DEPARTMENT OF GEOGRAPHY

SCHOOL OF SCIENCE AND SCIENCE EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SECOND SEMESTER EXAMINATION 2011/2012 SESSION

COURSE CODE: MET 322

COURSE TITLE: INT. ATMOSPHERIC THERMODYNAMICS & PRECIPITATION PROCESSES

INSTRUCTION: Answer any four questions   TIME: 2HOURS

1) Distinguish between any five of the following terms and processes :
   a) Long wave and Short wave radiation
   b) Kinetic energy and Momentum
   c) Conduction and Convection
   d) Stability and Instability of air parcel
   e) Cloud droplet and Condensation nuclei
   f) Riming and aggregation

2) a) State the First and second Laws of Thermodynamics
   b) Using clear illustrations, describe the following equations:
   i) $dE = dW$
   ii) $dE = dQ$
   iii) $dE = dQ + dW$
   c) What are the implications of the above equations on stability and instability of air percel

3) a) Prepare a brief treatise on Bergeron's Precipitation processes
   b) Why Cloud Droplet does not fall?
   c) Distinguish between Collision and Coalescence Precipitation processes

4) Briefly provide Explanatory notes on any four of the following:

   i) Concept of Internal Energy

   ii) Orographic lifting

   iii) Rain Showers

   iv) Hail storm

   v) Convergence lifting

5) using Specific examples, describe the processes and formation of Lightning and Thunderstorm in the Atmosphere

6) Discuss the relevance of lapse rates in the stability and instability of the atmosphere