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 allowed*.
3. *Answer all Questions*.

Question 1 **(Marks: 10)**

Multiple-choice questions: Select one (1) correct answer for each of the following. In your answer booklet, write down only the number of the question and next to it, the letter of the correct answer.

Q.1.1	Which of the following is NOT a layer of the TCP/IP protocol?		(1)
	(1)	Physical	
	(2)	Transport	
	(3)	Application	
	(4)	Network Access	
	(5)	Presentation	
Q.1.2	Which of the following is NOT a layer of the OSI model?		(1)
	(1)	Session	
	(2)	Transport	
	(3)	Physical	
	(4)	Presentation	
	(5)	Network Access	
Q.1.3	What is the process of sending data over a signal by varying either its amplitude, frequency, or phase?		(1)
	(1)	Amplification	
	(2)	Modulation	
	(3)	Attenuation	
	(4)	Digital encoding	
	(5)	Sampling	
Q.1.4	What are Manchester encoding schemes are called, because the occurrence of a regular transition is similar to seconds ticking on a clock?		(1)
	(1)	Continuous-clocking	
	(2)	Analog-clocking	
	(3)	Discrete-clocking	
	(4)	Self-clocking	
	(5)	Non-clocking	

Q.1.5	What was the first-generation cellular telephone system?		(1)
	(1)	Personal Communications Services (PCS)	
	(2)	Time Division Multiple Access (TDMA)	
	(3)	Advanced Mobile Phone Service (AMPS)	
	(4)	Global System for Mobile (GSM) Communications	
	(5)	Code Division Multiple Access (CDMA)	

Q.1.6	Which systems are good at sending low-speed signals over short to medium distances?		(1)
	(1)	Microwave	
	(2)	Satellite	
	(3)	WiFi	
	(4)	ZigBee	
	(5)	Bluetooth	

Q.1.7	Which component of USB strictly specifies the exact dimensions of the interface's connectors and cabling?		(1)
	(1)	procedural	
	(2)	functional	
	(3)	mechanical	
	(4)	electrical	
	(5)	physical	

Q.1.8	Which technique is used for interfacing a computer to high-speed devices such as hard disk drives, tape drives, CDs, and DVDs?		(1)
	(1)	Serial	
	(2)	RS-232	
	(3)	SCSI	
	(4)	EIA-232F	
	(5)	daisy-chaining	

Q.1.9	What uses different wavelength (frequency) lasers to transmit multiple signals at the same time over a single medium?		(1)
	(1)	Wave division multiplexing	
	(2)	Statistical time division multiplexing	
	(3)	Channel division multiplexing	
	(4)	Time division multiplexing	
	(5)	Inverse wavelength division multiplexing (IWDM)	
Q.1.10	Which division multiplexing is a good technique for transmitting multiple concurrent signals over a fiber-optic line?		(1)
	(1)	Statistical time	
	(2)	Synchronous time	
	(3)	Frequency	
	(4)	Wavelength	
	(5)	Amplitude	

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	Frequency shift keying is subject to.	**1.**	Quadrature phase
Q.2.2	OSI layer that handles routing.	**2.**	Procedural
Q.2.3	TCP/IP layer that supports network applications and may include presentation services.	**3.**	Synchronous time division
Q.2.4	This Shift keying technique incorporates four different phase angles, each of which represents 2 bits.	**4.**	Application
Q.2.5	Broadband wireless transmission technology that is based upon a series of IEEE standards.	**5.**	intermodulation distortion
Q.2.6	Serial connection or bus that can carry multiple channels of data at the same time	**6.**	WiMAX
Q.2.7	Component of an interface describes how the particular circuits are used to perform an operation.	**7.**	Ultra-wideband
Q.2.8	The technology behind the popular digital subscriber line (DSL) system	**8.**	InfiniBand
Q.2.9	Systems transmit data over a wide range of frequencies rather than limiting transmissions to a narrow, fixed band of frequencies.	**9.**	Network
Q.2.10	Multiplexing technique used to support SONET.	**10.**	Discrete multitone
		11.	Frequency division

Question 3		**(Marks: 30)**
Q.3.1	Discuss the benefits of a microcomputer-to-local area network connection?	(6)
Q.3.2	What happens when you introduce noise into digital data and digital signals?	(6)
Q.3.3	Briefly describe the characteristics of Category 5e twisted pair?	(5)
Q.3.4	Briefly discuss what are the three ways used to maintain synchronization in synchronous connections?	(8)
Q.3.5	What are the major disadvantages of frequency division multiplexing?	(5)

Question 4	**(Marks: 10)**
Discuss in detail how T-1 multiplexing work?	

END OF PAPER