

DEPARTMENT OF GEOGRAPHY
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
2ND SEMESTER EXAMINATION, 2012/2013 SESSION

COURSE CODE: MET 322

COURSE TITLE: ATMOSPHERIC THERMODYNAMICS & PRECIPITATION PROCESSES

INSTRUCTION: ANSWER ANY FOUR (4) QUESTIONS OF YOUR CHOICE

TIME: 2 Hours 30 Mins

- 1) Draw and explain annual mean wind and pressure pattern from the equator to the poles. How does this pattern shape the general circulation in the atmosphere?
- 2) Using clear illustrations prepare a treatise on growth of cloud droplets in warm clouds.
- 3) "The atmosphere is a huge thermodynamics engine driven by the energy received from the sun. The general circulation over the earth, all winds, storms and clouds result from the differences in the amount and utilization of this energy". Discuss.
- 4) Provide brief explanatory notes on any six (6) of the following:
 - a) Thermodynamics
 - b) Convection
 - c) Dewpoint
 - d) Cloud droplets
 - e) Adiabatic process
 - f) Orographic Lifting
 - g) Terminal velocity
 - h) ITCZ/ITD
- 5)
 - a) State First and Second Law of Thermodynamics.
 - b) Define the Concept of internal energy.
 - c) Explain the following equations:
 - $dE=dQ$
 - $dE=dW$
 - $de=dW + dQ$
- 6) Explain the four mechanisms that lift air for condensation and cloud formation in the atmosphere.