

KATHMANDU UNIVERSITY  
End Semester Examination  
March/April, 2017

Marks Scored:

Level : B.Sc.

Year : III

Course : ENVS 338

Semester: I

Exam Roll No. :

Time : 30 mins.

F. M. : 20

Registration No. :

Date :

APR 02 2017

SECTION "A"

[20 Q.×0.5=10 marks]

Mark "X" in the appropriate box.

1. Function of vegetation in slope to stop and hold a moving object down the hill is ..... function?  
 Catch                       Anchor                       Reinforce                       Drain
2. Among the following civil engineering structures, which one is specified for armour function?  
 Revetment wall       Retaining walls       Reinforced earth       Soil anchors
3. Babiyo (*Eulaliopsis binate*) is a ..... species.  
 Tree                       Grass                       Shrub                       Bamboo
4. If you are planting 'Padang bans' in contour pattern for slope stabilization, the line spacing within rows should be approximately ..... centers:  
 100 mm                       200 mm                       400 mm                       500 mm
5. Which of the following grass plantation techniques help in reducing infiltration and the likelihood of liquefaction of the soil?  
 Horizontal                       Random                       Vertical                       Contour
6. Rooted culm cutting method of bamboo plantation is suitable for:  
 Large bamboos       Small bamboos       Amliso                       *Bambusanutans*
7. Among which of the following bioengineering techniques is highly appropriate for controlling gulley widening?  
 Fascine                       Brush-layering                       Palisade                       Live check-dam
8. Reinforced concrete wall is an example of:  
 Revetment wall       Retention wall       Prop wall                       Check-dam
9. Length of a spur should not exceed ..... of the normal width of stream from the desired bank line.  
 10%                       20%                       30%                       40%
10. Removal of fines along an underground channel is referred as:  
 Landslide                       Piping                       Sheet erosion                       Rill erosion

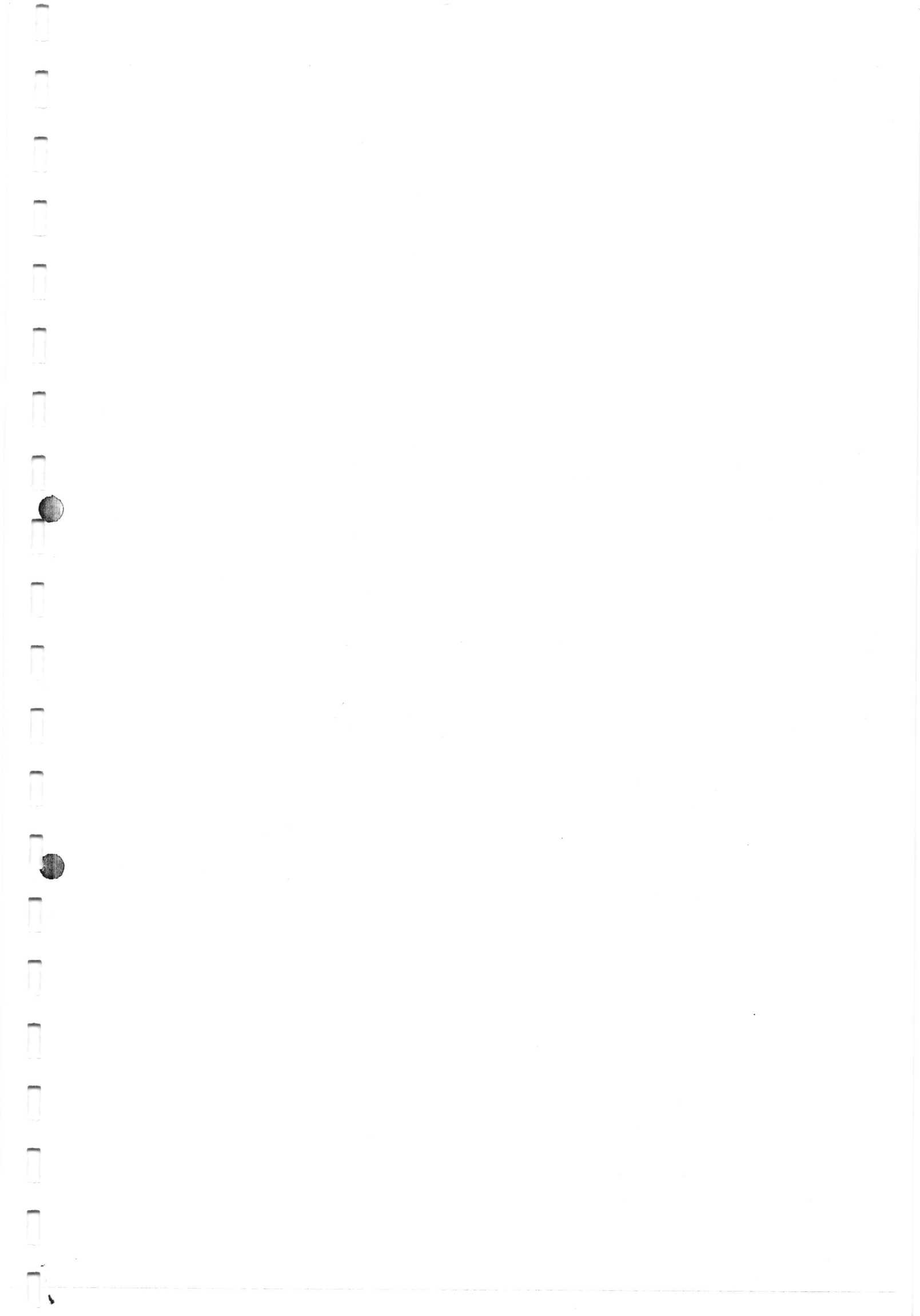
11. A special type of rock failure, found in massive or sparsely jointed permeable, weatherable rocks is called:  
 Disintegration       Degradation       erosion       Weathering
12. Primary responsibilities of a ..... are to coordinate and maintain the movement of trees/shrubs/other plant material and merchandise into and out of our nursery yard and to facilitate the organization of merchandise for pick-ups, plantings and deliveries.  
 Nursery foremen       Laborers       Seed collectors       Watchmen
13. Ideally for protecting large seedlings the height of shades in a nursery should be ..... above ground level:  
 570 mm       650 mm       750 mm       560 mm
14. On sunny day, cloches in nursery must be opened out for at least one hour, twice per day to:  
 Avoid airless environment       Pass sunlight  
 Expose seedlings       Cool the cloches
15. Among which of the following is not the routine maintenance technique of Bioengineering:  
 Coppicing       Weeding       Mulching       Grass cutting
16. Which of the following plants should never be used for bioengineering purpose?  
 *Tectonagrandis*       *Pinusruxburghii*       *Acacia catechu*       *Dalbergiasisoo*
17. Dividing the sites into slope segments for stabilizing purpose comes under ..... stage.  
 Planning       Designing       Implementing       Maintenance
18. Seed collection for the production of nursery plants is mostly done in the month of:  
 Shrawan/Bhadra/Ashwin       Kartik/Mangsir/Poush  
 Magh/Falgun/Chaitra       Baishak/Jestha/Ashad
19. From the perspective of Department of Road, among the following conditions, which is given lowest prioritization of maintenance works?  
 Slope movement threatens the house       Slope movement threatens the loss of road  
 Slope movement threatens road blockage       Slope movement threatens drain blockage
20. During the assessment of site, slope moisture is recorded into ..... classes.  
 Three       Four       Five       Six

SECTION "B"  
[10 Q. × 1 = 10 marks]

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Fill in the blanks with appropriate word/words.

21. Dense surface cover of vegetation with low canopy is requirements for .....  
..... function.
22. In assessing the engineering function of plants, ..... depth is very important.
23. Planning for the year's bioengineering work is mostly done early in the .....  
year.
24. Length of slope with uniform angle and homogenous material is called  
.....
25. .... should be used whenever there is doubt as to which  
grass line planting system should be used, as a result of uncertainties over site environmental  
characteristics or material properties.
26. .... is shallow rooting grass along with the soil in which it is growing in.
27. Normally, shrub and tree plantation is done with the density of ..... plants per  
hectare in slope for bioengineering purpose.
28. Alternatively, ..... technique is also named as live contour wattling.
29. .... a place where seedlings are raised/factory to supply plants for a bio-  
engineering works.
30. Theoretically a slope is said to be stable when the value of *factor of safety* is .....



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SECTION "C"

[3 Q. × 7 = 21 marks]

Attempt any THREE questions.

1. Explain in detail about brush layering. How brush layering is different from palisades? [5+2]
2. Explain various causes of slope failure. Briefly describe erosion types. [4+3]
3. How do you assess the quality of bioengineering nursery? Briefly highlight on different aspects of nursery management. [4+3]
4. How do you select appropriate plant species for slope stabilization? List any four plants that should never be used for bioengineering purpose. [5+2]

SECTION "D"

Differentiate between ANY FOUR

[4 Q. × 4 = 16 marks]

5. Fascines and live check dams
6. Contour and downslope grass plantation.
7. Routine and preventive maintenance of vegetation.
8. Prop walls and wire bolster cylinders.
9. Permanent and expendable nursery equipment.

Justify the following statements

[4 Q. × 3 = 12 marks]

10. Bioengineering is solution for shallow seated landslides or failures.
11. For effective bioengineering application, slope should be divided into its component segments.
12. Larger seeds are preferred during direct sowing of shrub and trees.
13. Vegetated stone pitching is long run solution compared to only grass lines for armouring function.

Write short notes on:

[3 Q. × 2 = 6 marks]

14. Local species for bioengineering.
15. Gunite
16. Differential weathering

