NPSC TECHNICAL MOCK EXAM

AGRICULTURAL ENGINEERING PAPER 1 APRIL

1. The volume of irrigated water divided by the area irrigated is called as

   a) Delta
   b) Duty
   c) Base
   d) Intensity of irrigation
   Ans: a) Delta

2. Ratio of total cropped area in different seasons to the total land area is known as

   a) Cropping pattern
   b) Cropping Intensity
   c) Multiple cropping
   d) Single cropping
   Ans: b) Cropping Intensity

3. Major Irrigation Projects have a culturable command area

   a) Less than 2000 ha

   b) 2000-10,000 ha

   c) More than 10,000 ha

   d) 10000 ha

   Ans: c) More than 10,000 ha

4. Total Geographical Area of India is about

   a) 405 Mha

   b) 229 Mha

   c) 119 Mha

   d) 329 Mha

   Ans: d) 329 Mha

5. The capillary rise above the free water surface is called as

   a) Tension

   b) Capillary potential

   c) Suction head

d) None of the above

Ans: c) Suction head

6. A plant receives the water and most of the soil nutrients from

a) Zone of aeration

b) Zone of saturation

c) Capillary fringe

d) Phreatic surface

Ans: c) Capillary fringe

7. Capillary movement is always from

a) Higher suction region to lower suction region

b) Lower suction region to higher suction region

c) Higher elevation to lower elevation

d) None of the above

Ans: b) Lower suction region to higher suction region

8. Radius of soil pore is usually taken as

a) 1/5 th of the particles sphericity

b) ½ of d_{10}

c) 1/10 th of the mean diameter of soil particle

d) None of the above

Ans: c) 1/10 th of the mean diameter of soil particle

9. A plant normally has highest root density in

a) Top half of the effective root zone depth

b) 1st quarter of the effective root zone depth

c) 2nd quarter of the effective root zone depth

d) 3rd quarter of the effective root zone depth

Ans: a) Top half of the effective root zone depth

10. The P^F of most soils varies from

a) 2.5 to 4.5

b) 0.25 to 0.45

c) 3 to 6

d) 25 to 30

Ans: a) 2.5 to 4.5

11. Infiltration rate in case of furrow irrigation is usually expressed as

a) litre/min

b) cm/sec

c) litre/min for 100 m of furrow length.

d) All of the above

Ans: c) litre/min for 100m of furrow length

12. A direct relationship between rainfall and infiltration is found to be valid, when

a) Rainfall intensity is more than infiltration rate

b) Rainfall intensity is less than infiltration rate

c) Rainfall intensity is very high

d) None of the above

Ans: b) Rainfall intensity is less than infiltration rate

13. For the same texture of land, infiltration rate is higher in

a) Cropped soil

b) Forest soil

c) Pasture land

d) Barren land

Ans: b) Forest soil

14. Potential evaporation represents evaporation from

a) Cropped land

b) Pan evaporimeter

c) Large free water body

d) All of the above

Ans: c) Large free water body

15. Logarithms of height of water columns (cm) representing total stress with which water is held into soil is called as

a) Suction head
b) Hygroscopic head
c) Bar
d) P^F

Ans: d) P^F

16. The formations that transmit water uniformly in all directions are said to be

a) Isotropic

b) Anisotropic

c) Homogeneous

d) Ideal

Ans: a) Isotropic

17. The total quantity of water required for essential physiological functions of the plant is usually

a) Less than 5% of all water absorbed
b) More than 5% of the available water
c) The available water at field capacity
d) None of the above

Ans: a) Less than 5% of all water absorbed

18. Tensiometers are best suitable for sandy soil because

a) Large part of the available moisture to plant is held at a tension of less than 1atm

b) Loose in nature

c) It contains less moisture compared to other soils

d) All of the above

Ans: a) Large part of the available moisture to plant is held at a tension of less than 1atm

19. The maximum water vapour movement in soil takes place just

a) After the permanent wilting point

b) Before the permanent wilting point

c) Before field capacity

d) None of the above

Ans: b) Before the permanent wilting point

20. All natural channels are generally

a) prismatic

b) ideal

c) Non-prismatic

d) None of the above

Ans: c) Non-prismatic

21. The passage of flood wave in a river is the case of

a) Unsteady uniform flow

b) Unsteady Rapidly Varied flow

c) Unsteady Gradually Varied flow

d) None of the above

Ans: b) Unsteady Rapidly Varied flow

22. Amongst all possible sections of channel, a least perimeter is found in

a) Semi-circular shape

b) Triangular shape

c) Trapezoidal shape

d) Parabolic shape

Ans: a) Semi-circular shape

23. When the flow under super critical condition changes into sub critical condition, the hydraulic phenomena lead to

a) Hydraulic drop
b) Hydraulic jump
c) Eddies Formation
d) None of the above

Ans: b) Hydraulic jump

24. The vertical distance between free surface of water and any arbitrary datum is called as

a) Stage
b) Reference height
c) Gravity head
d) Freeboard

Ans: a) Stage

25. For measurement of water flow at farm, the common weir is

a) Sharp crested weir

b) V-notch weir

c) Broad crested weir

d) None of the above

Ans: a) Sharp crested weir

26. In weirs, the scale or gauge used for measurement of head should be located at a distance of

a) About 4 times the approximate head
b) 150cm
c) 100cm
d) 10cm

Ans: a) About 4 times the approximate head

27. To ensure a correct measurement of flow through a large orifice, the

a) Partial submerged flow condition is essential

b) Free flow of condition is essential

c) Submerged flow condition is essential

d) None of the above

Ans: a) Partial submerged flow condition is essential

28. The sheet of flowing water over the weir is called as

a) Nappe

b) Weir crest

c) Water depth

d) None of the above

Ans: a) Nappe

29. V-notch weirs are used to measure

a) Small to medium discharge

b) Small discharge

c) Medium discharge

d) None of the above

Ans: a) Small to medium discharge

30. The frictional resistance offered to the flow in channel is directly proportional to the

a) Hydraulic radius

b) Flow area

c) Wetted perimeter

d) None of the above

Ans: c) Wetted perimeter

31. To carry the discharge down the slope through a lined channel rather than by dropping the water in a free overfall, the suitable structure is

a) Drop inlet spillway
b) Chute spillway
c) Drop structure
d) All above

Ans: b) Chute spillway

32. In rainfed areas, the actual consumptive use during majority of the year is

a) Higher than the potential consumptive use

b) Equal to PET

c) Lesser than the potential consumptive use

d) None of the above

Ans: c) Lesser than the potential consumptive use

33. Pan evaporation data are recorded daily at

a) 8:30 h IST

b) 18:30 h IST

c) 12:00 Noon

d) None of the above

Ans: a) 8:30 h IST

34. Irrigation requirement of a crop denotes

a) Leaching losses + special operation losses only

b) Sum of water losses due to evapo-transpiration and other unavoidable losses

c) Evapo- transpiration loss only

d) Runoff losses

Ans: b) Sum of water losses due to evapo-transpiration and other unavoidable losses

35. Evapo-transpiration will be greater when average moisture content in the soil is closer to

a) Wilting point

b) Saturation stage

c) Permanent wilting point

d) Field capacity

Ans: d) Field capacity

36. Measurement of evapotranspiration rate by Lysimeter is based on

a) Inflow- outflow relationship

b) Soil moisture depletion level

c) Water- balance equation

d) All of the above

Ans: c) Water- balance equation

37. For absorbing moisture and creating osmotic pressure for water movement, the most effective component of the plant is

a) Leaves
b) Xylem
c) Stem
d) Root

Ans: d) Root

38. If net irrigation for a crop is 8cm and field efficiency is 75%, then gross irrigation depth to be

applied, will be

a) 8.75 cm
b) 10.66 cm
c) 6cm
d) 12.0 cm

Ans: b) 10.66 cm

39. The most efficient and widely used method for computation of land grading work is

a) End point method

b) Grid method

c) Least square method

d) All of the above

Ans: c) Least square method

40. Under land grading work, the volume of cut should be greater than volume of fill by

a) 15 to 25%

b) 15 to 50%

c) 20 to 30%

d) 10 to 20%

Ans: b) 15 to 50%

41. For medium soils (loam), the recommended safe limit of longitudinal slope for efficient irrigation varies from

a) 0.2 to 0.4%
b) 0.25 to 0.5%
c) 0.1 to 0.15%
d) 0.25 to 0.65%

Ans: a) 0.2 to 0.4%

42. Cut- fill ratio under land levelling varies from

a) 1.5 to 3.0

b) 1.5 to 2.0

c) 1 to 1.5

d) 1.2 to 1.6

Ans: d) 1.2 to 1.6

43. Equipment employed for making ditches/ channels is

a) A-frame ridger

b) V-ditcher

c) Mould board plough

d) Disc ridger

Ans: b) V-ditcher

44. Border irrigation is most commonly used in

a) Horticultural crops

b) Vegetable crops

c) All close growing grain crops

d) Row crops oftenly

Ans: c) All close growing grain crops

45. Hydraulic force causing water movement is the function of

a) Field slope

b) Stream size

c) Surface Head

d) All of the above

Ans: c) Surface Head

46. Parallelism of advance curve and recession curve denotes

a) Less depth of water application

b) Highest uniformity coefficient of irrigation

c) Uniform distribution of water throughout the border

d) None of the above

Ans: c) Uniform distribution of water throughout the border

47. Check basin method of irrigation is not suitable for irrigating the crops, which are

a) Sensitive to wet condition

b) Sensitive to dry condition

c) Sensitive to insects and pests

d) All of the above

Ans: a) Sensitive to wet condition

48. For the crops like maize etc which are affected by the ponding of water, the most suitable method for irrigation is

a) Border method
b) Check basin method
c) Drip method
d) Furrow method

Ans: d) Furrow method

49. The most important variables affecting characteristics of flow in furrow irrigation system is

a) Wetting front
b) Cut fill ratio
c) Infiltration of water
d) All of the above

Ans: c) Infiltration of water

50. In sub irrigation, the root system of plant receives the moisture through

a) Infiltration action

b) Capillary action

c) Gravitational flow

d) All of the above

Ans: b) Capillary action

51. Sprinkler method of irrigation is not suitable in the soils having infiltration rate as

a) 2.5 mm/hr

b) 5.0 mm/hr

c) 3.5 mm/hr

d) 4.0 mm/hr

Ans: a) 2.5 mm/hr

52. For satisfactory operation of sprinkler system, the pressure variation in laterals should

a) be more than 20% of maximum pressure

b) not be more than 20% of maximum pressure

c) be ± 0.5%

d) None of the above

Ans: b) not be more than 20% of maximum pressure

53. For a water scare region, the most suitable irrigation technique is

a) Sprinkler system

b) Check Basin System

c) Border Irrigation

d) Drip irrigation

Ans: d) Drip irrigation

54. A formation which neither contain nor transmit water is called as

a) Aquifer

b) Aquifuge

c) Aquiclude

d) Aquitard

Ans: b) Aquifuge

55. The volume of water that is retained by molecular and surface tension force against gravity force is called as

a) Specific retention

b) Pore water

c) Specific yield

d) None of the above

Ans: a) Specific retention

56. Transmissivity of aquifer has a dimension of

a) L/T

b) L^2/T

c) L/T^2

d) None of the above

Ans: b) L^2/T

57. Constant head permeameter is suitable to determine the hydraulic conductivity of

a) Coarse grained formation

b) Fine grained formation

c) Medium grained formation

d) None of the above

Ans: a) Coarse grained formation

58. A slug test for evaluation of aquifer parameters is restricted to

a) Unconfined aquifer with small transmissivity

b) Artesian aquifers with moderate transmissivity

c) Artesian aquifers with small transmissivity

d) None of the above

Ans : c) Artesian aquifers with small transmissivity

59. The distance from the centre of the well to the outer boundary of cone of depression is termed as

a) Cone of depression

b) Radius of influence

c) Zone of influence

d) None of the above

Ans: b) Radius of influence

60. Effective grain size of aquifer material is designated as

a) D_{50}

b) D_{10}

c) D_{40}

d) D_{60}

Ans: b) D_{10}

61. For construction of well, the gravel material to be used should have

a) Cu 2.5

b) Cu less than 2.5

c) Cu 3.0

d) Cu more than 2.5 and less than 3.0

Ans: b) Cu less than 2.5

62. Diameter of dug well in unconsolidated formation varies from

a) 1.5 to 4.5 m

b) 3 to 6 m

c) 6 to 8 m

d) 5 to 10 m

Ans: a) 1.5 to 4.5 m

63. Generally , the size of screen openings is selected to retain

a) 30 to 50% of formation materials

b) About 35% of formation materials

c) 30 to 70% of gravel pack materials

d) None of the above

Ans: a**) 30 to 50% of formation materials**

64. The maximum permissible range of P^H of water for its use is

a) 7 to 10

b) 7 to 8

c) 5 to 7

d) 6 to 9

Ans: b) 7 to 8

65. Presence of silt in water is generally beneficial to

a) Domestic

b) Industrial

c) Agriculture

d) All of the above

Ans: c) Agriculture

66. Persian wheel is a

a) Low height water lifting device

b) Medium height water lifting device

c) Hand operated water lifting device

d) None of the above

Ans: b) Medium height water lifting device

67. The depth from which liquid has to be lifted by the pump is known as

a) Suction head

b) Delivery head

c) Velocity head

d) None of the above

Ans: a) Suction head

68. A low lift centrifugal pump can work against head of

a) About 7.5 m

b) Upto 15 m

c) 10 to 15 m

d) 5.0 m

Ans: b) Upto 15 m

69. Cavitation occurs when

a) Pressure falls below atmosphere

b) Pressure above atmosphere

c) Suction head is very high

d) None of the above

Ans: a) Pressure falls below atmosphere

70. In centrifugal pump, the head varies as the

a) Square root of speed

b) Square of impeller diameter

c) No. of stages

d) None of the above

Ans: b) Square of impeller diameter

71. Line joining equal elevations of ground water table is called as

a) iso bar

b) isohyets

c) iso chrome

d) iso bath

Ans: d) iso bath

72. Drainage coefficient is the depth of water (Cm) to be removed from an area in a period of

a) 12h

b) 6 h

c) 24 h

d) 10 h

Ans: c) 24 h

73. Most common cross – section of open ditch used for drainage system is

a) Triangular

b) Parabollic

c) Trapezoidal

d) Circular

Ans: c) Trapezoidal

74. Darcy's law is valid as long as the velocity of flow and soil properties are such that Reynold's number is

a) More than 1
b) Less than 1
c) 1
d) 10

Ans: b) Less than 1

75. The surface drainage system in which laterals are parallel and meet the main drain from both sides at few angle is called as

a) Grid iron system
b) Herringbone system
c) Bedding system
d) None of the above

Ans: b) Herringbone system

76. Hooghoudt's equation is valid for

a) Isotropic soil without impermeable layer below the soil surface

b) Anisotropic soil with impermeable layer below the soil surface

c) Homogeneous soil with impermeable layer below the soil surface

d) All the soils

Ans: c) Homogeneous soil with impermeable layer below the soil surface

77. For lowering of water table permanently from the field, the suitable method is

a) Surface drainage

b) Well point system

c) Sub surface drainage

d) Both a and c

Ans: c) Sub surface drainage

78. The most suitable soil for use of mole drainage systems is

a) Soil with 25-50% clay content

b) Clay soil

c) Sandy soil

d) Both a and b

Ans: a) Soil with 25-50% clay content

79. A smaller value of drainage coefficient is considered for design of

a) Surface drainage system

b) Sub- surface drainage system

c) Mole drainage system only

d) Both a and b

Ans: b) Sub- surface drainage system

80. Leaching requirement for a soil will be greater under

a) Less tolerable crop condition

b) Highly tolerable crop condition

c) Level surface condition

d) Smooth surface condition

Ans: a) Less tolerable crop condition

81. The least effective vegetation for protecting the soil form erosion is

a) Tall tree crops

b) Low height crops with big leaves

c) Dense grass

d) Grain crops

Ans: a) Tall tree crops

82. On increment of land slope 4 times, the transportation of particle is increased by

a) 4 times

b) 8 times

c) 16 times

d) 32 times

Ans: d) 32 times

83. Transportation ability of flowing water varies as

a) Fifth power of its velocity

b) Square of its velocity

c) Square root of its velocity

d) Fourth power of its velocity

Ans: a) Fifth power of its velocity

84. An erosion is considered to be insignificant, when erosion intensity is

a) 1.0 m^3/ha/y

b) Less than 0.5 m^3/ha/y

c) 0.5 m^3/ha/y

d) 5.0 m^3/ha/y

Ans: b) Less than 0.5 m^3/ha/y

85. The detachment and transportation processes on the inter rill areas occur essentially independent of

a) Rill erosion

b) Sheet erosion

c) Splash erosion

d) Stream bank erosion

Ans: a) Rill erosion

86. Stage 3 of gully development refers to

a) Stabilized stage

b) Initiation stage

c) Healing stage

d) None of the above

Ans: c) Healing stage

87. Contour cultivation is found difficult in the area dominated by

a) U- shaped gullies

b) V- shaped gullies with water flow

c) U–shaped gullies without water flow

d) V-shaped gullies

Ans: d) V-shaped gullies

88. Above gully head, the diversion canals should be located at a distance

a) Equal to or twice the gully depth

b) Less than 15 m

c) More than 15 m

d) Of 150 m

Ans: a) Equal to or twice the gully depth

89. The apron length in rubble masonary dam should

a) 1.5 m

b) Be equal to 1.5 times the dam height

c) Not be less than 1.5 times dam height

d) Be ¾ of dam height

Ans : c) Not be less than 1.5 times dam height

90. To ensure the hydraulic structure safe against sliding , the sum of all resisting forces should be equal to

a) 0.75 times the sum of all horizontal forces
b) 1.5 times the sum of all horizontal forces
c) Weight of structure
d) None of the above

Ans: b) 1.5 times the sum of all horizontal forces

91. Thickness of apron / stilling basin is decided based on

a) Frictional forces

b) Eccentricity of all forces

c) Uplift pressure acting on it

d) None of the above

Ans: c) Uplift pressure acting on it

92. Masonary spurs are located at the point , where

a) Immediate control is needed

b) Stream current is swift

c) Sharp bend takes place

d) Both a and b

Ans: c) Sharp bend takes place

93. Spacing of spur is equal to

a) 3times the stream water depth

b) 7 times the vertical projection

c) 0.5 times the stream width

d) None of the above

Ans: b) 7 times the vertical projection

94. Homogeneous cohesive banks are most frequent to failure through

a) Catastrophic shear failure

b) Rotational slip failure

c) Cantilever slip failure

d) Non circular rotational slip failure

Ans: a) Catastrophic shear failure

95. Torrent is associated to

a) Strong water current

b) Uniform water flow

c) Turbulent water current

d) Water flow with less velocity

Ans: a) Strong water current

96. The length of brush wood rollers used for constructing the brush wood edging for bank erosion control is from

a) 10 to 15 m
b) 5 to 10m
c) 2 to 3 m
d) 8 to 9 m

Ans: c) 2 to 3 m

97. Erosive power of wind velocity is evaluated based on

a) Actual wind velocity at ground surface

b) Friction velocity

c) Maximum wind velocity

d) None of the above

Ans: b) Friction velocity

98. Quantity of soil movement through wind varies as the

a) Square of the particle diameter

b) Square root of particle diameter

c) Third power of wind velocity

d) Square of wind velocity

Ans: b) Square root of particle diameter

99. Maximum transportation of soil particles is carried out under

a) Suspension

b) Saltation

c) Surface creep

d) Tunneling

Ans:b) Saltation

100. The particles of diameter greater than 0.84 mm are assumed to be

a) Erodible by wind

b) Colloidal

c) Non erodible by wind

d) None of the above

Ans: c) Non erodible by wind

101. For development of shelter belt, there is a general rule that width of shelter belt should normally be

a) 10 times the field width

b) 10 times the height of shelter belt

c) 4 times the row to row spacing

d) None of the above

Ans: b) 10 times the height of shelter belt

102. Soil erosion from a field takes place, when

a) Soil erodibility dominates rainfall erosivity.

b) Rainfall erosivity dominates the soil erodibility

c) Soil erodibility is zero

d) Erosivity is zero

Ans: b) Rainfall erosivity dominates the soil erodibility

103. A raindrop causes maximum detachment of soil particles, when it strikes the particle at

a) 120^{o} from horizontal

b) 30^{o} from horizontal

c) 90^{o} from horizontal

d) 60^{o} from horizontal

Ans: c) 90^{o} from horizontal

104. Indicator of soil erodibility is mainly considered as

a) Infiltration rate of soil

b) Soil structure

c) Land gradient

d) percentage of clay content in the soil

Ans: d) percentage of clay content in the soil

105. A soil is said to be non-erodible when erosion ratio is

a) 10

b) More than 10

c) Less than 10

d) 0

Ans: c) Less than 10

106. I_{30} index method for computing the rainfall erosivity, consider the rainfall intensity

a) 30 mm/hr

b) Less than 30 mm/hr

c) For maximum 30 minutes rainfall duration

d) More than 30 mm/hr

Ans: c) For maximum 30 minutes rainfall duration

107. Permanent limitations refer to those land characteristics which can

a) easily be modified by minor land improvement works.

b) not be modified by minor land improvement works

c) be removed by tillage practices

d) none of the above

Ans: b) not be modified by minor land improvement works

108. Land capability sub-classes are formed on the basis of limitations regarding

a) soil type

b) land slope

c) land use

d) soil depth

Ans: c) land use

109. Landuse sub-class (w) indicates the lands, under the problem of

a) shallow soil depth

b) erosion and runoff

c) wetness and drainage

d) climatic limitations

Ans: c) wetness and drainage

110. In low rainfall areas, the primary purpose of contour cultivation is to

a) Reduce soil loss

b) Reduce runoff

c) Increase crop yield

d) Conserve rainwater into the soil

Ans: d) Conserve rainwater into the soil

111. The width of buffer strip crops usually varies from

a) 5 to 10 m

b) 10 to 15 m

c) 15 to 20 m

d) 2 to 4 m

Ans: d) 2 to 4 m

112. Relationship between mulching rate and soil loss from the ground surface is

a) Logarithmic

b) Linear

c) Exponential

d) Non-linear

Ans: c) Exponential

113. The mechanical measures for soil conservation are considered as

a) first line of defence

b) second line of defence

c) substitute of soil loss control

d) None of the above

Ans: a) first line of defence

114. The contour cultivation is most effective on slopes

a) 15 %

b) from 3 to 8 %

c) 10 to 15 %

d) 15 to 20 %

Ans: b) from 3 to 8 %

115. The graded bunds are also known as

a) Broad base bund

b) Paddy terrace

c) Channel terrace

d) Level bund

Ans: c) Channel terrace

116. Normally, in the soils having high infiltration and permeability and engauged under agronomical practices for soil loss control etc.

a) 5% extra space is given to the VI
b) 25% extra space is given to the VI
c) 20% extra space is given to the VI
d) 15% extra space is given to the VI

Ans: b) 25% extra space is given to the VI

117. The formula for bund length per hectare is given by

a) $\frac{10000}{HI}$

b) $\frac{S}{EI} \times 100$

c) $\frac{VI}{S} \times 100$

d) Both a and b

Ans: a) $\boldsymbol{\frac{10000}{HI}}$

118. Contour trenches are recommended to construct on the land slope of

a) 5%

b) 10%

c) 15%

d) greater than 33%

Ans: d) greater than 33%

119. For the design of channel cross-section in graded bunds, the safe velocity of flow for sandy soil is considered as

a) 1.5 m/sec
b) 2.0 m/sec
c) 1.75 m/sec
d) 0.50 m/sec

Ans: d) 0.50 m/sec

120. Soil loss is directly proportional to the power of

a) 0.5 of slope steepness

b) 0.5 of slope length

c) 0.75 of slope length

d) 0.75 of slope steepness

Ans: b) 0.5 of slope length

121. Level bench terraces are also known as

a) Orchard type bench terraces

b) Paddy terraces

c) Hill type terraces

d) Both a and b

Ans: b) Paddy terraces

122. In worse cases, the construction of bench terrace can be done upto the land slope of

a) 50 %

b) 60%

c) 33%

d) 45%

Ans: c) 33%

123. The bottom width of shoulder bund in case of outwardly sloping bench terrace is taken as

a) 150 cm
b) 75 cm
c) 120 cm
d) 30 cm

Ans: c) 120 cm

124. The recommended land slope for construction of graded broad base terrace is

a) 3 to 10%

b) 1 to 2%

c) 12 to 15%

d) 17 to 30%

Ans: a) 3 to 10%

125. The maximum length of broad base terrace varies from

a) 100-150 m

b) 400 to 500 m

c) 200 to 300 m

d) 500 to 1000 m

Ans: b) 400 to 500 m

126. The design of grassed waterways is done based on the return period of

a) 20 years

b) 10 years

c) 50 years

d) 25 to 30 years

Ans: b) 10 years

127. For the design of grassed waterway to be under a sod of excellent cover, the permissible flow velocity should be from

a) 1.5 to 1.8 m/sec
b) 2 to 2.5 m/sec
c) 3 to 3.5 m/sec
d) 1 to 1.5 m/sec

Ans: b) 2 to 2.5 m/sec

128. The most suitable shape of grassed waterway for use is

a) Trapezoidal

b) Rectangular

c) Parabolic

d) Triangular

Ans: c) Parabolic

129. For design of grassed water ways the Manning's roughness co-efficient is generally taken as

a) 0.5 to 0.8
b) 1.5
c) 1.0
d) 0.4

Ans: d) 0.4

130. In gullied areas, the diversion should be constructed on gully head at a distance of about

a) 150 m
b) 75 m
c) 3 times the height of overfall in gully
d) 50 to 100 m

Ans: c) 3 times the height of overfall in gully

131. Value of soil loss tolerance varies from

a) 2 to 10 ton/acre/y

b) 2 to 3 ton/ha/y

c) 1 to 5 ton/acre/y

d) 10 to 20 ton/ha/y

Ans: c) 1 to 5 ton/acre/y

132. In USLE/RUSLE, the specification of 'unit plot' is

a) 10 m length with 4.5% uniform slope

b) 22.10 m length with 9% uniform slope

c) 15 m length with 9% uniform slope

d) 50 m length with 9% uniform slope

Ans: b) 22.10 m length with 9% uniform slope

133. Line joining equal rates of soil erosion is called as

a) isochrone

b) isobath

c) isohyet

d) isoerodent

Ans: d) isoerodent

134. The value of factor-L is higher, when

a) Rill erosion is dominant

b) Sheet erosion is dominant

c) Splash erosion is dominant

d) Slope steepness is less

Ans: a) Rill erosion is dominant

135. Maximum soil loss from a barren field without any conservation measure is given by

a) A=RKLS

b) A=RK

c) A=RKLSCP

d) A=RKCP

Ans: a) A=RKLS

136. Soil erosion will be maximum under the combination of

a) Drop splash+ surface flow

b) Drop splash+ standing water

c) Drop splash+ rough surface

d) Surface flow + rough surface

Ans: a) Drop splash+ surface flow

137. The average annual EI_{30} of India is

a) 250

b) 150

c) about 496

d) 1000

Ans: c) about 496

138. For a barren field, the value of crop management practices factor is taken as

a) 1.5

b) 1

c) 0.50

d) 2.0

Ans: b) 1

139. MUSLE predicts

a) Annual soil loss (t/ha/y)

b) Sediment yield (t/ha/y)

c) Seasonal soil loss

d) storm-wise soil loss

Ans: b) Sediment yield (t/ha/y)

140. In grassland farming, the main crops are

a) Hay and grass silage

b) Maize and Berseem

c) Jowar and Berseem

d) None of the above

Ans: a) Hay and grass silage

141. Drainage density varies inversely with:

(a) Number of streams

(b) Stream orders

(c) Length of overland flow

(d) Stream length

Ans:- (c) Length of overland flow

142. Controls are laid out in a stream, to create proper flow conditions for measurement of:

(a) The velocity of flow

(b) The cross section area of flow

(c) The stage of water level

(d) None of these

Ans:- (c) The stage of water level

143. Small watersheds are those in which

(a) Runoff is predominant

(b) Over land flow is predominant

(c) Base flow is predominant

(d) All of the above

Ans:- (b) Over land flow is predominant

144. The flood routing by hydrologic method is based on the:

(a) Energy equation

(b) Equation of motion

(c) Continuity equation

(d) Momentum and continuity equation

Ans:- (c) Continuity equation

145. Streams always carry water are called:

(a) Perennial streams

(b) Ephemeral streams

(c) Intermittent streams

(d) Biannual streams

Ans:- (a) Perennial streams

146. In the forest watersheds, one of the major causes for mass landslides is:

(a) Too much of terracing

(b) Plantation of fruit crops

(c) Construction of roads

(d) High plant density

Ans:- (c) Construction of roads

147. Seepage line is similar to:

(a) An ellipse

(b) parabola

(c) straight line

(d) hyperbola

Ans:- (b) parabola

148. The line of seepage in an earth embankment is also called the:

(a) Phreatic line

(b) Lower most flow line

(c) Run off line

(d) Water pressure line

Ans:- (a) Phreatic line

149. Micro-irrigation is also called:

(a) Nano-irrigation

(b) Petite irrigation

(c) Localized irrigation

(d) Flood irrigation

Ans:- (c) Localized irrigation

150. A hyetograph is drawn as a plot of ……....

a) Runoff discharge vs. time
b) Rainfall intensity vs. time
c) Rainfall volume vs. time
d) Cumulative rainfall volume vs. time

151. Generally the water equivalent of snowfall is considered to be equal to
a) 40%
b) 10%
c) 25%
d) 100%

152. The basic intake rate is the highest in respect of ……
a)Heavy textured soil
b)Moderately textured soil
c) Sandy soil
d) Clay-loam soil

153. Computation of evaporation by the energy budget method is based on
a) Water balance method
b) Law of the conservation of energy
c) Lysimeter data
d) Potential evaporation

154. Stage recorders measure ……
a) Velocity of flow
b) Discharge rate
c) Height of the water level in a channel
d) None of these

155. Rating curves for stream discharge are relationships between the ……
a)Velocity and depth of flow
b)Discharge and stage of flow
c) Discharge and velocity of flow
d) Discharge and depth of flow

156. The time of translation of the flow from the most remote point of drainage basin to its outlet is equal to that of ……
a) Overland flow
b) Lag time
c) Rainfall duration
d) Time of concentration

157. If a watershed has a high drainage density, then the peak of its hydrograph compared to that of a low drainage density. When all other factors remain the same, will be
a) Sharp crested
b) Wide crested
c) Flat crested
d) None of these

158. Flood routing is the computation of.....
a) Outflow hydrograph, when the inflow hydrograph and storage properties are known
b) Storage, when the outflow hydrograph is known
c) Inflow hydrograph, when the outflow hydro graph is known
d) Direction of the flood flow

159. In India, the permissible soil loss from agricultural lands is …….
a) 12 t/ha/yr
b) 7.5 t/ha/yr
c) 50 t/ha/yr
d) 90 t/ha/yr

160. The rainfall erosivity factor (R) is calculated from the data of ……..

a) Daily rainfall recorder

b) Recording rain gauges

c) Stage recorders

d) Erosivity meter

161. Box-inlet drop spillways are recommended for areas, where …….

a) Short crest lengths are required

b) Down slope channel is wide

c) Water from a reservoir is to be removed

d) Long crest length on a narrow channel is required

162. In a chute spillway, the hydraulic jump is created at its ……..

a) Inlet

b) Outlet

c) Middle

d) Sides

163. SAR is mainly used for analysis of …….

a) Irrigation water

b) Organic matter

c) Soil quality

d) None of these

164. A light steady rain in fine drops and intensity less than …… is called as drizzle.

a) 1mm/hr

b) 5mm/hr

c) 10mm/hr

d) 20mm/hr

165. ……. is used for testing the consistency of rainfall records at the station in question.

a) Double mass curve

b) Mass curve

c) Depth area duration curve

d) Hyetograph

166. The chemical that is found to be most suitable as water evaporation inhibitor is

a) Ethyl alcohol

b) Methyl alcohol

c) Cetyl alcohol

d) Butyl alcohol

167. A stilling well is required when the stage measurement is made by …….. .

a) Bubble gauge

b) Float gauge recorder

c) Vertical staff gauge

d) Incline staff gauge

168. Upper limit for unit hydrograph use is ……

a) 5000 km^2
b) 200 ha
c) 5000 ha
d) 200 km^2

169. Virgin flow is …….. .

a) The flow in the river downstream of gauging station
b) The flow in the river upstream of gauging station
c) The flow unaffected by works of man
d) The flow that would exists in stream if there were no abstraction to the precipitation.

170. The initial infiltration rate is at capacity if the intensity of rainfall ……. .

a) Less than the average rate infiltration
b) Less than the infiltration capacity of the soil
c) Equal to or more than the infiltration capacity of soil
d) Equal to or more than the average rate of infiltration

171. Muskingum method of flood routing is used for …….. .

a) Hydraulic channel routing
b) Hydraulic reservoir routing
c) Hydrologic channel routing
d) Solving Saint Venant equation

172. Areas of Thiessen polygon method are determined by the devices known as

a) Planimeter
b) Sextant
c) Tachometer
d) None of above

173. To harvest water for irrigating crops, the ratio of catchment area and cultivated area should be equal to

a) 1:5 to 1:40
b) 1:2
c) 4:5
d) 3:5

174. The maximum depth of water that can be harvested by semi-circular hoop, is equal to

a) 100 cm
b) The height of embankment
c) 125 cm

d) 75 cm

175. The coverage area for runoff harvesting is greater in case of

a) trapezoidal bunds

b) semi-circular hoop

c) graded bunds

d) contour bunds

176. For a good design of water harvesting structure, the storage or spread area for water collection should be

a) 10 ha
b) 25 to 50 % of catchment area
c) 20% of catchment area
d) 1/8 to 1/5 of catchment area

177**.** For water harvesting, the high level bunds are constructed at

a) depressed part of watershed

b) either sides of gully

c) gully head

d) none of the above

178. The construction of dug out farm pond is not suitable, where

a) soil contains a high percentage of gypsum

b) land slope is 50%

c) soil is very heavy

d) soil has impervious layer at shallow depth

179. A best site for pond construction is

a) a clay formation

b) a depressed part with pervious layer below

c) narrow valley with steep sides

d) All above

180. The maximum height of core wall in embankment/dam is limited upto

a) 15 m

b) 5 m

c) Maximum expected water level

d) 20 m

181. In embankment, above seepage line the hydrostatic pressure is

a) zero

b) negative

c) positive

d) 1 kg/cm^2

182. For a pond with catchment area from 4 to 12 ha, the suitable spillway for use is

a) Mechanical spillway
b) Vegetative spillway
c) Chute spillway only
d) Combination of vegetative and mechanical spillway

183. Most commonly, the side slope of dugout farm pond is kept as

a) 1:2

b) 2:1

c) 3:2

d) 1:1

184. A homogeneous type earth dam is the example of

a) hydraulic fill dam

b) rock fill dam

c) roll fill dam

d) gravity dam

185. In zoned type earth dam the pervious zone is developed with the help of

a) sand, gravel and rocks

b) sand only

c) gravel

d) rock

186. The overtopping problem from a dam can be overcome by providing sufficient

a) Capacity of spillway
b) Freeboard
c) Allowance for settlement
d) Both a and b

187. As per ISI recommendation the top width of earth dam should be

a) Atleast 6 m

b) 10 m

c) Upto 15 m

d) Minimum 20 m

188. An earth material with D_{85} greater than 25 mm is good for construction of

a) Foundation of earth dam

b) Core wall

c) horizontal drain

d) diaphragm

189. For design of filter in earth dam to facilitate drainage, D_{15} size of filter material should be

a) Atleast 4 to 15 times D_{15} size of base material

b) 6 mm diameter
c) 15 mm diameter
d) 2 to 3 mm diameter

190. The flow of seepage water through porous media is described by

a) Laplace equation

b) Hooghoudt's equation

c) Stoke's law

d) Ohm's law

191. The value of factor of safety against sliding for u/s slope during sudden draw down should be

a) 1.5
b) More than 1.0
c) More than 1.5
d) More than 2.0

192. For making the hydraulic structure safe against tensile stress, the value of eccentricity (e) should always be

a) Equal to b/6
b) Less than b/6
c) More than b/6
d) 1

193. The base width of cantilever type retaining wall varies from

a) 0.5 H to 0.7 H

b) 1.5 to 1.75 m

c) 1 to 1.5 m

d) 0.75 to 1.0 m

(H is total height of retaining wall)

194. The mean supply discharge to full supply discharge is called as

a) Time factor

b) Nominal duty

c) Capacity factor

d) None of the above

195. For rigid module sensitivity is

a) Zero

b) One

c) Two

d) None of the above

196. …….hydrograph is constructed to serve as a unit hydrograph for a basin which is not gauge

a) Flood hydrograph
b) Instantaneous unit hydrograph
c) Synthetic unit hydrograph
d) None of the above

197. The science and the practice of water flow measurement is known as

a) Fluvimetry

b) Hydrometeorology

c) Hypsometry

d) Hydrometry

198. Sheet erosion is also termed as

a) Attrition

b) Laminar erosion

c) Detritions

d) Phytogenic erosion

199. Indirect runoff includes

a) Inter flow and base flow

b) Inter flow and channel flow

c) Base flow only

d) Delayed inter flow

200. A hydrograph shows the integral response of watershed for

a) Rainfall input

b) Discharge at outlet

c) Stream orders

d) All of the above