

PURWANCHAL UNIVERSITY

IV SEMESTER BACK-PAPER EXAMINATION-2004

LEVEL : B. E. (Civil)

SUBJECT: BEG255CI, Engineering Geology.

TIME: 03:00 hrs

Full Marks: 80

Pass marks: 32

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Attempt any FIVE questions.

- Q. [1] [a]** Describe internal structure of the earth with a neat sketch. Write down the major land forms and their characteristics on the earth surface. [8]
[b] What do you mean by plate tectonics? Describe different types of plate boundaries. Explain the effects of an earthquake. [8]
- Q. [2] [a]** Describe crystal systems with reference to angular relationship and crystal axis. Write the engineering, significance of rock forming minerals. [8]
[b] How the rocks are metamorphosed? Write the classification system for igneous rocks and their engineering significance. [8]
- Q. [3] [a]** How faults are recognized in the field? Write down the characteristics of the discontinuities in a rock out crop. [8]
[b] Define unconformities. How are they formed? Describe rock and mineral cleavage with their engineering significance. [8]
- Q. [4] [a]** Describe the factors affecting slope stability. What do you mean by mass movements? Explain preventive measures for landslides. [8]
[b] Explain the measure functions of a river. Describe the morphology of a river channel and write its engineering importance. [8]

- Q. [5] [a]** Briefly discuss the geology of Nepal Himalaya and list out the engineering significance of HFT, MBT and MCT. [8]
[b] Define structural and engineering Geology. Describe the objectives and importance of engineering geology in the context of Himalayan geology. [8]
- Q. [6] [a]** How will the geological studies be carried out for the site investigation of civil engineering construction. Describe investigation procedures and parameters. [8]
[b] What are the main feature of engineering geological maps? How the geophysical method is applied for the study of site investigation. [8]

- Q. [7] [a] Write short notes on (any FOUR) [4x2=8]**
[i] Permeability and porosity [ii] Joint and fault
[iii] Dip and strike [iv] Granite and basalt
[v] Hardness and strength
- [b] Differentiate between (any FOUR): [4x2=8]**
[i] Fault gauge [ii] Recumbent fold
[iii] Sedimentary rocks. [iv] Plateaus
[v] Mohorovicic discontinuity.

PURWANCHAL UNIVERSITY

IV SEMESTER FINAL EXAMINATION-2006

LEVEL : B. E. (Civil)

SUBJECT: BEG255CI, Engineering Geology.

TIME: 03:00 hrs

Full Marks: 80

Pass marks: 32

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Attempt any FIVE questions.

- Q. [1] [a]** Define engineering geology? List out major objectives of the engineering geological investigation for a hill-road project. [8]
- [b]** Explain intensity and magnitude of earthquake. Explain the different type of seismic waves generated during the earthquake. Add a note about focus, epicenter, seismograph and Richter scale. [2+4+2]
- Q. [2] [a]** List out the crystal symmetry with examples. Explain engineering significance of rock-forming minerals. Describe the feldspar group of minerals. [2+3+3]
- [b]** What is rock cycle? Describe the-basic physical and engineering properties of rocks. [2+3+3]
- Q. [3] [a]** What is fold? Describe the various parts of a fold with neat sketches. List out the influence of fold structures in civil engineering practice. [1+3+4]
- [b]** What is unconformity? Describe different types of unconformities. Explain the Rock Quality Designation (RQD) [1+3+4]
- Q. [4] [a]** List out the types of Mass. movement. What are the factors affecting the slope stability? Mention the preventive measures of the landslides. [3+3+2]
- [b]** Explain the various types of river channels. Define aquifer permeability and pizeometric levels. [5+1+1+1]
- Q [5] [a]** Describe the tectonic division or Nepal with neat sketch including Lithology and geological structure.

Mention the engineering significance the MFT, MBT and MCT. [3+2+3]

- [b]** Suppose you are going to purpose after storage dam in Lesser Himalayan of Nepal as a Project Co.-ordinator, why do you, think the importance of geological survey in detail? [8]
- Q. [6] [a]** Define topographical map and arial photograph. . How geophysics is .useful for geological investigation? Give any two examples of geophysical tool. [3+4+1]
- [b]** Point A is 600m North of Point B and Point C is 300m East of Point B. The altitudes of A, B and C are 500m. 100m ajid 400m respectively. Find the. attitudes (Strike, dip direction and dip amount) of the bed rock, whose bedding plane is- passing through these points. [8]
- Q. [7] [a]** Write short notes (any TWO): [4x2=8]
- [i] Plateau [ii] Water-table.
[iii] Geological map [iv] Volcanic products
- [b]** Differentiate between (any Two). [4x2=8]
- [i] Altitude and attitude.
[ii] Rotary drilling and percussion drilling
[iii] Granite and gneiss.
[iv] Core and crust

PURWANCHAL UNIVERSITY

IV SEMESTER FINAL EXAMINATION-2004

LEVEL : B. E. (Civil)

SUBJECT: BEG255CI, Engineering Geology.

TIME: 03:00 hrs

Full Marks: 80

Pass marks: 32

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Attempt any FIVE questions.

- Q. [1] [a]** Draw a neat sketch and describe the interior of the earth with typical example of material types in each layers. [3+5]
- [b]** What do you know about plate tectonics? Write about different plate boundaries. Why do you think Nepal is frequently hit by earthquakes? [2+4+2]
- Q. [2] [a]** Describe physics properties of minerals in brief. What is the engineering significance of studying those properties? [5+3]
- [b]** What is texture? Describe different types of textures in igneous rocks? [2+6]
- Q. [3] [a]** What is rock deformation? Give any three bases of classification of folds and describe its engineering significance? [2+4+2]
- [b]** What is rock mass? What do you understand by RQD? Give an illustrative example to show how RQD can be calculated. [2+2+4]
- Q. [4] [a]** What do you know about mass movement? Describe the probable causes and preventive measure of landslides. [2+3+3]
- [b]** Describe Darcy's law. Describe types of aquifers with neat diagrams. [3+5]
- Q. [5] [a]** Write in brief about geology of Nepal with emphasize on morphotectonic units, their typical rock types and structures. [8]

- [b]** What are the branches of geology? Write about scope of engineering geology in civil engineering. [4+4]
- Q. [6] [a]** What do you think the major objective of engineering geological site investigation? Describe the type of site investigations. [4+4]
- [b]** What are the geological factors to be considered of the construction of reservoir and dam? [4+4]
- Q. [7] [a]** Write short notes on (any FOUR): [4x2=8]
- [i] Limestone [ii] Mountains
[iii] Metamorphism [iv] Granite
[v] Q system of rock mass classification
[vi] Porosity and permeability.
- [b]** Differentiate between (any FOUR): [4x2=8]
- [i] Symmetrical and Assymetrical folds.
[ii] Anticline and syncline
[iii] Landside and slope failure
[iv] Sphericity and roundness
[v] Clastic and non-clastic rocks.
[vi] Rock forming minerals and accessory minerals.

PURWANCHAL UNIVERSITY

IV SEMESTER FINAL EXAMINATION-2005

LEVEL : B. E. (Civil)

SUBJECT: BEG255CI, Engineering Geology.

TIME: 03:00 hrs

Full Marks: 80

Pass marks: 32

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Attempt any FIVE questions.

- Q. [1] [a]** Describe how Himalaya is formed and write about different plate boundaries. Why do you think Nepal is frequently hit by earthquake? [3+3+2]
[b] Draw a neat sketch of typical volcano. Write about the types of volcano. Differentiate between pyroclastic materials and lava. [3+2+3]
- Q. [2] [a]** Define crystals and minerals. Describe different crystal systems with each of their example of typical mineral types. [2+6]
[b] Define sedimentary rocks. Describe different types of textures in sedimentary rocks. [2+6]
- Q. [3] [a]** What is fault? Give any two basis of classification of faults and describe its engineering significance? [2+4+2]
[b] What is rock mass? Compare the strength different between rock mass and intact rock. Give an account of the Q-system of rock mass classification. [2+4+4]
- Q. [4] [a]** What is the basis difference between landslide and slope failure? Write your opinion about the major trigger of landslides in Nepal in most of the cases? Also write how landslide can be controlled. [2+3+3]
[b] Define aquifers and aquitards. Describe types of aquifers with neat diagrams. Which type of aquifer gives water in pressure? [2+4+2]
- Q. [5] [a]** Give a brief outline about geology of Nepal. What is the engineering significance of different thrusts found

in Nepal? [6+2]

- [b]** Elaborate the scope of engineering geology in civil engineering projects. Why do you think engineering geology is sometimes essential in the post implementation stage of a civil engineering project as well? [6+2]
- Q. [6] [a]** Describe the types of site investigations. Why do you think indirect surface investigations are becoming more and more popular in recent days? [6+2]
[b] What are the geological factors to be considered for the construction of bridge and tunnel? [4+4]
- Q. [7] [a] Write short notes on (any FOUR): [4x2=8]**
[i] Quartzite [ii] Geological boundaries.
[iii] Volcanic rocks [iv] Unconformity
[v] Basalt [vi] RQD
- [b] Differentiate between (any FOUR): [4x2=8]**
[i] Shear joint and extension joint
[ii] Clay and sand
[iii] Braided river and Meandering river.
[iv] Sphericity and roundness
[v] Concordant bodies and discordant bodies
[vi] Rock forming minerals and accessory minerals.

PURWANCHAL UNIVERSITY

IV SEMESTER FINAL EXAMINATION-2002

LEVEL : B. E. (Civil)

SUBJECT: BEG255CI, Engineering Geology.

TIME: 03:00 hrs

Full Marks: 80

Pass marks: 32

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks.

Attempt any FIVE questions.

- Q. [1] [a]** Explain elastic rebound theory. Explain different types of waves and show how they pass through the earth. What is Mohorovicic discontinuity.
- [b]** Describe with sketch the internal structure of the earth with temperature and pressure at different depths.
- Q. [2] [a]** How igneous rocks are formed? Describe any two rocks mentioning their engineering importance.
- [b]** Define minerals and crystals and explain physical properties of minerals.
- Q. [3] [a]** What are discontinuities? Explain any four types of faults and elaborate on the engineering considerations during your investigation.
- [b]** Give in short the tectonic division of Nepal, the distribution of rocks and the main geological structures encountered.
- Q. [4] [a]** Explain dip, strike and folds.
- [b]** From the three points given below determine strike and dip of the following planar surface.

Figure :

- Q. [5] [a]** Describe geological investigation for a tunneling and describe importance of geological features in constructing a tunnel such as type of rocks, fold, fault, dip strike and water table.
- [b]** Explain cycles of erosion and drainage pattern in the morphology of river channel.

- Q. [6] [a]** Explain different types of landslides. What are the preventive measure for landslides and corrective methods for maintaining stability? Mention the types of landslides that commonly occur in Nepal.
- [b]** A town with a moderate population requires an immediate water supply. Which type of aquifer would you prefer? Illustrate your answer with figures where necessary.
- Q. [7] [a]** What is Rock Quality Designations (RQD)? Give the geomechanics classification of jointed rock masses.
- [b]** Explain the objectives of Engineering Geology and mention the importance of engineering geological studies in Nepal.
- Q. [8] Differentiate between (any Three):**
- [a] Springs and Reservoirs.
- [b] Rock fall and Rock slide.
- [c] Aerial photographs and Geological maps.
- [d] Mountains and Plateaus.
- [e] Permeability and Porosity.

PURWANCHAL UNIVERSITY

IV SEMESTER FINAL EXAMINATION-2003

LEVEL : B. E. (Civil)

SUBJECT: BEG255CI, Engineering Geology.

TIME: 03:00 hrs

Full Marks: 80

Pass marks: 32

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Attempt any FIVE questions.

- Q. [1] [a] Describe how Himalaya is formed and write about different plate boundaries. Why do you think Nepal is frequently hit by earthquake? [3+3+2]
[b] Draw a neat sketch of typical volcano. Write about the types of volcano. Differentiate between pyroclastic materials and lava. [3+2+3]
- Q. [1] [a] How do you study the internal structure of the earth and its composition? Describe with neat sketch including seismic wave nature. [8]
[b] Define plate tectonics. Relate plate tectonics and occurrence of earth quake in the Himalayan region considering elastic rebound theory. [8]
- Q. [2] [a] Define crystals. Discuss the crystal systems with axial relationship. [8]
[b] What is rock cycle? How does it represent the sequences of formation of different rock types? Give the classification of sedimentary rock. [8]
- Q. [3] [a] How are folds recognized in the field? List out the influence of fold structure in civil engineering practice.[8]
[b] Describe the planes of discontinuities in rockwrite brief notes on Rock Mass Quality and Rock Mass classification. [8]
- Q. [4] [a] List out the types of mass movement. What are the factor affecting the slope stability? Mention the preventive measures of the land slides. [8]

- Q. [5] [a] Describe the geological form work of Nepal with net sketch indicating tentative location of tectonic boundaries such as MBT and MCT. Also point out the engineering significances of such boundaries. [8]
[b] Describe the scope and objective of engineering geology. What are the importances of engineering geology studies in Nepal? [8]
- Q. [6] [a] List out the methods of site investigations for dam and tunnel sites. [8]
[b] Describe the geology of lesser Himalayan. Describe the different geological factors for a road alignment in lesser Himalayan Nepal. [8]
- Q. [7] [a] Write short notes on (any FOUR): [4x2=8]
[i] Spring [ii] Crystal System [iii] Shadow Zone
[iv] RQD [v] Gneis [vi] Confined Aquife
- [b] **Diffeentiate between (any FOUR):** [4x2=8]
[i] Intrusive and Extrussive Rock.
[ii] Topographic Maps and Areal Photographs.
[iii] Confined and Unconfined Aquifer
[iv] A.....True Dip.
[v] Horst and Garber