24 AB CP 107

UG PROGRAM (4 YEARS HONOURS) WITH SINGLE MAJOR

AT THE END OF FIRST SEMESTER

INTRODUCTION TO CLASSICAL BIOLOGY

(COMMON FOR MICROBIOLOGY, FISHERIES)

(w.e.f. Admitted Batch 2024 - 25)

Time: 3Hours **Maximum: 70 Marks**

SECTION – A (Multiple Choice Questions) **30 x 1 = 30 M**

1. Which of the following best defines systematic?

A. The study of ecosystems and their components

B. The classification and organization of organisms based on their evolutionary relationships

C. The chemical processes with in organisms D. The study of plant anatomy

2. Which of the following correctly represents the taxonomic hierarchy?

A. Class → Order → Family → Genus → Species → Kingdom

B. Kingdom → Phylum → Class → Order → Family → Genus → Species

C. Phylum → Kingdom → Class → Genus → Species → Order

D. Genus → Family → Order → Class → Phylum → Kingdom

3. What does ICZN stand for?

A. International Code of Zonal Nomenclature B. International Code of Zoological Nomenclature

C. Indian Code of Zoological Nomenclature D. International Committee of Zoological Names

4. In binomial nomenclature, the two components represent:

A. Species and subspecies B. Genus and species C. Order and family D. Phylum and class

5. Which of the following is not a component of an ecosystem?

A. Biotic factors B. Abiotic factors C. Energy flow D. Genetic recombination

6. Which Green House Gas is primarily responsible for Global Warming?

A. Oxygen B. Carbon dioxide C. Nitrogen D. Helium

7. Which of the following divisions of the plant kingdom is characterized by non-vascular plants?

A. Angiosperms B. Gymnosperms C. Bryophytes D. Pteridophytes

8. What is the primary pigment involved in photosynthesis?

A. Chlorophyll B. Carotenoids C. Anthocyanins D. Xanthophyll

9. Which phytohormone is responsible for promoting cell elongation in plants?

A. Cytokinins B. Auxins C. Abscisic Acid D. Ethylene

10. What is the key difference between microsporogenesis and megasporogenesis?

A. Microsporogenesis occurs in ovules, while megasporogenesis occurs in anthers.

B. Microsporogenesis produces male gametophytes, while megasporogenesis produces female gametophytes.

C. Microsporogenesis leads to pollination, while megasporogenesis leads to fertilization.
D. Both processes occur in the pollen sac.

11. In mushroom cultivation, which of the following is used as the primary substrate for fungal growth?
A. Sand B. Compost C. Water D. Clay

12. Which type of embryo structure is typical in monocot plants?
A. Two cotyledons with branched venation B. Single cotyledon with parallel venation
C. Two cotyledons with fibrous root systems D. Single cotyledon with reticulate venation

13. Which of the following is NOT a characteristic feature of animals in the Kingdom Animalia?
a) Multicellularity b) Presence of a cell wall
c) Heterotrophic nutrition d) Mobility in some stage of life

14. Which of the following is a defining characteristic of phylum Chordata?
a) Jointed appendages b) Dorsal hollow nerve cord
c) Exoskeleton made of chitin d) Radial symmetry

15. Which hormone regulates blood sugar levels by lowering glucose concentration in the blood?
a) Glucagon b) Insulin c) Adrenaline d) Cortisol

16. The process of cleavage during early embryonic development results in:
a) Formation of gametes b) Formation of zygote
c) An increase in cell number without an increase in size d) Differentiation of tissues and organs

17. The primary silk-producing species used in sericulture is:
a) Apismellifera b) Bombyxmori c) Penaeusmonodon d) Tenebriomolitor

18. Which of the following is a commonly cultured species in Aquaculture?
a) Labeorohita b) Muscadomestica c) Ranatigrina d) Lumbricusterrestris

19. Which statement is NOT a part of cell theory?
A) All living organisms are composed of one or more cells.
B) Cells arise only from pre-existing cells.
C) Cells are the basic unit of structure and function in living organisms. D) All cells have a nucleus.

20. Which of the following structures is found in Eukaryotic cells but NOT in Prokaryotic cells?
a) Ribosome b) Cell membrane c) Nucleus d) Cytoplasm

21.What is the basic structural unit of a chromosome?
A) Gene B) Histone C) Nucleosome D) Centromere

22. The central dogma of molecular biology describes the flow of genetic information as:
A) DNA → RNA → Protein B) RNA → DNA → Protein
C) Protein → RNA → DNA D) DNA → Protein → RNA

23. Which theory suggests life originated from simple organic molecules forming under early Earth conditions?

A) Endosymbiotic theory B) Chemical evolution theory

C) Panspermia theory D) Spontaneous generation

24. During which phase of the cell cycle does DNA replication occur?

A) G_1 phase B) S phase C) G_2 phase D) M phase

25. What is the definition of chemistry?

A) The study of living organisms and their environment

B) The study of matter, its properties, and interactions with energy

C) The study of celestial bodies and space D) The study of mathematical principles

26. Which of the following is NOT an application of chemistry in daily life?

A) Cooking food B) Combustion of fuels C) Designing software D) Developing medicines

27. Which branch of chemistry focuses on the study of carbon-containing compounds?

A) Inorganic chemistry B) Physical chemistry C) Organic chemistry D) Analytical chemistry

28. What type of bond is formed when atoms share electrons?

A) Ionic bond B) Covalent bond C) Hydrogen bond D) Vanderwaals bond

29. Which of the following is a principle of green chemistry?

A) Maximizing hazardous waste production B) Using renewable feedstocks

C) Focusing solely on inorganic compounds D) Reducing product efficiency to save energy

30. Which type of non-covalent bond is primarily responsible for holding DNA strands together?

A) Ionic bonds B) Hydrogen bonds C) Vanderwaals forces D) Hydrophobic interactions

SECTION B (Fill in the blanks) 10 X 1 = 10 M

31. The system of giving each species a unique scientific name using two parts (genus and species) is known as _____ nomenclature.

32. The branch of biology that focuses on the study of ecosystems, including the interactions between organisms and their environment, is called _____.

33. The process by which plants convert carbon dioxide and water into glucose and oxygen using sunlight is known as _____.

34. In the classification of the plant kingdom, the plants that produce seeds and are characterized by having flowers are known as _____.

35. The kingdom Animalia includes animals that have a notochord at some stage of development and are classified under the phylum _____

36. In prokaryotic cells, the genetic material is not enclosed within a _____, unlike in eukaryotic cells.

37. _____is the process of cell division that occurs after fertilization, leading to the formation of the blastula.

38. _____ deals with the chemical processes in living organisms.

39. One of the goals of green chemistry is to prevent _____at the source rather than treating it after it is created.

40. Using _____ resources is a key principle of green chemistry.

SECTION C (Very short answer questions) ***10 X 1 = 10 M***

41. What is the main focus of taxonomy?
42. What is meant by biodiversity?
43. What is the primary function of transpiration in plants?
44.Which process involves the fusion of male and female gametes in plants?
45.What is the primary function of hormones in animal physiology?
46. What is gametogenesis?
47. What is central concept of cell theory.
48. What is central dogma of molecular biology?
49. What is the basic unit of Heredity?
50. What is the function of Ribosomes in a cell?

SECTION-D (Matching) ***2 X 5 = 10 M***

(I)

51. Binomial nomenclature	( )	A. Photosynthesis, respiration, transpiration
52. Ecosystem	**( )**	B. Two-part naming system in taxonomy
53. Plant physiological processes	**( )**	C. Interactions between living and non-living components
54. ICZN	( )	D. Bombyxmori
55**.** Mulberry Silk	( )	E. Rules for naming animals

(II).

56. Sericulture	( )	A. Fertilization and cleavage
57. Gametogenesis	( )	B. Sustainable chemical practices
58.Green Chemistry	( )	C. Silk Production
59.Hydrophobic bonds	( )	D. Calvin
60.C_3Cycle	( )	E. Non-covalent chemical interactions

<u>SECTION - E (True or False)</u> ***10 X 1 = 10 M***

61. The binomial nomenclature system gives each species a unique scientific name using three parts: genus, species, and subspecies. (True or False)
62. An ecosystem includes only living organisms and their interactions with each other. (True or False)
63. Photosynthesis occurs in the mitochondria of plant cells. (True or False)
64. In dicot embryos, there are two cotyledons. (True or False)
65.Gametogenesis is the process of forming zygotes from fertilized eggs. (True or False)
66. Sericulture involves the cultivation of bees for honey production. (True or False)
67. Prokaryotic cells contain a nucleus. True or False)
68. The central dogma of molecular biology describes the flow of genetic information from DNA to RNA to protein. (True or False)
69. Green chemistry focuses on designing products and processes that minimize environmental impact. (True or False)
70. Biochemistry is a branch of chemistry that focuses on the chemical processes in living organisms. (True or False)

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