**1      Fill in the blanks.** (10x1=10)

1    ………………index method was introduced by Hudson for estimating rainfall erosivity of tropical storms.

2    …………….bunds are constructed between two contour bunds to limit the horizontal spacing to the maximum required.

3    Stream channel erosion applied to the …………….end of headwater tributaries.

4    The shelter belt is ………….. barrier than the wind break.

5    …………….gullies develop in the areas where the subsoil is resistant to erosion.

**State True or False**

6    Soil transportability increases with a decrease in particular size.

7    The USLE predicts soil loss resulting from all types of water erosion.

8    The rate of gully erosion depends mainly on the runoff producing characteristics of the watershed.

9    The fluid threshold velocity is the minimum velocity required to initiate movement from the impact of soil particles carried in saltation.

10   In most areas graded terraces are more effective in reducing erosion than runoff.

**II     Write short notes/answers etc on ANY FIVE** (5x2=10)

1    What is erosion and state the agents of erosion?

2    State the process of gully development.

3    State applications of USLE.

4    What is erosivity and state the factors upon which it depends?

5    State the types of strip cropping and explain any one.

6    Explain how tillage practices helps to control soil erosion.

7    Differentiate between saltation and suspension movement.

**III    Answer any FIVE of the following.** (5x4=20)

1    Define water erosion and explain the types of water erosion.

2    Discuss briefly the classification of gullies.

3    Describe the $EI_{30}$ index method for computing the rainfall erosivity.

4    What is runoff plot? State and discuss the types of runoff plots.

5    State the principles of gully control and discuss its control by vegetative methods.

6    Explain wind erosion control measures.

7   Design a 250 m long graded bund in clayey soil having 2.5% land slope. Grade of bund for first 100 m is 0.1% and for the remaining 150 m it is 0.2 %. The VI is 1.6 m, rainfall intensity for the time of concentration and recurrence interval = 17.5 cm per hour, runoff coefficient = 0.3. Consider stable side slope as 1:1 and seepage line slope as 3:1.

**IV    Answer any ONE of the following.**                                  **(1x10=10)**

1   What is bench terracing? State its types and discuss the design of bench terracing.
2   Define grassed waterways and describe the factors affecting the shape of grassed waterways. Discuss the designing of most commonly adopted grassed waterways.

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