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Total No. of Pages : 02

Total No. of Questions : 18

B.Sc. (Agriculture) (Sem.-5)

**FUNDAMENTALS OF SOIL AND WATER ENGINEERING**

Subject Code : BSAG-501

M.Code : 74165

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**Answer briefly :**

- 1) What is back sight in leveling?
- 2) Define contour interval.
- 3) Draw the sketch of Archimedian Screw.
- 4) Give the scientific unit of Power requirements of pumping.
- 5) For what Chezy's formula is used? Write the formula.
- 6) Write Scobey's formula. For what purpose, it is used.
- 7) Name two implements for Surface irrigation systems.
- 8) Define Consumptive use efficiency.
- 9) Differentiate between Slope length factor and Slope steepness factor.
- 10) What is the value of hydraulic conductivity for a bed width of 10 m .

### SECTION-B

- 11) Calculate the area of a hexagon having each side equal to 270 cm.
- 12) A centrifugal pump delivers water at the rate of 90 l/sec against a total head of 50 m operating at 2500 rpm. Calculate the discharge, head and power required by the pump if it has to operate at 1800 rpm, the efficiency remaining same as 50 %.
- 13) Land slope of 4 percent is available at a place. Calculate horizontal spacing of bunds, assuming heavy rainfall occurring at that place.
- 14) What is soil erodibility? On what factors does it depend?
- 15) Differentiate between Weir and Orifice.

### SECTION-C

- 16) On a saturated vertical circular soil column 100 cm long, water is ponded to a depth of 10 cm. The outflow was observed to be  $1 \text{ cm}^3/\text{cm}^2/\text{min}$ . Calculate the hydraulic conductivity. How much flow will increase if ponding depth is tripled.
- 17) If a sprinkler system and a drip system are to be designed for the same area and the same crop, compare the components of both in respect of following :
  - a) Size of the main line
  - b) Horse power requirements
  - c) Size of laterals
- 18) Two trapezoidal concrete channels have the same width of 50 cm and depth of flow of 20 cm. One has side slopes of 1/2:1 and the other as 1:1. Which one can be considered as the best hydraulic section? Give reasons in support of your answer.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**