DEPARTMENT OF EESC BROOKLYN COLLEGE SPRING 2019
NAME (PRINT) _____

PART I FILL IN THE BLANK (3 each = 30)

1. The term used for the temperature at which water vapor sublimates is _____FROST POINT_____.

2. An increasing air temperature, measured from the ground, is an example of _temperature inversion_.

3. Fog differs from dew in that fog requires ____CONDENSATION NUCLEI____.

4. The two most prevalent permanent gases in the atmosphere are ___OXYGEN__ and _NITROGEN___.

5. "Energy in the process of being transferred between one object and the other because of the temperature difference between them" is the definition of __HEAT_____.

6. Changing water from one phase to another involves ___LATENT_____ heat.

7. The term that is used for the fraction or percentage of incoming light that is reflected by an object or surface is __ALBEDO_____.

8. Winds are deflected to the ___RIGHT_____ by the Coriolis Effect in the N. Hemisphere.

9. The part of the atmosphere that plays a part in radio transmissions is the __IONOSPHERE___.

10. Particle that repel water are called _____HYDROPHOBIC_____

PART TWO TRUE FALSE (1 each = 10)

__F__1. The wet bulb depression is the number of degrees, the dew point drops as the air temperature falls.

__T__2. Virtually all of the world's weather takes place in the troposphere

__F__3. Greenhouses gases are equitable with climate change

__F__4. In the stratosphere the temperature falls.

__F__5. Every object absorbs the same amount of long wave radiation as it does short wave radiation.

__F__6. Electronic thermometers have made comparisons with older records more reliable.

__T__7. Relative humidity can be changed by changing the air's temperature or its water vapor content

__F___8 Relative humidity tells us what percent of the air contains moisture.

__T___9. One of the functions of the Gulf Stream is the distribution of heat

__F___10. Water heats up and cools down more rapidly than other common substances.

PART 3 MULTIPLE CHOICE (1 each = 10)

__A__1. The number of hPa (hector pascals) will have the same number as
a. millibars
b. inches of mercury
c. pounds per square inch
d. atmospheres

__C__2. When water goes from gas to ice without becoming a liquid it is called
a. condensation
b. freezing or fusion
c. deposition
d. sublimation

__b__3. Transfer of heat by physical contact is called
a. convection
b. conduction
c. radiation
d. none of these

__d__4. Convection refers to
a. cooler air rising
b. warmer air moving horizontally
c. cooler air moving horizontally
d. warmer air rising

__a__5. Which is true?
a. the Sun emits short wave radiation as does the Earth.
b. the Sun emits short wave radiation and the Earth emits long wave radiation
c. The Sun and the Earth emit long wave radiation
d. The Sun emits long wave radiation and the Earth emits short wave radiation.

__d___6. Knots per hour is
(a) An incorrect use of the term
(b) An indication of speed
(c) An indication of velocity
(d) An indication of acceleration.

__c____7. The Milankovitch cycles deal with
(a) a hydrological cycle
(b) a carbon cycle
(c) changes in the Earth's orbit
(d) changes in lapse rates

__b____8. What kind of radiation lies between 0.4 and 0.7 μm?
(a) ultraviolet
(b) visible light
(c) infrared
(d) none of these

__a__9. To what degree north and south of the equator can one find the sun striking the Earth directly

(a) 23.5 degrees north and south latitude
(b) 23.5 degrees east and west longitude
(c) 45 degree north and south latitude
(d) 60 degrees north and south latitude

___b_ 10. When the mirror "fogs" up after a hot shower has been taken it is an example of

(a) advective fog
(b) dew
(c) radiation fog
(d) precipitation fog

PART 4 PROBLEM (20)

Given the following data for a parcel of air – determine the stability of the air.

Environmental lapse rate: = 7^0C/1000 meters
Dry adiabatic rate = 8^0C/1000 meters
Moist adiabatic rate = 6^0C/1000 meters
Surface air temperature = 30^0C

Explain why you concluded what you did.

.Conditionally unstable. ELR lies between the DALR and the MALR

PART 5. ESSAY (Do any one) (30)

1. What are the different kinds of humidity and indicate how they differ from one another in what they represent.

2. Discuss what fog is and how it differs from other forms of condensation. What are the various ways in which it can form?

3. Temperatures are often given in terms of mean daily and mean annual temperatures. Discuss the ways in which these figures are arrived at and the factors that can affect them and what problems may arise using them

If the parcel is unsaturated:

OUTSIDE TEMPERATURE at 1000 meters = 23^0C
PARCEL TEMPERATURE at 1000 m = 22^0C

OUTSIDE TEMPERATURE at 2000 m = 16^0C
PARCEL TEMPERATURE at 2000m = 14^0C
The parcel temperature is always LESS than the surrounding air

If the parcel is saturated:

OUTSIDE TEMPERATURE at 1000 meters = 23^0C
PARCEL TEMPERATURE at 1000 meters = 24^0C

OUTSIDE TEMPERATURE at 2000 meters = 16^0C
PARCEL TEMPERATURE at 2000 meters = 18^0C
The parcel temperature is always MORE than the surrounding air

Since in DRY adiabatic case the parcel temperature is LESS than the surrounding air and

Since in the MOIST adiabatic case the parcel temperature is MORE than the surrounding air

THEN THE AIR IS CONDITIONALLY UNSTABLE