F.Y. Bsc (Biotechnology)

RAIGAD - II (CBCS - 2015 COURSE) : SUMMER - 2016

Sem - II

Subject : Introduction to Microbiology

Day : Saturday
Date : 09/04/2016

28456

Time : 10.00 AM TO 01.00 PM
Max Marks : 60 Total Pages : 1

N.B:

1) **Q. No 1 & Q. No 5** are **COMPULSORY.** Answer **ANY TWO** from Questions **2, 3 & 4** and from **6, 7 & 8.**
2) Answers the questions of Section- **I** and Section-**II** in separate answer Books.

SECTION-I

Q.1 Attempt **ANY FIVE** of the following: **(10)**

a) Define pathovar and phagovar.
b) Give importance of capsule in bacterial cell structures
c) Mention role of condenser and Iris diaphragm in compound microscope.
d) Define numerical aperture.
e) Koch's postulates
f) Name various methods of sterilization by heat

Q.2 Attempt the following questions: **(10)**

a) Describe different micro and macro elements used in microbial nutrition.
b) What are phototrophs? Explain with suitable examples.

Q.3 Answer the following: **(10)**

a) Explain mode of action of halogens with suitable examples.
b) Give salient features of Bergey's manual of systematic bacteriology.

Q.4 Write short notes on : **(10)**

a) Fluorescence microscope
b) Growth curve of bacteria

SECTION-II

Q.5 A) Attempt the following questions: **(10)**

a) What is stationary phase?
b) What are different types of bacteria on basis oxygen requirement?
c) What differential media? Give its example.
d) What is pour plate technique?
e) Name different types of flageller arrangement in bacteria.

Q.6 Attempt the following: **(10)**

a) Explain the structure and function of endospore.
b) Explain in brief continuous culture.

Q.7 Write short notes on: **(10)**

a) Structure of Peptidoglycan
b) Pasteurization

Q.8 Give an account on: **(10)**

a) Give an account on sterility checking.
b) Explain selective media with reference to Wilson & Blair's media.

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RAIGAD - II (CBCS - 2015 COURSE) : SUMMER - 2016

Subject : Biochemistry - I

Day : Monday
Date : 11/04/2016

28457

Time : 10.00 AM TO 01.00 PM
Max Marks : 60 Total Pages : 1

N.B.

1) **Q.1** and **Q.5** are COMPULSORY.
2) Answer any **TWO** questions from Q.2, Q.3 and Q.4 and from Q.6, Q.7 and Q.8.
3) Answers to both the sections should be written in **SEPARATE** answer books.
4) Draw neat structures and diagrams **WHEREVER** necessary.

SECTION – I

Q.1 Attempt any **FIVE** of the following: **(10)**

a) Name different types of RNA with their functions.
b) Which factors affects stability of α-helix conformation of proteins?
c) Name various known DNA models.
d) What are the biological roles of NAD and FAD?
e) Draw the structure of any two naturally occurring amino acid.
f) Explain the terms; ionic bond and covalent bond.

Q.2 Answer the following: **(10)**

a) What are amino acids? How are they classified based on their R groups? Draw the structure of any one example from each class.
b) Discuss in detail the Watson and Crick model of DNA.

Q.3 Answer in brief: **(10)**

a) Explain the characteristic property and the structure of i) polar amino acid ii) non-polar amino acid iii) aromatic amino acid iv) acidic amino acid.
b) Draw the structure of AMP, ADP and ATP as well as explain their role in biological system.

Q.4 Write short notes on: **(10)**

a) Ramchandran plot
b) Denaturation-renaturation of DNA

SECTION – II

Q.5 Answer the following: **(10)**

a) Explain the principal and procedure for estimation of inorganic phosphate from soil sample.
b) Enlist various techniques of the chromatography and describe anyone type in detail.

Q.6 Attempt the following: **(10)**

a) Explain the estimation of fluorides from potable water by tritrimetry.
b) Give various types of electrophoresis and explain the principle as well as separation of proteins by any one technique.

Q.7 Answer the following: **(10)**

a) Give the list of analytical tools for separation of biomolecules and describe the technique ultracentrifugation.
b) Explain the term vitamin; give classification, function and deficiency of any four vitamins.

Q.8 Explain briefly: **(10)**

a) Enlist the modern methods for estimation of iron and describe the gravimetric analysis of iron.
b) Give the principal and procedure for estimation of sodium by flame photometry.

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RAIGAD - II (CBCS - 2015 COURSE) : SUMMER - 2016

Subject : Cell Biology

Day : Wednesday
Date : 13/04/2016

28458

Time : 10.00 AM TO 01.00 PM
Max Marks : 60 Total Pages : 1

N.B.:

1) Q. No. 1 and Q. No. 5 are **COMPULSORY.** Answer any **TWO** from Q. No. 2, 3, & 4 and **TWO** from Q. No. 6, 7, & 8.
2) Figures to the **RIGHT** indicate full marks.
3) Both the sections should be written in **SEPARATE** answer books.
4) Draw neat labeled diagrams **WHEREVER** necessary.

SECTION-I

Q.1 Attempt any **FIVE** of the following: **(10)**

a) Name the organelles other than nucleus where genetic material is present.
b) Sketch and label metaphase of mitosis.
c) What is cell theory?
d) Define apoptosis and Necrosis.
e) Enlist phases of prophase-I of meiosis.
f) Enlist different types of plastids with their functions.

Q.2 Attempt the following questions: **(10)**

a) Describe in brief the structure and functions of mitochondria.
b) Differentiate between prokaryotic and eukaryotic cell.

Q.3 Attempt the following questions: **(10)**

a) Describe the structure and functions of microtubule.
b) Describe the ultrastructure of chloroplast and add a note on its functions.

Q.4 Write short notes on any **TWO** of the following: **(10)**

a) Describe typical structure of plant cell.
b) Describe structure and functions of endoplasmic reticulum.
c) Explain evolution of cell from molecules to first cell.

SECTION-II

Q.5 Attempt any **FIVE** of the following: **(10)**

a) What is active transport? Explain structure and mechanism of Na^+ and k^+ pump.
b) Describe the structure of Fluid Mosaic model and explain how it differs from other previous models.
c) Describe in brief different types of ion channels with their mechanism.

Q.6 Attempt the following questions: **(10)**

a) What is cell cycle? Describe the role of centriole and spindle fibers in cell division.
b) Describe in brief about spermatogenesis and add a note on its significance.

Q.7 Attempt the following questions: **(10)**

a) What is apoptosis? Describe in brief mechanism of apoptosis process.
b) Describe in brief types of cell signaling molecules.

Q.8 Describe in detail about meiosis process and explain how it differs from mitosis. **(10)**

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RAIGAD - II (CBCS - 2015 COURSE) : SUMMER - 2016

Subject : Genetics

Day : Saturday
Date : 16/04/2016

28459

Time : 10.00 AM TO 01.00 PM
Max Marks : 60 Total Pages : 1

N. B. :

1) **Q No. 1** and **Q. No. 5** are **COMPULSORY**.
2) Attempt **ANY TWO** questions from remaining three in each section.
3) Answers to both the sections should be written in **SEPARATE** answer books.

SECTION - I

Q. 1 A) Answer **ANY FIVE** of the following: **(10)**

i) What is recessive trait give one example?
ii) What is genetic counseling?
iii) Sketch and label the parts of Lampbrush chromosomes.
iv) What are congenital diseases? State any two examples.
v) What is Speciation?
vi) What is test cross?

Q. 2 Discuss in details with the help of proper example **(10)**

a) Multiple allele
b) X linked inheritance

Q. 3 Explain the following: **(10)**

a) Epistasis
b) Polytene chromosoms

Q. 4 Write short notes on **ANY TWO** of the following: **(10)**

a) FISH
b) Pedigree analysis
c) Mutation

SECTION - II

Q. 5 Attempt the following: **(10)**

a) Explain the use of *C. elegans* as a model organism in genetics.
b) Give an account of numerical chromosomal aberrations.

Q. 6 Attempt the following: **(10)**

a) Define variation. Give an account of continuous variation.
b) Write a short note on molecular evolution.

Q. 7 Write short notes on the following: **(10)**

a) Pre-natal diagnosis
b) Co-operative gene interactions

Q. 8 Attempt **ANY ONE** of the following: **(10)**

a) Give an account of any two patterns of sex determination.
b) What is evolution? Explain in detail Darwin's theory of evolution.

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