Subject : Introduction to Microbiology

Day : Monday
Date : 10/10/2016

31413

Time : 02.00 PM TO 05.00 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 **Q. No.2, 3 & 4.**
3) Attempt **ANY TWO** questions from **Q. No.6, 7 & 8.**
4) Answer to the sections should be written in the **SEPERATE** answer book.

SECTION-I

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

a) Mention Koch's postulates
b) Define the term a) Resolution b) Focal point
c) How does immersion oil increases the microspore resolution?
d) Explain various types of lenses present in bright field compound microscope.
e) Draw a ray diagram of dark field microbiology.

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

a) Give an outline of salient features of Bergey's manual of systematic bacteriology.
b) Explain Frascisco Redi's experiment.

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

a) Explain inclusion bodies in bacteria
b) Describe sterility checking in brief

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

a) SEM
b) Kinetics of growth

SECTION-II

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

a) Enlist various phases of growth curve.
b) What are different types of bacteria on the basis of temperature?
c) What are phototrophs? Give its example
d) What is selective media? Give its examples.
e) What are plasmids? Mention various types of plasmids.

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

a) Describe structure of bacterial cell with labelled diagram.
b) Explain ionizing radiations as method of sterilization.

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

a) Cell wall of Gram positive bacteria
b) Mode of action of halogens

Q.8 Answer of the following: **(10)**

a) Give an account on moist heat sterilization.
b) Give detail account on pour plate techniques

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

Subject : Biochemistry - I

Day : Thursday
Date : 13/10/2016

31414

Time : 02.00 PM TO 05.00 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) What are four different levels of protein structure?
b) What are nucleic acids? Name different purine and pyrimidine bases.
c) Name various factors responsible for protein denaturation.
d) Why enzymes act as biocatalysts?
e) Draw the structures of ADP and ATP.
f) Explain the term hydrogen bond and give example.

Q.2 Answer the following: **(10)**
a) Describe the titration curve of simple amino acid. Explain the terms :
i) Zwitter ion ii) pI.
b) What is RNA? Describe the various types, detailing their structures and functions.

Q.3 Answer in brief: **(10)**
a) Describe briefly various functions of proteins.
b) Explain the spectrophotometric estimation of purine and pyrimidine. Describe the denaturation and renaturation of DNA.

Q.4 Write short notes on: **(10)**
a) Peptide bond
b) Amphoteric nature of amino acids

SECTION – II

Q.5 Answer the following: **(10)**
a) Explain the principal and procedure for estimation of Na by flame photometry.
b) Enumerate various types of chromatographic techniques and explain principle as well as applications of ion exchange chromatography.

Q.6 Attempt the following: **(10)**
a) Enlist various techniques for separation of biomolecules and describe any one separation technique in detail.
b) Enlist different types of electrophoresis and describe any one type briefly.

Q.7 Answer the following: **(10)**
a) Give the classification of vitamin and explain function as well as deficiency and symptoms of any four vitamins.
b) Explain the term trace metal and explain the gravimetric method for separation of calcium briefly.

Q.8 Answer the following: **(10)**
a) Explain the estimation of phosphate from soil by colorimetry.
b) Explain the technique for estimation of Arsenic from water by tritrimetry.

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Subject : Cell Biology

Day : Friday
Date : 14/10/2016

31415

Time : 02.00 PM TO 05.00 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) Differentiate between desmosomes and hemidesmosomes.
b) Write importance of meiosis.
c) Mechanism of Ca^{++} ATPases.
d) What is Plasmodesmata?
e) Differentiate between passive diffusion and facilitated diffusion.
f) What are tight junctions?

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

a) Describe the structure and functions of nucleus.
b) Describe the structure and functions of Golgi complex.

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

a) Describe the structure and functions of microfilaments.
b) Describe the typical structure of animal cell.

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

a) Describe the Oogenosis with its significance.
b) Describe the structure of plant cell wall.
c) Describe structure and functions of lysosomes.

SECTION-II

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

a) Differentiate between passive and active transport.
b) Describe in brief structure of plasma membrane.
c) Explain ligand gated and voltage gated channels.

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

a) Describe in brief interphase of cell cycle.
b) Explain various stages of prophase-I of meiosis.

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

a) Explain the mechanism of apoptosis and its failure leading to cancer development.
b) Describe in brief different types of cell signaling molecules.

Q.8 Describe structure of mitochondria and chloroplast and explain how they work in opposite direction. **(10)**

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

Subject : Genetics

Day : Saturday
Date : 15/10/2016

31416

Time : 02.00 PM TO 05.00 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) Draw and label the parts of acrocentric chromosomes.
ii) What is pedigree analysis?
iii) What is sex linked inheritance?
iv) What are transposoms?
v) What is molecular evolution?
vi) What are multiple alleles? Give one example.

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

a) Law of segregation
b) Genetic counseling

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

a) Mitochondrial inheritance
b) RFLP

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

a) Plasmid
b) Parental diagnosis
c) Natural selection

SECTION - II

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

a) Give an account of pre-Darwinian theory of evolution.
b) Give an account of environment dependent sex determination.

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

a) State and explain the Hardy-Weinberg law.
b) Explain modern evolutionary synthesis.

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

a) Pedigree analysis
b) Epistasis

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

a) Explain in detail numerical chromosomal aberration.
b) Describe the applications of *E. Coli* as a model study organism in Genetics.

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