

PART III

09 – AGRICULTURAL AND IRRIGATION ENGINEERING

(Answer ALL questions)

41. Which one of the following is not a movable pulley?
- Elevator
 - Construction Crane
 - Weight Lifting machine
 - Pulley at the flag pole
42. Which Gear is used in conveyer systems to lock?
- Spur gear
 - Worm gear
 - Helical gear
 - Bevel gear
43. Which type of mould board is used in sticky soils as primary tillage equipment?
- General purpose mould board
 - Slat mould board
 - Stubble mould board
 - Sod mould board
44. While designing seed drill, the normal width of seed drill (w) is based on Number of furrow opener (N) and spacing between furrows. Then the relationship to determine width of seed drill is
- $W = N/S$
 - $W = N \times S$
 - $W = S/N$
 - $S = W/N$
45. When energy expressed is 10 calorie, it is equal to
- 41.86 J
 - 4.186 J
 - 418.6 J
 - 0.4186 J
46. How the connecting rod in a conventional mower which is pinned to crank shaft with a pin to transmits reciprocating motion to knife head is called?
- Ledger Plate
 - Wearing Plate
 - Pitman
 - Grass board
47. Which of the following estimates the potential wind energy sites by power density of the site?
- $P = \frac{1}{2} mv^2$
 - $P = \frac{1}{2} \rho v^3$
 - $P = \frac{1}{2} \rho A v^2$
 - $P = \frac{1}{2} \rho A v^3$
48. Which one of the following is the most efficient in energy storage as a rechargeable battery?
- Lead Acid
 - Nickel – Cadmium
 - Zinc – Air
 - Lithium – Ion
49. What is the displacement volume for a four stroke engine, with 10 cm bore diameter and 8 cm stroke length?
- 2512 cm³
 - 25.12 cm³
 - 251.2 cm³
 - 25120 cm³
50. What is the speed required if a tractor engine has constant hp, to get high torque at rear wheel?
- Very high
 - High
 - Low
 - Constant

51. Which of the following anti freeze solution is mixed with water in cooling system of tractors under very cold condition?
- Sodium chloride
 - Glycerine
 - Caustic soda
 - Sodium hydroxide
52. Which of the following is highly power intensive in farm operations?
- Plant protection
 - Tilling
 - Transplanting
 - Weeding
53. Which of the following is **Not** a part of Dash board of a tractor?
- Main Switch
 - Decompression Lever
 - Water temperature
 - Steering Wheel
54. How the horizontal distance between front and rear wheel measured at ground contact is called?
- Ground clearance
 - Track
 - Wheel base
 - Turning space
55. In a power tiller, when main clutch transmits power to the transmission gear, the power is transferred to
- Steering clutch
 - Tilling attachment
 - Brakes
 - Centre drive
56. How a real fluid in which shear stress is directly proportional to rate of shear strain is called?
- Ideal plastic
 - Newtonian fluid
 - Non- Newtonian fluid
 - Ideal fluid
57. What is the Reynolds number for the flow with velocity 2 m/s, flowing through a 10 cm diameter pipe carry water with viscosity 1 centi poise?
- 2.00×10^3
 - 2.00×10^4
 - 2.00×10^5
 - 2.00×10^6
58. In the downstream of spill ways hydraulic jump occurs mainly to
- Increase discharge
 - Increase velocity of flow
 - Dissipate energy
 - Avoid siltation
59. The shear strength of soil is approximately 1.7 kN/m² when it is said to be at
- Liquid limit
 - Plastic limit
 - Shrinkage limit
 - Extremely firm
60. Flow nets are constructed such that the head lost between successive _____ line remain the same
- Stream line
 - Streak lines
 - Equipotential line
 - Stream tubes
61. Which one of the following is not a layout of tile drain?
- French drain system
 - Herringbone system
 - Grid iron system
 - Intercepting drain system
62. Which of the following is a region above water table where water rises in a porous medium?
- Water table
 - Capillary fringe
 - Phreatic zone
 - Aquifer

63. In a Darcy's equation, the constant K which is the property of the media is called
- Density
 - Dynamic viscosity
 - Kinematic viscosity
 - Intrinsic permeability
64. In ground water hydrology, the term used to describe, saturated flow directed away from water table is called
- Discharge area
 - Recharge area
 - Midline
 - Pathline
65. Which of the following occurs when Land surface dips to intersect the water table?
- Fault spring
 - Sinkhole spring
 - Fracture spring
 - Depression spring
66. If i is intensity of rain in cm/hr, f is rate of infiltration in cm/hr and f_c is infiltration capacity in cm/hr. Maximum rate at which, soil can absorb water is
- $f = i$ when $i < f_c$
 - $f \leq i$ when $i > f_c$
 - $f < i$ when $i > f_c$
 - $f \geq f_c$ when $i = f_c$
67. How Lumped hydrologic flow routing of flood, when flow is calculated as a function of time alone is called?
- Distributed routing
 - Lumped routing
 - Hydraulic routing
 - Dynamic wave routing
68. Which of the following is **Not** a recording rain gauge?
- Tipping bucket type
 - Weighing bucket type
 - Symon's gauge
 - Natural siphon type
69. Wells which are excavated pits through the geological formation which needs lining only for a couple of meter from top are usually found in
- Alluvial formation
 - Rocky formation
 - Fracture zones
 - Fault zones
70. Aquifer testing conducted to determine hydraulic parameter is
- Time draw down test
 - Step – draw down test
 - Step – injection test
 - Time – ground water level rise test
71. An agricultural pump has lifting water from well has a discharge of 1,00,000 litres/hour against its head of 20 m, What is the water power in watts?
- 5.4936
 - 54.936
 - 549.36
 - 5493.6
72. The Branch of Surveying, which takes into consideration the true shape of earth is called
- Plane surveying
 - Compass Surveying
 - Topographic Surveying
 - Geodetic Surveying
73. Lines are first run around the perimeter of a plot, then details are fixed in relation to established lines. This process in Surveying is called
- Transverse Survey
 - Plain table Survey
 - Theodolite Survey
 - Triangulation Survey
74. In surveying using a compass, _____ is the operation in which compass is kept exactly over the station from where the bearing is to be determined
- Levelling
 - Focussing
 - Centering
 - Bearing

75. Which of the following soil structures impedes downward movement of water?
- Granular
 - Columnar
 - Platy
 - Prismoidal
76. A soil sample has a mass of 20 g and the volume of the soil sample is 15 cm³. The bulk density of soil is
- 1.1 g/cm³
 - 1.2 g/cm³
 - 1.3 g/cm³
 - 1.4 g/cm³
77. At a given matric potential, _____ retains more water
- Clay soil
 - Loam soil
 - Silty soil
 - Sandy soil
78. One of the erosion control measures for slope management is
- Conservation tillage
 - Vegetative hedge
 - Check dam
 - Terraces
79. Tree wind breaks protect soil carrying capacity of wind for approximately _____ times the height of the tall tree on windward side
- 3-4
 - 15-20
 - 5-10
 - 11-15
80. The design velocity of flow in grassed waterway is 2.0 m/s, then the cover condition should be
- Good grass cover
 - Sod of excellent cover
 - Sparse grass cover
 - No vegetation
81. If rice requires 10 cm depth of water at an average interval of about 10 days and if crop period of rice is 120 days. The delta for rice is
- 10 cm
 - 12 cm
 - 100 cm
 - 120 cm
82. For which of the following crops Furrow irrigation is **Not** suited for?
- Cotton
 - Rice
 - Sugarcane
 - Potato
83. Which one of the following is **not** suitable for fertigation under drip irrigation because of its slow solubility in water?
- Urea
 - Super phosphate
 - Gypsum
 - Muriate of potash
84. When the soil concentration in water extracted from saturated soil is found to be greater than 18 mmhos/cm. Then the soil is said to be
- Highly saline
 - Medium saline
 - Slightly saline
 - Non saline
85. What is the drainage co-efficient in an agricultural watershed of 1500 ha is discharging through a drain at an average rate of 2.5 m³/s?
- 1.22 cm/day
 - 1.44 cm/day
 - 1.66 cm/day
 - 1.88 cm/day
86. In a subsurface drainage network of an agricultural watershed had 10 lateral drains laid at a spacing of 40 m and each is 150 m long, join a collector drain. If average discharge at the outlet of collector drain is 10 L/s, the water table drops 40 cm below the ground in 3 days. The average drainable porosity of soil is
- 5.8%
 - 7.8%
 - 10.8%
 - 15.8%

87. For which of the following Magnetic separators equipment is used?
- Sorting
 - Cleaning
 - Grading
 - Milling
88. Which component of rice, is rich in dietary fibre, essential fatty acids, starch, protein and vitamin?
- Whole kernel
 - Husk
 - Bran
 - Oil
89. What is the main purpose of blanching vegetables before freezing?
- to soften cellulose
 - to deactivate enzymes
 - to increase color
 - to prevent loss of vitamin C
90. Pantnagar process of milling is designed for
- Black gram
 - Green gram
 - Green pea
 - Pigeon pea
91. Where Compression force is used as a means of size reduction?
- In Hammer mill
 - In Disc attrition mill
 - In Roller mill
 - In Knife cutter
92. For transporting grains, bed speed recommend in a belt conveyor is
- ≤ 1 m/s
 - 2.5 to 2.8 m/s
 - 3.5 to 3.8 m/s
 - ≥ 5 m/s
93. The portal for farmers to get information services/advisories by SMS is
- Pusa Krishi
 - m Kisan
 - Farm Opera
 - Kisan Suvidha
94. FAO has used Google's earth engine to forecast and control occurrence of
- H₅ N₁ Virus
 - Avian influenza
 - Locust
 - Corona Virus
95. How Crop growth monitoring and management are possible?
- By Remote sensing
 - By GIS
 - By Unmanned Aerial vehicle
 - By Modelling
96. Who has developed Linear programming?
- George B.Dantzig
 - Richard Bellman
 - Narendra Karmarkar
 - Bolton
97. OFD works are part of
- CADP
 - HADP
 - DPAP
 - RVP
98. Neerkatti is a water management institution of Tamil Nadu which is
- Formal
 - Traditional
 - Informal
 - Official
99. How Voluntary contribution in rehabilitation of tanks in Tamil Nadu is called?
- Erivariam
 - Kudimaramathu
 - Toorvaruthal
 - Ayacutudar Kuzhu
100. Shejpali system of irrigation is a water system practised in the state of
- Bihar
 - Karnataka
 - Maharashtra
 - Andhra Pradesh