

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

December, 2010

**ET-537(A) : SOIL CONSERVATION AND
AGRONOMY**

Time : 3 hours

Maximum Marks : 70

Note : Answer any seven questions. Use of calculator is allowed.

1. Explain length and slope factors of USLE (Universal Soil Loss Equations). Calculate annual soil loss from an area where no conservation practices have been adopted. 10

Given that

$R=5000$, $K=0.01$ Mg/ha/Yr.

$L=2.41$, $S=1.17$, $C=0.18$

$P_c=0.6$, $P_s=0.75$ $P_t=1.0$

What do you expect when conservation tillage without strip cropping is adopted ($C=.05$) for such area ?

2. Explain factors affecting soil loss due to wind erosion. Explain the methods to reduce soil loss to wind erosion. 10

3. Briefly explain important factors normally considered while designing a terrace. 10

A given region has reported soil loss of 16 Mg/ha/yr. Calculate maximum slope length and corresponding terrace spacing needed to reduce soil loss to terrace channel to 7 Mg/hr/yr. Assume $k=0.1$, $l=120\text{m}$, $s=8\%$ $C=0.15$ and $P=0.7$. Assume suitable missing data, if any.

4. Explain design procedure of check dam. What are important cares to be taken in this regard ? 10

5. Irrigation and drainage are two faces of the same coin, Comment. How will you determine capacity and grade of a tile drain ? Explain in detail. 10

6. Write utility and methodology of the following : 10
- (a) Leaching.
 - (b) Bio drainage.

7. Give procedure of rice cultivation highlighting the followings : 10
- (a) Variation in cropping season in India.
 - (b) main varieties.
 - (c) transplanting methods.
 - (d) weed control.

8. Write short notes on *any four* of the following : 10
- (a) Residual effects of pesticides.
 - (b) Mechanization of wheat harvesting and threshing.
 - (c) Seed bed preparation.
 - (d) Integrated pest management.
 - (e) Green revolution.
9. Give a brief note on impact of crop management practices in rain fed farming. What are the weaknesses of traditional rainfed farming ? 10
10. Explain in brief : 10
- (a) Agro-horticulture.
 - (b) Green manuring.
 - (c) Sprayers and dusters.
 - (d) Vertical drainage.
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