

14P/289/6

Engg.

Question Booklet No.....

(To be filled up by the candidate by blue/black ball-point pen)

Roll No.

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Roll No.
(Write the digits in words)

Serial No. of OMR Answer Sheet

Day and Date (Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only blue/black ball-point pen in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. **On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.**
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and also Roll No. and OMR Sheet No. on the Question Booklet.
7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.*
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).*
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

14P/289/6

No. of Questions/प्रश्नों की संख्या : 120

Time/समय : 2 Hours/घण्टे

Full Marks/पूर्णांक : 360

Note : (1) Attempt as many questions as you can. Each question carries 3 marks. One mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न 3 अंक का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

(2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. Hydrologic cycle is driven by

- | | |
|-----------------------|--------------------------|
| (1) winds | (2) sun |
| (3) rotation of earth | (4) water level in ocean |

2. Indian has world's ——— water resources.

- | | | | |
|--------|--------|---------|---------|
| (1) 1% | (2) 4% | (3) 10% | (4) 20% |
|--------|--------|---------|---------|

(161)

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(P.T.O.)

3. Overall impact of climate change will
 - (1) have no effect on water resources
 - (2) water resources are likely to get scarce
 - (3) water resources will increase
 - (4) Nothing can be predicted

4. Hydroponics is
 - (1) growing plants in water solution
 - (2) growing plants without water
 - (3) carrying plants on pony's back
 - (4) water carrying ponies

5. When a canal is carried over a natural drain, at crossing, the structure provided is called
 - (1) siphon
 - (2) aquaduct
 - (3) super passage
 - (4) level crossing

6. A cross-regulator is provided on a main canal
 - (1) to minimize the amount of silt entering the branch canal
 - (2) for no specific reason
 - (3) to let maximum silt into the branch canal
 - (4) to carry the canal across the drain

7. Rivers meander but manmade canals do not, why
- (1) straight canals look good
 - (2) rivers are made by almighty to cover large area
 - (3) general slope of earth surface is too large to sustain uniform flow
 - (4) rivers do not like to move straight
8. The terminal velocity of rain drop is about
- (1) 1 m/s
 - (2) 5 m/s
 - (3) 10 m/s
 - (4) 20 m/s
9. A plot between rainfall intensity versus time is called
- (1) hydrograph
 - (2) mass curve
 - (3) hyetograph
 - (4) isohyet
10. A reflex valve is used in a centrifugal pumping system so as to
- (1) keep it primed
 - (2) measure the flow
 - (3) give strength at its foot
 - (4) control water flow into pumping system
11. The line joining the static water levels in several wells, excavated through a confined aquifer, is known as the
- (1) cone of depression
 - (2) piezometric surface
 - (3) perched water table
 - (4) hypsometric curve

12. Isobath maps indicate

- (1) area affected by high water table problems
- (2) flow of water
- (3) extent of salinity
- (4) amount of groundwater

13. Hydrologic soil group A stands for

- (1) low rainfall potential
- (2) high rainfall potential
- (3) moderately low rainfall potential
- (4) moderately high rainfall potential

14. The cross slope ditch drainage system is used for draining

- (1) flat land
- (2) ponded land
- (3) waste land
- (4) sloping land

15. At critical condition of flow

- (1) specific energy is minimum
- (2) specific force is maximum
- (3) viscous force is minimum
- (4) total force is maximum

16. Wide open channel, the hydraulic radius is practically equal to

- (1) flow depth
- (2) flow are
- (3) flow width
- (4) wetted perimeter

17. An S curve in hydrology is obtained by summing
(1) rainfall (2) snowmelts (3) runoff (4) evaporation
18. Area under a hydrograph represents
(1) volume of runoff (2) volume of rainfall
(3) area of watershed (4) average rate of runoff
19. A drop spillway is used for
(1) erosion control (2) flow measurement
(3) flow diversion (4) flow regulation
20. Which river is mainly associated with the Sardar Sarovar Project?
(1) Ganga (2) Krishna (3) Brahmaputra (4) Narmada
21. Infiltration is measured by
(1) cylindrical metal rings (2) USWB Class A pan
(3) lysimeter (4) rain gauge
22. Darcy's law is valid under the condition of
(1) laminar flow with Reynold's number > 10
(2) Reynold's number < 1
(3) Newtonian flow
(4) steady uniform flow

23. Erodibility of a soil depends upon
- (1) soil moisture
 - (2) mechanical composition of soil
 - (3) soil structure
 - (4) hydraulic conductivity
24. Thiessen polygons are drawn by
- (1) joining rain gauge stations
 - (2) drawing lines of equal elevation
 - (3) drawing perpendiculars of lines joining rain gauge stations
 - (4) drawing lines of equal rainfall
25. A confined aquifer is the one that contains water
- (1) confined within atmospheric pressure
 - (2) at atmospheric pressure
 - (3) at more than atmospheric pressure
 - (4) at no pressure
26. Curve number represents
- (1) rainfall property
 - (2) watershed feature
 - (3) runoff trend
 - (4) stream flow feature
27. From the hydraulic efficiency point of view, the most efficient cross-section of an open channel is
- (1) semicircular
 - (2) rectangular
 - (3) trapezoidal
 - (4) parabolic

28. Time domain reflectometry is the method of monitoring

- (1) vapour pressure (2) solar radiation
(3) soil moisture (4) salt concentration

29. The unit hydrograph may be obtained by dividing the ordinates of the direct runoff hydrograph of a storm

- (1) direct runoff volume
(2) storm duration
(3) duration of unit hydrograph
(4) total runoff volume

30. A circular shaped watershed has a form factor of

- (1) 1 (2) 3.14 (3) 1.57 (4) 0.78

31. The time of concentration of a watershed is proportional to

- (1) $L^{1.77}$ (2) $S^{-0.385}$ (3) $L^{1.77}S^{0.385}$ (4) $S^{0.385}$

32. To derive the Hooghoudt's equation the following assumption is made "The hydraulic gradient at any point is equal to the slope of the water table above that point $\left(i = \frac{\partial y}{\partial x}\right)$ and the water flows horizontally". This assumption is known as

- (1) Cypress Creek (2) Kirkham
(3) Dupuit-Forchheimer (4) Glover-Dumm

33. A linear reservoir is one in which
- (1) volume varies linearly with elevation
 - (2) the storage varies linearly with the outflow rate
 - (3) the storage varies linearly with time
 - (4) the storage varies linearly with the inflow rate
34. Ratio of volume of water added or removed directly from the saturated aquifer to the resulting change in volume of aquifer below the water table is called
- (1) apparent specific yield
 - (2) specific yield
 - (3) storage coefficient
 - (4) specific storage
35. Interception losses
- (1) include only evaporation losses
 - (2) include evaporation and transpiration losses
 - (3) include evaporation, through flow and stream flow
 - (4) consist only of stream flow
36. Which of the following is the most accurate instrument for measuring stream flow velocity?
- (1) Coshocton wheel
 - (2) Dethridge wheel
 - (3) Current meter
 - (4) Surface float

37. Unit of runoff coefficient in the rational formula is

- (1) dimensionless (2) cm
(3) m (4) mm

38. The soil erodibility may decrease over time with

- (1) good management practices
(2) poor management practices
(3) high rainfall
(4) poor rainfall pattern

39. If the saturated hydraulic conductivity of a soil is 1 m/day, the rate of water transmission across a rectangular area 100 m long and 1 m height under a unit hydraulic gradient will be

- (1) $10 \text{ m}^3/\text{day}$ (2) $100 \text{ m}^3/\text{day}$ (3) $1 \text{ m}^3/\text{day}$ (4) $1000 \text{ m}^3/\text{day}$

40. The useful moisture of a soil is equal to its

- (1) field capacity
(2) saturation capacity
(3) moisture content at permanent wilting point
(4) difference between field capacity and permanent wilting point within the root zone of plants

41. Which one of the following defines Aridity Index (AI) ?

(1) $AI = \frac{PET - AET}{PET} \times 100$

(2) $AI = \frac{PET}{AET} \times 100$

(3) $AI = \frac{AET}{PET} \times 100$

(4) $AI = \frac{AET - PET}{AET} \times 100$

42. The dimension of intrinsic permeability

(1) $M^0L^2T^{-1}$

(2) $M^0L^2T^0$

(3) $M^0L^2T^{-2}$

(4) None of the above

43. The process of detachment and transportation of soil particles in rills is primarily a function of

(1) flow hydraulic

(2) susceptibility of soil detachment by flow

(3) transportability of detached sediment

(4) All of the above

44. Land use capability classification is primarily based on

(1) soil texture

(2) rainfall

(3) groundwater

(4) land slope

45. The cumulative infiltration equation is $I = 2t^{0.5}$ (I in cm, t in minutes). The instantaneous infiltration rate at 4 minutes from start will be

(1) 0.1 cm/min

(2) 0.5 cm/min

(3) 1.0 cm/min

(4) 1.5 cm/min

46. A drop spillway is used for

(1) erosion control

(2) flow measurement

(3) flow diversion

(4) flow regulation

47. Small watersheds are those, in which
- (1) runoff is major flow
 - (2) overland flow is major flow
 - (3) base flow is major flow
 - (4) All of the above
48. Erosivity refers to the potential ability of
- (1) soil to get erode
 - (2) rain drops and blowing wind to erode the particles
 - (3) wind to erode particles
 - (4) rain to erode particles
49. A chute spill way is used to convey water for an elevation difference
- (1) less than 1 m
 - (2) 1 m to 2 m
 - (3) 1 m
 - (4) more than 3 m
50. A 75% dependable rainfall means
- (1) magnitude of rainfall equal to 75% of normal
 - (2) chances of normal rainfall are 75%
 - (3) rainfall will be equal to or more than the given value 75% of the time
 - (4) None of the above
51. Effective rainfall in irrigation planning is equal to
- (1) total rainfall
 - (2) rainfall - runoff
 - (3) rainwater stored in root zone
 - (4) rainfall + runoff

52. The hydrologic flood-routing methods are

- (1) equation of continuity
- (2) equation of motion only
- (3) Both momentum and continuity equations
- (4) energy equations only

53. Rain drops are spherical in shape because of

- (1) surface tension
- (2) capillary
- (3) acceleration due to gravity
- (4) cohesion and adhesion

54. Groundwater recharge by surface flooding is primarily governed by.

- (1) infiltration rate
- (2) aquifer transmissibility
- (3) aquifer storage coefficient
- (4) saturated hydraulic conductivity

55. Rain gun is a term used to describe

- (1) gun usable in rains
- (2) dropping of guns like rain
- (3) gun that fires like rain
- (4) huge sprinkler head

56. Vertisols is a term used to define

- (1) very light soils
- (2) light soils
- (3) heavy clay soils
- (4) loam soils

57. Groundwater pollution is primarily caused by
- (1) nitrogenous fertilizers (2) phosphate fertilizers
(3) potassium fertilizers (4) micronutrients supplements
58. A saturated soil sample has 42.2 per cent water content and unit weight 2.69. The void ratio of the soil sample will be
- (1) 0.784 (2) 0.478 (3) 0.874 (4) 0.087
59. Tensiometer can effectively measure soil moisture tension in the range of
- (1) 0 to 1.5 atm (2) < 0.8 atm (3) 0 to 15 atm (4) 15 to 33 atm
60. Which of the following crops is most susceptible to waterlogging?
- (1) Fruits (2) Vegetables (3) Field crops (4) Paddy
61. The formula for recurrence interval return period is given by
- (1) $T = 1/N$ (2) $T = (p)^{1/2}$ (3) $T = (N + 1)/M$ (4) None of the above
62. A water year return to
- (1) expectance of a complete cycle of climatic changes
(2) water budget having least amount of carry over
(3) completion of hydrologic cycle
(4) Both (1) and (2)

63. The Glover-Dumm equation is particularly used to calculate the drain spacing in
- | | |
|-----------------|---------------------|
| (1) humid areas | (2) irrigated areas |
| (3) dry areas | (4) sloping areas |
64. The Gross Irrigation Requirement (GIR) of water is equal to
- | | | | |
|--------------------|---------------------------|-----------------------------------|-----------------------|
| (1) $NIR + \eta_d$ | (2) $NIR + \eta_d \eta_c$ | (3) $NIR + \frac{\eta_d}{\eta_c}$ | (4) None of the above |
|--------------------|---------------------------|-----------------------------------|-----------------------|
65. Trapezoidal weir with 1:4 side slopes is known as
- | | |
|------------------------|----------------------|
| (1) triangular weir | (2) rectangular weir |
| (3) sharp crested weir | (4) Cipolletti weir |
66. Casagrande's apparatus is used to determine
- | | |
|---------------------|-----------------------|
| (1) liquid limit | (2) plastic limit |
| (3) shrinkage limit | (4) None of the above |
67. A centrifugal pump discharging 10 lps water against a total head of 7.5 m would require
- | | | | |
|----------|----------|------------|-----------|
| (1) 1 hp | (2) 2 hp | (3) 7.5 hp | (4) 10 hp |
|----------|----------|------------|-----------|
68. Confined aquifer is also known as
- | | |
|-------------------------|---------------------------|
| (1) perched | (2) artesian aquifer |
| (3) water table aquifer | (4) semi-confined aquifer |

69. A well excavated in a confined aquifer always contains
- (1) higher water level than groundwater table
 - (2) lower water level than groundwater table
 - (3) same level as static water table
 - (4) saline water
70. Vertical entry into the soil through soil surface may be defined as
- (1) seepage rate
 - (2) percolation rate
 - (3) infiltration rate
 - (4) evaporation rate
71. An inundation irrigation system requires the construction of
- (1) only a diversion structure
 - (2) only a canal regulator
 - (3) neither a diversion structure nor a canal regulator
 - (4) Both a diversion structure and a canal regulator
72. In a rectangular channel section, the critical depth (h_c) is given by
- (1) $h_c = \sqrt{\frac{Q^2}{gb^2}}$
 - (2) $h_c = \sqrt[3]{\frac{Q^2}{b^2}}$
 - (3) $h_c = \sqrt[3]{\frac{Q^2}{gb^2}}$
 - (4) $h_c = \sqrt[3]{\frac{Q^2}{gb}}$
73. The value of dimensionless Froude number $\left(\frac{V}{\sqrt{gh}}\right)$ for critical flow should be
- (1) < 1
 - (2) 1
 - (3) > 1
 - (4) < 1

74. Rill erosion usually begins in the
- (1) lower part of land slope
 - (2) upper part of land slope
 - (3) middle of land slope
 - (4) entire length of land slope
75. Soil detachment in raindrop erosion takes place due to
- (1) KE of raindrop
 - (2) running flow
 - (3) PE of raindrop
 - (4) land slope
76. The portion of a chute spillway, which is known as its control structure, is
- (1) low ogee weir
 - (2) chute channel
 - (3) approach channel leading the water from the reservoir to the ogee weir
 - (4) stilling basin at its bottom
77. The rate of the flow of water through ground strata, can be estimated by
- (1) Manning's formula
 - (2) Strickler's formula
 - (3) Dupuit's formula
 - (4) Darcy's formula
78. In EI_{30}, I_{30} stands for
- (1) maximum rainfall intensity for 30 minutes duration
 - (2) rainfall intensity as 30 cm/h
 - (3) rainfall intensity at 30 minutes interval
 - (4) rainfall during 30 days

79. Lyaimeter is a device used to measure the

- | | |
|-----------------------------------|------------------------|
| (1) infiltration capacity of soil | (2) evapotranspiration |
| (3) evaporation | (4) transpiration |

80. DGPS is a device

- (1) to indicate position of the globe in a room
- (2) to indicate position of a point on the globe
- (3) to indicate position of earth in respect of the sun
- (4) to determine if a series is GP (Geometric Progression)

81. A greater soil erosion is observed in case of

- (1) soil surface covered by plant canopy
- (2) soil surface under grass cover
- (3) soil under forest cover
- (4) soil under cultivated crop

82. Mathematical equation used to describe saturated-unsaturated flow of water in drip irrigation

- | | |
|-------------------------|-------------------------|
| (1) Richard equation | (2) Continuity equation |
| (3) Bernoulli's theorem | (4) Laplace equation |

83. An intense short duration storm over a small hilly watershed produces a hydrograph of

- | | |
|---------------------|---------------------|
| (1) large time base | (2) large peak |
| (3) large lag time | (4) large base flow |

84. The height of a storage tank necessary to create a pressure of 1 kg/cm^2 in a connected pipe at the ground level will be about
- (1) 1 m (2) 10 m (3) 100 m (4) 1000 m
85. The velocity head in the case of fluid flow is the
- (1) kinetic energy per unit mass
 (2) kinetic energy per unit weight
 (3) kinetic energy per unit flow area
 (4) kinetic energy per unit drop in water surface
86. Contours of elevation 20 m and 21 m pass through two diagonally opposite corners of a rectangular field of $300 \text{ m} \times 400 \text{ m}$. The slope between two corners is
- (1) 0.2% (2) 0.5% (3) 1% (4) 1.4%
87. A 4-hr unit (1 cm) hydrograph does not mean
- (1) the duration of daily rainfall is 4 hr
 (2) the intensity of rainfall over the entire catchment is 2.5 mm/hr constant
 (3) 1 cm depth of rainfall over the entire catchment
 (4) 1 cm depth of rainfall excess over the entire catchment
88. The sequence of water erosion is
- (1) splash, sheet, rill and gully (2) sheet, rill, raindrop and gully
 (3) rill, sheet, splash and gully (4) gully, splash, rill and sheet

89. A geologic formation, which can absorb water but can not transmit significant amount is called an
- (1) aquifuge (2) aquiclude (3) aquitard (4) aquifer
90. Well log is prepared during
- (1) well development (2) strainer installation
(3) bore drilling (4) gravel packing
91. A field measuring 30 hectares, 40 cm of water was stored in the root zone when 6 cumec of water was applied for 8 hours. What will be application efficiency?
- (1) 70% (2) 75% (3) 69.44% (4) 80%
92. The electrical conductivity of medium saline water (C_2) at 25 °C is of the order
- (1) 50 to 100 $\mu\text{m}/\text{cm}$ (2) 100 to 250 $\mu\text{m}/\text{cm}$
(3) 250 to 750 $\mu\text{m}/\text{cm}$ (4) 750 to 1500 $\mu\text{m}/\text{cm}$
93. In drip irrigation design, the design criteria is generally based on an emitter flow variation of
- (1) < 20% (2) > 20% (3) < 5% (4) < 10%
94. Sprinkler irrigation system performance is considered satisfactory when minimum value of the uniformity coefficient is
- (1) 65% (2) 75% (3) 85% (4) 95%

95. To check the gully from scouring backward, the gradient of gully head should be reduced up to the angle of
(1) 15° (2) 20° (3) 30° (4) 45°
96. Venturi used for doing fertigation in micro-irrigation system working on the following theorem
(1) Kennedy's (2) Khosla's (3) Bernoulli (4) Jones
97. Which of the following mineral particle size is classified as silt according to ISSS ?
(1) 0.05 to 0.1 mm (2) 0.002 to 0.05 mm
(3) 0.002 to 0.02 mm (4) None of the above
98. When two centrifugal pumps are operated in series, the discharge
(1) increases (2) decreases
(3) remains constant (4) None of the above
99. The discharge rates of drip emitters are usually ranges from
(1) 2-10 litres/day (2) 2-10 litres/h
(3) 2-10 litres/min (4) 2-10 litres/sec
100. Sheet flow is generated when
(1) land slope is steep
(2) land surface is rough
(3) land surface is smooth with uniform slope
(4) land slope is negative

101. Hydraulic jump takes place when

- (1) flow changes from critical to super critical
- (2) flow changes from subcritical to critical
- (3) flow changes from subcritical to supercritical
- (4) flow changes from supercritical to subcritical

102. Use of canal water and groundwater for irrigation in the same area is known as

- (1) consumptive use of water
- (2) conjunctive use of water
- (3) integrated use of water
- (4) multiple use of water

103. Traditional *Warabandi* system of water distribution achieves

- (1) time equity in water distribution
- (2) volumetric equity in water distribution
- (3) water requirement equity in water distribution
- (4) social equity in water distribution

104. NRSA stands for

- (1) National Remote Space Administration
- (2) National Remote Satellite Agency
- (3) National Remote Space Agency
- (4) National Remote Sensing Agency

105. NDVI stands for
- (1) Numerical Digit Vegetation Index
 - (2) Normalized Difference Vegetation Index
 - (3) Numerical Digitization Vegetation Index
 - (4) Numerical Difference Value Indicator
106. Radar is a system to detect object using
- (1) Gamma-ray
 - (2) X-ray
 - (3) Radio waves
 - (4) Beta-ray
107. An image with a ground resolution of 10 metres shows no ground features with surface area
- (1) smaller than $10\text{ m} \times 10\text{ m}$
 - (2) greater than $10\text{ m} \times 10\text{ m}$
 - (3) smaller than 10 square metres
 - (4) smaller than 1 square metre
108. If the electrical conductivity of irrigation and drainage water is 0.2 mmhos/cm and 0.4 mmhos/cm respectively, the leaching requirement will be equal to
- (1) 80%
 - (2) 50%
 - (3) 20%
 - (4) 40%
109. The common size of screen openings for wells is
- (1) 1.5 to 5.0 mm
 - (2) 5.0 to 10 mm
 - (3) 10 to 15 mm
 - (4) 15 to 20 mm
110. The safe entrance velocity through a well screen is
- (1) 0.3 mm/s
 - (2) 3 mm/s
 - (3) 30 mm/s
 - (4) 300 mm/s

111. If the saturated hydraulic conductivity of a soil is 1 m/day, the rate of water transmission across a rectangular area 100 m long and 1 m height under a unit hydraulic gradient will be
 (1) $10 \text{ m}^3/\text{day}$ (2) $100 \text{ m}^3/\text{day}$ (3) $1 \text{ m}^3/\text{day}$ (4) $1000 \text{ m}^3/\text{day}$
112. Alkali soils are reclaimed by
 (1) leaching only (2) addition of gypsum and leaching
 (3) addition of gypsum only (4) provision of drainage
113. Land having no significant limitations to sustained application of a given use can be put under the class
 (1) Class S1 (2) Class S2 (3) Class S3 (4) Class SN
114. The average rainfall in India is about
 (1) 1194 mm (2) 1384 mm (3) 1591 mm (4) 2000 mm
115. Flow in an irrigation channel is considered as
 (1) gradually varied (2) spatially varied
 (3) rapidly varied (4) uniform
116. Revised USLE was developed by
 (1) Wischmeir and Smith (2) Wischmeir and Kneath
 (3) Kneath *et al* (4) Williams

117. If the diameter of a pipe is halved, flow of water in it experiences the increase in the head loss due to friction are
(1) two times (2) four times (3) ten times (4) sixteen times
118. The quantity n as used in Manning's formula
(1) is considered dimensionless (2) has the dimension of L
(3) has the dimension of $L^{1/3}$ (4) has the dimension of $L^{1/6}$
119. Most commonly, the side slope of dugout pond key trench is kept as
(1) 1:2 (2) 2:1 (3) 3:1 (4) 1:1
120. The quick sand condition is created due to
(1) frictionless nature of soil
(2) low value of cohesion soil
(3) upward seepage force greater than submerged weight of soil
(4) downward seepage pressure

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ़ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ०एम०आर० उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।