RS19BSCAG577

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2nd SEMESTER, REGULAR EXAMINATIONS SEPT/OCT 2019-20

AT-121

SOIL AND WATER CONSERVATION ENGINEERING

Time : 2 Hours Maximum : 50 Marks

(Answer **all** questions of Section – A)

SECTION – A

Q.1 Fill up the Blanks with suitable and meaningful word(s): [10 X 0.5 = 5]

a. On increasing the velocity of sheet flow twice, the erosive power increases by_____ times.
b. Terminal velocity of rain drops varies from _____to_____ m/s
c. _____is an advanced stage of rill erosion
d. Transpiration of moisture through plants to atmosphere _____ soil moisture storage capacity.
e. _____ trenches are adopted in high rainfall areas
f. Sloping outward type bench terraces are suitable for _____ rainfall areas
g. In wind strip cropping the crop strips are laid out at _____to the direction of wind
h. Bunding is suitable for lands having slopes up to_____%
i. A_____year recurrence interval is used to compute the maximum expected runoff to the grassed water way
j. In wind erosion,_____ type movement of soil particles is responsible for transporting maximum soil.

Q.2. Define or Explain the following in one or two sentences [5 × 1 = 5]

a) Soil erosion b) Alley cropping c) Bench terracing

d) Saltation e)Water harvesting

Q.3. Match the following columns [10 × 0.5 = 5]

(i) Geologic erosion	(1) Prismoidal formula
(ii) Wind erosion	(2) Alluvial plain
(iii) Crop rotation	(3) Gully head
(iv) Graded bund	(4) Temporary measure for controlling gully
(v) Batter slope	(5) Depth of cut
(vi) Chute spillway	(6) Slow natural process
(vii) Capacity of the pond	(7) Arid and semi-arid regions
(viii) Rock filled check dam	(8) Stability of the fill in bench terrace
(ix) Terrace spacing	(9) High rainfall area
(x) U shaped gullies	(10)Biological measure

Q.4. WriteTRUE or FALSE against the following statements [10 × 0.5 = 5]

a) Sheet erosion starts after rill erosion.
b) USLE equation is developed for estimating soil loss.
c) Inward sloping bench terraces are recommended for medium rainfall zones.
d) Contour bunds are suitable for deep black soils.
e) Wind breaks are longer barriers than shelter belts.
f) Medium gullies have a gully depth of 1 to 5 m.
g) A multi-slot divisor has even number of slots.
h) Clay soils are more susceptible splash erosion.
i) Drop inlet spillways are used for storage of water.
J) In development stage, the gully head moves downstream.

SECTION – B

(Attempt any five questions. Each question carries equal marks) 5x6=30

Q.5 a) Discuss in detail about the factors affecting soil erosion.

b) Rainfall of mass 'M' falls at a terminal velocity of 4 m/s. The mass of the runoff produced out of that rain is 'M/5' and it flows at a velocity of 1.0 m/s. Compare the kinetic energy of the falling rain and the runoff.

Q.6 a) Describe briefly the engineering measures adopted for controlling soil erosion in agricultural lands

b) Calculate the vertical interval and horizontal interval of a contour bund to be constructed at a land slope of 5% in a high rainfall zone. If the rainfall excess is 10 cm, what will be the height of water storage against the bund?

Q.7 a) Discuss about the types of soil movements in wind erosion.

b) Narrate various vegetative measures, tillage practices and mechanical measures to control wind erosion.

Q.8 a) Describe the entire process of gully development

b) Discuss about various permanent gully control structures and What is the importance of apron in such structures?

Q.9 a) What do you mean by bench terracing? Describe different types of bench terraces.

b) A level top bench terrace is to be constructed at 15% slope. If the depth of cut is 1.0 m and batter slope is ½ :1, calculate the width of the terrace.

Q.10 a) What is a grassed waterway and why it is required in bunded areas?

b) Discuss the design considerations of grassed waterway

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