# 002/2024

Maximum : 100 marks

Time : 1 hour and 30 minutes

**1.** (i) The term agronomy is derived from Latin words.

(ii) The meaning of 'agros' is field and 'nomos' is to manage.

(A) only (i) is correct (B) only (ii) is correct

(C) both (i) and (ii) are correct (D) both (i) and (ii) are incorrect

**2.** At physiological maturity the moisture percentage of grains is about ———— per cent.

(A) 10 (B) 20

(C) 30 (D) 40

**3.** Justus Von Liebig in 1862 proposed the :

(A) Law of minimum (B) Law of optima and limiting factors

(C) Law of Diminishing returns (D) Inverse Yield Nitrogen Law

**4.** (i) The growth curve of individual organs of a whole plant is sigmoidal.

(ii) The lag phase is called exponential phase.

(A) only (i) is correct (B) only (ii) is correct

(C) both (i) and (ii) are correct (D) both (i) and (ii) are incorrect

**5.** The concept of minimum tillage was started in :

(A) United Kingdom (B) Brazil

(C) USA (D) India

**6.** (i) The deficiency symptoms of Ca and B in plants appear on the younger leaves.

(ii) Ca and B are immobile in plants.

(A) only (i) is correct (B) only (ii) is correct

(C) both (i) and (ii) are correct (D) both (i) and (ii) are incorrect

**7.** (i) Bulky organic manures contain small percentage of nutrients.

(ii) Oil cake is an example for a bulky organic manure.

(A) only (i) is correct (B) only (ii) is correct

(C) both (i) and (ii) are correct (D) both (i) and (ii) are incorrect

8. The nursery area required for transplanting 1 ha of rice is :

(A) 10 $m^2$ (B) 100 $m^2$

(C) 1000 $m^2$ (D) 10000 $m^2$

9. Cultural method recommended for the management of weedy rice is :

(A) Mulching (B) Stale seed bed

(C) Green manuring (D) Soil solarisation

10. Bush type cowpea variety released from Kerala Agricultural University :

(A) Anaswara (B) Kanakamony

(C) Bhagyalakshmi (D) Sreya

11. Multiplication ratio of minisett planting technique of tapioca is :

(A) 1:20 (B) 1:40

(C) 1:60 (D) 1:80

12. The soil moisture tension at field capacity is ———— bars.

(A) 0.1 to 0.33 (B) 0.01 to 0.03

(C) 0.001 to 0.003 (D) 1 to 3

13. The ratio of crop yield to the amount of water depleted by crop plants through evapo-transpiration :

(A) Storage efficiency (B) Crop water use efficiency

(C) Field water use efficiency (D) Coneyance efficiency

14. Expand LEISA :

(A) Low External Input and Supplementary Agriculture

(B) Low External Input and Sustainable Agriculture

(C) Low External Input and Satisfactory Agriculture

(D) Low External Input and Suitable Agriculture

15. Family of sesamum is :

(A) Fabaceae (B) Convolvulaceae

(C) Solanaceae (D) Pedaliaceae

16. In land capability classification, lands which are level with deep, well-drained soils and therefore little or no limitations on agricultural uses are classified under :

(A) Class-I
(B) Class-II
(C) Class-III
(D) Class-VIII

17. The velocity or speed at which water enters the soil is :

(A) Water holding capacity
(B) Rate of evapotranspiration
(C) Infiltration rate
(D) Hydraulic conductivity

18. In dryland agriculture, the addition of lesser amounts of water to rainfed crops in periods of low rainfall shall include (Choose the best answer among the options) :

(A) Supplemental irrigation
(B) Drip irrigation system
(C) Both (A) and (B) correct
(D) None of these

19. The three-step process of soil erosion by water begins with the impact of raindrops on wet soil followed by :

(A) Detachment, transport and deposition
(B) Detachment, evaporation and deposition
(C) Evaporation, transpiration and deposition
(D) None of the above

20. After routine soil testing for organic carbon, available P and K in state government-controlled laboratories, soil test value-based rating soils is done following :

(A) 10-class system, numbered from 0 to 9 as class notation
(B) 5-class system
(C) 6-class system
(D) None of the above

**21.** Universal soil loss equation Q = R * K * L * S * C * P. Where, Q is the predicted annual soil loss, and * is the multiplication symbol. Considering the other symbols, which of the following statement/statements is or are true?

(1) R = rainfall erosivity, K = soil erodibility, L = slope length, S = slope gradient or steepness, C = Cover, management and P = erosion-control practices

(2) R = total rainfall, K = soil texture, L = slope length, S = slope gradient or steepness, C = cation exchange capacity and P = available phosphorous

(3) R = rainfall erosivity, K = soil bulk density, L = slope length, S = slope gradient or steepness, C = cover, management and P = penetrability of the soil

(4) By management practices if any one factor in the equation is brought to zero, the resulting anoint of erosion (Q) would also be reduced to zero.

(A) 1 and 2 are correct
(B) 3 and 4 are correct
(C) 1 and 4 are correct
(D) None of the above

**22.** If the elevation difference is 70 mover a horizontal distance of 100 m, then :

(1) the slope gradient is 10%.

(2) The slope angle is approximately 35°.

(A) (1) alone is correct
(B) (2) alone is correct
(C) (1) and (2) are correct
(D) None of the above is correct

**23.** The nano fertilisers should have a size dimension of :

(1) Less than 100 nm at least in one-dimension

(2) Less than 100 nm in two-dimensions

(3) More than 200 nm in all three dimensions.

(A) 1 alone is correct
(B) 2 alone is correct
(C) 1 and 2 are correct
(D) None of the above is correct

**24.** In a dry farming situation, the recommended set of crops may be :

(1) *Pennesitum americanum*, *Cajanus cajan*, *Moringa oleifera*,

(2) *Oryza sativa*, *Lycopersicon esculentum* (Mill.)

(A) 1 is correct and 2 is wrong
(B) 2 is correct and 1 is wrong
(C) Option A is wrong
(D) Option B is right

**25.** In a dry farming situation, crop scouting in precision farming may be conducted with the help of :

(1) Scintillation counter

(2) Global positioning System

(3) Unmanned aerial vehicle

(4) Yoders' apparatus

(A) 1 is correct and 2 is wrong.

(B) 3 is correct and 4 is wrong.

(C) 3 and 4 are right

(D) 1 and 3 are correct.

**26.** In Site-specific nutrient management (SSNM) :

(1) Soil test-based crop response-based targeted yield equations can be used in SSNM.

(2) Jhuming cultivation is a part of SSNM.

(3) In SSNM, soil-based, or plant-based approaches may be followed.

(4) Free flooding and border irrigation methods are essential components of SSNM.

(A) 1 is correct and 3 is wrong

(B) 3 is correct and 4 is wrong

(C) 3 and 4 are right

(D) 1 and 3 are correct

**27.** Agronomic measures of soil and water conservation may be included :

(1) Contour farming, conservation tillage, mulching, dense cropping, strip cropping and mixed cropping.

(2) Contour bunding, contour trenching, bench terracing and graded bunding

(A) 1 alone is correct.

(B) 2 alone is correct

(C) 1 and 2 are correct

(D) 1 and 2 are wrong

**28.** (1) The occurrence of abundant root nodules in clumps or root bunches was noticed in *Casuarina equisetifolia*.

(2) *Casuarina equisetifolia* is an effective wind break.

(3) Rhizobium is associated with nodulation which helps in nitrogen fixation in *Casuarina equisetifolia*.

(A) (1) is correct and (2) is wrong

(B) (3) is correct and (1) is wrong

(C) (1) and (2) are correct

(D) All are correct

**29.** (1) The top-down method of nanoparticle synthesis involves condensation of atoms in the gas phase or molecular phase or solution allowing for the precursor particle to grow into the size of a nanoparticle.

(2) In the bottom-up approach nanoparticles are synthesized by massive solid into smaller portions till the nano-sized particles are obtained.

(A) (1) is correct

(B) (2) is correct

(C) (1) and (2) are correct

(D) All the above options are wrong

**30.** (1) In conventional tillage, a moldboard plough inverts the upper soil horizon, burying all plant residues and producing a bare soil surface.

(2) A chisel plough, one type of conservation tillage implement, stirs the soil but leaves a good deal of Crop residues.

(3) An equipment, "no-till planter's rolling furrow openers" cut the slot for planting through the mulched residue of the earlier crop and soil into which the seed is planted at a depth set by the dept wheel of the equipment.

(A) (1) and (2) are wrong

(B) (1), (2) and (3) are correct

(C) (1), (2) and (3) are wrong

(D) (1) and (3) are correct

**31.** A desirable choice to reduce runoff trap eroded soil materials and stabilize slopes :

(A) Rice and maize-based cropping system

(B) Tapioca with ground nut along the slope

(C) Vetiver planting along the border of the slope

(D) None of the above is correct

**32.** Straw checkerboard mulching, Stubble mulching, transposing, planting, paving, and mulching are done before planting to enhance :

(A) Particle density
(B) Stabilize sandunes
(C) Rate of evapotranspiration
(D) None of the above

**33.** A 400 $cm^3$ oven dry core has a bulk density of 1.2 $g/cm^3$. After water saturation oven-dry soil weighs 680 grams, with a "pore volume to total volume ratio of 0.5". The total soil porosity is :

(A) 80%
(B) 25%
(C) 50%
(D) None of the above options

**34.** Nano-porous materials can store water in the soil during the rainfall season and release it during drought stress. Examples are :

(A) Nano urea
(B) Nano hydrogels and zeolites
(C) (A) is wrong
(D) (A) and (B) are right

**35.** A nano nitrogenous fertilizer with grade 4:0:0 available in the market is applied to the rice crop at the rate of 1000 ml per ha of the formulation. If so, what is the quantity of N applied to the crop?

(A) 38.5 g
(B) 40.5 g
(C) 40 g
(D) 100 g

**36.** Which of the following microbes have insecticidal activity :

(i) *Pasteuria penetrans*
(ii) *Arthrobotrys dactyloides*
(iii) *Paecilomyces lilacinus*
(iv) *Bacillus thuringiensis*

(A) Only (i)
(B) Only (iv)
(C) (i), (ii) and (iii)
(D) None of the above

**37.** Leaf webs found through out the season in mango is due to infestation of :

(A) *Rastrococcus iceryoides*
(B) *Acrocercops syngramma*
(C) *Orthaga exvinacea*
(D) *Deanolis albizonalis*

**38.** Match List I with List II :

| List I | | List II | |
|---|---|---|---|
| (a) | Banana stem borer | (1) | *Nilaparvata lugens* |
| (b) | Brown plant hopper | (2) | *Oecophylla smaragdina* |
| (c) | Rice yellow stem borer | (3) | *Odoiporus longicollis* |
| (d) | Red ant | (4) | *Sciropophaga incertulus* |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 2 | 1 | 4 | 3 |
| (B) | 3 | 1 | 4 | 2 |
| (C) | 3 | 4 | 1 | 2 |
| (D) | 4 | 3 | 1 | 2 |

**39.** The plant from which botanical insecticide Pyrethrum is obtained :

(A) *Chrysanthemum cinerariaefolium*

(B) *Derris elliptica*

(C) *Azadiracta indica*

(D) *Andrographis paniculate*

**40.** Statement (i) Fenvalerate is a synthetic pyrethroid.

Statement (ii) Phosalone is a bio pesticide.

Statement (iii) The insecticide spinosad is derived from actinomycetes.

(A) Statement (i) and (iii) correct; statement (ii) wrong

(B) Statement (i) and (ii) correct; statement (iii) wrong

(C) Statement (i) and (ii) wrong; statement (iii) correct

(D) Statement (i) correct; Statement (ii) and (iii) wrong

**41.** Match List I with List II :

| | List I | | List II |
|---|---|---|---|
| (a) | Citrus tristeza | (1) | *Diaphorina citri* |
| (b) | Papaya ring spot virus | (2) | *Dysmicoccus brevipus* |
| (c) | Citrus greening disease | (3) | *Myzus persicae* |
| (d) | Pineapple wilt associated virus | (4) | *Toxoptera citricida* |

| | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| (A) | 2 | 1 | 4 | 3 |
| (B) | 3 | 1 | 4 | 2 |
| (C) | 3 | 4 | 1 | 2 |
| (D) | 4 | 3 | 1 | 2 |

**42.** Statement (i) T-toxin is a selective toxin produced by *Helminthosporium maydis.*

Statement (ii) Fumaric acid is a non selective toxin produced by *Rhizopus* spp.

Statement (iii) Zinniol is a non selective toxin produced by *Ceratocystis ulmi.*

(A) Statement (i), (ii) and (iii) correct

(B) Statement (i) correct; Statement (ii) and (iii) wrong

(C) Statement (i) and (ii) correct; Statement (iii) wrong

(D) Statement (i) and (iii) correct; Statement (ii) wrong

**43.** Which of the following is the parapheromone used for monitoring fruit fly in bittergourd :

(A) methyl eugenol (B) cuelure

(C) trimedlure (D) ferrugineol

**44.** Application of sawdust/paddy husk at 500 g /plant in bhindi is useful against :

(A) Bacterial wilt (B) Fungal wilt

(C) Root mealy bug (D) Nematodes

**45.** Simulation model for blast disease of rice :

(A) MYCOS (B) EPICAST

(C) EPIBLAST (D) EPIDEM

**46.** Genes which offers resistance against wheat blast disease :

(A) Pi36 (B) Rmg8

(C) Sr35 (D) BSR1

47. Precursor of Salisilic Acid in SAR :

(A) Prephenate (B) Phosphoenol pyruvate

(C) Erythrose phosphate (D) Chorismate

48. Which of the following is not a phytoalexin produced in cow pea?

(A) Phaseollin (B) Phaseollidine

(C) Rishitin (D) Kevitone

49. A disease having domestic quarantine regulation in India :

(A) Late blight of potato (B) Bunchy top of banana

(C) Black stem rust of wheat (D) Moko wilt in banana

50. First discovered triazole fungicide :

(A) Hexaconazole (B) Triadimefon

(C) Tebuconazole (D) Triademorph

51. Coconut variety having resistance to root (wilt) :

(A) Kalpa Sreshta (B) Kalpa Surya

(C) Kalpa Sree (D) Kalpa Mithra

52. Which of the following PR-protein families have chitinase property?

(i) PR 1

(ii) PR 2

(iii) PR 3

(iv) PR 4

(A) (i) and (ii) (B) (i) and (iii)

(C) (iii) and (iv) (D) All of the above

53. Which of the following fungicide is effective against mites?

(A) Carbendazim (B) Copper oxychloride

(C) Strobilurin (D) Karathane

54. The secretion system in plant pathogenic bacteria for host pathogen interaction :

(A) TSS III (B) TSS VI

(C) TSS I (D) TSS II

**55.** An antibiotic which can inhibits wall synthesis in bacteria :

(A) Streptomycin (B) Griseofuvin

(C) Cycloheximide (D) Penicillin

**56.** 'Spongy tissue' is a disorder in which -mango variety :

(A) Neelum (B) Ratna

(C) ArkaPuneet (D) Alphonso

**57.** Polyploidy can be induced by application of :

(A) Silver nitrate (B) Colchicine

(C) Silver thiosulphate (D) Potassium nitrate

**58.** India is the largest producer of which of these two crops :

(A) Okra and tomato (B) Potato and bottlegourd

(C) Okra and ginger (D) Onion and cabbage

**59.** Tag color for foundation seed is :

(A) White (B) Azure blue

(C) Golden yellow (D) No color

**60.** The most suitable temp. for colour development in carrot is :

(A) 10-15°C (B) 15-21°C

(C) 7-10°C (D) 22-25°C

**61.** Panchami is a variety of which of the following crop?

(A) Nutmeg (B) Turnip

(C) Black pepper (D) Knol Kohl

**62.** Sprouting of onion bulbs in storage can be prevented by spraying which of the following?

(A) MH 2500 ppm 2 weeks before harvest

(B) MH 2500 ppm 2 weeks after harvest

(C) MH 2500 ppm 1 weeks before harvest

(D) MH 250 ppm 1 weeks before harvest

**63.** Tropism in plants is controlled by which phytohormone?

(A) Ethylene (B) Gibberellin

(C) Cytokinin (D) Auxin

**64.** The National Biodiversity Authority (NBA) is located at :

(A) Varanasi (B) New Delhi

(C) Mumbai (D) Chennai

**65.** The parents of coconut hybrid 'Kerasankara' are :

(A) WCT x COD (B) WCT x MYD

(C) COD x WCT (D) MYD x WCT

**66.** Vengurla 1 is a cultivar of :

(A) Arecanut (B) Brinjal

(C) Coconut (D) Cashew nut

**67.** The practice of controlled hydration treatment to the seed is called :

(A) Seed Pelleting (B) Seed germination

(C) Seed soaking (D) Seed Priming

**68.** Pusa Early bunching is a variety of :

(A) Coriander (B) Mint

(C) Fenugreek (D) Palak

**69.** Conservation of germplasm under natural habitat is referred to :

(A) Ex-situ Conservation (B) In-situ Conservation

(C) Cryopreservation (D) None of the above

**70.** Seeds which can be dried to low moisture content and stored at low temperature are known as :

(A) Orthodox seeds (B) Recalcitrant seeds

(C) True seeds (D) Pure seeds

**71.** IISR Varada is a variety of :

(A) Nutmeg (B) Ginger

(C) Turmeric (D) Cardamom

**72.** Long term conservation in seed gene banks is at what temperature :

(A) 0°C (B) 5-10°C

(C) -18 or -20°C (D) 4-6°C

**73.** In mutation substitution of a purine by a pyrimidine and vice versa is called :

(A) Transition (B) Transversion

(C) Frame shift mutation (D) None of these

**74.** Triticale a man-made cereal is as an artificially synthesized :

(A) Allopolyploid (B) Aneuploid

(C) Autopolyploid (D) Diploid

**75.** Types of Vegetable gardens were suggested by :

(A) Carl Linnaeus (B) Thomas Jefferson

(C) Thompson and Kelly (D) None of the above

**76.** Typha grass roots are used in which type of vegetable garden :

(A) Truck garden (B) Market garden

(C) Seed production garden (D) Floating garden

**77.** PPVFR Act was enacted in :

(A) 2011 (B) 2009

(C) 2001 (D) 1995

**78.** Seedless watermelon is a :

(A) Tetraploid (B) Diploid

(C) Triploid (D) Haploid

**79.** The economic part of the medicinal Coleus forskohlii is :

(A) Leaves (B) Tuberous roots

(C) Stem (D) Flower

**80.** The major component of Rosemary oil is :

(A) 1, 8 cineole (B) Camphor

(C) Linalool (D) $\alpha$-pinene

81. 'Stone grafting' is also known as :

(A) Wedge grafting
(B) Epicotyl grafting
(C) Bridge grafting
(D) Soft wood grafting

82. Ultra dwarfing rootstock of apple is :

(A) M-9
(B) M-27
(C) MM-104
(D) MM-111

83. 'Marcottage' is another term for :

(A) Tip layering
(B) Trench layering
(C) Air layering
(D) Mound layering

84. Kokkan disease is caused by :

(A) Fungus
(B) Bacteria
(C) Virus
(D) MLO

85. Whiptail of Cauliflower is caused by :

(A) Calcium deficiency
(B) Virus
(C) Molybdenum deficiency
(D) Boron deficiency

86. There is a decrease in the demand for a commodity when the price of a substitute commodity increases :

(A) True
(B) False
(C) Both
(D) None of the above

87. In a market with perfect competition, the firms are :

(A) Price makers
(B) Price takers
(C) Both
(D) None of the above

88. ———— can be measured by the area under the demand curve and above the commodity price.

(A) Producer's surplus
(B) Consumer's surplus
(C) Consumer's welfare
(D) Producer's welfare

**89.** Consumer utility maximisation is satisfied by the condition that :

(A) $MU_x=MU_y=MU_z$ (B) $MU_x=P_y$

(C) $MU_x/P_x=MU_y/P_y$ (D) None of the above

**90.** Geographical market segmentation is a sub-set of :

(A) Demographic market segmentation

(B) Firmographic market segmentation

(C) Behavioural segmentation

(D) Psychographic segmentation

**91.** Decreasing costs of a firm refer to the situation wherein :

(A) Maximum output

(B) Output increases proportionately more than the inputs

(C) Minimum costs

(D) None of the above

**92.** A product pricing strategy by which a firm charges the highest initial price that customers will pay and then lowers it over time :

(A) Product penetration (B) Price skimming

(C) Product mix (D) None of the above

**93.** Companies that have patents or extensive research and development costs such as pharmaceutical companies are considered as :

(A) Natural Monopolies (B) Monopolistic

(C) Price monopoly (D) Public monopoly

**94.** A programme initiated with an objective to enhance the resilience of Indian agriculture covering crops, livestock and fisheries to climatic variability and climate change through development and application of improved production and risk management technologies :

(A) NATP (B) NAIP

(C) NICRA (D) IVLP

**95.** What is the meaning of the term economists use "ceteris paribus"?

(A) All the variables are held constant

(B) All the other independent variables affecting the dependent variable are held constant

(C) Both of the above

(D) None of these

**96.** Marginal cost equals :

(A) $\Delta TC / \Delta Y$ (B) $\Delta TVC / \Delta Y$

(C) Both of these (D) None of these

**97.** The process of determining the extent to which we have been able to attain our objectives in extension programme planning :

(A) Analysis of a situation

(B) Collection of facts

(C) Evaluation of progress

(D) Identification of problems

**98.** Demand and pricing for the products in monopolistic competition is :

(A) Inelastic, price takers (B) Highly elastic, price makers

(C) Inelastic, price makers (D) Highly elastic, price takers

**99.** Costs that vary directly with the level of output :

(A) Total Fixed costs (B) Implicit costs

(C) Total Variable costs (D) Explicit costs

**100.** An organisation created from a formal agreement between a group of producers of a good or service to control supply or to regulate or manipulate prices :

(A) Monopoly (B) Cartel

(C) Partnership (D) Co-operatives

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