GEOLOGY 102

FINAL EXAM

Test Bank

Q1: Defined the following terms

1. Continental Volcanic Arc _____
2. Seismic gaps _____
3. Stream Capacity_____
4. Spring Tides _____

Q2: Answer the following questions briefly

1. Streams can move materials in several ways, briefly describe the types of stream load_____
2. What are the differences between neap & spreading tides?_____
3. The mineralogy & grain size of replenished sand in a coastal area is very important. What is the disadvantages of using finer & coarser materials?
4. Explain with drawing the difference between passive & active continental margins _____

Q3: Answer with True (T) or False (F)

1. Ground rupture & faulting are secondary hazard associated with earthquakes
2. The flat back portion of a beach formed of material deposited by waves, called a berm
3. The closer the receiving seismograph is from earthquakes epicenter, the greater the time lag between 1st arrival time of P- & S- waves
4. Brittle behavior is characteristic of most rocks at near-surface conditions, leads to fault & fracture
5. The rocks of the sea floor are oldest close to the ridge & become younger away from ridge
6. Groins: structures constructed parallel to coasts to moderate wave action, stabilize sandy beach
7. Depth at which movement of water molecules within a wave becomes negligible is wave limit
8. Emissions of poisonous gases are considered as secondary hazards associated with volcanoes
9. The age pattern is symmetric across the ridge
10. Fault are results from plastic deformation
11. An earthquake with magnitude 6 releases 30 times as much energy as one of magnitude 5
12. The lower the gradient, the steeper the channel & the faster the stream flow
13. If the soils is less permeable, the water that runs off over the surface increase
14. Dissolved load clouds a stream & gives the water a muddy appearance
15. The Sea level rise currently estimated about 0.33m/yr
16. During erosion the headlines are more actively under attack than bays
17. Groins are long, narrow obstacle set perpendicular to the shoreline
18. The unit that used to express discharge is m^2/s
19. The stream gradient nearer its source is steeper, & decreased downstream
20. Stream deposits are poorly sorted (size, density)
21. The steeper the terrain, the more the infiltration
22. In tides, the oceans “bulge” on the side of the earth away from the moon
23. Falls are common along rocky coastlines
24. Reducing infiltration will decrease flooding risk
25. Active continental margin are wider than passive
26. Pumping large volumes of liquid from underground has caused sea-level rise
27. Smooth & rounded particles tend to support only very low angle slopes
28. The faster the currents & more energetic the waves, the larger & heavier the sediment that can be moved
29. The passive continental margins are characterized by active volcanoes & earthquakes or tectonic activities

Q4: Complete the following sentences

1. _____ is the deformation resulting from stress
2. _____ is the movement of magnetic poles relative to the continents as a function of time
3. Creep sometimes termed _____, meaning fault displacement without significant earthquakes
4. Sign of liquification include _____, formed as liquified soil bubbles to surface during the quake
5. Stream _____ is the volume of water following past a given point in a specified length of time
6. Material of intermediate size may be carried in short hops along the stream bed by _____ process
7. _____ is a various modification of the stream channels to increase the velocity of water flow, the volume of channel or both
8. _____ is a localized increase in a water level of an ocean or large lake caused by extreme low air pressure associated with a strong storm
9. _____ is a body of water along a coastline, open to the sea in which the tide rises & falls & fresh & saltwater meet & mix in brackish water
10. A coastal feature that develops where land is rising & water level is falling is a set of _____
11. In _____ the materials moved is not coherent but moves in a more chaotic, dangerous fashion, with mixing of particles within the flowing mass
12. _____ is anybody of flowing water confined within a channel, regardless of size
13. Near stream mouth, the stream is approaching its _____ which is the lowest elevation to which the stream can erode downward
14. _____ is a depositional feature made of alluvium that accumulate on the inside bend of streams and rivers below the slip-off slope
15. _____ are a variety of upstream flood, characterized by rapid rise of stream stage
16. _____ are a gently sloping surface washed over by the waves & covered by sediment
17. _____ is a transportation of sediments along a coast parallel to the shoreline
18. _____ expansion of wet soils as freezes

Q5: Choice the correct answer

1. Plastic & deformed layer below lithosphere
   A. Troposphere B. Hydrosphere
   C. Asthenosphere D. Magnetosphere
2. The youngest oceanic lithosphere is
   A. Atlantic B. Pacific
   C. Red sea D. Indian
3. Transform fault are associated with
   A. Divergent plates B. Subduction zone
   C. Convergent plates D. Hot spot
4. The region from which a stream obtain water
   A. Floodplain B. Hydrosphere
   C. Reservoir D. Drainage basin
5. Earthquakes can occur with _____ faulting
   A. Reverse B. Normal
   C. Thrust D. All of them
6. Which region of the earth has the most frequent earthquakes?
   A. Pacific region B. Atlantic region
   C. Antarctic region D. Indian region
7. To locate an earthquake epicenter, you need at least _____ seismograph stations
   A. 2 B. 3
   C. 5 D. 10
8. Earthquake of magnitude 6 on Richter scale releases _____ times as much energy as an earthquake of magnitude 4
   A. 30 B. 20
   C. 100 D. 900
9. The movement of tectonic plates is driven by
   A. Conduction zone B. Collision boundaries
   C. Convergent plate D. Convection currents
10. Passive continental margins characterized by
    A. Cliffs B. Steep drop to offshore
    C. Narrow shelf D. All of them
11. The unit cubic feet per second or cubic meters per second describe a stream's
    A. Velocity B. Discharge
    C. Capacity D. Volume
12. The most destructive earthquake waves are
    A. P-wave B. Surface wave
    C. Sea wave D. S-wave
13. Dip-slip fault in which the block above has moved down relative to the block below is
    A. Reverse B. Normal
    C. Thrust D. Strike-Slip fault
14. The point on earth's surface directly above the focus of an earthquake is called the
    A. Shadow zone B. Benioff zone
    C. Epicenter D. Fault trace
15. The amount of displacement in earthquake is
    A. Epicenter B. Dip & Slip
    C. Focus D. Non of the above
16. What kind of tide would occur if the Sun, Moon, & Earth were aligned?
    A. Neap tide B. Spring tide
    C. Mixed tide D. Diurnal tide

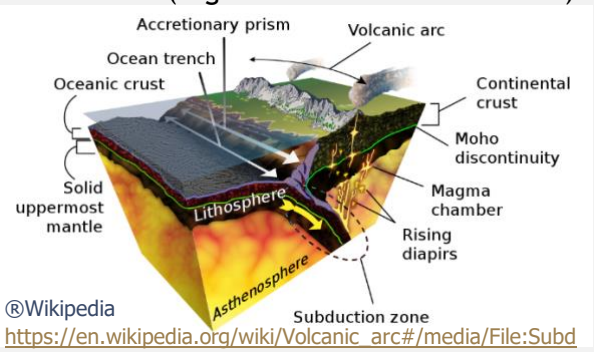
17. Important coastal feature that forms when the coastline is elevated, or sea level falls is
    A. A fjord
    B. A wave-cut platform
    C. An active margin
    D. A drowned valley
18. A 100-yr flood has a _____ percent chance of occurring in any given year
    A. 0.1
    B. 0.01
    C. 10
    D. 100
19. The depth at which the movement of water within a wave becomes neglected is called
    A. Amplitude wave
    B. Base wave
    C. Hight wave
    D. Limit wave
20. Elevation of stream surface along length is
    A. Stage
    B. Grade
    C. Base level
    D. Crest
21. Which of the following can trigger a tsunami?
    A. Undersea earthquakes
    B. undersea landslides
    C. The eruption of an oceanic volcano
    D. All the choices
22. S-waves produce a series of
    A. Shearing motions that are at right angles to the direction of wave propagation
    B. Snake-like motions parallel to Earth's surface
    C. Circular motions like ocean wave
    D. Contractions & expansions that are in the direction of wave propagation
23. Compared to P-wave, The S-wave
    A. Has smaller amplitude & travel faster
    B. Not able to travel through earth's outer core
    C. Are a type of surface wave
    D. Are compressional waves
24. The gradient of a stream refers to the
    A. Increase in depth of the stream along length
    B. Relations of current velocity & stream width
    C. Slope of stream channel along its length
    D. Size of sediments deposited as a function of stream velocity
25. New oceanic lithosphere forms at
    A. Divergent plate boundaries
    B. Convergent plate boundaries
    C. Transform plate boundaries
    D. All of them
26. Vegetation helps to reduce flooding by
    A. Provide a physical barrier to surface runoff
    B. Absorbing water
    C. Increase the soil permeability & infiltration
    D. All of them
27. A seismic gap can be defined as _____
    A. A region where there are no active faults
    B. A down-dropped block of earth's crust bordered on 2 sides by active faults
    C. A locked section of active fault along which few earthquakes occur
    D. The distance between the fault & the next
28. How dose shaking ground cause soft sediments to liquify
    A. Breaks particles into smaller pieces
    B. Evaporates water in pores of sediments
    C. Makes particles fit more tightly together
    D. Melt the sediments & water in pores
29. A stream's discharge is
    A. Volume of load carried by stream with time
    B. Average amount of water in stream system
    C. Volume of excess water during flood stage
    D. Volume of water passing through a specific point along the stream in a unit of time
30. Upstream floods
    A. Generally, affect large drainage basins
    B. caused by prolonged heavy rains or snowmelt
    C. Normally are of long duration
    D. Caused by sudden, rainstorm, or dam failures
31. A braided stream develops
    A. When a stream carrying a load flow into a more slowly flowing, larger stream
    B. if a stream load is low relative to water volume
    C. if a stream load is high relative to water volume
    D. As a response by stream to flood-causing events
32. In coastal erosion, the soft structural stabilization includes
    A. Construction of region
    B. Construction of region
    C. Sand replenishment
    D. Seawalls construction
33. What is the effect of wave refraction?
    A. Stabilize coastal erosion
    B. Prevents waves from reaching the coastline
    C. Concentrates wave energy on bays
    D. Concentrates wave energy on headlands
34. A seismograph is a device used to
    A. Prevent earthquakes from occurring
    B. Calm the seismologist during an earthquake
    C. Record vibrations during an earthquake
    D. sound an alarm
35. Causes of long-term sea-level change include
    A. Groundwater extraction (land subsidence)
    B. Global-warming (milting of ice caps)
    C. Tectonics (land-water interphase changes)
    D. All of the above
36. A hydrograph plots
    A. Stream stage (discharge) over time
    B. Discharge as function of recurrence infiltration
    C. Changes in water quality during a flood event
    D. Stream velocity as a function of infiltration
37. The eastern continental margin of N-American is a passive margin, & characterized by
    A. Cliffs above the waterline
    B. Narrow continental shelf
    C. Broad continental shelf
    D. Relatively steep drop to the ocean depths

Solutions

Q1

1

As oceanic crust & continental crust collides (convergence) the oceanic crust will be subducted into the asthenosphere where subjected to partial melting & the resulting magma rises up (due to their lower density as compared with the surrounding rock) into overriding plate (i.e. continental crust) that leads to produce active volcanoes on continental margin that termed continental volcanic arc (e.g. such as Andes mountains)



®Wikipedia
https://en.wikipedia.org/wiki/Volcanic_arc#/media/File:Subduction-en.svg

2

Stretches along faults with little seismic activity, locked section of active faults along which friction is preventing slip & accumulates energy & when fault slip, cause a very large earthquake

3

Is a total load of materials that a stream can move, & is a function of discharge, & the amount of water in a stream

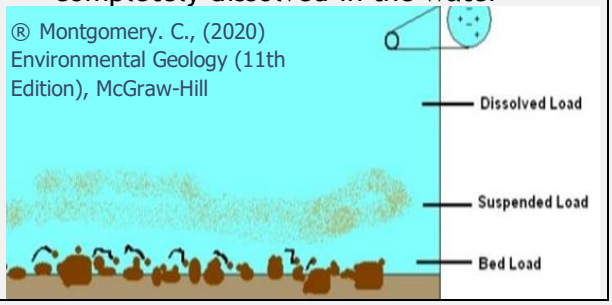
4

Times of full & new moon, greatest tidal extreme when the sun, moon & earth are aligned, sun & moon are pulling together

Q2

1

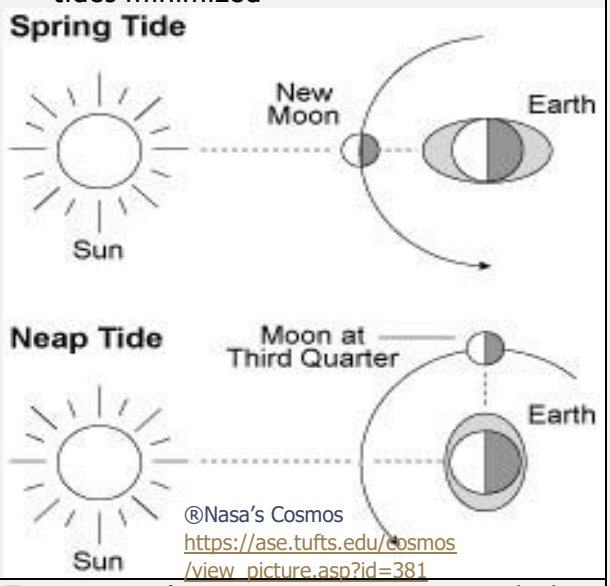
- **Bed load (traction & saltation):** Heavier debris that rolled, dragged, or pushed along the bottom of the stream bed as its traction load, & Saltation is the material of intermediate size carried in short hops along the stream bed
- **Suspended load**: materials that are fine enough to be moved along suspended, supported by flowing water, clouds a stream & gives the water a muddy appearance
- **Dissolved load**: substances that are completely dissolved in the water



Q2

2

- **Spring tides**: time of full & new moon, greatest tidal extremes, when sun, moon, & earth are all aligned, & the sun & moon are pulling together
- **Neap tides**: sun & moon pulling at right angles, difference between high & low tides minimized



®Nasa's Cosmos
https://ase.tufts.edu/cosmos/view_picture.asp?id=381

3

Fine sand: cause water turbidity (cloudiness), can be deadly to organisms
Coarse sand: steepen the beach face, which may make the beach less safe

Q3

1	2	3	4	5	6	7	8	9	10
F	T	F	T	F	F	T	T	T	T
11	12	13	14	15	16	17	18	19	20
T	F	T	F	F	T	T	F	T	F
21	22	23	24	25	26	27	28	29	
F	F	T	F	F	T	F	T	F	

Q4

1	Strain	2	Polar wander curve
3	Seismic slip	4	Sand boils
5	Discharge	6	Saltation
7	Channelization	8	A storm surge
9	Estuaries	10	Wave-cut platforms
11	Mass wasting	12	Stream
13	Base level	14	A point bar
15	Flash floods	16	A beach
17	longshore sediment transport	18	Frost Heaving

Q5

1	2	3	4	5	6	7	8	9	10
C	C	A	D	D	A	B	D	D	D
11	12	13	14	15	16	17	18	19	20
B	B	B	D	D	B	B	D	D	B
21	22	23	24	25	26	27	28	29	30
D	A	B	C	A	D	C	A	D	D
31	32	33	34	35	36	37			
D	C	D	C	D	A	C			