DEPARTMENT OF GEOGRAPHY
SCHOOL OF SCIENCE AND SCIENCE EDUCATION
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SECOND SEMESTER EXAMINATIONS 2011/2012 SESSION
COURSE CODE: MET 524 (2 units)
COURSE TITLE: ADVANCED TOPICS IN TROPICAL METEOROLOGY

Instructions: Answer any 4 questions
Time Allowed: 2½ hours

1. a. Draw and explain annual mean pattern of wind and pressure from the equator to the poles.

   b. How does the above shape the seasons at the Tropics?

2. a. What are tropical cyclones?

   b. Describe their geographical and seasonal distributions.

3. Review the recent advances in satellite technology which are having tremendous impacts on the monitoring and prediction of severe tropical weather systems.

4. a. Define the different types of drought you know.

   b. "Deforestation, drought and desertification have more in common than the letter 'D'. They are three-dare devils that constitute an unseen nightmare to human survival. They merge together to produce another dreaded 'D' – Degradation" (olofin, 1993). Expatiate the above statement with specific reference to Nigeria.

5. Explain with clear illustration the formation and characteristics of Easterly waves and West African Line squall.

6. Write short note on any five of the following:

   a. Jes Streams
   b. Thunderstorms
   c. Cyclones and Anticyclones
   d. Desertification
   e. Drought
   f. Climate Change
   g. Geostropic Wind
   h. Flood.

DEPARTMENT OF GEOGRAPHY
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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.

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1st SEMESTER EXAMINATION, 2011/2012 SESSION

COURSE CODE: MET 511
COURSE TITLE: ADVANCED PHYSICAL METEOROLOGY
INSTRUCTION: **ANSWER ANY FOUR (4) QUESTIONS OF YOUR CHOICE**

TIME: 3 Hours

1) Draw and explain annual mean wind and pressure pattern from the equator to the poles. How do these patterns shape the season in the Tropics?

2) Describe with clear illustration the formation and characteristics of West African Line squall.

3) Discuss with specific reference to Nigeria the relevance of Satellite technology on Improved Weather Forecasting and Prediction.

4) Provide brief explanatory notes on any six (6) of the following:
a) Jet stream b) Thunderstorms c) Cyclones
d) Anticyclonee) sea surface temperature f) Geotropic wind
g) Drought h) ITCZ/ITD

5) Prepare a treatise on the influence of ITCZ migration on weather and climate of Nigeria.

6) How does topography influence rainfall and temperature distribution over Jos and Mambila Plateau?