1. What is the drainage of 1 ha cm water (10^2 litres) in 24 hrs equal to?
   (1) 1157 Lps  (2) 1157 Lps  (3) 115.7 Lps  (4) 1157 Lps

2. What are the small furrows formed at known intervals parallel to the slope of the land for draining out excess water from the soil called?
   (1) Bedding  (2) Land smoothing  (3) Random field ditch method  (4) Parallel field ditch system

3. Who considered yield, profit and frequency of crop failure, as field indicators for farmer’s satisfaction while computing sustainable index?
   (1) Gomez  (2) Hargrove  (3) Reddy  (4) Prasad

4. Which of the following components does a water harvesting system have?
   (1) Catchment area  (2) Storage facility  (3) Command area  (4) (1), (2) and (3) above

5. What happens if crop seed is sown very deep in the soil?
   (1) Early germination.
   (2) Uniform plant population.
   (3) The young seedlings may not be able to push their shoots above the thick soil layer.
   (4) Vigorous seedlings.

6. Which weed is associated with tobacco crop?
   (1) Striga densiflora  (2) Phalaris minor  (3) Solanum nigrum  (4) Orobanche indica

7. Which of the following statements is applicable for rainfed farming?
   (1) Cultivation of crops in areas receiving less than 750 mm rainfall per annum.
   (2) Dry spells are most common and crop failures are more frequent.
   (3) Cultivation of crops where dry spells occur but crop failures are less frequent.
   (4) Cultivation of crops where crop failures are rare and drainage is the problem.

8. In which of the following crops thinning and earthing up is necessary for higher productivity?
   (1) Sugarcane  (2) Sugarbeet  (3) Potato  (4) Sweet Potato

SPACE FOR ROUGH WORK

P.T.O.
9. Suggest a suitable crop under contingent crop planning under late onset of monsoons (8 to 15th July) in Maharashtra.
   (1) Green gram   (2) Pigeon pea   (3) Black gram   (4) Groundnut

10. How does the soil moisture move in an area?
    (1) High tension to area of low tension.
    (2) Higher elevation to lower elevation.
    (3) Low tension to area of high tension.
    (4) Lower elevation to higher elevation.

11. What variety of pigeon pea is recommended for Maharashtra?
    (1) BM - 4   (2) BDU - 1   (3) BSMR - 736   (4) TAU - 1

12. What is the role of an Agronomist in Agriculture?
    (1) Coordinator of different subject matter specialists.
    (2) Convenor
    (3) Producer of maximum yield with maximum cost
    (4) None of the above

13. What should be the right choice of base and inter crops on medium deep soils in regions with uni-modal rainfall pattern?
    (1) The base crop should be of shorter duration than the companion crop.
    (2) The base crop should be of longer duration than the companion crop.
    (3) The choice of crop should be such that the peak growth period of both the crops should coincide with rainfall peaks.
    (4) None of the above

14. In our country, which surface method of irrigation is the most widely practised for field crops?
    (1) Check basin method   (2) Basin method
    (3) Border strip method   (4) Wild flooding

15. Which of the following are the major sunflower growing states?
    (1) Karnataka, Maharashtra, Andhra Pradesh.
    (2) Karnataka, Madhya Pradesh, Punjab.
    (3) Andhra Pradesh, Rajasthan, Tamil Nadu.
    (4) Bihar, Andhra Pradesh, Maharashtra.

SPACE FOR ROUGH WORK
16. What type of drought is it in which the actual rainfall falls short below 75 percent of the normal?
   (1) Agricultural drought   (2) Meteorological drought
   (3) Hydrological drought   (4) Contingent drought

17. Modern concept of tillage includes ________
   (1) Minimum tillage   (2) Zero tillage
   (3) Conservation tillage (4) (1), (2) and (3) above

18. At what depth, the seeds of semi dwarf varieties of wheat crop could be sown?
   (1) 2 - 3 cm   (2) 5 - 6 cm   (3) 7 - 8 cm   (4) 8 - 9 cm

19. Which of the following is another term for the Sustainable Agriculture?
   (1) Alternative farming   (2) Eco-farming
   (3) Permaculture         (4) (1), (2) and (3) above

20. What is the advantage of a conservation tillage?
    (1) Reduced tillage machinery maximizes soil compaction.
    (2) Low infiltration of water and high evaporation.
    (3) Low risk of pests and diseases.
    (4) Surface crop cover reduces soil erosion.

21. Which process is responsible for the loss of about 60 to 75 percent of the rainfall?
    (1) Evaporation   (2) Transpiration
    (3) Evapotranspiration (4) Percolation

22. Which of the following is an example of a film forming antitranspirant?
    (1) Atrazine   (2) Mobileaf
    (3) Kaolin (4) Phenylmercuric acetate

23. Which crop is suitable for oil as well as fibre purpose?
    (1) Sunflower   (2) Mustard   (3) Linseed   (4) Safflower

24. About how many root slips or stem cuttings are required for planting napier grass in one hectare area?
    (1) 18800   (2) 33800   (3) 27800   (4) 42800

SPACE FOR ROUGH WORK

P.T.O.
25. What is a period of medium range forecast for Agriculture?
   (1) Few hours to one day (2) 24 hours to less than three days
   (3) 3 to 10 days (4) More than 10 days

26. Among the following, which is a bio-herbicide?
   (1) Oryzalin (2) Lactofen (3) Tripose (4) Metribuzin

27. What is the oil and protein content of groundnut kernel?
   (1) 50% oil and 18 - 20% protein (2) 45% oil and 26% protein
   (3) 33 - 47% oil and 36% protein (4) 24 - 36% oil and 40 - 45% protein

28. In winter, what will be the temperature at equatorial tropopause?
   (1) −60°C (2) −70°C (3) −80°C (4) −90°C

29. In which crop, flower/inflorescence is called as arrow?
   (1) Flower primodia initiation in wheat.
   (2) Flower of Maize.
   (3) Flower of Sorghum.
   (4) Flower/inflorescence of sugarcane.

30. What is normal lapse rate in Troposphere?
   (1) 6.5°C/1000 ft (2) 5.4°C/1000 ft
   (3) 3.6°C/1000 ft (4) 4.0°C/1000 ft

31. Which of the following agencies has been entrusted by the Government of India with the task of preparation of a feasibility report of interlinking of rivers in India?
   (1) National Water Development Agency (NWDA)
   (2) Irrigation Commission of India
   (3) Central Ground Water Board (CGWB)
   (4) National Water Board

32. Among the following which is a component of farming system?
   (1) Duckery (2) Biogas plant (3) Coir work (4) (1), (2) and (3) above

33. What is the main advantage of Sustainable Agriculture?
   (1) Ecological balance (2) Nutritious food without pesticide residue
   (3) Clean environment (4) (1), (2) and (3) above

SPACE FOR ROUGH WORK
34. How much is the annual yield of green fodder from the Napier grass?
   (1) 1200 - 1500 quintals/ha  (2) 250 - 300 quintals/ha
   (3) 800 - 1000 quintals/ha  (4) 800 - 1100 quintals/ha

35. Which is the appropriate time of ploughing operation?
   (1) During summer season.
   (2) When 25 - 50% available soil moisture is depleted.
   (3) Soil has completely dried.
   (4) Soil is in wet condition.

36. Before sunrise and sunset which solar radiation penetrates into plant canopies more effectively?
   (1) Direct solar radiation  (2) Diffused solar radiation
   (3) Global solar radiation  (4) Reflected solar radiation

37. Which soil tillage aims at reducing the tillage operation to the minimum necessary for ensuring the good seed bed and rapid germination of seed?
   (1) Primary tillage  (2) Minimum tillage
   (3) Secondary tillage  (4) Rowzone tillage

38. Which is the important developmental activity in resource management for dry land region?
   (1) Deforestation  (2) Crop production
   (3) Use of fertilizers  (4) Watershed management

39. In which cropping system the term component crop is used?
   (1) Inter cropping system  (2) Sole cropping system
   (3) Ratoon cropping system  (4) Monoculture cropping system

40. Which is the most serious pest of bengalgram crop?
   (1) Cutworm  (2) Aphids  (3) Pod borer  (4) None of these

41. What is a fertilizer containing a single nutrient, called?
   (1) Straight fertilizer  (2) Compound fertilizer
   (3) Fertilizer mixture  (4) None of these

SPACE FOR ROUGH WORK
42. The maximum water vapour movement in soil occurs when the soil is:
   (1) at field capacity    (2) at maximum water holding capacity
   (3) at just below the wilting point  (4) at wilting point

43. Among the major plant nutrients, which of the following nutrient content in soil solution is the least variable and the lowest?
   (1) Phosphorus    (2) Potassium    (3) Magnesium    (4) Sulphur

44. Which is/are predominant ionic species of phosphate in soil at pH 7.2?
   (1) H$_2$PO$_4^-$    (2) HPO$_4^{2-}$
   (3) H$_2$PO$_4^-$ and HPO$_4^{2-}$    (4) PO$_4^{3-}$

45. Which of the following materials is added to prepare a mixed fertilizer with good drilling conditions and reduced caking?
   (1) Coal ash    (2) Lime stone    (3) Peat    (4) Dolomite

46. The _________ is that water which lies between wilting coefficient and field capacity.
   (1) available water    (2) unavailable water
   (3) superfluous water    (4) none of these

47. Which of the following organic manures contains highest amount of nitrogen?
   (1) Neem cake    (2) Castor cake
   (3) Linseed cake    (4) Groundnut cake

48. Fill in the blank correctly.
   When gypsum is used as a reclaiming agent, calcium replaces the exchangeable _________ in alkali soils.
   (1) Boron    (2) Magnesium    (3) Sodium    (4) Potassium

49. Which of the following is the process of decomposition of organic matter and synthesis of new organic substances?
   (1) Horizonation    (2) Eluviation    (3) Humification    (4) Illuviation

50. Which of the following crops is a low salt tolerant crop?
   (1) Cotton    (2) Wheat    (3) Soyabean    (4) Maize

SPACE FOR ROUGH WORK
51. Which of the following types of soils will adsorb more pesticides and increase soil pollution and health hazards?
   (1) A fine textured soil dominated with Kaolinite.
   (2) A coarse textured soil dominated with Kaolinite.
   (3) A fine textured soil dominated with Montmorillonite.
   (4) A coarse textured soil dominated with Montmorillonite.

52. What small but significant quantities of soluble compounds does the soil solution contain?
   (1) Organic
   (2) Inorganic
   (3) Organic and Inorganic
   (4) None of these

53. Which of the following is a symbiotic bacterium, colonizing on the roots of specific legumes to form root nodules for fixing atmospheric nitrogen?
   (1) Azotobacter
   (2) Azospirillum
   (3) Rhizobium
   (4) Blue - Green Algae

54. What is the chemical combination of water molecules with a particular mineral termed as?
   (1) Solution
   (2) Hydration
   (3) Hydrolysis
   (4) Oxidation

55. _______ denotes the status of soil with respect to the amount and availability of elements to a plant necessary for its growth.
   (1) Soil Productivity
   (2) Soil Fertility
   (3) Soil Chemistry
   (4) None of these

56. Which of the following minerals has a greater anion adsorbing and exchanging capacity?
   (1) Kaolinite
   (2) Illite
   (3) Montmorillonite
   (4) Vermiculite

57. What proportion of clay content in soil seems to be desirable for dry land farming?
   (1) 30 to 40%
   (2) 40 to 50%
   (3) 50 to 60%
   (4) More than 60%

58. What is the process of removal or loss of oxygen called?
   (1) Hydration
   (2) Hydrolysis
   (3) Oxidation
   (4) Reduction

59. Which is a secondary nutrient from among the following?
   (1) Iron
   (2) Zinc
   (3) Boron
   (4) Sulphur

SPACE FOR ROUGH WORK
60. Which of the following constituents of organic matter in soil are most rapidly decomposed?

<table>
<thead>
<tr>
<th></th>
<th>1. Celluloses and hemicelluloses</th>
<th>2. Fats, waxes and resins</th>
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<tbody>
<tr>
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<td>3. Carbohydrates and simple proteins</td>
<td>4. Lignins</td>
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</table>

61. Fill in the blank appropriately.
In ________ seed metering mechanism, vertical plate is provided with radially projected arms, which drop the larger seeds like potato in furrows with the help of suitable jaws.

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<tr>
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<th>1. fluted feed type</th>
<th>2. cell feed mechanism</th>
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<tbody>
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<td>3. picker wheel type</td>
<td>4. internal double run type</td>
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</table>

62. What is the Internal double run type seed metering device suitable for?

<table>
<thead>
<tr>
<th></th>
<th>1. Large size seed</th>
<th>2. Small size seed</th>
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<tr>
<td></td>
<td>3. Sugar beet seeds</td>
<td>4. Both (1) and (2)</td>
</tr>
</tbody>
</table>

63. In four stroke engine, one power stroke is generated after ________ revolution of crankshaft.

|---|---------|-------|--------|--------|

64. The power developed by the engine and is available at the end of crankshaft is called

<table>
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<th>1. IHP</th>
<th>2. BHP</th>
<th>3. DBHP</th>
<th>4. FHP</th>
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65. What is the forward end of cutting edge of share which actually penetrates into the soil called?

|---|-----------|----------------|-----------------|------------|

66. On what factors threshing efficiency of a thresher depends?

<table>
<thead>
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<th>a. Cylinder concave clearance</th>
<th>b. Type of crop</th>
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<tr>
<td></td>
<td>c. Weather conditions</td>
<td>d. Moisture content of crop</td>
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<tr>
<td></td>
<td>(1) (a) and (b)</td>
<td>(2) (a), (b) and (c)</td>
</tr>
<tr>
<td></td>
<td>(3) (a), (b) and (d)</td>
<td>(4) All of these</td>
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67. What is the perpendicular distance between point of share and lower position of the beam of plough called?

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<th>1. Throat clearance</th>
<th>2. Horizontal clearance</th>
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<tbody>
<tr>
<td></td>
<td>3. Vertical clearance</td>
<td>4. Share point clearance</td>
</tr>
</tbody>
</table>

SPACE FOR ROUGH WORK
68. The main purpose of puddling is to __________.
   (1) reduce leaching of water
   (2) kill the weeds
   (3) facilitate transplanting of paddy seedlings
   (4) all the above

69. What is the concave clearance in the power thresher?
   (a) Clearance between concave and beater or cylinder tip.
   (b) Clearance between concave and the blower.
   (c) Clearance between concave and the screen.
   (d) Clearance between beater or cylinder tip and blower.
Which of the above statements are correct?
   (1) only (d) (2) (a) and (b) (3) only (a) (4) (a), (b) and (d)

70. What does the planter consist of?
   (a) Hopper
   (b) Seed metering device
   (c) Land side
   (d) Frog
Which of the above options are correct?
   (1) (a), (b) and (c) only (2) (a) and (b) only
   (3) (c) and (d) only (4) (a), (b) and (d) only

71. To separate mustard seed from wheat, the best type of separator is __________.
   (1) indented cylinder separator
   (2) specific gravity separator
   (3) centrifugal separator
   (4) spiral separator

72. Janssen equation is related to __________.
   (1) storage silo design
   (2) size reduction
   (3) grain transportation system
   (4) grain handling

73. Fill in the blank with the most appropriate option.
   At present __________ is the most common material used for bottles and jars.
   (1) High density polyethylene
   (2) Food grade PVC
   (3) High impact polystyrene
   (4) Low density polyethylene

74. Which of the following is an indirect method of moisture determination?
   (1) Infra-red method
   (2) Dielectric method
   (3) Air-oven method
   (4) None of the above

SPACE FOR ROUGH WORK
75. To predict the lateral pressure in deep bins, which of the equations is used?
(1) Airy equation  
(2) Rankine’s equation  
(3) Janssen’s equation  
(4) All of the above

76. What is the order of components in vapour compression refrigeration system?
(1) Compressor - evaporator - condensor - expansion valve.
(2) Compressor - expansion valve - evaporator - condensor.
(3) Compressor - condensor - expansion valve - evaporator.
(4) Compressor - condensor - evaporator - expansion valve.

77. Fill in the blank appropriately.
_________ has a fan at the air discharge point which creates a vacuum or negative pressure within the machine.
(1) Specific gravity separator  
(2) Aspirator  
(3)Indented cylinder separator  
(4) Spiral separator

78. ________ is the most common type of heat exchanger used in HTST Pasteurization.
(1) Tubular type  
(2) Barrel type  
(3) Plate type  
(4) Flat surface type

79. The indented cylinder separators, separate the materials on the basis of ________.
(1) Relative lengths  
(2) Roundness  
(3) Density  
(4) None of the above

80. In winter season, due to moisture migration spoilage of grains occurs at the ________ of the bin.
(1) bottom  
(2) top  
(3) centre  
(4) wall side

81. Fill in the blanks appropriately.
An elongated watershed will have a ________ bifurcation ratio and will result into a ________ peak flow compared to circular or normal shaped watershed of the same area.
(1) higher, lower  
(2) lower, higher  
(3) same, same  
(4) none of the above

82. What is the peak runoff rate of an area, if the runoff coefficient, rainfall intensity equals time of concentration and watershed areas are 0.3, 150 mm/h and 90,000 sq.metre respectively?
(1) 1.521 m³/s  
(2) 2.125 m³/s  
(3) 1.215 m³/s  
(4) 1.125 m³/s

SPACE FOR ROUGH WORK
83. What is the principle of chain surveying?
   (1) Radiation  (2) Intersection  (3) Resection  (4) Triangulation

84. What is the shape index of a watershed having length along the main stream 1000 ms and size of watershed 5 square kilometres?
   (1) 0.2  (2) 20.0  (3) 200.0  (4) 5000

85. In high volume spraying, total volume of spray liquid applied amount to ________ litres per ha.
   (1) < 5  (2) 5 - 200  (3) 200 - 400  (4) > 400

86. What assumptions are valid for determining peak runoff rate by rational method?
   (a) Rainfall has occurred with uniform intensity for the duration at least equal to time of concentration of the catchment area.
   (b) The infiltration rate of the soils in watershed is constant.
   (c) The rainfall intensity is uniform throughout the catchment.
   (d) The initial soil moisture is uniform in the watershed.
   (1) (a) and (c)  (2) (a) and (b)
   (3) (b) and (d)  (4) (a) and (d)

87. There is a gulley control structure, performing following functions:
   (a) Used as a principal spillway in case of farm ponds
   (b) It stabilizes gulley grade
   (c) Used at lower end of water disposal system
   (d) Used as a culvert in forest roads
   Which structure is this?
   (1) Chute spillway  (2) Drop inlet spillway
   (3) Straight drop spillway  (4) Graded bund

88. If the runoff area increases, what will its effect be on both the rate and the volume per unit of a watershed area?
   (1) it will increase  (2) it will decrease
   (3) it will remain unaffected  (4) becomes zero

89. What is the volume of rainfall for which the water harvesting project is designed called?
   (1) Designed rainfall  (2) Required rainfall
   (3) Expected rainfall  (4) Excess rainfall

SPACE FOR ROUGH WORK

P.T.O.
90. How is the incorrect holding of chain by a surveyor during the survey, categorised?
   (1) Compensating errors  (2) Cumulative errors
   (3) Human errors        (4) None of the above

91. For moderate slopes and small to moderate irrigation streams, the length of border for clay soils should be ________ meters.
   (1) 100 to 180  (2) 60 to 120  (3) 150 to 300  (4) None of these

92. Priming is required to start:
   (1) reciprocating pump  (2) centrifugal pump
   (3) jet pump            (4) axial pump

93. The christiansen equation for uniformity coefficient (Cu) is expressed as:
   (1) \( Cu = 100 \left( 0.1 - \frac{\sum x}{mn} \right) \)
   (2) \( Cu = 100 \left( 1.0 - \frac{\sum x}{mn} \right) \)
   (3) \( Cu = 100 \left( 1.0 - \frac{\sum x^2}{mn} \right) \)
   (4) \( Cu = 100 \left( 1.0 + \frac{\sum x}{mn} \right) \)

94. The flow over trapezoidal notch is proportional to ________ . (H is head over the crest of notch)
   (1) \( H^{3/2} \)  (2) \( H \)  (3) \( H^{1/2} \)  (4) \( H^{5/2} \)

95. The rate of discharge of irrigation pump (q) is calculated by the following relationship.
   \[ q = 27.78 \frac{AY}{RT} \]
   Where, \( Y = \) ________
   (1) Duration of pumping  (2) Depth of irrigation
   (3) Velocity of water in suction pipe  (4) Co-efficient of friction

96. The primary objective/s of a well planned farm-stead is/are:
   (1) Sanitation  (2) Economy
   (3) Low maintenance cost  (4) All of these

SPACE FOR ROUGH WORK
97. The presence of about 5 to 8 percent moisture content in sand increases the volume of sand by as much as
   (1) 1 to 15 percent  (2) 20 to 40 percent
   (3) 50 to 60 percent  (4) 65 to 70 percent

98. In barbed wire fencing, barbed wire is made up of _______ gauge wire.
   (1) 10  (2) 14  (3) 18  (4) 22

99. The "environment of greenhouse" does not refer to ________
   (1) Crop yield  (2) Light
   (3) Air composition  (4) Nature of root media

100. Gutters in stanchion barn are usually _______ cms wide and _______ cms deep.
    (1) 25, 5  (2) 35, 10  (3) 45, 15  (4) 55, 20

SPACE FOR ROUGH WORK
Q.No. 201. The Catch varies inversely with the size of the:

(1) nozzle (2) droplet (3) obstruction (4) sprayer

As the nozzle size increases, the catch decreases. The catch is inversely proportional to the size of the nozzle.

Pr. 201. ① ② ④

Although the size of the nozzle increases, the catch decreases. The catch is inversely proportional to the size of the nozzle.

Space for rough work
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<tr>
<th>पत्रिका क्रमांक</th>
<th>बारेंकब</th>
<th>पत्रिका क्रमांक का पूर्ण पत्रिका क्रमांक</th>
<th>उपपतिक्रेमकर विशेष जानकारी</th>
<th>पत्रिका क्रमांक का पूर्ण पत्रिका क्रमांक</th>
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<td>अगस्त पत्रिका क्रमांक</td>
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