09 — AGRICULTURAL AND IRRIGATION ENGINEERING

(Answer ALL questions)

- 56. In humid climate the average annual rainfall is
 - 1. 40 cm
 - 2. between 40 and 75 cm
 - 3. More than 75 cm
 - 4. Not less than 150 cm
- 57. Sheet erosion is dominant in
 - 1. Arid region
 - 2. Semi-arid region
 - 3. Regions of moderate rainfall
 - 4. Region of high rainfall
- 58. Which of the following is an item of inflow into a basin?
 - 1. Precipitation
 - 2. Evaporation
 - 3. Transpiration
 - 4. Evapo-transpiration
- 59. National arid zone research institute is located as
 - 1. New Delhi
 - 2. Jaipur
 - 3. Jodhpur
 - 4. Ahmedabad
- 60. In arid zones afforestation provides a mechanical obstacle to the free sweep of wind, reducing in the process
 - 1. Wind velocity
 - 2. Soil erosion
 - 3. Evaporation from soil
 - 4. All of the above
- 61. Sediment deposit in reservoirs can be reduced by
 - 1. Avoiding reservoir sites which are prolific sources of sediment
 - 2. Adopting soil conservation measures in the catchment area
 - 3. Providing vegetative cover
 - 4. All of the above

- 62. Which of the following statement is false?
 - 1. The specific yield of an aquifer may be more than its porosity
 - 2. Flow in a medium sand aquifer is entirely laminar
 - Plants usually extract water from the capillary zone
 - Storage co-efficient is the same as specific yield for a water table aquifer.
- 63. In India, the variability of rainfall is least in
 - 1. Zones of high rainfall
 - 2. Zones of low rainfall
 - 3. Coastal areas
 - 4. Hilly areas
- 64. When the dynamic viscosity of a fluid is 0.6 poise and specific gravity is 0.6, the kinematic viscosity of that fluid will be
 - 1. 0.36 poise
 - 2. 0.6 poise
 - 3. 1 poise
 - 4. None of the above
- 65. The separation of flow occurs
 - 1. Due to reduction of pressure gradient to zero
 - 2. Due to reduction of pressure gradient to negligibly low value
 - 3. Under an adverse pressure gradient
 - 4. When the hydrodynamic boundary layer thickness is reduced to zero
- 66. The viscosity of a fluid with specific gravity
 1.3 is measured to be 0.0034 Ns/m². Its
 kinematic viscosity in m²/s is
 - 1. 2.6×10^{-6}
 - $2. \quad 4.4 \times 10^{-6}$
 - 3. 5.8×10^{-6}
 - 4. 7.2×10^{-6}

- 67. Viscosity has dimensions of
 - 1. $\frac{FT^2}{F}$
 - $2. \qquad \frac{F}{TL^2}$
 - 3. $\frac{M}{LT^2}$
 - 4. $\frac{M}{LT}$
 - 68. The head loss in a pipe flow can be calculated by using
 - 1. The Bernoulli equation
 - 2. Darcy's law
 - 3. The Chezy Manning equation
 - 4. The Darcy Weisbach equation
 - 69. Which one of the following soils may be expected to have higher percentage of silt?
 - 1. Clay
 - 2. Sand clay
 - 3. Sand
 - 4. Silty clay loam
 - 70. A fibrous mass of organic matter in various stages of decomposition generally dark brown to black in colour and of spongy consistency, is known as
 - 1. Murrum
 - 2. Peat
 - 3. Black expansive soil
 - 4. Back fill
 - 71. When water content in a soil is reduced beyond the shrinkage limit, the soil will be in a
 - 1. Solid state
 - 2. Liquid state
 - 3. Semi solid state
 - 4. Plastic state
 - 72. Which soil remains at the place of integration of parent rock?
 - 1. Residual soil
 - 2. Lacustrine soil
 - 3. Aeolian soil
 - 4. Alluvial soil

- 73. The uniformity coefficient of soil is
 - $1. \qquad \frac{D60}{D10}$
 - $2. \qquad \frac{D30}{D10}$
 - $3. \qquad \frac{D60}{D30}$
 - $4. \qquad \frac{D60}{D30xD10}$
 - 74. The ratio of volume of irrigation water stored in the root zone and available for plant to the volume delivered from irrigation system is called
 - 1. Irrigation water use efficiency
 - 2. Water conveyance efficiency
 - 3. Water use efficiency
 - 4. Irrigation application efficiency
 - 75. The appearance of 'yellow colour' in soil is due to presence of
 - 1. Hematite
 - 2. Silicates
 - 3. Limonite
 - 4. Quartz
 - 76. Which soil water is not available for plant growth?
 - 1. Capillary water
 - 2. Gravitational water
 - 3. Hygroscopic water
 - 4. Perched water
 - 77. The irrigation method suitable for cotton potatoes etc is
 - 1. Border strip method
 - 2. Furrow method
 - 3. Basin method
 - 4. All of them
 - 78. Maximum water application efficiency is in
 - 1. Surface irrigation
 - 2. Lift irrigation
 - 3. Sprinkler irrigation
 - 4. Furrow irrigation

79.	The ratio of total volume of water delivered to	84.	Gasification of biomass is a
	a crop to the area on which it has been spread		1. Biochemical conversion process
	is called		2. Thermo chemical conversion process
	1. Critical depth		3. Hydro chemical conversion process
	2. Duty		4. Geochemical conversion process
	3. Delta	85.	The relies of calculations to approximately
	4. Crop water depth		The value of solar constant is approximately kW/m ² .
80.	A cross drainage work which carries a canal		1. 3.64 2. 10
	er a channel without lowering the bed level		3. 1.36
	of the channel is called		4. 6.5
	1. Aquaduct		4. 0.0
	2. Hybrid channel	86.	Wellner – Jelliner method is adopted in
	3. Super passage		1. Freezer
	4. Siphon		2. Evaporator
			3. Separator
81.	The weed growth in canal		4. Mixer and blender
	1. Reduces silting		
	2. Reduces discharge through the canal	87.	Quantitative Microbial Risk Analysis
	3. Increases the velocity of flow		1. Analyses health risks associated with contaminated drinking water
	4. Increases the contamination of water		2. Analyses environmental flow
			3. Analyses river water
82.	Evapo-transpiration is		4. Analyses health risks associated with
	1. Water equivalent to moisture contained		waste water use in agriculture
	in air which is lost through evaporation		
	2. Unaccounted loss of water by	88.	The specific heat of a grain at 12% m.c. wb
	evaporation at a location		whose specific heat at absolute dry condition
	3. Evaporation from plants in a		is 0.42 will be kcal / kg °C.
	catchment area		1. 0.472
	4. The total evaporation and		2. 0.372
	transpiration from the catchment area		3. 0.572
			4. 0.742
83.	is used to find the water	89.	Gable type is a — that is more
	activity of a heterogeneous mixture of food.		suitable for rainfall areas.
	1. Salwin Slawson equation		1. Hog house
	2. BET isotherm equation		2. Stanchion barn
	3 GAB isotherm equation		2 Poultwy house

Fish pond

Rault's law

- 90. 100 kg of milk with 7.5% fat content was fed into a cream separator and the cream obtained was 14.1 kg with 52.5% fat. The skimming efficiency of the cream separator is
 - 1. 78.9%
 - 2. 87.9%
 - 3. 97.8%
 - 4. 98.7%
- 91. Milk obtained by adding water, skimmed milk powder to the whole milk to get 3% fat and 8.5% SNF is called
 - 1. Homogenized milk
 - 2. Toned milk
 - 3. Standardized milk
 - 4. Reconstituted milk
 - 92. The unit draft when a pair of bullocks pulls a plough with 85 kg draft at 3 kmph to make a furrow of 20 cm wide and 11 cm deep will be
 - 1. 0.863 ksc
 - 2. 0.944 ksc
 - 3. 0.386 ksc
 - 4. 0.386 psi
 - 93. The ratio of Effective field capacity to Theoretical field capacity is called
 - 1. Machine efficiency
 - 2. Field efficiency
 - 3. Custom efficiency
 - 4. Mechanical efficiency
 - 94. The total draft required for a plough is measured by
 - 1. Dynamometer
 - 2. Chartometer
 - 3. Speedometer
 - 4. Pyrometer
 - 95. In a tyre size of 10×38 , 10 represents
 - Cross-sectional diameter in inches
 - 2. Rim diameter in inches
 - 3. Pressure of tyre in psi
 - 4. Pressure of tyre in ksc

- 96. A fan running at a speed of 473 rpm and delivering 14850 cub ft /min requires 3.18 HP. If the fan is to run at 537 rpm and deliver 16850 cub ft / min, the HP required is
 - 1. 6.45
 - 2. 4.65
 - 3. 4.56
 - 4. 5.64
 - 97. The angles of intersection of two plane mirrors of an optical square is
 - 1. 15°
 - 2. $22\frac{1}{2}^{\circ}$
 - 3. 30°
 - 4. 45°
 - 98. Hour system is mostly used in
 - 1. Geological survey
 - 2. Astronomy
 - 3. Navigation
 - 4. (2) and (3) above
 - 99. The total depth of irrigation to crop
 - 1. Delta
 - 2. Base
 - 3. Intensity of irrigation
 - 4. None of the above
 - 100. The volume of water discharged per unit time from the well is called
 - 1. Capacity of well
 - 2. Well yield
 - 3. Well stock
 - 4. None of the above
 - 101. Which of the following is low volume spraye
 - 1. Gear type rotary pump
 - 2. Roller vane rotary pump
 - 3. Plunger pump
 - 4. All of the above

- 102. Which of the following statements is correct regarding transpiration?
 - It creates suction force and help in the ascent of sap
 - 2. It affects the diffusion pressure deficit
 - 3. It maintains the temperature for the leaves
 - 4. All of the above
- 103. Which one used for primary tillage?
 - 1. Hand hoe
 - 2. Deshi plough
 - 3. Mould board plough
 - 4. Blade harrow
- 104. The single cylinder engine is generally used in
 - 1. Tractor
 - 2. Stationery tillage
 - 3. Motor cars
 - 4. Power tiller engine
- 105. Junker's calorimeter is used for determining the calorific value of
 - 1. Liquid fuels
 - 2. Solid fuels
 - 3. Gaseous fuels
 - 4. None of these
- 106. Detonation refers to the
 - 1. Engine Knocking
 - 2. Engine speed
 - 3. Engine efficiency
 - 4 None of the above
- 107. In tractor engines, a commonly used thermostat valve is
 - 1. Bimetallic type
 - 2. Bellows type
 - 3. Both (1) and (2) type
 - 4. None of these
- 108. A mould board plough which is suitable for ploughing along hill sides is
 - 1. One-way plough
 - 2. Two way plough
 - 3. Both (1) and (2) above
 - 4. Three way plough

- 109. An undisturbed soil surface of a furrow is
 - 1. Furrow slice
 - 2. Furrow wall
 - 3. Furrow crown
 - 4. Furrow back
- 110. Sweeps are used for
 - 1. Seedbed preparation
 - 2. Ridging
 - 3. Earthing plants
 - 4. Mulching
- 111. In power operated sprayer, the pump works at a pressure of
 - 1. 2-5 kg/cm²
 - 2. $3-8.5 \text{ kg/cm}^2$
 - 3. $4-12 \text{ kg/cm}^2$
 - 4. $5-15 \text{ kg/cm}^2$
- 112. The operating speed of combine harvester varies within a range of
 - 1. 600-800 rpm
 - 2. 900-1000 rpm
 - 3. 600-1400 rpm
 - 4. Above 1500 rpm
- #13. Gully erosion is the advance stage of
 - 1. Splash erosion
 - 2. Sheet erosion
 - 3. Rill erosion
 - 4. All are correct
- 114. Grassed waterways are used as
 - 1. Diversion channels
 - 2. Outlets
 - 3. Inlet to terrace system
 - 4. Inlet
- 115. Present tractor population in India is around
 - 1. 1 million
 - 2. 1.5 million
 - 3. 2.5 million
 - 4. More than 3.5 million