so that the crane is never in danger of toppling over.

CHAILI WA UKWELI

Pascal

a). Write down the Topic Sentence i.e. the sentence carrying the main idea of the paragraph. (2marks.)

b). Make notes on the paragraph, paying attention to all techniques of note making / note taking

SECTION THREE: (DOCUMENTING SOURCES :).

Question 4.

A University student consulted a number of sources to obtain information required for completing a Take Home Assignment. Below is bibliographical information of sources consulted: Use the information to write a Reference section.

1. An article titled: A Case history in Scientific Method, written by B.F Skinner and was published in the journal American Psychologist number 11 of 1956 pages 221 to 233.

2. The 3rd edition of a book titled: Using Multivariate Statistics. The book was written by B.G., Tabachnick and L.S. Fidell and it was published in 1996 in New York by Harper Collins publishers.

3. An Online article titled: International Energy Investment; written by T.W. Waelde. The article appeared in Energy Law Journal, number 17 of 1999. It was retrieved from Lexis- Nexis database on May 10th 2000.

4. A chapter titled: The Political Economy of the New Germany, written by Kreil, M. (1992).The chapter appeared in a book titled: The New Germany and the New Europe. (pages 55-92). The editor of this book is P.B. Stakes.It was published in Washington DC by Brookings Institution.

THE END.

LECTURE THREE NOTES

Module 2: Note-taking and Note-making Skills

2.1 Purpose for writing notes: WHY write notes

Students need to take or make notes in order to:

2.1.1 Keep record for future use

- Notes provide us with a written record of information presented in lectures and reading materials,
- Once written, they may be filed away for several days/months before being looked at again,
- Notes are primarily intended to assist us in the recall of information and are used for revision purposes.
- It is important that notes represent a concise and accurate record of what was spoken or written

2.1.2 Understand the subject better

- The skill of recognising and understanding main and subsidiary points in speech and writing is crucial in efficient and effective learning and essential for good note-taking
- It is usually easier to distinguish between sections of information in writing.
- The main features in writing which signal the way information is organised is sections are paragraphs and headings
- You will also frequently find in writing that the main ideas of each paragraph is given at the beginning of that paragraph,
- The topic sentence can help you understand the main ideas more rapidly when you are reading.

2.1.3 Keep track of what you read or hear

- Taking notes while listening to lectures (or reading) helps us keep attentive and alert
- Taking notes enhances your memory of the subject matter
- It improves your writing and thinking skills

2.2 Style in spoken and written texts

There are common factors between spoken and written language. Some of these are:

2.2.1 Use of signals to indicate the organisation of information

2.2.2 Introductory statements that introduce the topic – pay special attention to initial sentence

2.2.3 It is possible to predict what information will be presented next, in both written and spoken texts.

However, there are also differences in the style of presentation in that:

2.2.4 Written texts seldom have errors because they have been edited while spoken texts have errors, false starts, gap filler, hesitations, repetitions, etc.

2.2.5 Written texts are permanent while spoken texts 'temporary' or can be easily changed or rephrased

2.2.6 Written texts can be legally binding while spoken texts are not

2.3 Listening to and understanding lectures

If you really want to do well in a course, you must promise yourself that you will go to class faithfully and take good notes. This module offers you a series of tips on how to take effective lecture notes.

2.3.1 However, these tips will not be of value if you do not attend lectures. Most lectures in a course are connected; if you miss some of the lectures you are likely to miss the connection and feel lost the next time you attend.

2.3.2 Using someone else's notes can seldom substitute for the experience of being in class and hearing the lecturer talk about key ideas in the course

2.3.3 These ideas are often the ones you will be expected to know on exams.

2.3.4 In order to understand lectures, you need to pay attention and listen to what the lecturer is saying.

2.3.5 In particular, pay attention to points that your lecturer has emphasised by what he/she:

- Writes on the board,
- Repeats,
- Says with emphatic tone/voice,
- Says it slowly for you to feel the effect,
- Says precisely that it is an important point to remember, such as:
    - "This is an important reason..."
    - "A point that will keep coming up later..."
    - "The chief cause of X was..."
    - "The basic idea here is..."
    - "Don't forget that..."
    - "Pay special attention to..." and so on.

2.3.6 It is important to write down the examples that the lecturer provides; and to understand them, think up of similar examples or try to remember those that you have heard before.

2.3.7 Take notes every time the opportunity arises, for example, in addition to lectures and from your readings, you can take notes during discussions, debates, observations, site visits.

2.3.8 It is very useful to read or revise your notes on the same day you took them. This will enhance your memory on them.

In the next lecture we will get the opportunity to examine various techniques for note-taking/note-making. * * * * * *

Seminar activities for Lecture Three

This activity will give you practice in developing your listening and note-taking skills.

Group A: Your seminar tutor will read out each sentence in group A once, at a normal speaking speed. Listen carefully and after he/she has read the sentences, see if you can write down what has been said. The tutor will give you time to finish writing before starting the second sentence. Do not worry about getting down very little word; do try to get down the basic idea. (if there are words you cannot spell, try to spell them the way they sound. In actual note-taking situations, you can later look up correct spelling in your dictionary.) There are three practice sentences in group A.

a) Using e-mail, you can distribute your document to a network of computers – within your city or worldwide.
b) Whatever your career plans, you probably will have to work as a part time technical writer.
c) One concrete measure of your job performance will be your letters, memos and reports of different nature.

Group B: The three sentences in group B are almost twice as long as those in group A. They require increased listening skills. Your tutor will read the two sentences in each example at a normal speaking speed. You can begin writing as soon as the tutor starts the first sentence. You will have to listen to and remember the second sentence in each example at the same time you are writing the first sentence.

a) Every writer struggles with the same essential decisions, but rarely in a neat, predictable sequence. Instead, each writer approaches the process through a sequence of decisions that works best for *that* person.
b) People have a great advantage over computers, for we can understand visual images drawn from our environment. Computers can process only facts that are put into numerical form.
c) If you can "listen ahead" and process and remember what you hear at the same time that you are writing rapidly, you will be listening efficiently. Your brain will be able to work along with and ahead of your pen.

Group C: The three examples in group C are about three times as long as those in group A. They create an even more realistic note-taking situation and they require a further increase in listening skills. Again, your tutor will read out sentences in each example at a normal rate of speed. You will have to "listen ahead" and remember what you hear at the same time that you are writing rapidly.

a) Babies seldom cry for no reason at all. They cry because of some discomfort that they feel. In the first year of life in particular, it is important that parents respond to a baby's cries rather than ignore them. A prompt response helps build a sense of security and trust in the baby.
b) When trapped in quicksand, do not struggle, or you will be sucked in deeper. The body floats on quicksand, so you should fall on your back, stretching out your arms at right angles, as if floating on water. Then, after working your legs free from the sand, begin rolling your entire body toward safe ground.
c) Depending on the course, the grade you want and your own study skills, you may have to schedule more time later. A difficult course, for example, may require three hours or more of study time for each course hour. Remember that learning is what counts, not the time it takes to learn.

Lecture Four Notes

2.4 Techniques for note-taking/note-making:

Note-taking is a means of recording the main points of information in a lecture or a written text in such a way that it can be done quickly and that the resultant notes are clear and easy to revise from. These two aims can be realised if you use the following techniques:

2.4.1 Selectivity and brevity,

From written or spoken text, select only the main points as notes. Consider the paragraph below.

> Parapsychologists (psychologists who study claims of more-than-normal happenings) have proposed four types of extrasensory perceptions, or ESP, each of which is said to occur without using the physical senses. *Telepathy* is one person's sending thoughts to another. For example, in an experiment, one person may look at a picture and try to "send" this picture to a "receiver" in another room. *Clairvoyance* is perceiving distant events, such as sensing that one's child has just been in a car accident. *Precognition* is "pre-knowing" (foretelling) future events, such as the assassination of a political leader. *Psychokinesis* is "mind over matter" – for example, levitating a table or, in an experiment, influencing the roll of a dice by concentrating on a particular number. (108 words)

Selectivity and brevity in relation to this paragraph means selecting only the main points and writing them as briefly as possible. For example:

> Parapsychologists propose four types of extrasensory perceptions (ESP). *Telepathy* is one person's sending thoughts to another, like a person may look at a picture and "send" it to a "receiver". *Clairvoyance* is perceiving distant events, like sensing one's child in an accident. *Precognition* is "pre-knowing" future events, like assassination of a political leader. *Psychokinesis* is "mind-over-matter", such as levitating a table or influencing the roll of a dice by concentrating on a number (73 words)

2.4.2 use of point form,

In addition to being brief, notes need to be written in point form or as a list, rather than in grammatically complete sentences

- Parapsychologists propose four types of extrasensory perceptions (ESP).
- *Telepathy* is one person's sending thoughts to another, like looking at picture and "sending" it to "receiver".
- *Clairvoyance* is perceiving distant events, like sensing one's child in accident.
- *Precognition* is "pre-knowing" future events, like assassination of political leader.
- *Psychokinesis* is "mind-over-matter", like levitating table or influencing the roll of dice by concentrating on a number (68 words)

2.4.3 abbreviation and symbols; and

To further reduce/economize your notes you need to use abbreviation and symbols as much as possible.

- Parapsychlgsts propose 4 types of x-trasensory prcptns (ESP).
- *Telepathy* = 1 person sends thghts to another, i.e look @ pict. & "send" → "receiver".
- *Clairvoyance* = percvng distnt evnts, like sensing one's child in accdnt.
- *Precognition* = "pre-knowing" futr evnts, like assassintn of pol'cal ldr.
- *Psychokinesis* = "mind-over-matter", i.e. levitatng a table/ inflncng roll of dc. by concntrtng on no. (65 words)

2.4.4 layout

When making notes from a lecture or from a book, it is important that your notes reflect the way in which the lecturer or writer has organised his/her information.

- Main sections and sub-sections need to be separated in notes
- The layout must distinguish between main and subsidiary ideas and also indicate the relationships between these ideas.
- Numbers, spacing, capitalisation and indentation can be used to clearly show sections and how they relate to one another.

Parapsychlgsts propose 4 types of x-trasensory prcptns (ESP).

1. *Telepathy* = 1 person sends thghts to another,
   e. g. look @ pict. & "send" → "receiver".
2. *Clairvoyance* = percvng distnt evnts,
   e.g. sensing one's child in accdnt.
3. *Precognition* = "pre-knowing" futr evnts,
   e.g. assassintn of pol'cal ldr.
4. *Psychokinesis* = "mind-over-matter",
   e.g. levitatng table, or
   inflncng roll of dc. by concntrtng on no. (65 words)

As you can see from the above example, each technique used changes the size and appearance of the original text. In terms of size the number has gone down from the original 108 words to 65 words. In terms of appearance the text has changed from continuous prose to a list of points to outlined notes. It is important to apply all these techniques to get the best results in note-taking.

2.5 Taking notes from written texts: identifying topic sentences, main ideas, summarising paragraphs and sentences, and paraphrasing

2.5.1 Notes from written texts

In the course of your university studies, you will need to read many academic texts from which you will be required to take notes. If you are lucky, the lecturers will give you an outline of what the reading is about; but most of the time you will be given a list of references materials (whether books, journals or reports) and will be expected to read and make your own notes.

- As you take up your reading, be clear in your mind what it is that you want to get out of your reading; i.e.
  - What information are you looking for,
  - What ideas you wish to develop further, etc.
- Before you start reading and taking notes, survey the whole material first.
  - Go over the table of contents and see how the material is organised.
  - Look for special features in the material: Is there an index or special vocabulary?
  - Get an overview of the material as to what it is about or what it contains.
  - Look at the pictures, tables, graphs, charts and other illustrative items and read the captions beneath them.
- When you read and take notes you may use as your basis the paragraphs, the sections or outlining the whole material, or combine all these techniques.
  - Take note of the main ideas/topics, the sub-topics as well as the reinforcement ideas and examples that illustrate the points.
  - Be alert for special vocabulary whose meaning you can get from the context or look it up in a dictionary. Sometimes you may come across a seemingly familiar word that happens to take on a new meaning.
- As soon as your finish taking notes, review and relate them to your objective(s) by asking yourself the following questions:
  - What new information have I learnt from these notes?
  - Do they answer or meet the objective of my reading assignment?
  - Is there anything I don't understand?
  - How will I learn it?

Taking good notes, understanding and reviewing them will help you commit the ideas to your knowledge bank. This forms the basis for you being an expert in that area of study.

2.5.2 Identifying topic sentences

The topic sentence gives the main idea of the paragraph. It is the most general sentence in a paragraph to which the other sentences in that paragraph are tied or relate. Read the paragraph below and see if you can identify the topic sentence.

> The products of engineering are all around us. The computer on which these words are typed is an obvious example, as is the air conditioning system that keeps us (and our computers) comfortable even though it is hot and humid outside the building – which is also a product of engineering. When we do go outside physically, we often ride in a car on roads and highways with tunnels and bridges; and when we go outside metaphorically, we use telephones, videotapes, faxes, and computer networks. All of these are products of engineering design, manufacturing and construction. Indeed, the world of our everyday experience is shaped by the practice of engineering and technology and the world shapes those activities in turn. But what is engineering, what are its origins and how do engineers practice it? What is technology, what are its roots and how does it relate to the rest of experience?
>
> (Adopted from Petroski, H. (2002). *Invention and Design: How Engineers get from thought to thing.* Cambridge: Harvard University Press).

In the above paragraph, the topic sentence acts as an umbrella to all the other sentences in the sense that it is the most general sentence. All of the other sentences in the paragraph relate to it. This happens to be the first sentence, which read: **The products of engineering are all around us.**

2.5.3 Recognising main points from other details

The main points are those sentences that directly relate to the topic sentence in a paragraph. The paragraph above has been reproduced below with the main points underlined.

> The products of engineering are all around us. The computer on which these words are typed is an obvious example, as is the air conditioning system that keeps us (and our computers) comfortable even though it is hot and humid outside the building – which is also a product of engineering. When we do go outside physically, we often ride in a car on roads and highways with tunnels and bridges; and when we go outside metaphorically, we use telephones, videotapes, faxes, and computer networks. All of these are products of engineering design, manufacturing and construction. Indeed, the world of our everyday experience is shaped by the practice of engineering and technology and the world shapes those activities in turn. But what is engineering, what are its origins and how do engineers practice it? What is technology, what are its roots and how does it relate to the rest of experience?

2.5.4 Summarising paragraphs and sentences

2.5.5 paraphrasing

UNIVERSITY OF DAR ES SALAAM
THE LIBRARY
LIBRARY EXERCISE FOR SCIENCE AND ENGINEERING STUDENTS

Name.....Reg. No.....College.....

To do this exercise you will need to use the Library Guide. The Card Catalogue and Online Public Access Catalogue (OPAC)

1. a) How many main catalogues does the Library maintain?.....2.....

   b) Name them
   (i).....Manual Card catalogue.....(ii).....OPAC.....

2. What is the charge imposed on overdue books from:
   The General Collections.....100/=.....
   The Special Reserve Collections.....50/=.....

Use the Main Card Catalogue to answer question 3 and 4.

3. Write down the name of the author, title and class mark of any book under the following subject headings.

   (a) Tuberculosis - Prevention
   Author.....Shennan, Douglas, Hodgson.....
   Title.....Tuberculosis (Clinical aspect Prevention and Treatment).....
   Class mark.....RC 311 .E45 RA 644 .T7 S45.....

   (b) Soil Mechanics
   Author.....Taylor RAYMOND (W) N.....
   Title.....INTRODUCTION TO SOIL CHEMISTRY.....
   Class mark.....TA 710 .T6 76.....

Use OPAC to answer question 5 and 6

4. Write down the little and class mark of the following books:

   (a) A book by E.L. Jordan, P.S. Verma
   Title.....Invertebrate Zoology.....
   Class mark.....Z00 QL362 .J65.....

~~595 5439.G788~~
~~442 5439.595~~

93451 – S 401.58
93602 – S 495.T35

5. Write down the name of the author, title and class mark under the following subject headings:

(a) Fluid Mechanism
~~281930~~
Author J.F Douglas, R.D mathews
Title Solving problems in fluid mechanics
Class mark TA 357.D69

6. From the Periodicals of the Science and engineering Collection, write down the author and class mark of the journal of the following articles.

a) "The role of Salinity and Sodicity in the dieback of ***Acacia Xanthophloea*** in Ngorongoro Caldera, Tanzania@ African Journal of Ecology Vol 44 (1) March 2006.
Author Africa journal of Zoology
Class mark per QH 546 A32

b) "An unexpected ring protonation in Meisenheimer Complex Formation "***The Journal of Organic Chemicstry*** **Vol 62 (22) October, 1997.**

7. Name 3 non-book materials and 2 reference books available in the Reference Collection Department.

a) Non-book materials
(i) CD ROM
(ii) Films
(iii) DIRECTORIES

b) Reference books (write titles only)
(i) REF TS 176.A43 1976
tools and manufacturing engineering
(ii) REF QD 71.5 D5 Hand book dictionary of analytical
(iii) RREF QD 65.C4 1964
Handbook of chemistry and physics

8. What types of materials can a student borrow? ~~Books~~ Special book material and open book materials reagent

9. What is the normal loan period

( ) Three days (✓) Three hours (✓) Three weeks

Overlaps occur. Often ..... discrepancies have ..... clear explanation. For example, there is ..... region where Africa overlaps South America; ..... Projecting part is simply ..... Niger delta.

Task 2.3: Verb phrases

In the paragraph below, the main verbs are missing and the spaces for them are numbered. The words to use in each space are given below. **Write** the missing main verbs in the correct form on the dotted lines (including the extra words printed in small letters). Number one has been done for you as an example.

A computer (1) *can only do* what it (2) is told to tell ..... to do. It slavishly (3) Follow ..... every instruction, without any discrimination. It (4) can not say ..... to itself: "That (5) does not seem ..... sensible". It just (6) obey ..... So instructions (7) must be carefully designed ..... to make sure that the computer (8) will not be asked ..... to do anything illogical. Therefore, when a computer (9) issues ..... a bill for 00/-, the machine (10) has not done ..... anything stupid. It (11) has just obeyed ..... a stupid instruction. The illogicality (12) has been caused ..... by the human operator who (13) have failed ..... to foresee the situation. The art of computer programming (14) ..... therefore a skilled one. Every possible circumstance (15) must be considered ..... by the programmer; and an appropriate set of instructions (16) must be worked out .....

* * * * * * * * * * * *

1) CAN + only + DO
2) BE + TELL
3) FOLLOW
4) CAN + not + SAY
5) DO + not + SEEM
6) OBEY
7) MUST + BE + carefully + DESIGN
8) WILL + not + BE + ASK
9) ISSUE
10) HAVE + not + DO
11) BE + just + OBEY
12) HAVE + BE + CAUSE
13) HAVE + FAIL
14) BE
15) MUST + BE + CONSIDER
16) MUST + BE + WORK OUT

UNIVERSITY OF DAR ES SALAAM
COLLEGE OF ENGINEERING AND TECHNOLOGY

FIRST YEAR END OF SEMESTER FIRST/SUPPLEMENTARY EXAMINATION
FOR THE DEGREE OF B.Sc. ENGINEERING

CL 111- COMMUNICATION SKILLS FOR ENGINEERS

Date: 12nd November, 2010 **Time Allowed: 2 Hours**

Instructions:
1. This paper consists of **3 printed pages** presenting **four questions.**
2. Read the instructions for each question carefully before you start writing your answer.
3. **Answer all the four questions.**
4. All answers must be written in the answer booklet provided.
5. The examination **paper is marked out of 60** with marks for each Question indicated at the end of each one.

SECTION ONE GRAMMAR AND TECHNICAL COMMUNICATION

QUESTION 1

Explain the meaning in terms of discourse function signaled by the bolded discourse devices in the Text that follows.

TEXT

Industrial Robots

There are few micro-electronic applications **more likely** to raise fears regarding future employment opportunities **than** robots for the very obvious reason that such machines directly replace human labour. The **emotive nature** of the subject inevitably **gives rise** to misapprehensions.

It is necessary first to **define** an industrial robot **Alternative** definitions and **classifications** abound **but** basically a robot is a machine which moves, manipulates, joins or processes components in the same way as human hand or arm. It consists basically of three **elements:** the mechanical structure (including the artificial wrist and gripper) the power unit (hydraulic, pneumatic or, increasingly, electrical) and the control system (increasingly mini-computers and microprocessors). **However**, the **essential characteristic** of a robot is that it can be programmed. **Thus** many devices (often called robots) would be better termed 'numerically controlled arms', **since** they are mechanical arms controlled by

rudimentary (non-computer) software and as such are not radically different to much existing automation equipment. There are reportedly about 20,000 of the latter in use in Japan, and perhaps several thousand in the United Kingdom. A robot, however, **is here defined** as a hybrid of mechanical, electrical and computing engineering.

Most robots **in current use** handle fairly straightforward tasks **such as** welding and spraying **where** the software programmes controlling the machines are not very complex. However, the newer machines, usually referred to as 'universal' but which are still under development, will be **able to perform** more complex assembly tasks (for example, carburettor assembly). (From: *The Manpower Implications of Micro-Electronic Technology*, MSC.)

(20 Marks)

QUESTION 2

(a) Write brief accounts in prose form on the characteristics of technical report writing. Provide relevant examples drawn from the Text that follows.

(b) Construct sentences of your own that illustrate the use in technical report writing of the grammatical features listed below

i) infinitive verb forms
ii) passive voice
iii) dummy or empty subjects

TEXT

ELECTRIC CURRENT

A solid conductive metal contains mobile, or free, electrons. These electrons are bound to the metal lattice but not to any individual atom. Even with no external electric field applied, these electrons move about randomly due to thermal energy but, on average, there is zero net current within the metal. Given a plane through which the wire passes, the number of electrons moving from one side to the other in any period of time is on average equal to the number passing in the opposite direction. As George Gamow put in his science popularizing book, *One, Two, Three...Infinity* (1947), "The metallic substances differ from all other materials by the fact that the outer shells of their atoms are bound rather loosely, and often let one of their electrons go free. Thus the interior of a metal is filled up with a large number of unattached electrons that travel aimlessly around like a crowd of displaced persons. When a metal wire is subjected to electric force applied on its opposite ends, these free electrons rush in the direction of the force, thus forming what we call an electric current."

(15marks)

Dummy or Empty subjects => No subject/Noun => Construct of a better future requires hardworking

Infinitive verb forms => Coming to school late is a crime

SECTION TWO; READING AND NOTEKING

QUESTION 3

Study the Text below and answer the questions that follow the Text

TEXT

Energy can exist in a vast variety of forms, of which the simplest is pure energy of motion-the motion of a train along a level track or of a billiard ball over a table. Newton had shown that this purely mechanical energy is 'conserved'. For instance, when two billiard balls collide, the energy of each is changed, but the total energy of the two remains unaltered; one gives energy to the other, but no energy is lost or gained in the transaction. This, however, is only true if the balls are 'perfectly elastic', an ideal condition in which the balls spring back from one another with the same speed with which they approached. Under actual conditions such as occur in nature, mechanical energy invariably appears to be lost; a bullet loses speed on passing through the air, and a train comes to rest in time if the engine is shut off In all such cases heat and sound are produced. Now a long series of investigations has shown that heat and sound are themselves forms of energy. In a classical series of experiments made in 1840-50, Joule measured the energy of sound with the rudimentary apparatus of a violoncello string. Imperfect though his experiments were, they resulted in the recognition of 'conservation of energy' as a principle which covered all known transformations of energy through its various modes of mechanical energy, heat, sound and electrical energy. They showed in brief that energy is transformed rather than lost, an apparent loss of energy of motion being compensated by the appearance of an exactly equal energy of heat and sound; the energy of motion of the rushing train is replaced by the equivalent energy of the noise of the shrieking brakes, and of the heating of wheels, brake-blocks and rails. (From *The Mysterious Universe* by Sir James Jeans.)

a) Suggest a suitable title for the text
b) Write down the Topic Sentence, i.e., the sentence carrying the main idea of the passage.
c) Makes note on the passage, paying attention to the techniques of note making.

(15 marks)

SECTION THREE: DOCUMENTING SOURCES

QUESTION 4

State the most important information that must be contained in any bibliographical reference accompanying a technical report or academic writing and indicate how such references are often arranged.

(10 marks)

UNIVERSITY OF DAR ES SALAAM
COLLEGE OF ENGINEERING AND TECHNOLOGY.
FIRST YEAR END OF SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF BSc. ENGINEERING.

CL 111- COMMUNICATION SKILLS FOR ENGINEERS

Date: 26th March 2009: 8.00- 10.00 am **Time Allowed:** 2 Hours.

Instructions:

1. This paper consists of two **(2)** printed pages.
2. Read the instructions for each question carefully before you start writing your answers.
3. Answer all the questions.
4. All answers must be written in the answer booklet provided.
5. The examination paper is marked out of 60 with marks for each Question indicated at the end of each one.

SECTION ONE: GRAMMAR AND TECHNICAL COMMUNICATION

Question 1

Explain the meaning signaled by the bolded **discourse device** in the text that follows.

Text

Unlike the scientist, the engineer is not free to select the problem which interests her; she must solve the problems as they arise, **and** her solutions must satisfy conflicting requirements. Efficiency costs money, safety adds complexity, performance increases weight. The engineering solution is the optimum solution, the most desirable end result **taking into account** many factors. It may be the cheapest for a given performance, the most reliable for a given weight, the simplest for a given safety, **or** the most efficient for a given cost. Engineering is optimizing.

To the engineer, efficiency means output divided by input. Her job is to secure a maximum output **for a given** input or secure a given output with minimum input. The emphasis on efficiency leads to a large, complex operations **which** are characteristic of engineering. The processing of the new antibiotics and vaccines in a test-tube stage belongs in the field of biochemistry, **but when** great quantities must be produced at low cost, it becomes an engineering problem. **It** is the desire for efficiency and economy that **differentiates** ceramic engineering from the work of a potter, textile engineering from weaving, and agricultural engineering from farming.

(15 marks)

Question 2

(a) Write brief notes on the characteristics of academic writing. Provide relevant examples drawn from the Text accompanying **Question 1** above and **Question 3** below.

(b) Construct sentences that illustrate the following features. (One example of each).

i) Passive sentences.
ii) Use of infinitive verb forms.
iii) Sentences with "dummy" or "empty" subjects.

(20 marks)

SECTION TWO: READING AND NOTE MAKING

Question 3

Study the Text below and answer the questions that follow.

Text

Most materials used in engineering are elastic. A material which has the property of elasticity will return to its original size and shape when the forces producing strain are removed. However, if these forces go beyond a certain limit, called the elastic limit, an elastic material will not regain its original dimensions. If we take a bar of uniform c.s.a of an elastic material like mild steel, and apply gradually increasing tensile forces to it, it will extend. If we measure each extension produced by each increase in force, we will find that the bar's increase in length is in proportion to the increase in force. In other words, strain is proportional to stress.

a) Suggest a suitable title for the text.
b) Write down the Topic Sentence i.e. the sentence carrying the **main idea** of the paragraph.
c). Make notes on the paragraph, paying attention to all techniques of note making / note taking.

(15 marks)

SECTION THREE: DOCUMENTING SOURCES

Question 4

A University student is expected to consult a number of written sources to obtain information required for completing a writing assignment. This bibliographical information forms the reference section of the completed assignment. Give a brief explanation of the way different bibliographical sources (i.e. books, journal articles, unpublished works, and internet article etc) that have different kinds of authorship (i.e. editors, single authors, multiple authors, and institutional authors etc) are presented in the reference section. Base your explanations on the APA Documentation Style.

(10 marks)

THE END

SEMINAR HOUR ACTIVITIES FOR WEEK ONE AND TWO
=Registration into Seminar Group and Assignment of next week's seminar hour class discussion on Communication Process {WEEK ONE}
- Classroom discussion on Communication Process & on Style in Spoken and Written Texts; followed assignment of Take Home Essay Assignment {WEEK TWO} Essay Topic= What are the key elements of the communication process and in what way is the style of spoken technical texts different from that of written technical texts.

Additional Class Exercises

As a warm up to class seminar work, the Seminar Leader may have the following 3 Texts distributed and have the class try to fill in the blanks , using the occasion to guide students to engage in guided conversation on what appears to be the main characteristics of the human communication process as well as the key characteristics of technical written communication style

TEXT 1

Industrial Robots

(1)..... are few micro-electronic applications (2).....to rise fears regarding future employment opportunities (3)..... ...robots for the very obvious reason that such machines directly replace human labor. The (4)..... ...of the subject inevitably (5)..... to misapprehensions.

(6).....is necessary first to (7)..... an industrial robot. (8)..... definitions and (9)..... abound (10)..... basically a robot is a machine which moves, manipulates, joins or processes components in the same way as human hand or arm. It consists basically of three (11).....: the mechanical structure (including the artificial wrist and gripper), the power unit (hydraulic, pneumatic or, increasingly, electrical) and the control system (increasingly mini-computers and microprocessors). (12)....., the (13)..... of a robot is that it can be programmed. (14)..... many devices (often called robots) would be better termed 'numerically controlled arms', they are (15)..... mechanical arms controlled by rudimentary (non-computer) software and as such are not radically different to much existing automation equipment. There are reportedly about 20,000 of the latter in use in Japan, and perhaps several thousand in the United Kingdom. A robot, however, (16)..... as a hybrid of mechanical, electrical and computing engineering.

Most robots (17)..... handle fairly straightforward tasks (18)..... welding and spraying (19)..... the software programmes controlling the machines are not very complex. However, the newer machines, usually referred to as 'universal' but which are still under development, will be (20)..... more complex assembly tasks (for example, carburettor assembly). (From: *The Manpower Implications of Micro-Electronic Technology*, MSC.)

TEXT 2

ELECTRIC CURRENT

A solid conductive metal **contains** mobile, (1).....free, electrons. These electrons (2).....**bound** to the metal lattice but not to any individual atom. Even with no external electric field applied, these electrons move about randomly (3)..... **to** thermal energy but, on average, (4)..... **is** zero net current within the metal. **Given** a plane through which the wire passes, the number of electrons moving from one side to the other in any period of time **is on average equal to** the number **passing** in the opposite direction. As George Gamow put in his science popularizing book, *One, Two, Three...Infinity* (1947), "The metallic substances differ from all other materials by the fact that the outer shells of their atoms are bound rather loosely, and often let one of their electrons go free. Thus the interior of a metal **is filled** (5).... with a large number of unattached electrons that travel aimlessly around like a crowd of displaced persons. **When** a metal wire **is subjected to** electric force applied on its opposite ends, these free electrons **rush** in the direction of the force, thus forming what we call an electric current."

TEXT 3

Energy (1)..... **exist** in a vast variety of forms, **of** (2)..... **the simplest is** pure energy of motion-the motion of a train along a level track or of a billiard ball over a table. Newton (3)..... **shown** that this purely mechanical energy is 'conserved'. **For** (4)....., when two billiard balls collide, the energy of each (5)..... **changed**, but the total energy of the two remains unaltered; one gives energy to the other, but no energy is lost or gained in the transaction. (6)....., **however,** is only true if the balls are 'perfectly elastic', an ideal condition in which the balls spring back from one another with the same speed with which they approached. Under actual conditions **such** (7).....(8)..... **in nature**, mechanical energy (9)..... (10)..... **to be lost**; a bullet loses speed **on** (11)..... **through** the air, and a train **comes** (12)..... **rest** in time if the engine is shut off. **In all** (13)..... **cases** heat and sound (14)..... **produced**. Now a long series of investigations (15)..... **shown** that heat and sound are themselves forms of energy. **In a classical** (16).....(17)..... **experiments** made in 1840-50, Joule (18)..... the energy of sound with the rudimentary apparatus of a violoncello string. (19)..... **though his experiments were**, they resulted in the recognition of 'conservation of energy' as a principle which covered all known transformations of energy through its various modes of mechanical energy, heat, sound and electrical energy. They **showed** (20)..... **brief** that energy is transformed rather than lost, an **apparent loss** of energy of motion being compensated by the appearance of an

exactly equal energy of heat and sound; the energy of motion of the rushing train (21)..... replaced by the (22)..... energy of the noise of the (23)..... brakes, and of the (24).....(25)..... wheels, brake-blocks and rails. (From *The Mysterious Universe* by Sir James Jeans.)

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1ST NOVEMBER, 2009

HANDOUT (3)

What Is an Essay?

DIFFERENCES BETWEEN AN ESSAY AND A PARAGRAPH

An essay is simply a paper of several paragraphs, rather than one paragraph, that supports a single point. In an essay, subjects can and should be treated more fully than they would be in a single-paragraph paper.

The main idea or point developed in an essay is called the *thesis statement* or *thesis sentence* (rather than, as in a paragraph, the *topic sentence*). The thesis statement appears in the introductory paragraph, and it is then developed in the supporting paragraphs that follow. A short concluding paragraph closes the essay.

THE FORM OF AN ESSAY

The diagram on the next page shows the form of an essay.

Introductory Paragraph

Introduction Thesis sentence Plan of development: Points 1, 2, 3

The *introduction* attracts the reader's interest.
The *thesis sentence* states the main idea advanced in the paper.
The *plan of development* is a list of points that support the thesis. The points are presented in the order in which they will be developed in the paper.

First Supporting Paragraph

Topic sentence (point 1) Specific evidence

The *topic sentence* advances the first supporting point for the thesis, and the *specific evidence* in the rest of the paragraph develops that first point.

Second Supporting Paragraph

Topic sentence (point 2) Specific evidence

The *topic sentence* advances the second supporting point for the thesis, and the *specific evidence* in the rest of the paragraph develops that second point.

Third Supporting Paragraph

Topic sentence (point 3) Specific evidence

The *topic sentence* advances the third supporting point for the thesis, and the *specific evidence* in the rest of the paragraph develops that third point.

Concluding Paragraph

Summary, conclusion, or both

A *summary* is a brief restatement of the thesis and its main points. A *conclusion* is a final thought or two stemming from the subject of the paper.

A MODEL ESSAY

Gene, the writer of the paragraph on working in an apple plant (page 43), later decided to develop his subject more fully. Here is the essay that resulted.

My Job in an Apple Plant

Introductory paragraph

[1]In the course of working my way through school, I have taken many jobs I would rather forget. [2]I have spent nine hours a day lifting heavy automobile and truck batteries off the end of an assembly belt. [3]I have risked the loss of eyes and fingers working a punch press in a textile factory. [4]I have served as a ward aide in a mental hospital, helping care for brain-damaged men who would break into violent fits at unexpected moments. [5]But none of these jobs was as dreadful as my job in an apple plant. [6]The work was physically hard; the pay was poor; and, most of all, the working conditions were dismal.

First supporting paragraph

[7]First of all, the job made enormous demands on my strength and energy. [8]For ten hours a night, I took cartons that rolled down a metal track and stacked them onto wooden skids in a tractor trailer. [9]Each carton contained twelve heavy cans or bottles of apple juice. [10]A carton shot down the track about every fifteen seconds. [11]I once figured out that I was lifting an average of twelve tons of apple juice every night. [12]When a truck was almost filled, I or my partner had to drag fourteen bulky wooden skids into the empty trailer nearby and then set up added sections of the heavy metal track so that we could start routing cartons to the back of the empty van. [13]While one of us did that, the other performed the stacking work of two men.

Second supporting paragraph

[14]I would not have minded the difficulty of the work so much if the pay had not been so poor. [15]I was paid the minimum wage at that time, $2.65 an hour, plus a quarter extra for working the night shift. [16]Because of the low salary, I felt compelled to get as much overtime pay as possible. [17]Everything over eight hours a night was time-and-a-half, so I typically worked twelve hours a night. [18]On Friday I would sometimes work straight through until Saturday at noon—eighteen hours. [19]I averaged over sixty hours a week but did not take home much more than $150.

Third supporting paragraph

[20]But even more than the low pay, what upset me about my apple plant job was the working conditions. [21]Our humorless supervisor cared only about his production record for each night and tried to keep the assembly line moving at breakneck pace. [22]During work I was limited to two ten-minute breaks and an unpaid half hour for lunch. [23]Most of my time was spent outside on the truck loading dock in near-zero-degree temperatures. [24]The steel floors of the trucks were like ice; the quickly penetrating cold made my feet feel like stone. [25]I had no shared interests with the man I loaded cartons with, and so I had to work without companionship on the job. [26]And after the production line shut down and most people left, I had to spend two hours alone scrubbing clean the apple vats, which were coated with a sticky residue.

Concluding paragraph

[27]I stayed on the job for five months, all the while hating the difficulty of the work, the poor money, and the conditions under which I worked. [28]By the time I quit, I was determined never to do such degrading work again.

Important Points about the Essay

INTRODUCTORY PARAGRAPH

An introductory paragraph has certain purposes or functions and can be constructed using various methods.

Purposes of the Introduction

An introductory paragraph should do three things:

1. Attract the reader's *interest*. Using one of the suggested methods of introduction described below can help draw the reader into your paper.
2. Present a *thesis sentence*—a clear, direct statement of the central idea that you will develop in your paper. The thesis statement, like a topic sentence, should have a key word or words reflecting your attitude about the subject. For example, in the essay on the apple plant job, the key word is *dreadful*.
3. Indicate a *plan of development*—a preview of the major points that will support your thesis statement, listed in the order in which they will be presented. In some cases, the thesis statement and plan of development may appear in the same sentence. In some cases, also, the plan of development may be omitted.

Activity

1. In "My Job in an Apple Plant," which sentences are used to attract the reader's interest?

   _____ sentences 1 to 3 _____ 1 to 4 _____ 1 to 5

2. The thesis in "My Job in an Apple Plant" is presented in

   _____ sentence 4 _____ sentence 5 _____ sentence 6

3. The thesis is followed by a plan of development.

   _____ Yes _____ No

4. Which words in the plan of development announce the three major supporting points in the essay? Write them below.

   a. _____

   b. _____

   c. _____

Common Methods of Introduction

Here are some common methods of introduction. Use any one method, or a combination of methods, to introduce your subject in an interesting way.

1. ***Broad statement.*** Begin with a broad, general statement of your topic and narrow it down to your thesis statement. Broad, general statements ease the reader into your thesis statement by providing a background for it. In "My Job in an Apple Plant," Gene writes generally on the topic of his worst jobs and then narrows down to a specific worst job.
2. ***Contrast.*** Start with an idea or situation that is the opposite of the one you will develop. This approach works because your readers will be surprised, and then intrigued, by the contrast between the opening idea and the thesis that follows it. Here is an example of a "contrast" introduction:

   When I was a girl, I never argued with my parents about differences between their attitudes and mine. My father would deliver his judgment on an issue, and that was usually the end of the matter. Discussion seldom changed his mind, and disagreement was not tolerated. But the situation is different with today's parents and children. My husband and I have to contend with radical differences between what our children think about a given situation and what we think about it. We have had disagreements with all three of our daughters, Stephanie, Diana, and Gisel.

3. ***"Relevance."*** Explain the importance of your topic. If you can convince your readers that the subject applies to them in some way, or is something they should know more about, they will want to continue reading. The introductory paragraph of "Sports-Crazy America" (page 227) provides an example of a "relevance" introduction.
4. ***Anecdote.*** Use an incident or brief story. Stories are naturally interesting. They appeal to a reader's curiosity. In your introduction, an anecdote will grab the reader's attention right away. The story should be brief and should be related to your central idea. The incident in the story can be something that happened to you, something that you may have heard about, or something that you have read about in a newspaper or magazine. Here is an example of a paragraph that begins with a story:

   The husky man pushes open the door of the bedroom and grins as he pulls out a .38 revolver. An elderly man wearing thin pajamas looks at him and whimpers. In a feeble effort at escape, the old man slides out of his bed and moves to the door of the room. The husky man, still grinning, blocks his way. With the face of a small, frightened animal, the old man looks up and whispers, "Oh God, please don't hurt me." The grinning man then fires four times. The television movie cuts now to a soap commercial, but the little boy who has been watching the set has begun to cry. Such scenes of direct violence on television must surely be harmful to children for a number of psychological reasons.

5 ***Questions.*** Ask your readers one or more questions. These questions catch the readers' interest and make them want to read on. Here is an example of a paragraph that begins with questions:

> What would happen if we were totally honest with ourselves? Would we be able to stand the pain of giving up self-deception? Would the complete truth be too much for us to bear? Such questions will probably never be answered, for in everyday life we protect ourselves from the onslaught of too much reality. All of us cultivate defense mechanisms that prevent us from seeing, hearing, or feeling too much. Included among such defense mechanisms are rationalization, reaction formation, and substitution.

Note, however, that the thesis itself must not be a question.

6 ***Quotation.*** A quotation can be something you have read in a book or an article. It can also be something that you have heard: a popular saying or proverb ("Never give advice to a friend"); a current or recent advertising slogan ("Reach out and touch someone"); a favorite expression used by your friends or family ("My father always says . . ."). Using a quotation in your introductory paragraph lets you add someone else's voice to your own. Here is an example of a paragraph that begins with a quotation:

> "Evil," wrote Martin Buber, "is lack of direction." In my school days as a fatherless boy, with a mother too confused by her own life to really care for me, I strayed down a number of dangerous paths. Before my eighteenth birthday, I had been a car thief, a burglar, and a drug seller.

SUPPORTING PARAGRAPHS

Most essays have three supporting points, developed in three separate paragraphs. (Some essays will have two supporting points; others, four or more.) Each of the supporting paragraphs should begin with a topic sentence that states the point to be detailed in that paragraph. Just as the thesis provides a focus for the entire essay, the topic sentence provides a focus for each supporting paragraph.

Activity

1. What is the topic sentence for the first supporting paragraph of "My Job in an Apple Plant"? (*Write the sentence number here.*) _____
2. What is the topic sentence for the second supporting paragraph? _____
3. What is the topic sentence for the third supporting paragraph? _____

TRANSITIONAL SENTENCES

In paragraphs, transitions and other connective devices (pages 89–94) are used to help link sentences. Similarly, in an essay *transitional sentences* are used to help tie the supporting paragraphs together. Such transitional sentences usually occur near the end of one paragraph or the beginning of the next.

In "My Job in an Apple Plant," the first transitional sentence is:

> I would not have minded the difficulty of the work so much if the pay had not been so poor.

In this sentence, the key word *difficulty* reminds us of the point of the first supporting paragraph, while *pay* tells us the point to be developed in the second supporting paragraph.

Activity

Here is the other transitional sentence in "My Job in an Apple Plant":

> But even more than the low pay, what upset me about my apple plant job was the working conditions.

Complete the following statement: In the sentence above, the key words _____ echo the point of the second supporting paragraph, and the key words _____ announce the topic of the third supporting paragraph.

CONCLUDING PARAGRAPH

The concluding paragraph often summarizes the essay by briefly restating the thesis and, at times, the main supporting points of the essay. Also, the conclusion brings the paper to a natural and graceful end, sometimes leaving the reader with a final thought on the subject.

Activity

1. Which sentence in the concluding paragraph of "My Job in an Apple Plant" restates the thesis and supporting points of the essay? _____
2. Which sentence contains the concluding thought of the essay? _____

Planning the Essay

OUTLINING THE ESSAY

When you write an essay, planning is crucial for success. You should plan your essay by outlining in two ways:

1. Prepare a scratch outline. This should consist of a short statement of the thesis followed by the main supporting points for the thesis. Here is Gene's scratch outline for his essay on the apple plant:

   Working at an apple plant was my worst job.
   1. Hard work
   2. Poor pay
   3. Bad working conditions

   Do not underestimate the value of this initial outline—or the work involved in achieving it. Be prepared to do a good deal of plain hard thinking at this first and most important stage of your paper.
2. Prepare a more detailed outline. The outline form that follows will serve as a guide. Your instructor may ask you to submit a copy of this form either before you actually write an essay or along with your finished essay.

FORM FOR PLANNING AN ESSAY

To write an effective essay, use a form like the one that follows.

Introduction

Opening remarks

Thesis statement _____

_____

Plan of development

Body

Topic sentence 1 _____

_____

Specific supporting evidence

Topic sentence 2 _____

_____

Specific supporting evidence

Topic sentence 3 _____

_____

Specific supporting evidence

Conclusion

Summary, closing remarks, or both