FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF PHYSICAL SCIENCES
DEPARTMENT OF GEOGRAPHY

2ND SEMESTER 2014/2015 SESSION UNDERGRADUATE EXAMINATION
COURSE CODE: MET 320
COURSE TITLE: GENERAL CIRCULATION OF THE ATMOSPHERE II

INSTRUCTION: Answer any four questions   **TIME ALLOWED: 2hrs.30mins**

1 a. State the four equation of motion.

b. A lorry moves from rest with an acceleration of $0.8m/s^2$. Find its velocity when it moved a distance of 55m.

c. Ahmed throws his uncle's shoe vertically upwards with an initial velocity of 48.3m/s. Determine the height to which the shoe will rise above its initial height.

d. Musbau drops his mobile phone from the top of a roof located 12.56m above the ground. Determine the time required for the mobile phone to reach the ground.

2. a. Derive Pisson's equation from the first law of thermodynamics.

b. Explain each of the terms in the equation derived in (a) above

3a. Using a well structured diagram, define hydrostatic approximation.

b. Suppose at the surface, there is a thick layer of air under standard conditions at an average density of $1.1kg\ m^3$ and acceleration due to gravity is 9.8m/s. Find the rate at which pressure decreases with height.

4. a. What do you understand by the term 'Kinematic'?

b. Enumerate and explain varieties of quantities associated with motion of objects.

5. a. Describe the four kinematic equations in freefall object.

b. State the conceptual characteristics of freefall motion.

c. Martin drops a pile of roof shingles from the top of a roof located 8.52 meters above the ground. Determine the time required for the shingles to reach the ground.

6. Using appropriate diagram write short note on any three of the following:

(i) Mid latitude depression (ii) Polar depression (iii) Thermal depression (iv) Lee depression