Tasa Name _____

Class_____ Date _____

Earth's Atmosphere and It's Seasons EXAM _____ points

Write the answers to all questions on the line provided for you before each number.

_____1. Which country has a wider variety of weather and more severe weather that causes greater damage than any other country in the world?
a. Russia b. England c. Canada d. U.S.

_____2. Wx stands for _____.

_____3. Which type of severe weather represents the largest annual number of fatalities (deaths) in the U.S.?
a. tornadoes b. floods c. hurricanes d. lightning

Do the following statements (4-8) refer to weather or climate? Answer by choosing the word weather or climate for each question.

_____4. Yesterday a hurricane struck Texas.

_____5. The low this morning was 25° F.

_____6. Southwest Africa is a desert.

_____7. The highest temperature recorded at this station was 109° F.

_____8. Pittsburgh is cold and snowy in the winter.

_____9. Miami's average January high temperature is 76° F. What do you think is Miami's "record low" for the same month?
a. 76° F b. 80° F c. 28° F d. 60° F

_____10. Percent is the same as _____.
a. parts per thousand b. parts per hundred c. ppm d. parts per dozen

_____11. Which of these gases is the most abundant in Earth's atmosphere?
a. oxygen b. CO_2 c. nitrogen d. argon

_____12. Which of the following is not an aerosol?
a. dust b. smoke c. oxygen d. volcanic ash

_____13. Which of these statements about aerosols is correct?
a. they are tiny solid and liquid particles
b. they play a role in cloud formation
c. they can cause colorful sunsets
d. all of the above statements are correct

_____14. The composition of the atmosphere is quite uniform up to an altitude of about ____kms.
a. 10 b. 30 c. 50 d. 80

_____15. Which of these atmospheric gases are the most important for the study of Meteorology (weather)?
a. oxygen b. CO_2 c. nitrogen d. water vapor

_____16. Which one of the atmospheric components is more important than the others with regard to heating the atmosphere?
a. CO_2 b. O_2 (oxygen) c. Kr (krypton) d. Ne (neon)

_____17. A colorful sunset is most likely caused by which of these atmospheric components?
a. aerosols b. nitrogen c. H_2O vapor d. oxygen

_____18. Which location has 12 hours of daylight and 12 hours of darkness every day?
a. North Pole b. equator c. a mid-latitude location d. South Pole

_____19. Which of these factors influences the amount of solar energy received at a particular location on Earth's surface?
a. time of day b. latitude c. season d. all of these

_____20. Which factor is least significant in causing seasonal temperature variation?
a. length of day b. sun angle c. distance between Earth and Sun

_____21. The closer the Sun angle is to 90° the **(more, less)** intense the solar rays at Earth's surface? Choose one

_____22. The closer the Sun angle is to 90°, the **(longer, shorter)** the path of the solar rays through the atmosphere. Choose one

_____23. The summer months are associated with which of the following conditions?
a. Sun low in the sky and long days
b. Sun high in sky and short days
c. Sun high in sky and long days
d. Sun low in the sky and short days

_____24. When we observe the Sun at sunrise or sunset, the rays are **(dim, intense)** because many of them have been scattered or absorbed by the multiple thicknesses of the atmosphere on their journey to Earth. choose one

_____25. What is the date of the winter solstice in the Northern Hemisphere?
a. March 21-22 b. June 21-22 c. September 22-23 d. December 21-22

_____26. During the winter solstice in the Northern Hemisphere, the area within the Arctic Circle experiences _____ hours of daylight.
a. 0 b. 6 c. 12 d. 24

_____27. The spring equinox in the Southern Hemisphere occurs on _____.
a. September 22-23 b. March 21-22 c. December 21-22 d. June 21-22

_____28. At which one of these latitudes are the Sun's rays most intense on June 21-22?
a. 30° N b. 50° N c. 30° S d. 50° S

_____29. A person is most likely to experience the Sun's most intense rays at which of these locations on December 21-22?
a. 30° N b. 50° N c. 30° S d. 50° S

_____30. The equator has 12 hours of daylight and darkness throughout the year. (**True or False**)
choose one

_____31. The Northern and Southern Hemispheres receive equal amounts of daylight and darkness during (**a solstice, an equinox**).
choose one

_____32. Ice is too cold to emit radiation. (**True or False**)
choose one

_____33. When an object absorbs any form of radiation, its temperature _____.
a. increases b. decreases c. does not change

_____34. The cooler an object, the wavelengths it emits are **(shorter, longer).**
Choose one

_____35. The wavelengths of radiation emitted by Earth are **(shorter, longer)** than those emitted by the Sun.
choose one

_____36. Earth radiates maximum energy in the _____ range.
a. visible b. microwave c. ultraviolet d. infrared

_____37. _____ is the process that explains how light reaches into a shaded area or room when direct sunlight is absent.
a. Absorption b. Convection c. Scattering d. Albedo

_____38. Radiation that is reflected or scattered back to space **(does, does not**) heat Earth.
Choose one

_____39. The amount of the total radiation that is reflected by a surface is called its _____.
a. advection b. albedo c. albino d. scatter quotient

_____40. Which surface has the highest albedo?
a. forest b. sandy beach c. fresh snow d. plowed field (soil)

_____41. This term is used to describe the process by which the atmosphere is heated.
a. blackbody effect b. red shift c. UV emission d. Greenhouse Effect

_____42. Which of these are important heat-absorbing gases in Earth's atmosphere? Select all that apply.
a. nitrogen b. argon c. CO_2 d. H_2O vapor

_____43. The CO2 content of the atmosphere has been _____ for the last 150 years.
a. rising b. decreasing c. steady

_____44. Much of the change in atmospheric CO2 in the past 150 years is probably due to _____.
a. volcanic activity b. expansion of tropical rain forests c. burning of fossil fuels

_____45. One potential impact of future global warming is that sea level will _____.
a. rise b. fall c. fluctuate greatly from year to year

_____46. Dark colors absorb **(higher, lower)** percentage of energy than lighter colors.
Choose one

_____47. A recording thermometer is called a **(thermograph, barograph)**.
Choose one

_____48. If a land surface and a water surface receive the same amount of solar energy, a **(shallower, thicker)** layer of water will be heated as compared with land.
Choose one

_____49. Land cools (**more, less**) rapidly than water.
Choose one

_____50. When coastal and interior stations at the same latitude are compared, we can say that the coastal station will probably have **(higher, lower**) winter temperatures than the interior location. Choose one

_____51. Two inland cities are located within 50 km of each other. City A has an annual mean temperature that is 12° C lower than City B. What control is the most likely cause for the much lower annual mean at City A?
a. geographic location b. latitude c. differences in albedo d. altitude

The remaining questions are each worth 2 points. Please show your work and circle your answer. Don't forget to include the appropriate units of measurement.

52. 68° F = _____° C

53. 10° C = _____ ° F

54. What is the daily mean temperature when the daily maximum is 68° F and the daily minimum is 50° F?

55. What is the daily temperature range using the data from question number 54?