

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF TECHNOLOGY EDUCATION
DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION
SECOND SEMESTER 2012/2013 EXAMINATION

COURSE CODE: ITE 321

COURSE TITLE: ELECTRICAL POWER AND DC MACHINES

TIME ALLOWED: 2 HOURS

**INSTRUCTION: ATTEMPT QUESTION TWO (2) (IS COMPULSORY)
AND ANY OTHERS THREE (3)**

Q1 (a) In full, explain How a DC motor operate.

1(b) DC motors are widely used in applications requiring accurate speed control, e.g. in servo systems. Now mention three (3) factors on which the spin of the motor depends.

Q2 (a) Define what an electric generator is.

2(b) Give full detail of how electric generator operates.

2(c) How do we determine the directions of induced EMF, speed and direction of magnetic FLUX in a generator, i.e is it by right hand or left hand rule? Explain.

Q3 (a) Illustrate the installation/wiring of two 60W lamps controlled 2-two way switches supplied from a 10A stab lock in a DB.

3(b) Illustrate also the wiring of a 13A socket outlet from the same DB.

Q4 (a) An element has a value of 10 ohm is connected in series with two resistors arranged in parallel, and each of these resistors has a value of 15ohm what resistance must be shunted across this series parallel combination, so that the total current in the circuit will be 1.5A at 20v supply source?

4(b) Explain the following (i) Energy (ii) power and (iii) work

Q5 (a) Briefly explain the operation of hydroelectric power station at Kainji Dam here in Niger State.

5(b) How many components of an electric power system do we have in our modern time? Mention them and their functions.