

Bihar Board 12 Biology Set F 2024 Question Paper

Time Allowed :3 Hours 15 mins

Maximum Marks :70

Total questions :96

General Instructions

Instructions to the candidates:

1. Candidate must enter his/her Question Booklet Serial No. (10 Digits) in the **OMR Answer Sheet**.
2. Candidates are required to give their answers in their own words as far as practicable.
3. Figures in the right-hand margin indicate full marks.
4. An extra time of 15 minutes has been allotted for the candidates to read the questions carefully.
5. This question booklet is divided into two sections — **Section-A** and **Section-B**.

1. What is the use of alpha-1-antitrypsin?

- (A) In treatment of emphysema
 - (B) In treatment of asthma
 - (C) As insecticidal protein
 - (D) In treatment of diabetes
-

2. Which of the following methods is used for the amplification of nucleic acid?

- (A) Transformation
 - (B) Transfection
 - (C) PCR
 - (D) Micropropagation
-

3. At what pH insecticidal protein synthesized by *Bacillus thuringiensis* becomes active?

- (A) Acidic pH
 - (B) Alkaline pH
 - (C) Neutral pH
 - (D) First acidic then alkaline pH
-

4. RNA interference is utilized to prevent nematode infestation in tobacco plants. By which vector are nematode specific genes introduced?

- (A) Bacteriophage
 - (B) Retrovirus
 - (C) *Escherichia coli*
 - (D) *Agrobacterium*
-

5. How many varieties of Basmati rice are grown in India?

- (A) 20
 - (B) 15
 - (C) 27
 - (D) 5
-

6. Which of the following organizations makes decision regarding the validity of GM research and the safety of introducing GM organisms?

- (A) Department of Science and Technology
 - (B) Department of Biotechnology
 - (C) GEAC
 - (D) Indian Patent Office
-

7. Name of Ramdeo Mishra is associated with which field of research?

- (A) Ecology
 - (B) Biotechnology
 - (C) Green revolution
 - (D) Genetics
-

8. HIV attacks on which of the following cells?

- (A) B-cells
 - (B) T-cells
 - (C) Epithelial cell
 - (D) T-helper cell
-

9. Going down of inorganic water soluble nutrients into the soil nutrients is called as

- (A) Fragmentation

- (B) Leaching
 - (C) Catabolism
 - (D) Humification
-

10. According to Robert May, how much is the global species diversity?

- (A) 7 million
 - (B) 1–5 million
 - (C) 20–25 million
 - (D) 2 million
-

11. Biodiversity of India is what percentage of the total global species diversity?

- (A) 2–4%
 - (B) 8–1%
 - (C) 5%
 - (D) 9%
-

12. What was the reason for extinction of more than 200 species of Cichlid fish in Lake Victoria?

- (A) Co-extinction
 - (B) Alien species invasion
 - (C) Overexploitation
 - (D) Habitat loss
-

13. Which of the following is not the reason for global warming?

- (A) Use of fossil fuels
- (B) Deforestation

- (C) Population explosion
 - (D) Improvement in the efficiency of energy use
-

14. Which of the following statements is incorrect about organic farming?

- (A) It is cyclic
 - (B) Zero waste is generated
 - (C) Maximum utilization of resources
 - (D) Use of chemical fertilizers
-

15. Which of the following statements is incorrect about temperature?

- (A) Temperature is the most important environmental factor
 - (B) Temperature decreases from the equator towards the pole
 - (C) Temperature increases with increase in height
 - (D) Temperature is low at the summit of a mountain
-

16. At which level is natural selection operated to evolve the desired traits?

- (A) Individual level
 - (B) Population level
 - (C) Community level
 - (D) Ecosystem level
-

17. When percentage of individuals of pre-reproductive, reproductive and post-reproductive phase is in decreasing order in the age pyramid of human population, it shows that population is

- (A) Expanding
- (B) Decreasing

- (C) Stable
 - (D) Unstable
-

18. Which of the following reproduces once in a lifetime?

- (A) Pacific salmon fish and bamboo
 - (B) Mammals
 - (C) Birds and mammals
 - (D) Litchi and mango
-

19. What was the reason for co-existence of five closely related species of warblers?

- (A) Competitive exclusion
 - (B) Resource partitioning
 - (C) Parasitism
 - (D) Commensalism
-

20. Which of the following plants produces poisonous cardiac glycoside?

- (A) Cactus
 - (B) Calotropis
 - (C) Coffee plant
 - (D) Tobacco
-

21. Which of the following are decomposers?

- (A) Fungi and algae
- (B) Fungi and virus
- (C) Fungi and bacteria
- (D) Fungi, bacteria and virus

22. Which of the following is not a cloning vector for bacteria?

- (A) Bacteriophage
- (B) Plasmid
- (C) pBR322
- (D) T-DNA

23. Which of the following methods is used to inject recombinant DNA into nucleus of animal cell directly?

- (A) Transfection
- (B) Transformation
- (C) Gene gun
- (D) Microinjection

24. For isolation of DNA a fungus is treated with which enzyme?

- (A) Lysozyme
- (B) Cellulase
- (C) DNase
- (D) Chitinase

25. Which of the following is absent in pBR322?

- (A) Origin of replication
 - (B) Restriction site
 - (C) T-DNA
 - (D) Antibiotic resistant genes
-

26. If a foreign DNA is inserted in tetracycline resistant gene, the recombinant plasmid

- (A) Will lose ampicillin resistance
 - (B) Will lose tetracycline resistance
 - (C) Cloning would become easier
 - (D) Ampicillin resistance will become stronger
-

27. From which of the following bacteria, thermostable DNA polymerase is isolated?

- (A) Agrobacterium
 - (B) *Thermus aquaticus*
 - (C) Methanobacterium
 - (D) Archaeobacteria
-

28. Which of the following bacteria synthesizes insecticidal protein?

- (A) Agrobacterium
 - (B) *Bacillus thuringiensis*
 - (C) *Escherichia coli*
 - (D) Archaeobacteria
-

29. Which of the following statements is incorrect about DNA replication?

- (A) DNA replication is semi-conservative
 - (B) Main enzyme for DNA replication is DNA polymerase
 - (C) Mutation appears due to error in replication
 - (D) Replication on both strands of DNA is continuous
-

30. Which of the following enzymes is responsible for transcription of ribosomal RNA?

- (A) RNA polymerase
 - (B) RNA polymerase I
 - (C) RNA polymerase II
 - (D) RNA polymerase III
-

31. Some amino acids are coded by more than one codon. Such code is known as

- (A) unambiguous
 - (B) degenerate/redundant
 - (C) universal
 - (D) specific
-

32. What is the role of y gene in lac operon?

- (A) Codes for -galactosidase
 - (B) Codes for permease
 - (C) Codes for repressor gene
 - (D) Codes for transacetylase
-

33. Paleontological evidence is based on the study of

- (A) embryological development
 - (B) comparative anatomy
 - (C) fossils
 - (D) divergent evolution
-

34. What do analogous structures show?

- (A) Divergent evolution
- (B) Convergent evolution

- (C) Parallel evolution
 - (D) Saltation
-

35. When did prehistoric cave art develop?

- (A) 18,000 years ago
 - (B) 10,000 years ago
 - (C) 75,000 years ago
 - (D) 40,000 years ago
-

36. Amount of which vitamin increases after conversion of milk into curd?

- (A) Vitamin B₁₂
 - (B) Vitamin A
 - (C) Vitamin C
 - (D) Vitamin B₆
-

37. Alexander Fleming discovered penicillin while working on which of the following bacteria?

- (A) Streptococcus
 - (B) Acetobacter
 - (C) Staphylococcus
 - (D) Lactobacillus
-

38. Which of the following inhibits synthesis of cholesterol?

- (A) Protease
- (B) Streptokinase
- (C) Penicillin

(D) Statin

39. Capacity to generate a whole plant from a plant cell is called as

- (A) Tissue culture
 - (B) Pluripotency
 - (C) Totipotency
 - (D) Micropropagation
-

40. Hisardale is a breed of which of the following animals?

- (A) Cow
 - (B) Buffalo
 - (C) Sheep
 - (D) Chicken
-

41. Which of the following techniques was used to get yellow mosaic virus resistant mung lentil?

- (A) Mutation breeding
 - (B) Introduction
 - (C) Hybridisation
 - (D) Tissue culture
-

42. Reason for movement of DNA fragments towards anode in electrophoresis is DNA fragments being

- (A) Negatively charged
- (B) Positively charged
- (C) Charged

(D) Charged with charges of both types

43. Which of the following is not responsible for vegetative propagation of plants?

- (A) Offset
 - (B) Bulb
 - (C) Rhizome
 - (D) Gemmule
-

44. Which of the following statements is incorrect?

- (A) Antheridia are present on antheridiophore of female thallus of *Marchantia*
 - (B) *Chara* is monoecious
 - (C) Diploid gene forms gamete after meiosis
 - (D) Zoospores are formed in *Chlamydomonas*
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45. Which of the following plants is referred to as 'Terror of Bengal'?

- (A) Water hyacinth
 - (B) Bamboo
 - (C) Lantana
 - (D) Parthenium
-

46. Which of the following is not a part of microsporangium?

- (A) Endothecium
- (B) Tapetum
- (C) Epidermis
- (D) Micropyle

47. Which of the following cells divides to form two male gametes in angiospermic plant?

- (A) Vegetative cell
- (B) Generative cell
- (C) Microspore mother cell
- (D) Microspore

48. Which of the following is not associated with egg apparatus?

- (A) Synergid
- (B) Egg
- (C) Antipodal cells
- (D) Filiform apparatus

49. Scutellum present in the seeds of grass is called

- (A) Endosperm
- (B) Cotyledon
- (C) Seed coat
- (D) Embryonal axis

50. In a cross between true breeding red flowered and true breeding white flowered plants of *Antirrhinum* the F₁ generation was pink flowered, which is an example of

- (A) Dominance
- (B) Codominance
- (C) Incomplete dominance
- (D) Blending of contrasting forms of a character

51. Which of the following statements is incorrect?

- (A) Characters are controlled by factors
- (B) Factors are discrete
- (C) In pea, factors are in pairs
- (D) Alleles blend with each other

52. What is the cytological basis of law of independent assortment?

- (A) There is no blending of alleles
- (B) Alleles of a pair separate during gamete formation
- (C) Alleles may be dominant or recessive
- (D) Pair of chromosomes arrange themselves in line independently in metaphase I

53. Who propounded the chromosomal theory of inheritance?

- (A) Mendel
- (B) Sutton and Boveri
- (C) Morgan
- (D) Henking

54. Which of the following is not a chromosomal disorder?

- (A) Down's syndrome
- (B) Klinefelter's syndrome
- (C) Turner's syndrome
- (D) Haemophilia

55. Who provided X-ray diffraction data of DNA?

- (A) Maurice Wilkins & Rosalind Franklin
 - (B) Chargaff
 - (C) Watson and Crick
 - (D) Holley
-

56. What was the conclusion of Hershey and Chase experiment?

- (A) Genetic material of bacteria is DNA
 - (B) Genetic material of virus is DNA
 - (C) Genetic material of bacteria is RNA
 - (D) Genetic material of virus is RNA
-

57. Which of the following is not a termination codon?

- (A) UAG
 - (B) UGA
 - (C) AUG
 - (D) UAA
-

58. What is the meaning of charging of t-RNA?

- (1) Linking of amino acid with cognate t-RNA
 - (2) Attachment of t-RNA with ribosome
 - (3) Translation of RNA
 - (4) Modification of RNA
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59. Which of the following is a non-infectious disease?

- (1) AIDS
- (2) Malaria

- (3) Cancer
 - (4) Typhoid
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60. Which of the following blood cells is known as PMNL (Polymorphonuclear leukocyte)?

- (1) Lymphocyte
 - (2) Monocyte
 - (3) Neutrophil
 - (4) Platelets
-

61. Which of the following is abundantly found in colostrum?

- (1) IgA
 - (2) IgG
 - (3) IgM
 - (4) IgD
-

62. What is diacetyl morphine?

- (1) Codeine
 - (2) Heroin
 - (3) Cannabinoid
 - (4) Coke
-

63. Which fever is confirmed by Widal test?

- (1) Malaria
- (2) Typhoid
- (3) AIDS

(4) Pneumonia

64. After how many months of pregnancy, do limbs and digits of embryo develop?

- (1) 2 months
 - (2) 3 months
 - (3) 1 month
 - (4) 6 months
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65. Which of the following secretes large amount of progesterone?

- (1) Graafian follicle
 - (2) Corpus albicans
 - (3) Corpus luteum
 - (4) Primary follicle
-

66. After ovulation the ovum is surrounded by a group of cells called?

- (1) Corona radiata
 - (2) Zona pellucida
 - (3) Granulosa cells
 - (4) Theca layer
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67. Which of the following cells is haploid?

- (1) Oogonia
- (2) Primary oocyte
- (3) Secondary oocyte
- (4) Zygote

68. A new contraceptive pill which is non-steroidal is referred as

- (1) LNG 20
- (2) Progestaset
- (3) Saheli
- (4) Lippes loop

69. What is the population growth rate of India as per 2001 census?

- (1) 1-1%
- (2) 3-7%
- (3) Approximately 2%
- (4) 3%

70. Which of the following IUDs is hormone releasing?

- (1) Multiload 375
- (2) LNG-20
- (3) Lippes loop
- (4) Cu-T

Section B

1. What is incomplete dominance?

2. What would be the blood group of offspring, if the blood group of mother is AB and blood group of father is O?

3. Draw the symbols used for male, female, mating and consanguineous mating in human pedigree analysis.

4. What are the goals of Human Genome Project?

5. What is the relationship between thorns of Bougainvillea and tendrils of Cucurbita?

6. Name the different species of Plasmodium. Which species is responsible for malignant malaria?

7. What are the factors which affect population growth?

8. Explain parasitic adaptations.

9. What is cell mediated immunity?

10. What is cyclosporin-A and what is its use?

11. What are the primary and secondary productivities?

12. What is Dobson unit?

13. How are DNA fragments separated and isolated?

14. What is ELISA?

15. What is MOET?

16. How is the name given to restriction endonucleases?

17. Describe the structure of microsporangium.

18. Explain double fertilization.

19. What are spermatogonia, primary spermatocytes and secondary spermatocytes?

20. What are contraceptive pills? How do they function?

21. Explain the causes of biodiversity loss.

22. Write short notes on the following:

- (A) Phosphorus cycle
- (B) Primary immunity

23. Write short notes on the following:

- (A) Allergy
 - (B) Chemical composition of DNA.
-

24. How is gene of interest amplified by using PCR?

25. Answer the following questions:

- (A) Stability of DNA is higher than that of RNA. How?
 - (B) What are the roles of the three parts of the transcription unit?
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26. Write brief notes on the following:

- (A) Implantation
 - (B) Autogamy
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