Balagtasan essay

The Dynamic Crust. Earthquakes and the Earth’s InteriorWhy is the Earth’s crust described as being dynamic? Crust- solid stone outer zone of EarthThe crust is portion of the geosphere. The Earth’s crust is dynamic which means invariably altering. EarthquakesVentsCrustal motions along mistake zonesOther grounds indicates that parts of the Earth’s crust have been traveling to different locations for one million millions of old ages. Describe pieces of grounds that suggest minor alterations in the Earth’s crust. Displaced & A ; Deformed Rock Strata

Sedimentary stones appear to organize in horizontal beds. However. observations of the Earth’s surface indicate that the original formations of stone have changed through past motions. LeaningEarth motion ensuing in a alteration in the place of stone beds. “ rocks at an angle” Folded StratumBend in the stone beds produced during the mountain edifice procedure BlamingMotion of stone along a cleft (mistake) in the crustDisplaced FossilsDisplaced means “ moved. ” Marine fossils- remains or imprints of one time populating ocean beings such as coral. fish. etc. found in sedimentary stone Marine fossils found in beds of sedimentary stone in mountains. frequently 1000s of pess above sea degree. These marine dodos found at high lift suggest past upheaval of stone strata. Sinking or subsiding of stone strata

Rock beds that have been moved. Horizontal Displacement (Blaming)Earth displacements sideways along a transform mistake in the crustVertical Displacement (Blaming)Part of Earth’s surface is either uplifted or subsides along a mistake or cleft. BenchmarkPermanent cement or brass marker in land bespeaking a mensural lift. IsostasyCondition of balance or equilibrium

in Earth’s crust. Since the upper mantle Acts of the Apostless like a really heavy fluid. the crustal home bases float on top of it. Any alteration in one portion of the crust is offset by a corresponding alteration in another portion of the crust. Example of Isostasy

If a piece of crust loses some of its stuff due to eroding. it becomes lighter and drift higher in the mantle. When the eroded stuff gets deposited. the crust is weighted down doing that country to drop lower into the mantle. Another isostatic illustration.

The deposition of 2 stat mis thick ice on NY during a glacial ice age caused the country to lessen somewhat. This forced other countries to lift higher in response to the settling under the ice. Subsequently after the ice receded or melted. the part responded with gradual upheaval doing minor seismal activity or temblors. Give illustrations of crustal activity and explain where the zones of crustal activity are located. Areas of Crustal Activity

Crustal activities such as temblors and vents occur for the most portion in specific zones or parts of the Earth. These parts are normally along the boundary lines of continents and oceans. These zones grade boundaries or borders of big pieces of the Earth’s crust called crustal boundaries. ESRT p. 5

What is an temblor? Explain the difference between an epicentre and a focal point of an temblor.

Describe belongingss of the 3 types of temblor moving ridges and state the difference between a seismograph and a seismogram. I. EarthquakesSudden shaking or shaking of land normally caused by motion along a interruption or

a mistake let go ofing built up emphasis When an temblor occurs. seismal moving ridges are created and travel out in all waies from the focal point or point of beginning. The earthquake’s focal point or point of beginning is normally deep below the Earth’s surface. The point on the Earth’s surface straight above the focal point is called the epicentre. Describe belongingss of the 3 types of temblor moving ridges and state the difference between a seismograph and aseismogram. II. Earthquake Waves

Seismograph: Instrument that detects and records seismal moving ridges. Earthquakes generate several sorts of seismal moving ridges that can be detected by a seismograph. 3 types of seismal moving ridges are p. s. & A ; l moving ridges.

L moving ridgesLong moving ridgesDo non go through through the Earth. Ripple along the surface of the EarthMake the harm associated with temblorsP moving ridgesPrimary moving ridgesBesides called compressional because they cause the stuff through which they pass to vibrate back and Forth (compress) in the same way as the moving ridge is going. Called primary because they move rapidly through the Earth with a greater speed than secondary moving ridges and hence are the first moving ridges to make a distant location. S moving ridges

Secondary moving ridgesBesides called shear moving ridges because they cause the stuff through which they pass to vibrate at right angles (up & A ; down) to the way in which the moving ridge is going III. Speeds of Waves

When going in the same stuff. primary moving ridges travel at a greater speed than secondary moving ridges. So a seismograph will read the primary

moving ridges before the secondary moving ridges arrive. A individual seismogram demoing the arrival times of P & A ; s moving ridges may be used to find the distance to the temblor and its clip of beginning. The greater the difference in arrival times of the primary and secondary moving ridges. the greater the distance to the temblor epicentre. Finding the Distance to an Earthquake’s Epicenter

To happen out how far an epicentre was off from a location. a seismograph reading or seismogram is necessary that shows the reaching of both Ps and s moving ridges. Determining the Exact Location of an Earthquake’s Epicenter Epicenter location is found by the comparing of differences in travel clip of P & A ; s seismal moving ridges. Knowing the separation clip between reaching of both p & A ; s waves gives the distance to the point on the Earth’s surface straight above the temblor called the epicentre. Since merely the distance to epicenter and non way is known. a circle is drawn with the radius equal to the distance. The epicentre is on the circle.

To happen the existent location of the epicentre you must happen the distance from 3 different seismograph Stationss. Why non 2? Draw 3 circles around the 3 seismograph Stationss and where they intersect is the earthquake’s epicentre. The temblor occurred at a point someplace below the epicentre and that internal point is called the focal point. Scientists desiring to better truth of happening the true epicentre will happen the distance from more than 3 seismograph Stationss. Compare and contrast the 2 graduated tables for finding the strength of an temblor. a) The Modified Mercalli Scale

Based upon the harm inflicted by an temblor. This strength graduated table ranges from I to XII with I being felt by few people to XII ensuing in entire desolation. Modified Mercalli Scale Continued

Although this graduated table is still used. it is non really precise. Why? Damage inflicted by temblors depends on many factors besides the strength of the temblor such as location. type of land. edifice design & A ; construction. etc. B) The Richter Scale

A Magnitude graduated table used to depict the sum of energy released by an temblor. Richter graduated table magnitudes range from 0 to 9. Each figure step up the graduated table indicates a release of 32 times more energy than the old measure. Earthquakes that are less than 2. 5 are non normally felt by people. Approximately 20 major temblors in the magnitude 7. 0-7. 9 occur every twelvemonth and each 5-10 old ages an temblor of 8. 0 or more will lay waste to a part of Earth. Give illustrations of dangers to worlds from volcanic and temblor activity. Dangers to Worlds from Earthquakes and Volcanoes

Tell at least 4 of these jeopardies. Fires (Ruptured gas or power lines)Collapsing buildings/Falling DebrisBroken Bridgess and roadsTsunamis (Seismic Sea Waves)Lava flows thaw and burnVolcanic ash & A ; toxicant gases make it hard to take a breath Large pigboat (under H2O) earthquakes or those that occur along a coastline may ensue in tsunamis or seismal sea moving ridges. Describe differences between P and s moving ridge transmittal through the Earth and how it creates a shadow zone. VII. Transmission of Earthquake Waves

The speed of an temblor moving ridge varies harmonizing to denseness of the stuff through which it is going. The greater the denseness of the stuff. the greater the speed. As seismal moving ridges travel through stuffs of different densenesss. the speed of the seismal moving ridges will alter. This alteration in speed of the moving ridge causes the moving ridge to be dead set or refracted. Since the denseness of the Earth bit by bit increases with deepness. seismal moving ridges tend to increase in their speed and continually refract (crook) as they travel down into the Earth. Difference in P and S Wave Transmission

Compressional or P moving ridges are transmitted through all stages of affair ; solid. liquid or gas. However. shear or s moving ridges are merely transmitted through solids. This difference provides valuable information for scientists about the composing and interior construction of the Earth. S waves that perforate the Earth to the deepness of the outer nucleus disappear. Since these moving ridges are non transmitted by the outer nucleus. the stuff of the outer nucleus is assumed to be liquid. Earthquakes generate P & A ; s waves that move out from the temblor through the Earth in all waies. Seismograph that are located within 102 grades from the epicentre record both p & amp ; s moving ridges. Those seismograph Stationss that are further off than 102o do non enter any s moving ridges because they are non transmitted through the nucleus. A set that runs about 102o to 143o off from the epicentre records neither P nor s moving ridges. Describe a theoretical account of the Earth’s crust and inside. Describe features of both the crust and inside. Crust & A ; Interior Properties

There are 4 major Earth zones. three solid 1s and one liquid. The 3 solid zones are the crust. mantle and inner nucleus. The lone liquid zone is the outer nucleus. See ESRT p. 10Crustal ThicknessThe crust of the Earth compared to other zones is comparatively thin. merely a few kilometres in mean deepness. The mean thickness of the Continental crust is greater than the mean thickness of the pelagic crust. Crustal Composition

The Continental crust is composed chiefly of felsic pyrogenic stone like granite that is low in denseness. The pelagic crust is composed chiefly of mafic pyrogenic stone like basalt that is high in denseness. Interior Structure

Crust sits on top of mantle. Mantle histories for the greatest portion of the volume of the Earth. The crust-mantle boundary is called the Mohorovicic Discontinuity or the Moho. Below the mantle is the liquid outer nucleus and the solid inner nucleus. Interior Composition

Evidence from the behaviour of seismal moving ridges and metallic meteorites suggests that the interior part of the Earth is a high denseness combination of the metallic elements Fe (Fe) and nickel (Ni) . Features of Earth’s Interior

The denseness. temperature and force per unit area of the Earth’s inside additions with deepness. (ESRT p. 10) . The denseness ranges from 2. 7g/cm3 for the Continental crust and 3. 0g/cm3 for the pelagic crust to 12. 7 g/cm3-13. 0g/cm3 for the inner nucleus. Compare theories of Continental impetus and home base tectonics. Give grounds that support the thought that continents have moved. I. Plate Tectonics Theory

Theory that Earth’s lithosphere is made of a figure of solid home bases that move in relation to each other. ESRT p. 5Continental Drift

Theory that continents are now. every bit good as in the yesteryear. switching places. Wegener noted that the present continents appear to suit together as fragments of an originally larger land mass. much the same manner the pieces of a jigsaw mystifier tantrum together. This is particularly true if the borders of the Continental shelves are used as the boundaries. However. over the old ages new grounds has been collected that indicates that about 200 million old ages ago. the major continents were connected and since that clip the continents have been traveling by and large apart. The undermentioned diagrams show the Inferred Positions of the Continents over the last 458 million old ages. Label the Geologic Period for each diagram. Diagrams found in ESRT on page 9. Evidence to Support Idea that Continents Have Moved

Many stone beds and dodos can be correlated across ocean basins. Rock types along with mineral composing and the dodos found in those stones match up. A good illustration of this are stones and dodos found on the east seashore of South America match those found along the west coastline of Africa. Diamonds found in eastern Brazil are really similar to those found in western Africa. More Evidence for Continental Movement

Some mountain ironss appear to be uninterrupted from continent to continent. Example: Appalachians and CaledonianMore Evidence for Continental MovementRock and fossil grounds indicates ancient climes much different from those of today. Examples: glacial sedimentations in tropical

parts or coal sedimentations in Arctic More Evidence for Continental Movement

Rocks of the ocean basins are much younger than Continental stones. The most conclusive grounds comes from the ocean basins. Explain grounds for sea floor distributing from both pyrogenic ocean stones and the reversal of magnetic mutual opposition. Evidence to Suggest Sea Floor SpreadingThere is much grounds to bespeak that the ocean floors are distributing out from the mid-ocean ridges. The two major pieces of grounds are related to the age of pyrogenic ocean stuffs and the reversal of magnetic mutual opposition. a) Igneous Ocean Rocks

The ocean crust is made up chiefly of basalt that is formed when magma (liquefied stone) rises. cools. solidifies and crystallizes into pyrogenic stones of the mid-ocean ridges. Evidence shows that pyrogenic stones along the centre of the mid-ocean ridge is younger (more late formed) than the pyrogenic stone found further from the mid-ocean ridge. The age of pyrogenic stone has been accurately determined utilizing radioactive dating techniques. This suggests that as new ocean crust is generated at mid-ocean ridges. the ocean floor widens. Reversal of Magnetic Polarity

The strips of basaltic stone that lie parallel to the mid-ocean ridge show matched forms of magnetic reversals. Check out this life! Over 1000s of old ages. the magnetic poles of Earth change by reversal their mutual oppositions. The magnetic north pole alterations to the magnetic South pole and frailty versa. When the basaltic magma flows up in the center of the ridge and begins to chill. crystals of magnetic minerals align themselves with

the Earth’s magnetic field. This alliance of minerals in the stone leaves a recording of magnetic mutual opposition for the Earth at the clip of stone formation. When the Earth’s magnetic field is reversed. the new pyrogenic stones formed during the reversed mutual opposition period have their minerals aligned in an opposite way from the antecedently formed stones. These alterations in magnetic orientation are found in stone on both sides of the mid-ocean ridge. bespeaking that the development of the ocean floor is form the centre of the mid-ocean ridges outward. Describe the 3 types of home base gesture. Identify home base boundaries. Lithospheric Plates and Plate Boundaries

Three sorts of home base gesture are associated with home base boundaries ; convergent. divergent and transform. a) Convergent Plate BoundariesConvergent Plate Boundaries- home bases collide with each other Ocean Plate Meets Continental Plate

If an pelagic home base collides with a Continental home base. the denser ocean home base made of basalt honkytonks down (subducts) into the mantle organizing a subduction zone with an ocean trench formed at the surface. At the subduction zone. old crust is consumed by the mantle to make more liquefied stuff. The overruling Continental home base made of granite signifiers mountains. An illustration isthe Andes of South America. Ocean Plate Meets Ocean Plate

If two pelagic home bases converge. the older. denser home base will subduct besides organizing a trench on the surface along with a concatenation of islands called an island discharge. An illustration of this

convergent subduction zone is the Northern and Western boundaries of the Pacific Ocean. Continental Plate Meets Continental Plate

If a Continental home base collides with another Continental home base. the border of both home bases are crumpled up organizing folded mountains. An illustration of this type of convergent boundary is the Himalayas of India. B) Divergent Plate Boundaries

Divergent Plate Boundaries- home bases move apartA divergent boundary allows heat and magma to flux up from below organizing parallel ridges made of new crustal stuff. An illustration of a divergent home base boundary like this is any mid-ocean ridge. degree Celsius) Transform Plate Boundary

Transform Plate Boundary- home bases grind easy past each other At this type of boundary. crust is neither formed nor consumed. An illustration is San Andreas Fault in California.

Shallow focal point temblors are really common at transform boundaries. Plate Tectonic Map (ESRT p. 5)Although plate gesture is merely a few centimetres a twelvemonth. the interactions of the boundaries result in temblors. vents and mountain edifice on a expansive graduated table demoing that the Earth is a dynamic system. Explain how mantle convection cells are thought to be the method for traveling crustal home bases. Mantle Convection Cells

Although forces exist within the Earth that are powerful plenty to travel the lithospheric home bases. the scientific community is non in entire understanding on the specific mechanism (method) involved. Convection

cell- watercourse of heated stuff that is traveling due to denseness differences Evidence suggests that convection cells exist within a portion of the mantle called the asthenosphere because of the happening of heat flow highs in countries of mountain edifice and heat flow depressions in countries of shallow settling basins. These convection cells may be portion of the drive force which causes continents to travel. What are hot musca volitanss? How are they formed?

Hot SpotsHot Spots- topographic points on Earth's surface with remarkably high heat flow Most hot musca volitanss occur along active home base borders but some are found within the home bases. Hot musca volitanss are thought to be caused by magma lifting up from the mantle bring forthing sites of active volcanism. Wow! That was Dynamic!

Prepare for Chapter Test…Good Luck! ! !

* Earthquakes* Sub-topics:* How strong is an temblor? Make you populate near an active mistake? Earthquake and tsunamiWhat is inside the Earth?

* What is an Earthquake?* An temblor is a shaking of the land caused by the sudden breakage and motion of big subdivisions (tectonic home bases) of the earth's rocky outermost crust. The borders of the tectonic home bases are marked by mistakes (or breaks) . Most earthquakes occur along the mistake lines when the home bases slide past each other or clash against each other. * The shifting multitudes send out daze moving ridges that may be powerful plenty to change the surface of the Earth. thrusting up drops and opening great clefts in the land and • cause great harm … prostration of edifices and other semisynthetic constructions. broken power and gas lines

(and the attendant fire) . landslides. snow avalanches. tsunamis (elephantine sea moving ridges) and volcanic eruptions. * How strong is an Earthquake

* Earthquakes are measured in two different ways: 1.) Magnitude2.) Intensity* Earthquake magnitude* Earthquake magnitude is a step of the energy released by an temblor. or its “ size” . Because temblors vary a batch in size. temblor magnitude graduated tables are logarithmic. For a one-step addition in magnitude the sum of energy released additions about 32 times. So a magnitude 7 temblor is 32 times bigger than a magnitude 6 temblor. and a magnitude 8 temblor is 1000 bigger. * Earthquake strength

* Earthquake strength describes how much land agitating occurred. or how “ strong” an temblor was. at a peculiar location. Earthquake waves weaken as they travel off from the temblor beginning. so an temblor by and large feels less strong the farther off from the beginning you are. * Earthquake strength

* The strength of an temblor is determined by detecting the effects of the temblor in different topographic points. Houses. edifices. and other constructions are inspected. Peoples are interviewed about what they saw (the cabinet fell over) . how they felt (I was frightened) . or what they did (I ran out of the house) . * The Modified Mercalli (MM) strength graduated table

* MM 1Not felt.* MM 2Felt by peeple at remainder on upper floors of edifices. * MM 3Felt indoors. like a little truck passing ; hanging objects swing somewhat. * MM 4Felt indoors by many. like a heavy truck passing ; hanging objects swing. Windowss rattle. * MM 5Felt out-of-doorss. slumberers

awakened. little objects and images move. * MM 6Felt by all. dishware interruption. furniture moves. weak plaster clefts. * The Modified Mercalli (MM) strength graduated table

* MM 7Difficult to stand. noticed by auto drivers. furniture interruptions. weak chimneys interruption at roof line. plaster. loose bricks and tiles fall. * MM 8Driving is hard. ordinary masonry is damaged. chimneys and towers fall. some liquefaction. * MM 9General terror. hapless masonry destroyed. ordinary masonry and foundations damaged. liquefaction and landslides. * MM 10Most masonry constructions destroyed. Some well-built wooden constructionsand Bridgess destroyed. Dams and embankments damaged. big landslides. * MM 11Few edifices left standing.

* MM 12Damage about entire.* FAULTS* What is a mistake?* A mistake is a interruption in the stones that make up the Earth’s crust. along which rocks on either side have moved past each other. * The way of motion along the mistake plane determines the mistake type. * 3 Major Mistakes

* Normal* Reverse* Strike-slip* Do You Populate Near an Active Mistake?* An active mistake is one that has moved in the past and is expected to travel once more. Put in another manner. an active mistake has generated temblors before and is capable of doing more in the hereafter. * Scientists use different ways to happen out if a mistake is active. One is by look intoing the country’s historical records. Historians ever write about destructive events such as temblors. * Another is by analyzing the quivers. yesteryear and nowadays. that come from mistakes. Still another manner is by detecting the milieus. For illustration. a mistake may traverse a route and

because of that. the route is displaced. * Do You Live Near an Active Mistake?

* Or a mistake may cut across a watercourse and the watercourse channel is so shifted. Or a mistake may slit through mountains and signifier drops. This is non to state that anyone can descry an active mistake. Scientists need a batch of preparation to make that. * But along some mistakes. the effects may be dramatic. Suppose a house was built on a mistake. As the land shifts small by small. parts of the house will be affected. The floor will check. doors will non shut. and the roof may get down to leak. * Obviously. it is of import to cognize the location of active mistakes. Equally far as possible. no of import constructions should be built near or on them. Tsunami

* What is a tsunami?* A tsunami is a series of moving ridges normally caused by an submarine temblor that displaces the ocean floor. But a tsunami is non truly a “ wave” that moves up and down ; it’s really the ocean traveling sidewise as a massivesurge or a wall of H2O. It’s besides knownas a tidal moving ridge. The Nipponese word tsunami means “ harbor moving ridge. ” A tsunami can bring forth moving ridges for 12 to 24 hours. And the first moving ridge is non ever Japan. 2011 The Boston Globe the biggest! A tsunami travels across the unfastened ocean at over 500mph. the velocity of a jet aeroplane. As it reaches shallower H2O and attacks shore. it slows down but grows in tallness. A tsunami can go on at anytime of twenty-four hours or twelvemonth. How do temblors bring forth tsunamis?

* Tsunamis can be generated when the sea floor suddenly deforms and vertically displaces the superimposed H2O. Tectonic temblors are a peculiar

sort of temblor that are associated with the earth’s crustal distortion ; when these temblors occur beneath the sea. the H2O above the distorted country is displaced from its equilibrium place. Waves are formed as the displaced H2O mass. which acts under the influence of gravitation. efforts to recover its equilibrium. When big countries of the sea floor elevate or subside. a tsunami can be created. * What is a Tsunami Earthquake

* A tsunami temblor is an temblor that triggers a tsunami of a magnitude that is really much larger than the magnitude of the temblor as measured by shorter-period seismal moving ridges. Such events are a consequence of comparatively slow rupture speeds. They are peculiarly unsafe as a big tsunami may get at a neighboring seashore with small or no warning. a tsunami temblor is that the release of seismal energy occurs at long periods (low frequences) relative to typical tsunamigenic temblors. Earthquakes of this type do non by and large show the extremums of seismal moving ridge activity associated with ordinary events. A tsunami temblor can be defined as an submarine temblor. * What is inside the Earth?

* Earth’s Layers* CrustThe crust is the first bed of the Earth. It is split up intotwo parts the continentalcrust. and the pelagic crust.* MantleThe mantle is the 2nd bed of the Earth. It is split up into two different parts. the geosphere (which is the top portion) and the asthenosphere (which is the bottom portion) . * Earth’s Layers

* Outer coreThe outer nucleus is a liquid made up of Fe and Ni. The deepness of the outer nucleus is 2. 890. This is one of thethree beds that is seting force per unit area on the inner nucleus. * Inner coreThe Inner crust is the

2nd thinnest bed. The interior nucleus is hotter than the surface of the Sun. The interior nucleus is made out of Fe and Ni. It is 5159 to 6378 kilometer midst. * Earth’s Layers

* The Earth is formed of three homocentric beds: the nucleus. the mantle and the crust ; these are separated by passage zones called discontinuities. * Mohorovicic discontinuity* Gutenberg discontinuity* How the seismal moving ridges travel* The agitating starts from the focal point and spreads out. You can acquire an thought of how this happens by throwing a pebble into a pool. See the ripplings that move out in circles? The quivers from the focal point are something like that. * The quivers are more decently called seismal moving ridges. As seismal moving ridges travel through the organic structure of the Earth. they behave in different ways. depending on what they encounter along manner