FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT OF INFORMATION AND MEDIA TECHNOLOGY

FIRST SEMESTER 2016/2017 EXAMINATION

COURSE CODE:	CIT414
COURSE TITLE:	Web Database Application
CREDIT UNITS:	2
TIME ALLOWED:	2Hours
COURSE LECTURER(S):	Mr. H. A. Zubairu
NUMBER OF QUESTIONS:	6
NUMBER OF PAGES:	3 (INCLUDING THIS PAGE)

INSTRUCTIONS

- Answer all questions
- Do **not** use red pen
- Please use a clear handwriting
- This exam is closed book, closed notes, closed laptop and closed cell phone
- Please use non-programmable calculators only

1(a) Distinguish between Internet and World Wide Web (WWW) (**2marks**)
(b) In short sentences, discuss any two (2) server-side technologies as applied to web application (**2marks**)
(c) In N-tier architecture, the presentation layer is 'dumb'. What does this implies? (**2marks**)
(d) What is the difference between layer and tier architecture? (**2marks**)

2(a) Mathematically, odd numbers CANNOT be divided evenly into groups of two. Therefore, odd numbers usually end with a digit like 1,3,5,7, or 9. Creates a function odd() that accepts an argument and returns true if the argument is an odd number or false otherwise. The function should use the last digit of the argument to determine if the number is odd or not. Assume a valid parameter is supply (**6 marks**)

(b) What are the disadvantages of the following?
Client-side validation over Server-side validation
Server-side validation over Client-side validation (**4 marks**)

3(a) What does it mean to say a regular expression is greedy? Shows an example (**2 marks**)

(b) The standard of student matriculation number of the Federal University of Technology, Minna, specifies that it begins with a four digit numbers identifying the year of entry, followed by slash, follow by one or two identifying the level of entry, follow by slash, follow by five digits identifying the student's serial number, then followed by two letters identifying the course of study. For example 2014/1/34211CI, 2015/2/55342CS and 2016/1/55432CT are all valid matriculation numbers within SICT and FUT. Write a regular expression that matches the above standard for matriculation numbers. (Note: It should match both lower case and upper case characters) (**6 marks**)

(c) Make a web page that uses a cookie to keep track of how many times a user has viewed the page. The first time a particular user looks at the page, it should print something like "Number of views: 1." The second time the user looks at the page, it should print "Number of views: 2," and so on (**3 marks**)

4(a) What is the major advantage of cookie over session? (**2 marks**)
(b) State the attribute and necessary value of a cookie (**3 marks**)
(c) Mention the limitations of cookies in web applications (**2 marks**)
(d) Give four exemplary uses of cookies in web application (**2 marks**)

5(a) Briefly describe the following attacks on web applications:
I. Cross Site Scripting (XSS)
II. cross Site Request Forgery (CSRF)
III. Session Hijacking
IV. Session Theft
V. SQL Injection **(5 marks)**
(b) How do you mitigate against any of the three attacks in 5a? (**3 marks**)

6. Suppose we are to design a database to maintain information about students, courses and lecturers in a particular department in FUT, Minna. An analysis of the existing record used by the administrative staff reveals the dataset sample in table 1.

CourseTable					
CourseTitle	StaffPF	StaffName	StudentMatric	StudentName	Grade
E-commerce	PF0016	Mr. T	2014/1/1000CI	James K	B
E-commerce	PF0016	Mr. T	2014/1/1000CI	James K	A
E-commerce	PF0016	Mr. T	2013/1/1001CI	John B	C
E-commerce	PF0016	Mr. T	2011/1/2000CI	Peter M	B
E-commerce	PF0016	Mr. T	2011/1/2000CI	Peter M	A
Database Concept	PF0016	Mr. T	2014/1/1000CI	James K	C
Database Concept	PF0016	Mr. T	2014/1/1000CI	James K	C
Algorithm	PF2020	Itoro B.	2010/1/1010CI	Udoka E	A

Table 1: Analysis of existing information

(a)Explain in brief two problems that can arise from the data set in table 1 (**2 marks**)

(b) State the first principal of E.F Codd (first Normal form) (**2 marks**)

(c) Perform the non-loss decomposition on table 1, to obey the first normal form (**6 marks**)

(d) Name the fields, which can act as the primary key and foreign key for the table **CourseTable** and the new tables after decomposition. (**4 marks**)