

PART—C
SPECIFIC TO AGRICULTURE ENGINEERING

61. In India, losses of fruits and vegetables due to inadequate post-harvest management are estimated about

- (A) 1% of production and it is less than grain losses for similar reason
- (B) 15% of production and it is less than grain losses for similar reason
- (C) 15% of production and it is more than grain losses for similar reason
- (D) 5% of production and it is more than grain losses for similar reason

62. In case of grain storage, which of the following is correct?

- (A) Respiration of grains during storage never generate heat
- (B) Deterioration of quality is caused by germination and respiration of grain during storage
- (C) High rate of respiration during storage leads to weight gain of grains
- (D) Higher grain moisture prevents germination

63. When 1.5 kg freshly harvested grain is dried in an oven to 1.2 kg, the estimated moisture content (dry basis) is

- (A) 20%
- (B) 25%
- (C) 0.04%
- (D) 0.05%

64. When grain is exposed to specific temperature and relative humidity for sufficient period of time, it reaches a level of moisture which is neither gaining nor losing further. It is known as

- (A) equilibrium moisture content (EMC)
- (B) dry basis moisture content (DBMC)
- (C) wet basis moisture content (WBMC)
- (D) safe moisture content (SMC)

65. When drying paddy grain intended for seed purposes, the recommended air temperature is

- (A) below 43 °C
- (B) above 73 °C
- (C) about 55 °C
- (D) below 10 °C

66. The energy required for size reduction during milling and grinding is proportional to the relative change in size. This is stated by

- (A) Rittinger's law
- (B) Kick's law
- (C) Bond's law
- (D) Newton's law

67. For grading agriculture produce with equal sizes but differing densities, the equipment used is

- (A) air-screen cleaner
- (B) disc separator
- (C) specific gravity separator
- (D) indented cylinder

68. Effective field capacity (EFC) of a farm machine **does not** directly depend on

- (A) rated width of the machine
- (B) percentage of rated width actually utilized
- (C) travel speed of the machine
- (D) height of the farm machine

69. Tillage operation is **not** aimed

- (A) for mechanical manipulation of soil
- (B) for development of desired soil structure
- (C) to control weed
- (D) to maintain seed-to-seed and plant-to-plant distances

70. Tillage system used to reduce mechanical energy, conserve moisture and reduce soil erosion is known as

- (A) traditional tillage
- (B) conservation tillage
- (C) secondary tillage
- (D) primary tillage

71. Random scattering of seeds over surface of the field is known as

- (A) broadcasting
- (B) drill seeding
- (C) precision planting
- (D) hill dropping

72. What is/are the major problem(s) that has/have hindered the use of rotary tiller?

- (A) Excessive pulverization
- (B) High power requirement
- (C) Neither (A) nor (B)
- (D) Both (A) and (B)

73. A primary tillage implement is designed to provide down suction and side suction. The implement turns the detached soil layer upside down. The implement is

- (A) mould board plough
- (B) disc plough
- (C) rotavator
- (D) disc harrow

74. The minimum power required to pull a 20 cm plough operating at a depth of 15 cm in soil with specific soil resistance as 50 kPa by a tractor at 6 kmph is

- (A) 25 kW
- (B) 250 kW
- (C) 150 kW
- (D) 2.5 kW

75. Consumptive use of water for crop production comprises of

- (A) evapotranspiration only
- (B) evapotranspiration and water used by the plant for metabolic activities
- (C) evapotranspiration and water percolated down from the root zone
- (D) water used by the plant for metabolic activities only

76. Identify the correct option.

- (A) Tensiometer and neutron probe are used to measure soil moisture where the working principles of both are identical
- (B) The unit of measurement of neutron probe is kilopascal
- (C) A tensiometer measures soil water potential (or tension) and thus, simulates how a plant root experiences the conditions of soil moisture
- (D) The unit of measurement of tensiometer is mm of water per metre of soil depth

77. Seed is sown by tractor-drawn seed drill. Identify the crop among the following for the purpose.

- (A) Cabbage
- (B) Wetland rice
- (C) Wheat
- (D) Sugarcane

78. Kharif, Rabi and Zaid are the

- (A) names of field crops
- (B) names of weeds
- (C) names of agricultural festivals
- (D) names of agricultural seasons

79. Cropping intensity is the measure of land use efficiency for an entire farm or geographical region within a year and this is expressed as

- (A) the ratio of 'number of crops in rotation' to 'duration of the rotation (years)' as percentage
- (B) the ratio of 'net sown area' to 'total cropped area over the year' as percentage
- (C) the ratio of 'total cropped area over the year' to 'net sown area' as percentage
- (D) the ratio of 'duration of the rotation (years)' to 'number of crops in rotation'

80. Identify the **incorrect** option.

- (A) Crop rotation is the practice of growing a series of dissimilar or different types of crops in the same area
- (B) The primary goal of crop rotation is to maintain soil fertility and break the cycles of pest and disease
- (C) To ensure uniform nutrient uptake from different soil layers, deep-rooted crops are grown in rotation to follow shallow-rooted crops
- (D) Crop rotation intensity of paddy-wheat-moong in a year is 33%

81. Which is **not** the feature of precision agriculture?

- (A) Collection of crop and data through sensors
- (B) Provision of variable rate of application as per requirement
- (C) Irrigation by flooding method
- (D) GIS-based analysis of crop and field data

82. A brick is found with deep red colour. It absorbs less than 20% water when dipped in water for 24 hours and the compressive strength is about 12 N/mm^2 . Identify the class of the brick.

- (A) First class
- (B) Second class
- (C) Third class
- (D) Fourth class

83. Identify the **incorrect** option about the dead loads on farm building.

- (A) Dead load is caused by permanent loads imparted by self-weight of the building components
- (B) Dead load is estimated using the volume and unit weight of the components
- (C) Roof CGI sheets, trusses, purlins, beams, columns are the major dead load contributing components
- (D) Load imparted by blowing wind is a dead load

84. For a loose housing farm shed of a dairy farm, identify the **incorrect** option.

- (A) About 3.5 m^2 of covered area and 7 m^2 of open area are recommended per adult cow
- (B) The height of manger back wall is more than the height of front wall to prevent feed from being pushed out
- (C) In 'tail-to-tail' housing system, two mangers are placed back-to-back with a feeding passage in between, allowing to feed two cows simultaneously
- (D) The bottom of the manger is usually 5-10 cm higher than the floor where the animal stands to mimic the natural grazing position

85. The reason that the steel members in livestock housing are **not** in direct contact with the ground is

- (A) to keep the base of the steel columns away from wet floor conditions and animal waste to prevent corrosion
- (B) to prevent injury to the animals
- (C) to address aesthetic
- (D) to reduce cost

86. The voltage drop in the distribution line of a farm is proportional to the

- (A) length of the wire only
- (B) current flown through the wire only
- (C) resistance of the wire only
- (D) product of length, current and resistance

87. The most preferred farm operation for solar energy application is

- (A) tillage
- (B) irrigation
- (C) harvesting
- (D) threshing

88. A solar dryer works in the principle of

- (A) photovoltaic
- (B) external combustion
- (C) internal combustion
- (D) thermal heat transfer

89. With reference to the use of solar energy, identify the **incorrect** option.

(A) Solar inverter converts AC power generated by PV panel into DC power

(B) Solar inverter converts DC power generated by PV panel into AC power

(C) Inverter is not required for solar PV panel used in DC load

(D) The inverter switches the DC input on and off thousands of times per second in a specific pattern called pulse-width modulation

90. A 2.0 m^3 household biogas plant operated on cow dung would require

(A) 50 kg cow dung per day

(B) 100 kg cow dung per day

(C) 25 kg cow dung per day

(D) 0.5 m^3 cow dung per day

91. Name the basic purpose of lubrication in an IC engine.

(A) Reducing frictional effect

(B) Cooling

(C) Cleaning

(D) All of the above

92. The correct fact in case of thickness of the insulating material of cold storage is

(A) higher the thermal conductivity, lower the thermal resistance

(B) thinner the insulation, lower the thermal resistance

(C) thicker the insulation, lower the thermal resistance

(D) thermal conductivity and thickness of insulating materials are not related to thermal resistance

93. Heat is taken from stored material in a cold storage to materialize 'refrigerating effect'. Identify the correct option among the following responsible for the refrigeration effect.

(A) Evaporator

(B) Compressor

(C) Condenser

(D) Expansion valve

94. A 4-stroke IC engine produces one power stroke for every
- (A) four revolutions of the crankshaft
 - (B) two revolutions of the crankshaft
 - (C) one revolution of the crankshaft
 - (D) one movement of the piston from BDC to TDC
95. Which one of the following is used in tractor as 'traction aid'?
- (A) Ballast on front tire
 - (B) Lugs
 - (C) Cage wheel
 - (D) Reducing tire pressure
96. Hydraulic system in tractor works on
- (A) Pascal's law
 - (B) Otto cycle
 - (C) law of attraction
 - (D) None of the above
97. Thermostat valve in cooling system of a tractor controls the flow of water when activated by temperature signal and allows hot water to move to
- (A) radiator
 - (B) water jacket
 - (C) water pump
 - (D) hose pipe
98. Single disc type furrow opener is suitable for which of the following ?
- (A) Hard soil
 - (B) Tracy soil
 - (C) Wet sticky soil
 - (D) All of the above
99. A harrow with two gangs placed end-to-end which throws soil in opposite direction is called
- (A) double-action disc harrow
 - (B) single-action disc harrow
 - (C) offset disc harrow
 - (D) tandem disc harrow
100. Name the component of the harrow which removes the soil from the concave side of the disc and keeps it clean for effective working of harrow in the field.
- (A) Bearing
 - (B) Spool
 - (C) Scraper
 - (D) Clevis