



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: August 2018

Module Number: IS1301

Module Name: Communication for Engineers

[Three hours]

[Answer all questions in the answer sheet provided]

Q1.

a) Complete the sentences with the correct form of the verb in brackets.

[5 Marks]

- i.) Mr. Ranjendra _ (call) his aunt at the moment.
- ii.) Suranga _ (watch) a film tonight with Awishka. They have already bought the tickets!
- iii.) When Nisansala returned home, her brother _ (eat) dinner and had gone to sleep.
- iv.) The thieves broke into the house, stole some jewellery and _ (leave) the house before anyone saw them.
- v.) They _ (be) very good students. They work hard and maintain good discipline.
- vi.) The Hindus in India _ (regard) the River Ganges as holy and sacred.
- vii.) When the thunder struck the tree, we _ (play) in the playground. So we got scared.
- viii.) The cricket team _ (not/win) a game for a long time and the fans were really disappointed.
- ix.) The buffaloes _ (swim) in the river when the tiger suddenly appeared in front of the river.
- x.) I'm sure the train _ (arrive) in 5 minutes! But Nimal is still not here!

b) Fill in the correct passive form of the verb in parentheses.

[5 Marks]

- i.) Penicillin _ by Alexander Fleming in 1928. (discover)
- ii.) Statements _ from all the witnesses at this moment. (take)
- iii.) Whales _ by an international ban on whaling. (must protect)
- iv.) Both weddings _ by Good Taste. (cater)
- v.) A Picasso _ from the Metropolitan Museum of Art. (steal)
- vi.) _ this washing machine _ in Germany? (make)

vii.) Tea _ in China. (grow)

viii.) When we reached the airport, we found that all the flights _ due to the storm.
(cancel)

ix.) The fax _until tomorrow morning. (not send)

x.) The soundtrack of a movie _ always _ after the filming is finished. (is/add)

Q2.

Read the passage and answer the questions given below.

North American meteorologists from the National Oceanic and Atmospheric Administration (NOAA)'s Hurricane Research Division have recently improved the success rate in their forecasting of where hurricanes are likely to hit land by an estimated 15 to 30%. This increase in accuracy is due to the use of instruments called GPS-dropwindsondes, which can probe the atmosphere surrounding a hurricane while it is still out at sea. The atmospheric characteristics of hurricanes over land are well understood because an investigation is possible with weather balloons containing sophisticated meteorological instruments. When hurricanes are out of reach of balloons, gathering information is decidedly more difficult. Little is known of the weather conditions that guide hurricanes towards land.

An accurate estimation of where a hurricane will strike is essential in order to reduce the loss of life and property. Hurricane Andrew, the most costly hurricane in U.S. history, killed 15 people and caused damage of \$35 billion, in today's dollars, in 1992. However, the unnamed¹ : Category 4² hurricane, which struck south-east Florida in 1926 and killed 243 people would have caused an estimated \$77 billion if it had struck today. The reason for this is the explosion in population growth and development along the south-east coast of the U.S. during the last half century.

Hurricanes occur in cycles every few decades, the last intense period in the U.S. being from 1940 to 1969. 'Camille', a Category 5 hurricane of such catastrophic force that it caused over a billion and a half dollars' worth of damage at the time and killed 256 people, struck the coast of the Gulf of Mexico in 1969 with winds over 320 km/h. Yet, for the last quarter century, hurricane activity has been relatively mild.

¹ the custom of naming hurricanes began in the early 1950s

² hurricanes are categorized according to their wind speed from Category 1 (least intense) to Category 5 (most intense)

Scientists do not know the precise reason for the cycles of hurricane activity, but they could be caused by a phenomenon called the 'Atlantic Conveyor'. This is the name given to the gigantic current of water that flows cold from the top of the globe slowly along the Atlantic Ocean floor to Antarctica and resurfaces decades later before flowing back north, absorbing heat as it crosses the equator. Since hurricanes derive their energy from the heat of warm water, it is thought that an increase in the speed of the Conveyor, as it pulls warm water to the north, is an indicator of intensifying hurricane activity.

The use of GPS-dropwindsondes began in 1997. Small sensing devices dropped from planes at very high altitudes and over a wide area, they are far more revealing than previously used sensors. Because they weigh only 0.4 kilograms, they are able to stay aloft for longer periods and broadcast more data to the ground. Each sonde carries its own global positioning satellite receiver. The GPS signals received are used to calculate the direction and speed of the wind, and data on temperature, humidity, and barometric pressure at half second intervals all the way down to the ocean surface.

Dropwindsonde information is fed into a special meteorological computer in Maryland which generates a global computer model of wind patterns. Data analysts have discovered a greater variability in the winds at sea level than previously believed, but many forecasting problems are beyond a solution, at least for the time being. For instance, it is not yet known why hurricanes can suddenly change in intensity; current computer models often fail to predict whether a hurricane will reach land or else cannot pinpoint where a strike will take place.

One surprising result of a recent computer simulation was the destruction of a large part of downtown New York. Hurricane researchers believe that the city is more likely than Miami to suffer a direct hit in the near future. Also, certain geographical features of the coastline near New York make it conceivable that a wall of water called a storm surge pushed ashore by hurricane winds would cause a devastating flooding of Manhattan. A storm surge was responsible for the more than 8000 deaths caused by the hurricane that destroyed the city of Galveston in 1900.

Source adapted from: <http://web.mit.edu/12.000/www/m2010/teams/neworleans1/predicting%20hurricanes.htm>

a) Answer the questions below.

[8 Marks]

- i.) What do the letters NOAA stand for?
- ii.) Which instruments have recently increased the success rate of U.S. hurricane forecasts?
- iii.) What reason is given for the lack of knowledge of hurricanes at sea?
- iv.) Why was the hurricane which struck in 1926 not given a name?
- v.) What is the name of the strongest hurricane mentioned in the article?
- vi.) Explain 'Atlantic Conveyor'.
- vii.) What is the use of dropwindsonde?
- viii.) What is the meaning of the term 'catastrophic'?

b) According to the passage, to whom or what do the phrases on the right refer?

The first one has been done for you as an example. Note that you must give your answer **IN NO MORE THAN THREE WORDS.**

[7 Marks]

WHO or WHAT?

Ex : *Meteorologist* have improved their forecasts for hurricanes.

- i.) _ become stronger every few decades.
- ii.) _ energizes all hurricanes.
- iii.) _ is a huge current of water flowing from north to south.
- iv.) _ could not stay in the air for a long time.
- v.) _ know more about surface winds than they knew before.
- vi.) _ recently predicted a catastrophe for the city of New York.
- vii.) _ is a huge wave of water blown on land by a hurricane.

c) Which answer best completes the following sentences.

[05 Marks]

- i.) The main point of the passage is to give information about:
 - a) previous U.S. hurricanes
 - b) future U.S. hurricanes
 - c) forecasting hurricane activity
 - d) why hurricanes change in intensity

ii.) The intensity of U.S. hurricanes:

- a) has increased by 15 to 30% recently
- b) depends on the GPS-dropwindsondes
- c) was greater from 1940 to 1969 than at any previous time
- d) can be more accurately measured by satellite assistance

iii.) The Category 4 hurricane which hit Florida in 1926:

- a) was the most catastrophic to hit the U. S. this century
- b) caused \$77 billion worth of damage
- c) caused an explosion in population growth
- d) none of the above

iv.) Hurricane 'Camille':

- a) caused \$1.5 billion dollars damage in today's money
- b) was the worst U.S. storm this century in terms of life lost
- c) was named in the 1950s
- d) was not as intense as the hurricane of 1926

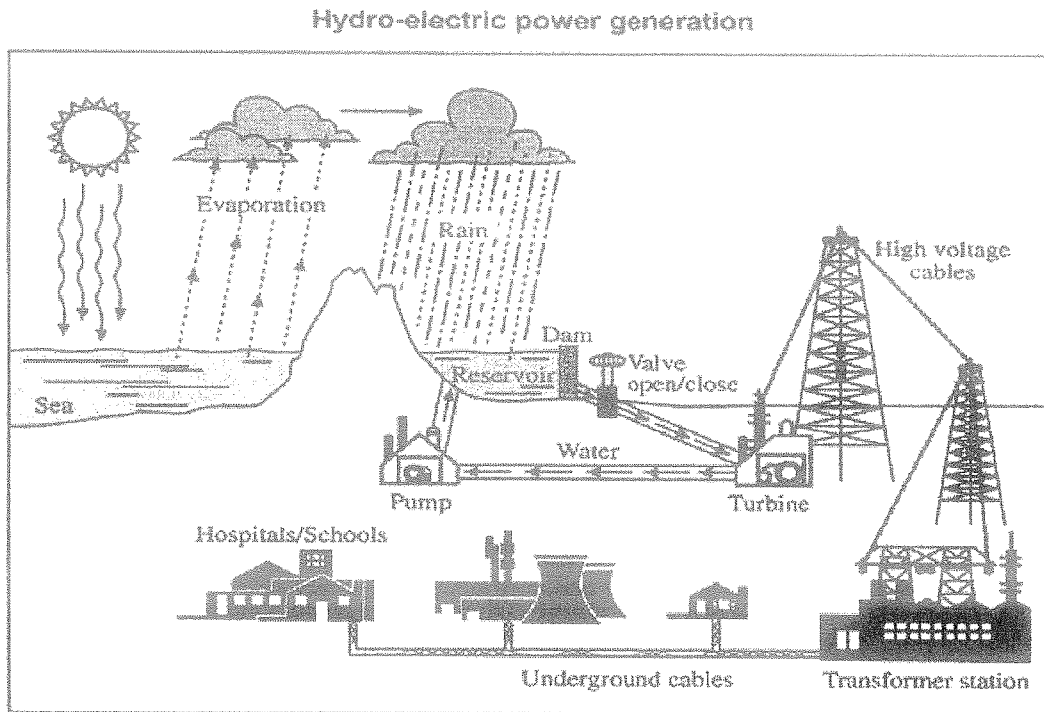
v.) The writer of the passage probably believes that:

- a) accurate tracking of hurricanes might be possible in the future
- b) storm surges only occur within computer simulations
- c) computer predictions are unreliable
- d) the worst hurricanes occur in the U.S.

Q3.

The diagram below shows the process of using water to generate electricity for human use. Summarize the information by selecting and reporting the main features, and make comparisons where relevant. You should write at least 150 words.

[6 Marks]



Q4.

Read the following passage and write a summary in 100 words. Provide a suitable title
[6 Marks]

Energy sector is dominated by traditional energy sources, comprising primarily of oil, gas and coal. These constitute about 85 per cent of India's total energy consumption, followed by renewable energy, which takes care of about 13 per cent of the pie. This trend is fast changing, as government is shifting its focus from traditional sources to cleaner and renewable sources of energy.

In a bid to reduce emissions, the Supreme Court had banned the sale and registration of non BS-IV compliant vehicles with effect from 1 April 2017. The government has been encouraging development of electric vehicles (EVS) for the Indian market. This paradigm shift towards electric vehicles is going to be a game-changer for the Indian economy in general and our energy sector in particular, as it will curtail demand for oil and gas in the long run. India, being a net importer of crude oil at present, is expected to benefit immensely from the ongoing shift towards electric vehicles. Also, this shift is expected to strengthen India's fiscal position in the years to come.

While companies are waiting for more clarity on the policy front, many corporates have already started investing in the development of technologies and infrastructure for electric vehicles. Several auto companies have aggressively scheduled product launches of electric vehicles over the next five years. The government has plans to make India a 100 percent electric vehicle nation by 2030 and, transport authorities across states have shown their keen interest in rolling out electric bus services.

India is the world's third largest producer of electricity, with a total installed capacity of 329 GW as of 31 August 2017. Thermal energy, comprising coal, gas and diesel power, constitutes about two thirds of the total installed capacity, followed by renewable energy and nuclear power, comprising about a 31 percent and 2 percent share in the pie respectively.

The outlook for new capacities in the thermal power space looks bleak, as there are no fresh long term power purchase agreements signed. Additionally, there is a sharp fall in the tariffs for renewable energy, competing aggressively with thermal power tariffs. To reduce its dependence on coal mining, India's largest coal mining company, Coal India, too has announced its intention to diversify into mining of other minerals such as bauxite, nickel, iron ore, etc.

The popularity of electric vehicles is all set to rise, with power tariffs becoming more affordable – driven by an increase in renewable power capacities. The development of improved technologies and supporting infrastructure facilities will further push demand for electric vehicles in the country.

A clear shift from subsidized fuel towards low-priced clean energy is expected now, which ought to be beneficial for the country. The share of oil, gas and coal in India's energy sector is expected to fall, while the share of cleaner and renewable energy is expected to rise in the years to come.

Source adapted from:

https://www.smartkeeda.com/General_English/Verbal_Ability/Comprehension_Test/My_BM/all/passage/Passage_No_81/

Q5.

Write short descriptions on the following topics. (80 words each) [10 Marks]

- a) Lifelong learning
- b) Engineers are critical thinkers
- c) Importance of ethics for engineers
- d) Effective communication
- e) Time and stress management

Q6.

Select one of the topics given below and write an essay. Write about 250 words.

[8 Marks]

- a) The use of internet for engineering undergraduates.
- b) Importance of university education.
- c) Pros and cons of advancement of technology.