CHAPTER 8 – OCE 1001 (Introduction to Oceanography, Professor Chiappone)  
WAVES AND WATER DYNAMICS (Trujillo and Thurman, 11th edition)  
SAMPLE QUESTIONS

Matching Questions

Match the term with the appropriate phrase. You may use each answer once, more than once or not at all.

A) the energy that causes ocean waves to form  
B) movement of different air masses along an air-air interface  
C) waves at the ocean surface involving longitudinal and transverse waves  
D) movement of air across the air-water interface  
E) constructive interference  
F) movement of water of different densities along a water-water interface  
G) destructive interference  
H) reflection  

1) internal wave  
2) disturbing force  
3) orbital waves  
4) atmospheric waves  
5) ocean waves

Match the term or person with the appropriate phrase. You may use each answer once, more than once or not at all.

A) wavelength/20  
B) 1.25 \( \sqrt{L(\text{meters})} \)  
C) wavelength/2  
D) wave height  
E) 1/period  
F) 5.67 \( \sqrt{\text{depth}(\text{ft})} \)  
G) wavelength/period  
H) steepness = 1:7

6) ratio of wave height to wavelength at which waves break  
7) deepest water depth of the circular motion of water molecules  
8) diameter of orbital wave at the surface  
9) minimum depth for generation of deep-water waves  
10) deep-water wave speed \( (S) \)
True/False Questions

11) Waves at the ocean surface are called orbital or interface waves.

12) The horizontal distance between two successive troughs is called the wave height.

13) A shallow-water wave must form in water depth less than 100 meters.

14) Deep-water waves move faster than shallow water waves because they are not slowed by friction with the ocean bottom.

15) A wave train is caused by wave energy moving more slowly than individual waves.

16) Rogue waves are generated by destructive interference patterns of ocean swells.

17) A curling wave formed over an air pocket is called a plunging breaker.

18) A standing wave can be caused by wave reflection.

19) Tsunamis travel as deep-water waves over the open ocean.

20) The Pacific Tsunami Warning Center (PTWC) was established in 1946 to coordinate data from seismic waves in the Pacific Ocean and around the Pacific rim to issue tsunami warnings to 25 Pacific rim nations when data suggest a tsunami is imminent.

Multiple Choice Questions

21) An internal wave might form:
A) at a density boundary within the ocean.
B) at the boundary between the atmosphere and the ocean.
C) at the boundary between the ocean and the seafloor.
D) close to shore as it moves into shallow water.
E) only as a result of tidal activity.

Refer to the figure below detailing wave characteristics. Use the information on the figure to answer the following question(s).
22) The crest is the portion of the wave corresponding to the number:
A) 1.
B) 2.
C) 3.
D) 4.
E) 5.

23) The wavelength is labeled with the number:
A) 1.
B) 2.
C) 3.
D) 4.
E) 5.

24) The ratio of wave height to wavelength is called the:
A) frequency.
B) period.
C) wave height.
D) wavelength.
E) wave steepness.

25) Wave speed is equal to:
A) wave height divided by frequency.
B) wave height divided by period.
C) wavelength divided by fetch.
D) wavelength divided by frequency.
E) wavelength divided by period.
26) The diameter of a wave orbital at the surface is equal to:
A) wave height.
B) wave height/wavelength.
C) wavelength.
D) wavelength/wave period.
E) wave period.

27) The speed of a deep-water wave is proportional to:
A) water depth.
B) wave frequency.
C) wave height.
D) wave speed or celerity.
E) wavelength.

28) The first wave that forms when the wind begins to blow across the ocean surface is a:
A) capillary wave.
B) seiche.
C) tide.
D) tsunami.
E) wind waves.

29) The height of a wave depends upon:
A) fetch.
B) fetch and wind speed.
C) fetch, wind duration, and wind speed.
D) wind duration.
E) wind duration and wind speed.

30) The largest wind-generated waves tend to be associated with the:
A) equatorial doldrums.
B) horse latitudes.
C) polar regions.
D) trade winds.
E) westerlies.

31) Constructive interference results in larger waves whereas destructive interference produces:
A) capillary waves.
B) rouge waves.
C) smaller waves.
D) swells.
E) tsunamis.

32) As a wave begins to feel bottom near a shoreline, its wave height:
A) decreases and its steepness decreases.
B) decreases and its wavelength increases.
C) increases and its frequency decreases.
D) increases and its wavelength decreases
E) increases and its wavelength remains the same.
33) Waves that are breaking along the shore and are forming a curling crest over an air pocket are called:
A) gravity waves.
B) plunging breakers.
C) spilling breakers.
D) surf.
E) swells.

34) Waves converge on headlands due to:
A) constructive interference.
B) destructive interference.
C) wave diffraction.
D) wave reflection.
E) wave refraction.

35) Standing waves may be caused by:
A) constructive interference.
B) destructive interference.
C) wave diffraction.
D) wave reflection.
E) wave refraction.

36) A tsunami is considered to be a:
A) capillary wave.
B) deep-water wave.
C) reflected wave.
D) refracted wave.
E) shallow water wave.

Word Relationships

Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does not fit the pattern.

37)
A. crest
B. height
C. length
D. period
E. trough

38)
A. plunging breaker
B. spilling breaker
C. surf
D. surging breaker
E. swell