MODULE NAME:	MODULE CODE:
NETWORK ENGINEERING	NWEG5111

ASSESSMENT TYPE:	**TEST (PAPER ONLY)**
TOTAL MARK ALLOCATION:	**60 MARKS**
TOTAL HOURS:	**1 HOUR (+5 minutes reading time)**

INSTRUCTIONS:

1. *Please adhere to all instructions in the assessment booklet.*
2. *Independent work is required.*
3. *Five minutes per hour of the assessment to a maximum of 15 minutes is dedicated to reading time before the start of the assessment. You may make notes on your question paper, but not in your answer sheet. Calculators may not be used during reading time.*
4. *You may not leave the assessment venue during reading time, or during the first hour or during the last 15 minutes of the assessment.*
5. *Ensure that your name is on all pieces of paper or books that you will be submitting. Submit all the pages of this assessment's question paper as well as your answer script.*
6. *Answer all the questions on the answer sheets or in answer booklets provided. The phrase 'END OF PAPER' will appear after the final set question of this assessment.*
7. *Remember to work at a steady pace so that you are able to complete the assessment within the allocated time. Use the mark allocation as a guideline as to how much time to spend on each section.*

Additional instructions:

1. *This is a CLOSED BOOK assessment.*
2. *Calculators are not allowed.*
3. *For multiple-choice questions, give only one (1) response per question. The marker will ignore any question with more than one answer, unless otherwise stated. You should, therefore, be sure of your answer before committing it to paper.*
4. *Answer All Questions.*

Question 1 (Marks: 10)

Multiple-choice questions: Select one correct answer for each of the following unless stated otherwise. In your answer booklet, write down only the number of the question and next to it, the letter of the correct answer (s).

Q.1.1 The range of frequencies that a signal spans from a minimum to maximum is called the _____. (1)

(a) Bandwidth;

(b) Sampling;

(c) Modulation;

(d) Microwave;

(e) Spectrum.

Q.1.2 Networks that serve an area up to 50 kilometers, approximately the area of a typical city are called_____? (1)

(a) LANs;

(b) MANs;

(c) WANs;

(d) PANs;

(e) CANs.

Q.1.3 Which one of the following is a disadvantage of Synchronous Time Division Multiplexing? (1)

(a) Noise problem;

(b) Potentially wastes bandwidth;

(c) Complexity;

(d) Limited by frequency;

(e) None of above

Q.1.4 Which of the following are advantages of Wavelength Division Multiplexing (Choose all that apply)? (2)

(a) Very high capacities over fiber;

(b) Capable of high transmission speeds;

(c) Signals can have varying speeds;

(d) Cost;

(e) None of the above.

Q.1.5 _____ is a copper cable for telephone and data communications. (1)

(a) Coaxial cable;

(b) Transfer cable;

(c) Twisted-pair cable;

(d) Fiber optic cable;

(e) None of above.

Q.1.6 For multiple signals to share a single medium, the medium must be divided into multiple channels. The basic techniques for dividing a medium into multiple channels are (Choose all that apply)? (3)

(a) Division of frequencies;

(b) Division of data;

(c) Division of time;

(d) Division of satellite;

(e) Division of transmission codes.

Q.1.7 _____ is a device that interconnects multiple workstations within a local area network and broadcasts its data to all connected devices (1)

(a) File;

(b) Echo

(c) Multiplexing;

(d) Hub;

(e) None of above.

Question 2 (Marks: 10)

Match-the-columns question: Match the description in Column A with the correct term from Column B. In your answer booklet, write down only the question number and, next to it, the letter of the correct answer.

Column A		Column B	
Q.2.1	Loss of power due to friction a signal medium experience	**A**	Amplitude shift keying
Q.2.2	OSI layer that is responsible for creating, maintaining and ending network connection.	**B**	Discrete multitone
Q.2.3	TCP/IP layer that supports network applications and may include presentation services.	**C**	Attenuation
Q.2.4	Multiplexing technique used to support SONET	**D**	Coarse wavelength division multiplexing (CWDM)
Q.2.5	The simplest modulation techniques	**E**	Application

Q.2.6	Uses different frequency lasers to transmit multiple signals at the same time over a single medium	**F**	Demultiplexor
Q.2.7	Designed for short-distance connections and has only a few lambdas, with a greater space between lambdas	**G**	Wave division multiplexing
Q.2.8	The technology behind the popular digital subscriber line (DSL) system	H	Wavelength
Q.2.9	The device that is attached to the receiving end of the medium and splits off each signal to deliver it to the appropriate receiver	I	Synchronous time division
Q.2.10	Multiplexing is a good technique for transmitting multiple concurrent signals over a fibre-optic line.	**J**	Network
		K	Quadrature amplitude modulation

Question 3 **(Marks: 25)**

Q.3.1	What is the difference between a Logical connection and a Physical connection?	(2)
Q.3.2	List **five** layers of the TCP/IP protocol suite.	(5)
Q.3.3	Briefly describe the characteristics of Category 5e twisted pair.	(4)
Q.3.4	What are the major disadvantages of Frequency Division Multiplexing (FDM)?	(6)
Q.3.5	Describe the advantages and disadvantages of LANs.	(8)

Question 3		**(Marks: 15)**
Q.4.1	Briefly describe how Wavelength Division Multiplexing works?	(5)
Q.4.2	Information that is stored within computer systems and transferred over a computer network can be divided into two categories; data and signals. Briefly discuss Data and Signals.	(5)
Q.4.3	Briefly Explain Fiber-Optic Cables.	(5)

END OF PAPER