

**S.V.K.P. &Dr. K.S. RAJU ARTS & SCIENCE COLLEGE (AUTONOMOUS),
PENUGONDA**

I -Semester

**INTRODUCTION TO CLASSICAL BIOLOGY (23BSC11)
Common for Botany, Zoology, Biochemistry and Biotechnology Majors
(w.e.f. 2023-24 AB)**

Time: 3hrs

Max. Marks: 70

SECTION-A

Choose the Correct Answer for the following Questions 30X 1=30M

1. Which among the following is the smallest category ? []
A) Order B) Species C) Genus D) Class
2. ICBN is associated with nomenclature of []
A) Animals B) Plants C) Bacteria D) Virus
3. Name the organization which provides rules of naming animals []
A) ICZN B) ICBN C) ICN D) IBM
4. The term Ecosystem was proposed by []
A) Linderman B) AG Tansley C) Turesson D) H. Reiter
5. A wide variety of living organisms called: []
A) Biodiversity B) Population C) Community D) Habitat
6. What is the percentage of Nitrogen in the atmosphere ? []
A) 65% B) 21% C) 0.03% D) 78%
7. Site of Photosynthesis is []
A) Chloroplast B) Mitochondria C) Nucleus D) Vacuole
8. What is the term for the loss of water through small water droplets on the leaf surface []
A) Transpiration B) Guttation C) Osmosis D) Plasmolysis
9. Which hormone is responsible for promoting cell division and shoot elongation []
A) Gibberellins B) ABA C) Auxins D) Ethylene
10. Embryosac consist of []
A) Egg apparatus B) Polar nuclei C) Antipodals D) all of these
11. Mushroom is a..... []
A) Fungi B) algae C) plants d) Bacteria
12. What is floriculture []
A) Cultivation of Mushrooms B) cultivation of fruits C) cultivation of flowers
D) all of the above
13. The Scientist who proposed name for the phylum Protozoa ? []
A) Aristotle B) Goldfuss C) Lamarck D) Grant
14. Choanocytes are found in the following group of Animals []
A) Coelenterates B) Cnidarians C) Sponges D) Crustaceans

15. The following characteristic is most important in the Chordates []
 A) Notochord B) Nerve cord C) Pharyngeal gill slits D) All
16. Which of the following is the most coordinated system of the digestive system? []
 A) Nervous system B) Muscular system C) Circulatory System D) Reproductive System
17. The fusion of male and female pronuclei is called ? []
 A) Amphimixis B) Syngamy C) Karyogamy D) Plasmogamy
18. Mussel oyster culture related to which of the following ? []
 A) Sericulture B) Apiculture C) Agriculture D) Aquaculture
19. who is the father of cytology? []
 A.) Robert Hooke B.) Louis Pasteur C). Anton van Leeuwenhoek D). Mendel
20. Which organelle is responsible for cellular respiration and ATP production? []
 A) Nucleus B). Mitochondrion C.) Endoplasmic reticulum D) Golgi apparatus
21. What is the primary function of the Golgi apparatus in a cell? []
 A) Protein synthesis B) Lipid synthesis C) Packaging and modification of proteins
 D) DNA replication
22. Which organelle is known as the "powerhouse of the cell" due to its role in energy production? []
 A) Nucleus B) Mitochondrion C) Chloroplast D) Golgi apparatus
23. Which organelle is the primary site of translation in eukaryotic cells? []
 A) Nucleus B) Mitochondria C) Endoplasmic reticulum D) Golgi apparatus
24. Where do scientists believe the first forms of life on Earth originated? []
 A) Deep-sea hydrothermal vents B) Polar ice caps C) Volcanic craters D) Mountain peak
25. The most important branches of chemistry that studies chemical compounds containing carbon elements combined with 'carbon-hydrogen' bonds is known as []
 A) organic chemistry B) Inorganic chemistry C) physical chemistry d) biochemistry
26. The DDT and Gammexane are examples of []
 A) Insecticides B) Antiseptics C) Antibiotics D) Anesthetics
27. The Term Green Chemistry Was Coined by []
 A) John Warner B) Paul Anatas C) Richard Feynman D) Nario Taniguchi
29. The molecule which contain inter hydrogen bonding. []
 A) P-nitrophenol B) O- nitrophenol C) Ethylene glycol D) salicylaldehyde.
30. Bio diesel is an example of which of the 12 principle of green chemistry? []
 A) Waste prevention B) use renewable feed stocks C) use of catalysis D) safer solvents

SECTION-B

Fill in the Blanks for the following Questions

10X1=10M

31. Who was proposed Binomial Nomenclature -----
32. Plants are also called as -----
33. The male reproductive organ that produces pollen is called the _____
34. ----- is an example of an edible Mushroom
35. Corals are found in the Phylum of -----
36. The formation of ova (female gametes) is called -----
37. In prokaryotic cells, the genetic material is found in the _____
38. The process of converting information from DNA into RNA is called _____.
39. %atom Economy = -----
40. $\text{CH}_3\text{CH}_2\text{OH} + \text{HBr} \rightarrow \text{CH}_3\text{CHBr} + \text{H}_2\text{O}$ in this reaction the waste product is-----

SECTION-C

Write the following very Short Answer Questions

10X1=10M

41. What is binomial nomenclature?
42. How to form acid rains?
43. What is photosynthesis?
44. What is fertilization?
45. What is the primary focus of zoology?
46. What is Hormone
47. What is gene?
48. Who proposed the theory of evolution?
49. Define Electrovalent bond?
50. Define first basic principle of green chemistry?

SECTION-D

51. Match the following Words

1X5 = 5M

<u>Column-A</u>		<u>Column-B</u>
1. Chlorophyll	[]	a) Energy currency used in the synthesis of glucose
2. Stomata	[]	b) Allow sentry of carbon dioxide and exit of oxygen
3. Thylakoid Membrane	[]	c) Site of the Calvin cycle (dark reactions)
4. ATP	[]	d) Absorbs sunlight during the light dependent reactions
5. Mitochondria	[]	e) Power house of the cell

52. Match the following

1X5=5M

<u>Column-A</u>		<u>Column-B</u>
1. Setae and parapodia	[]	a). Ova
2. Aristotle lantern	[]	b) Fishes
3. Cartilage & ligaments	[]	c) Annelids
4. Oogenesis	[]	d) Echinodermata
5. Ichthyology	[]	e) Skeletal System

SECTION-E

Choose the TRUE or FALSE for the following Questions.

10X1=10 M

53. Ecology is the study of interactions among organisms and their environment. T/ F
54. Ozone layer is present in the troposphere. T/ F
55. Auxins promote cell growth and elongation of the plants. T/ F
56. Sepals are the male reproductive organs of a flower. T/ F
57. Prokaryotic cells have membrane bound organelles T/ F
58. Mitochondria, responsible for energy production, are exclusive to eukaryotic cells. T/ F
59. DNA replication occurs during cell division T/ F
60. The first living organisms on the earth are complex multicellular organisms T/ F
61. Hydrogen bonding do not affect all physical and chemical properties of substance T/ F
62. Rearrangement Reaction are 100% atom economy reaction T/F



I B.Sc., SEMESTER –I BIOLOGICAL SCIENCE MAJOR
Course-II INTRODUCTION TO APPLIED BIOLOGY (23BSC12)
(W.e.f 2023-2024 Admitted Batch)

Time: 3Hrs

MODEL QUESTION PAPER

Max Marks : 70

SECTION – A**Choose the Correct Answer for the following Questions 30 X 1 =30 M**

1. Who is considered the "Father of Microbiology"?

a. Louis Pasteur b. Anton van Leeuwenhoek c. Robert Koch d. Joseph Lister

2. Who developed the first successful vaccine for smallpox?

a. Robert Koch b. Edward Jenner c. Paul Farmer d. Alexander Fleming

3. Which bacterial structure is responsible for locomotion and movement?

a. Flagellum b. Capsule c. Ribosome d. Cell wall

4. What is the primary function of the immune system?

a. Digestion b. Protection against disease c. Oxygen transport d. Muscle contraction

5. Which type of immunity is present at birth and provides immediate defense against pathogens?

a. Adaptive immunity b. Acquired immunity c. Innate immunity d. Passive immunity

6. Antibodies are produced by which cells of the immune system?

a. T cells b. B cells c. Natural killer cells d. Macrophages

7. What is the main function of memory cells in the immune system?

a. Produce antibodies b. Provide immediate defense

c. Remember previous infections d. Engulf pathogens

8. Which immunoglobulin is involved in allergic reactions?

a. IgA b. IgG c. IgE d. IgM

9. Which of the following is a monosaccharide?

a. Starch b. Glycogen c. Glucose d. Cellulose

10. Why are omega-3 and omega-6 fatty acids considered essential?

a. They provide energy. b. They are vital for membrane structure.

c. The body cannot synthesize. d. They regulate body temperature.

11. How many standard amino acids are commonly found in proteins?

a. 10 b. 15 c. 20 d. 25

12. What type of bond is formed between amino acids during protein synthesis?

a. Peptide bond b. Ionic bond c. Covalent bond d. Hydrogen bond

13. What are the three components of a nucleotide?

- a. Sugar, phosphate, & amino group b. Sugar, phosphate, & nitrogenous base
- c. Fatty acid, phosphate, & nitrogenous base d. Sugar, fatty acid, & nitrogenous base

14. Which nitrogenous base is present in RNA but not in DNA?

- a. Adenine b. Thymine c. Uracil d. Cytosine

15. What is the primary purpose of catabolic reactions in the body?

- a. Build complex molecules b. Store energy
- c. Break down complex molecules d. Synthesize ATP

16. Which of the following is an application of genetic engineering in medicine?

- a. Producing genetically modified crops b. Cloning animals for research
- c. Creating transgenic mice d. Producing human insulin using bacteria

17. Which of the following is a genetically engineered crop used for pest resistance?

- a. Golden rice b. Bt cotton c. Roundup Ready soybeans d. Hybrid maize

18. Which of the following is a well-known nitrogen-fixing bacterium used as a biofertilizer?

- a. Escherichia coli b. Bacillus subtilis c. Rhizobium spp. d. Pseudomonas aeruginosa

19. Which enzyme is essential for DNA synthesis in PCR?

- a. DNA ligase b. Taq DNA polymerase c. RNA polymerase d. Helicase

20. What is the purpose of adding a loading dye to DNA samples in gel electrophoresis?

- a. To amplify DNA b. To cut DNA at specific sites
- c. To visualize DNA under UV light d. To separate DNA fragments

21. What is the primary purpose of immunoblotting (Western blot)?

- a. DNA analysis b. Protein analysis c. RNA analysis d. Cell counting

22. In competitive ELISA, what competes for binding to the immobilized antigen?

- a. Antibodies in the sample b. Enzyme-labeled antibodies
- c. Blocking agents d. Substrate molecules

23. How are monoclonal antibodies produced?

- a. Isolation from human serum b. Fusion of B cells and myeloma cells
- c. Direct synthesis in a laboratory d. Injection into animals for immune response

24. How do monoclonal antibodies work in cancer therapy?

- a. Inducing inflammation b. Inhibiting cell division
- c. Enhancing viral replication d. Promoting angiogenesis

25. What is eugenics?

- a. Study of genetics b. Improvement of human genetic traits
- c. Treatment of genetic disorders d. Analysis of gene expression

26. Which genetic disorder has been successfully treated with gene therapy?
- a. Huntington's disease b. Cystic fibrosis
- c. Duchenne muscular dystrophy d. Sickle cell anemia
27. Which of the following is a widely used biological database for protein sequence information?
- a. iTunes b. GenBank c. Amazon d. Netflix
28. What does the standard deviation measure in a set of data?
- a. Central tendency b. Spread or dispersion c. Skewness d. Kurtosis
29. What is the median in a dataset?
- a. The most frequently occurring value b. The middle value when the data is arranged in ascending order c. The average of all values d. The range of the data
30. What is the mode of the dataset: 2, 4, 5, 6, 2, 7, 8, 2?
- a. 2 b. 6 c. 5 d. 7

SECTION – B

Fill in the Blanks for the following Questions

10 X 1 =10 M

31. Microorganisms play a key role in the _____ of bread and other bakery products.
32. Certain bacteria are employed in the nitrogen-fixing process in agriculture to enhance _____ fertility.
33. The process by which a protein loses its structure and function due to heat or chemical exposure is called _____.
34. The primary goal of anabolism is to store and utilize _____.
35. Bioremediation is a process where microorganisms are used to degrade and detoxify _____ pollutants in the environment.
36. The enzyme _____ is used to cut both the foreign DNA and the cloning vector at specific sites.
37. Hybridoma cells are often cultured in HAT media, which stands for _____.
38. During the denaturation step of PCR, the DNA template is heated to a high temperature, causing the double-stranded DNA to _____ into single strands. Answer: denature
39. NCBI, which stands for _____, is a part of the United States National Library of Medicine (NLM).
40. EBI, which stands for _____, is part of the European Molecular Biology Laboratory (EMBL).

SECTION – C

Write the following very Short Answer Questions?

10 X 1 =10 M

41. Define Microbiology
42. Describe about Secondary Lymphoid Organs.
43. What are Proteins?
44. What are Nucleic Acids?
45. Define Genetic Engineering
46. What are Biopesticides
47. What does Elisa stand for?
48. What are Monoclonal Antibodies (Mabs)?
49. Define Mean
50. Define Range

SECTION – D

Match the following

2 X 5 =10 M

- | | | |
|-----|---------------------------|----------------------------------|
| 51. | a) Golden Rice | i) First cloned mammal |
| | b) Flavr Savr Tomato | ii) Glyphosate tolerance |
| | c) Dolly the Sheep | iii) Increased vitamin A content |
| | d) Roundup Ready Soybeans | iv) Enhanced shelf life |
| | e) GloFish | v) Fluorescent coloration |
| 52. | a) Glucose | i) Monosaccharide |
| | b) Starch | ii) RNA |
| | c) Thymine | iii) Milk Sugar |
| | d) Uracil | iv) Polysaccharide |
| | e) Lactose | v) DNA |

SECTION – E

Choose the TRUE or FALSE for the following Questions.

10 X 1 =20

53. Viruses are considered living organisms.
54. Fungi can reproduce both sexually and asexually.
55. Lipids are hydrophobic molecules.
56. Amino acids are the building blocks of nucleic acids.
57. In plant biotechnology, tissue culture techniques are commonly used for mass propagation of plants with desirable traits.
58. In animal biotechnology, the use of in vitro fertilization (IVF) is limited to human reproduction and not applicable to livestock breeding.
59. Gene therapy involves the direct manipulation of an individual's DNA to treat or prevent genetic diseases.
60. Gel electrophoresis is a key step in DNA fingerprinting, separating DNA fragments based on their size.
61. Genomics involves the analysis of entire sets of genes and their DNA sequences.
62. Proteomics is primarily concerned with the study of DNA sequences and their variations.

S. V. K. P. & Dr. K. S. Raju Arts & Science College(A), PENUGONDA

II Semester Botany Major/ Minor

Non-Vascular Plants (Algae, Fungi, Lichens and Bryophytes) , 23BOT21

(w.e.f. 2023-24 AB)

MODEL QUESTION PAPER

Time: 3 hours

Max. Marks: 70

This Question Paper contains Two Parts

Part-I

Answer any **five** questions choosing at least **two** from each section A and section B.

Each question carries 10 marks

5 X 10 = 50 M

SECTION-A

1. Write an essay about Thallus organization of Algae.
2. Describe about ecological and economic importance of Algae.
3. Explain about life cycle of Spirogyra
4. Write a note on Bacillariophyceae.
5. Write an essay about general characters of Fungi.

SECTION-B

6. Describe about ecological and economic importance of Fungi.
7. Give detailed account on reproduction in penicillium.
8. Describe about ecological and economic importance of Lichens.
9. Explain about sexual reproduction in Marchantia.
10. Write an essay about evolution of sporophytes in Bryophyta

Part-II

Answer any FIVE questions. Each question carries 4 marks.

5 X 4 = 20 M

11. Classification of Algae
12. Asexual reproduction in polysiphonia.
13. Cultivation of chlorella.
14. Nutrition in Fungi.
15. Para sexuality.
16. Structure of Rhizopus.
17. Uredospores in puccinia.
18. Funaria Capsule.

S. V. K. P. & Dr. K. S. Raju Arts & Science College (A), PENUGONDA

II Semester Botany Major

Origin of Life and Diversity of Microbes (23BOT22)

(w.e.f. 2023-24 AB)

MODEL QUESTION PAPER

Time: 3 hours

Max. Marks: 70

This Question Paper contains Two Parts

Part-I

Answer any **five** questions choosing at least **two** from each section A and section B.

Each question carries 10 marks

5 X 10 = 50 M

SECTION-A

1. Write an essay about origin of life.
2. Write a note on Five-kingdom classification of R. H. Whittaker.
3. Describe the general characters of cyanobacteria.
4. Explain about cultivation of spirulina.
5. Write an essay about bacterial recombination.

SECTION-B

6. Write any two types of economic importance of Eubacteria.
7. Give detailed note on role of micro organisms in soil fertility.
8. Explain about microbial interaction and their effect on plant growth.
9. Write a note on advantages and limitation of bacterial inoculants.
10. Describe about microbial Biopesticides

Part-II

Answer any **FIVE** questions. Each question carries 4 marks.

5 X 4 = 20 M

11. Structure of TMV.
12. Archaeobacteria.
13. Mycoplasma.
14. Structure of Eubacteria.
15. Binary fission.
16. Mutualism.
17. Parasitism.
18. Azotobacter.
