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FINAL
Examination Paper

(COVER PAGE)

Session	:	**AUGUST 2014**
Programme	:	DIPLOMA IN ELECTRICAL AND ELECTRONIC (DEEI)
Course	:	**ENL1102 : TECHNICAL ENGLISH**
Date of Examination	:	December 6, 2014 (Saturday)
Time	:	2.00pm – 4.00pm Reading Time : Nil
Duration	:	2 Hours
Special Instructions	:	

This paper consists of **SIX(6)** questions. Answer ALL questions in **Section A** and **Section B** and any **ONE (1)** question in Section C in the answer booklet provided.

Materials permitted :

Nil

Materials provided :

Answer Booklet

Examiner(s)	:	**Ms. Grace Kang**
Moderator	:	**Dr. Ting Su Hie**

This paper consists of 12 printed pages, including the cover page.

INTI INTERNATIONAL COLLEGE PENANG
DIPLOMA IN ELECTRICAL & ELECTRONIC ENGINEERING
ENL 1102: TECHNICAL ENGLISH
FINAL EXAMINATION: AUGUST 2014 SESSION

Instructions: This paper consists of **SIX (6)** questions. Answer **ALL** questions in **SECTION A** and **SECTION B** and any **ONE (1)** question in **SECTION C** in the answer booklet provided.

SECTION A: Answer **ALL** questions.

Question 1a (17m)

Read the following passage about propagation (the movement of wave through a medium).

Propagation

A signal from a transmitter maybe propagated in three ways: by ground waves, by space waves and by sky waves. Ground waves travel round the surface of the earth for short distances. As they travel, they lose energy. This loss of power, or attenuation, depends on the nature of the surface. .attenuation also varies with the frequency of the signal: the higher the frequency, the greater the ground wave attenuation. At frequencies above 20 MHz the range is reduces to line of sight.

Propagation by space waves applies mainly to very high frequencies. Part of the transmitted signal travels in a direct line from transmitting antenna to receiving antenna. Partly the signal is reflected from the ground. The higher the frequency, the greater the possible ground wave reflection. The range of space wave propagation is restricted to approximately twice the direct optical path.

The range covered by ground waves and space waves is limited. Greater distances can be achieved using sky waves. Sky wave propagation depends on the ionosphere.

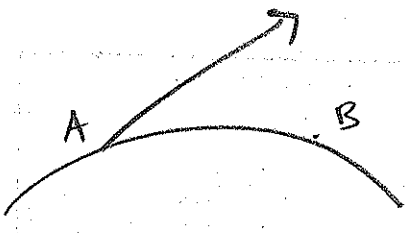

FIGURE 1

A signal transmitted from point A would not be received by B because of the curvature of the earth if it were not for the ionosphere. This consists of a number of layers of ionized gas in the upper atmosphere. If a transmission is directed towards these layers, it will be reflected back to earth as shown in Figure 2.

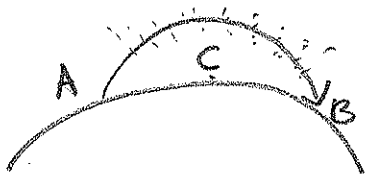

FIGURE 2

The wave may then be reflected back from the earth to the ionosphere. Indeed it may be carried right round the earth by successive reflections although it will lose power both in the earth and in the ionosphere at each bounce. A receiver at point C, which is outside ground wave range yet closer than B, will not receive the transmission.

The bending effect of the ionosphere depends on the frequency of the signal and the angle of radiation. The higher the frequency, the less the bending. At a certain frequency, signals will pass straight through the layers and be lost in space. The smaller the angle of radiation, the greater the distance which can be covered in one reflection.

At any time there is a maximum usable frequency for transmissions from a given site over a particular path. This frequency depends on the state of the ionosphere which varies according to many factors including the time of day and the season of the year. The lower the frequency of a transmission, the greater the number of reflections needed to cover the required distance and hence the weaker the signal will be. For this season, it is best to use a frequency as high as possible without exceeding the maximum usable frequency as this will cover the required distance with the smallest number of reflections and hence the least attenuation.

Complete this framework of notes based on the text above. The symbol ~ here means *depends* and the symbol ∵ means *because.* (17m)

Propagation

Definition: _____

Types:

i. _____
ii. _____
iii. _____

Attenuation is: _____

Ground wave attenuation ~

i. _____
ii. _____

Ground waves and space waves range are _____

Sky waves used for _____

Sky wave travel great distances by _____

Ionosphere is: _____

Ionosphere bending effect ~

1. _____
2. _____

Maximum usable frequency = _____

Maximum usable frequency of ionosphere ~

1. _____
2. _____

A frequency close to it should be used ∵ _____

Question 1b (13m)

This passage details the history and reasoning of Daylight Saving Time.

[1] For centuries time was measured by the position of the sun with the use of sundials. Noon was recognised when the sun was the highest in the sky, and cities would set their clock by this Apparent Solar Time, even though some cities would often be on a slightly different time. "Summer time" or Daylight Saving Time (DST) was instituted to make better use of daylight. Thus, clocks are set forward one hour in the spring to move an hour of daylight from the morning to the evening and then set back one hour in the fall to return to normal daylight.

[2] Benjamin Franklin first conceived the idea of daylight saving during his tenure as an American delegate in Paris in 1984 and wrote about it extensively in his essay, "An Economical Project". It is said that Franklin awoke early one morning and was surprised to see the sunlight at such an hour. Always the economist, Franklin believed the practice of moving the time could save on the use of candlelight as candles were expensive at the time. In England, builder William Willett (1857-1915), became a strong supporter for Daylight Saving Time upon noticing blinds of many houses were closed on an early sunny morning. Willett believed everyone, including himself, would appreciate longer hours of light in the evenings. In 1909, Sir Robert Pearce introduced a bill in the House of Commons to make it **obligatory** to adjust the clocks. A bill was drafted and introduced into Parliament several times but met with great opposition, mostly from farmers. Eventually, in 1925, it was decided that summer time should begin in the day following the third Saturday in April and close after the first Saturday in October.

[3] The United States Congress passed the Standard Time Act of 1918 to establish standard time and preserve and set Daylight Saving Time across the continent. This act also devised five time zones throughout the United States: Eastern, Central, Mountain, Pacific, and Alaska. The first time zone was set on "the mean astronomical time of the seventy-fifth degree of longitude west from Greenwich" (England). In 1919 this act was **repealed**. President Roosevelt established year-round Daylight Saving Time (also called "War Time") from 1942 – 1945. However, after this period each state adopted their own DST, which proved to be disconcerting to television and radio broadcasting and transportation. In 1966, President Lyndon Johnson created the Department of Transportation and signed the Uniform

Time Act. As a result, the Department of Transportation was given the responsibility for the time laws.

[4] During the oil embargo and energy crisis of the 1970s, President Richard Nixon extended DST through the Daylight Saving Time Energy Act of 1973 to conserve energy further. This law was **modified** in 1986, and Daylight Saving Time was set for beginning on the first Sunday in April (to "spring ahead") and ending on the last Sunday in October (to "fall back").

[5] Through the years the U.S. Department of Transportation conducted polls concerning daylight saving time and found that many Americans were in favour of it because of the extended hours of daylight and the freedom to do more in the evening hours. In further studies the U.S. Department of Transportation also found that DST conserves energy by cutting the electricity usage in the morning and evening for lights and particular appliances. During the darkest winter months (November through February), the advantage of conserving energy in afternoon daylight saving time is outweighed by needing more light in the morning because of late sunrise. In Britain, studies showed that there were fewer accidents on the road because of the increased visibility resulting from additional hours of daylight.

[6] Despite these advantages, there is still opposition to DST. One **perpetual** complaint is the inconvenience of changing many clocks, and adjusting to a new sleep schedule. Farmers often wake at sunrise and find that their animals do not adjust to the changing of time until weeks after the clock is either moved forward or back. In Israel, Sephardic Jews have campaigned against Daylight Saving Time because they recite prayers in the early morning during the Jewish month of Elul. Many places around the globe still do not observe daylight saving time – such as Arizona (excluding Navajo reservations), the five counties in Indiana, Hawaii, Puerto Rico, Japan, and Saskatchewan, Canada. Countries located near the equator have equal hours of day and light and do not participate in Daylight Saving Time.

1. Who first established the idea of DST?
    a. Sir Robert Pearce
    b. Benjamin Franklin
    c. President Richard Nixon
    d. President Lyndon Johnson

2. What was the initial drive to save daylight?
    a. Longer hours in the evening
    b. Farmers can wake up earlier
    c. Fewer road accidents
    d. Save on the use of candlelight

3. Who introduced the bill that states the need to adjust the clock?
    a. Sir Robert Pearce
    b. Benjamin Franklin
    c. President Richard Nixon
    d. President Lyndon Johnson

4. Which of the following statements is true of the U.S. Department of Transportation?
    a. It constructed the Uniform Time Act
    b. It was created by President Richard Nixon
    c. It oversees all time laws in the United States
    d. It established the standard railway time laws

5. What is the advantage of conserving energy during the winter months in Britain?
    a. Longer hours in the evening
    b. More freedom
    c. Fewer road accidents
    d. Save on energy

6. Below are the disadvantages of daylight saving time except:
    a. Inconvenience for farmers to farm
    b. Inconvenience of changing time
    c. Adjusting to sleep patterns
    d. Inconvenience of prayer time

7. According to the passage, in which area of the world is DST least useful?
    a. Indiana
    b. Mexico
    c. The tropics
    d. Saskatchewan

8. According to the passage what is the most beneficial effect of DST?
    a. Changing sleeping patterns
    b. Less car accidents
    c. Conservation of energy
    d. Additional time

9. What of the following statements is the best title for this passage?
    a. Lyndon Johnson and the Uniform Time Act
    b. Daylight Saving Time in the United States
    c. The History and Rationale of Daylight Saving Time
    d. The U.S. Department of Transportation and Daylight Saving Time

10. The word **obligatory** (para 2)most nearly means
    a. an excuse
    b. an aberrant
    c. an approval
    d. a requirement

11. The word **repealed** (para 3) most nearly means
    a. accepted
    b. cancel officially
    c. changed
    d. replaced

12. The word **modified** (para 4) most nearly means
    a. altered
    b. found
    c. started
    d. stopped

13. The word **perpetual** (para 6) most nearly means
    a. valid
    b. good
    c. continuous
    d. last

SECTION B: Answer **ALL** questions.

Question 2 (10m)

Join the following groups of sentences to make ten longer sentences. Use the words given. You may omit words and make whatever changes you think are necessary in the grammar, word order and punctuation of the sentences.

1. or
   Circuits can be protected from excessive currents by a fuse.
   Circuits can be protected from excessive currents by a circuit breaker.

2. however
   A fuse is the simplest and cheapest protection.
   For accurate and repetitive operation a circuit breaker is used.

3. which
   A simple circuit breaker consists of a solenoid and a switch with contacts.
   The contacts are held closed by a latch.

4. thus energizing
   The current from the supply line flows through the switch and solenoid coil.
   This energizes the solenoid.

5. which, therefore
   At normal currents the pull of the solenoid on the latch will not overcome the tension of the spring.
   The spring holds the latch in place.
   The switch remains closed.

6. if
   The current rises to a dangerous level.
   The pull of the solenoid on the latch increases.

7. and

   The increased pull overcomes the latch spring tension.

   The increased pull pulls the latch towards the solenoid.

8. which

   This releases the switch contacts.

   The switch contacts are pulled apart by the spring.

9. as

   The circuit is now broken.

   The unit is protected.

10. when

    The fault in the supply or unit is put right.

    The latch can be reset.

Question 3 (12m)

Identify and correct the errors in the text. Underline the error and write the correct answer above the word. There are 12 errors.

Last Year The U.S Navy Developed a Technology To Create Fuel From Seawater

September 27, 2014

Scientists at the U.S Naval Research Laboratory has developed a technology to recover carbon dioxide and hydrogen from seawater and converts it into a liquid hydrocarbon fuel. This could be a tremendous breakthrough but eliminate the need for old ways of generate fuel.

It's just another example of the many ways of generating energies that are now available that could ends our dependence on fossil fuels. These new, clean green ways of generating energy have been around from decades, so why are we always talking on them without ever implementing them?

Researchers say that these approach could be commercially viable within the next seven to ten years. They state interest in pursuing land-based options who could provides a solutions to our current problems.

Question 4 (18m)

Fill in the gaps with the correct form of the words given.

1. This _____ (invent) by Bette Nesmith Graham, who _____ (work) as a typist and needed something to correct the many mistakes she _____ (make) while she _____ (type). This invention _____ (buy) by Gillette Corporation in 1979 for $47.5 million plus royalties. IBM _____ (previously reject) the product in 1950s.

2. Although this invention _____ (seem) very simple, the modern version _____ (not invented) until 1899, by which that time; steel that was flexible enough to be _____ (bend) into this shape had become commonly available. Before that time people _____ (use) string and pins etc. to _____ (hold) paper together, but all those methods _____ (damage) the paper.

3. These things _____ (invent) by accident when Spencer Silver _____ (work) in the 3M laboratories _____ (try) to develop a strong glue. Although the glue developed was not strong enough for what he _____ (look) for, it later _____ (become) famous for how easy it was to remove it from the surface it _____ (stick) to.

SECTION C: Answer any **ONE (1)** of the following questions.

Question 6a (30m)

Your company is organizing a Robotic Competition. As the Head of Electronics Department, write an email to your staff informing them about this event. In your email, you need to also encourage them to join the competition.

You are to include the following information in your email:

i. Format of the email (To, From, etc.)
ii. What the Robotic Competition is about
iii. The rules and regulations of the competition
iv. The reasons your staff should participate

OR

Question 6b (30m)

I. Study this description of how batteries are charged. Then write a list of instructions (6 steps) for how to charge a battery. (14m)

The filler plugs are removed and the battery is connected to the charger. It must be ensured that the correct polarity is observed and good connections are made. The charger is then switched on. The charger is switched off when the battery has been fully charged. The specific gravity of a sample cell is checked. The filler plugs are replaced and the battery left to cool before use.

II. Electronic waste is a major problem in most of the countries since it has become a major cause for different diseases. Write a brief summary of about **150-200 words** on health effects of electronic wastes. (16m)

--THE END--