QP CODE : 24300

(3 Hours) Marks : **100**

Please check whether you have got the right question paper.

NB : (1) **All** questions are **compulsory.**
(2) Internal choices have been given.
(3) **Figures** to the **right** indicate full **marks**.
(4) Draw structures and diagrams wherever necessary.

1. (A) State true or false : **04**
(i) DNA was the first type of genetic material.
(ii) Theory of spontaneous generation is also called as abiogenesis.
(iii) Duck billed platypus is a connecting link between reptiles and mammals.
(iv) The first organism was an autotroph.

(B) Answer the following : **(any three)** **09**
(i) Give the contribution of Pasteur in study of evolution.
(ii) Justify- the primitive earth's atmosphere was reducing.
(iii) Write a note on protenoid microsphere.
(iv) Differentiate between genetic drift and natural selection.
(v) Elaborate on types of fossils.
(vi) Enlist the demerits of Darwin's theory.

(C) Answer the following : **(any two)** **12**
(i) Giving three examples, explain the phenomena of natural selection.
(ii) Explain in detail modern synthetic theory.
(iii) Write a note on chemical similarities of related forms of life.
(iv) Elaborate on Miller's experiment with the help of neat labelled diagram.

2. (A) State true or false : **04**
(i) Prokaryotes include all types of bacteria or protozoa.
(ii) Fungi are used as a model organism in genetic engineering.
(iii) Cytoplasmic and spindle microtubules are labile structures.
(iv) The main function of nucleus is production of ribosomes.

(B) Answer the following : **(any three)** **09**
(i) Give any three points of distinction between prokaryotic and eukaryotic cell.
(ii) Diagrammatically represent plant cell.
(iii) Write a note on: Functions of the cytoplasmic microtubules.
(iv) With the help of a diagram, discuss the structure of Golgi complex.
(v) Describe the morphology of chloroplasts supporting your answer with neat labelled diagram.
(vi) What are peroxisomes? State any two enzymes present in it.

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(C) Answer the following : **(any two)** **12**

(i) Describe in detail, the process of equational cell division.

(ii) Elaborate on the types, structure and functions of endoplasmic reticulum in the cell.

(iii) Give detailed account of the plant cell wall adding a note on its functions.

(iv) Explain why mitochondria are called as the semiautonomous organelle? Add a note on its functions.

3. (A) State true or false : **04**

(i) All microorganisms are of the same shape.

(ii) Flagella are the locomotory organelles of bacteria.

(iii) Bacteria can align themselves according to earth's magnetic field.

(iv) Teichoic acid is typically found in Gram-negative bacteria.

(B) Answer the following: **(any three)** **09**

(i) Explain in detail, the different arrangements of bacteria.

(ii) Discuss the classification of bacteria based on flagella.

(iii) Briefly explain the technique of lipid staining. What is the role of Sudan Black B in the same?

(iv) Explain the different techniques employed for grouping bacteria into specific genera.

(v) Comment on different types of bacteria based on their nutritional requirements.

(vi) With a special emphasis on the stains involved, briefly explain spore staining.

(C) Answer the following: **(any two)** **12**

(i) Compare and contrast: Gram positive and Gram negative bacteria.

(ii) Justify, in detail the given statement: Pasteur and Leeuwenhoek made remarkable contributions to the field of microbiology.

(iii) Giving suitable examples categorize bacteria on the basis of extreme environment. Explain the significance of the same.

(iv) Discuss the principle of capsule staining and elaborate on the role of different stains involved in it.

4. (A) Define the followings **(any five)** **10**

(i) Homology (ii) Fossil (iii) Coacervates

(iv) Suicide bag (v) Prokaryon (vi) Species

(vii) Flagellin

(B) Answer the following: **(any three)** **15**

(i) Explain in detail the contribution of Dr. Redi in theories of origin of life.

(ii) Justify- Vestigial organs have provided evidences that man has descended from simple primates.

(iii) Elaborate on the ultrastructure of nucleus with special mention of nuclear pore complex.

(iv) Write an informative note on lysosomes.

(v) Describe the Ziehl Neelsen staining technique.

(vi) With the help of a diagram, explain the different parts of a bacterial cell.
