MIZORAM PUBLIC SERVICE COMMISSION

AGRICULTURE & ALLIED SERVICES (COMBINED TECHNICAL) EXAMINATION, 2024 FOR RECRUITMENT OF JR. GRADE OF MIZORAM AGRICULTURE SERVICE UNDER AGRICULTURE & FARMERS' WELFARE DEPARTMENT, GOVERNMENT OF MIZORAM, DECEMBER-2024

AGRICULTURE SCIENCE PAPER-II

Time Allowed : 3 hours FM : 200

SECTION - A *(Multiple Choice Questions) (100 Marks)*

All questions carry equal mark of 2 each. Attempt all questions.

*This Section should be answered only on the **OMR Response Sheet** provided.*

1. Hot water treatment for the loose smut of wheat was given by-

(a) Luthra and sattar (b) Jensen

(c) Johnson (d) Kataan

2. Crystallization of virus was first done by-

(a) W.M Stanley (b) M.W. Beijerinck

(c) D.L.Ivanowski (d) Adulf Mayer

3. Nomenclature of fungi is governed by-

(a) ICBN (b) ICZN

(c) ICTV (d) ICFN

4. Aflatoxin is produced by-

(a) Penicillium spp (b) Trichoderma spp

(c) Aspergillus niger (d) Aspergillus flavus

5. Which of the following is a unicellular fungi?

(a) Saccharomyces (b) Phytophthora

(c) Pythium (d) Aspergillus

6. Little leaf of brinjal is caused by-

(a) Fungus (b) Bacteria

(c) Mycoplasma like organism-phytoplasma (d) Virus

7. Wilting syndrome known as "kresek" occurs in-

(a) Bacterial blight of rice (b) Blast of rice

(c) Bacterial wilt of cotton (d) Brown spot of rice

8. Gemini viruses are often transmitted by_____ in a persistent circulative manner.
   (a) Leaf hopper (b) Tree hopper
   (c) Plant hopper (d) Whitefly
9. Breakdown of vertical resistance imparted by R-gene is called-
   (a) Vertifolia effect (b) Crabtree effect
   (c) RNA interference (d) Gene for Gene interaction
10. A bacteria which have a large number of flagella all over the cell is categorized in-
   (a) Atrichous (b) Amphitrichous
   (c) Lophotrichous (d) Peritrichous
11. Amino acids are joined by which of the following?
   (a) Phosphodiester bond (b) Salt bridge
   (c) Peptide bond (d) Ester bond
12. Koch's postulates are used to-
   (a) Identify beneficial microorganisms (b) Confirm the causative agent of a disease
   (c) Develop antibiotic resistance in bacteria (d) Sterilize infected tissue samples
13. Citrus canker is caused by-
   (a) Xanthomonus campestrispv citri (b) Albugo candida
   (c) Erwinia amylovora (d) Plasmoparaviticola
14. Teichoic acid found in-
   (a) Fungi (b) Gram positive bacteria
   (c) Gram negative bacteria (d) Protozoa
15. Phyllody disease of sesame spread by-
   (a) Leaf hopper (b) Aphid
   (c) Jassids (d) Whitefly
16. Litchi is native to-
   (a) North China (b) India
   (c) North America (d) South China
17. Which among the following is a vector of little leaf of Brinjal?
   (a) Aphid (b) White fly
   (c) Leaf hopper (d) Mite
18. Which class of chemical insecticide is characterized by a relatively high degree of environmental persistence?
   (a) Carbamates (b) Synthetic pyrethroids
   (c) Organophosphates (d) Chlorinated hydrocarbons
19. The biggest honeybees which are distributed in India, in plains as well as hills are
   (a) Apis cerana (b) Apis mellifera
   (c) Apis florae (d) Apis dorsata

20. Which type of plant pathogen causes "witches'-broom" symptoms?

(a) Virus (b) Phytoplasma

(c) Fungus (d) Nematode

21. Which amongst the following is a polyphagous pest?

(a) Brinjal Fruit Borer (b) Bihar Hairy Caterpiller

(c) Cabbage butterfly (d) Mustard sawfly

22. *Antheraea assama* produced which type of silk?

(a) Eri silk (b) Muga silk

(c) Tasar (d) Mulberry

23. Bud necrosis in groundnut is transmitted by-

(a) Aphids (b) Thrips

(c) White fly (d) Mealy bug

24. In case of garlic, bulbils develop naturally from medication of which of the following?

(a) Roots (b) Shoots

(c) Flower (d) Fruit

25. Ufra disease of rice is caused by the nematode:

(a) Ditylenchus angustus (b) Trichinella spiralis

(c) Meloidogyne incognita (d) Helicotylenchus multicinctus

26. Cleistogamy promotes which of the following?

(a) Cross pollination (b) Self pollination

(c) Male sterility (d) Self incompatibility

27. The study of the mechanism by which genes bring about their phenotypic effects is called as-

(a) Epigenetics (b) Exogenetics

(c) Endogenetics (d) cytogenetics

28. Offspring from cross between two individuals differ in at least one character or trait is-

(a) Polyploid (b) Hybrids

(c) Mutants (d) Varieties

29. A man made Allopolyploid crop is-

(a) bread wheat (b) Maize

(c) Triticale (d) Sugarcane

30. Self-Pollination increases which of the following?

(a) Heterozygosity (b) Homozygosity

(c) Heterogenity (d) Homogeneity

31. A cross between open pollinated variety and pure line selection is-

(a) Top cross (b) Double cross

(c) Synthetic cross (d) Self cross

32. The major predator of lac insect.

(a) Mantisreligiosa (b) Eublemmaamabilis

(c) Coccinellaseptempunctata (d) Chrysoperlacarnea

33. Increased vigour of hybrids over parents results from-

(a) Selection (b) Heterosis

(c) Hybridization (d) Mutation

34. Site of protein synthesis in a cell is-

(a) Ribosomes (b) Endoplasmic reticulum

(c) Chloroplasts (d) Mitochondria

35. A plant in which gene has been transferred through genetic engineering is called-

(a) Hybrid (b) Pure line selection

(c) Back cross line (d) Transgenic plant

36. Which insect order includes the majority of vectors for plant viral diseases?

(a) Coleoptera (b) Hemiptera

(c) Orthoptera (d) Hymenoptera

37. The type of damage caused by insect vectors of plant diseases primarily includes:

(a) Chewing and skeletonizing leaves (b) Sap-sucking and virus transmission

(c) Leaf rolling and gall formation (d) Mining within plant tissues

38. The term "ecdysis" refers to:

(a) The production of pheromones (b) The excretion of waste products

(c) The process of moulting in insects (d) The development of compound eyes

39. The irradiance at which Photosynthesis is equal to respiration rate (net CO_2 exchange is zero) is called-

(a) Light compensation point (b) Light saturation point

(c) Solar constant (d) PAR

40. Which is the hereditary material in chromosomes?

(a) RNA (b) ATP

(c) DNA (d) ADP

41. The primary cause of fruit softening during ripening is the breakdown of:

(a) Cellulose (b) Pectin

(c) Starch (d) Protein

42. Indian Institute of Vegetable Research is located in-

(a) Bihar (b) Varanasi

(c) Maharashtra (d) Karnataka

43. The inflorescence of jackfruit is called-

(a) Spadix (b) Panicle

(c) Solitary (d) Hypanthodium

44. The inflorescence of banana is-

(a) Umbel (b) Catkin

(c) Spadix (d) Raceme

45. Fruits like mango, peach, and cherry belong to which category based on their seed structure?

(a) Drupes (b) Pome

(c) Berries (d) Pepo

46. The first stable compound formed during photosynthesis in C_4 plant is-

(a) PEP (b) 3 PGA

(c) Oxaloacetic acid (d) RuBP

47. Which of the following apparatus is commonly used to measure the rate of transpiration?

(a) Porometer (b) Altimeter

(c) Potometer (d) Luxmeter

48. Translocation of carbohydrates mostly take place in the form of-

(a) Glucose (b) Sucrose

(c) Fructose (d) Maltose

49. How many ATP are consumed /utilized in glycolysis?

(a) 1 ATP (b) 2 ATP

(c) 3 ATP (d) 4 ATP

50. The process of accelerating the ability of flowering in plants by exposing them to cold temperature is known as-

(a) Vernalization (b) Respiration

(c) Guttation (d) Photoperiodism

SECTION - B *(Conventional Type) (100 Marks)*

*This Section should be answered only on the **Answer Sheet** provided.*
Marks for each question is indicated against it.
Attempt all questions.

1. Give an account of major diseases of the following crops along with their etiological agent and control measures. **(4×4=16)**

(a) Rice (b) Chickpea

(c) Tomato (d) Rapeseed

2. Define heterosis and explain why it is important in plant breeding. Describe a method for estimating heterosis in a crop species. **(2+2=4)**

3. List and briefly describe three common breeding techniques used in plant breeding. Discuss the application of backcross breeding in transferring specific traits. **(4+4=8)**

4. Write short notes on the following **(4×3=12)**

   (a) Mutation breeding
   (b) Male sterility
   (c) Law of segregation
   (d) Pureline selection

5. Differentiate between the orders Lepidoptera and Coleoptera. Describe key distinguishing characteristic of Diptera and Orthoptera. **(2+6=8)**

6. Explain the different type of pesticide formulations. Classify the insecticides based on mode of action. **(6+6=12)**

7. Discuss the CAM pathway and identify plant types that commonly use this pathway. **(5)**

8. Write a note on photoperiodism and vernalization. **(4+4=8)**

9. Describe the role of auxins in plant growth. Discuss the effects of gibberellins and cytokinins on plant development. **(3+4=7)**

10. What are the main branches of horticulture? Explain the role of floriculture and its economic significance. Discuss the importance of olericulture and pomology in food production. **(2+4+4=10)**

11. Write the climatic requirements and cultivation practices of the following crops. **(Any two)** **(2×5=10)**

   (a) Onion
   (b) Lemongrass
   (c) Rose
   (d) Coconut

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