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

Subject : Concepts in Microbiology

Day : Monday
Date : 17/10/2016

31417

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) Attempt **ANY TWO** from Q. 2, Q.3 and Q. 4 in Section-I and **ANY TWO** from Q.6, Q.7 and Q.8 in Section-II.
3) All questions carry **EQUAL** marks.
4) Answer the questions of Section-I and Section-II in **SEPARATE** answer books.

SECTION-I

Q.1 Explain in brief **(ANY FIVE):** **(10)**

a) Genetic recombination
b) Physiological adaptation
c) *Deuteromycetes*
d) Genotype and phenotype
e) Characteristics features of barteriophage λ
f) Phage typing

Q.2 With the help of suitable diagram, explain in detail **(10)**

a) One step growth curve.
b) Bacterial transformation.

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

a) Briefly explain importance of
i) *Penicillium* *ii)* *Agaricus* *iii)* *Aspergillus*
iv) Mycorrhiza *v)* *Saccharomyces*
b) Explain in detail: different chemical components of a virus particle.

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

a) Viroids
b) Asexual spores produced by fungi
c) Distinguishing characteristics of actinomycetes

SECTION-II

Q.5 Explain in brief **(ANY FIVE):** **(10)**

a) Pathogen
b) Generalized infection
c) Chronic infection
d) Primary culture
e) Pandemic
f) Epidemiology

Q.6 Explain in detail: **(10)**

a) Families of viruses infecting vertebrates
b) Use of embryonated eggs for cultivation of animal viruses

Q.7 Elaborate on: **(10)**

a) Bacterial exotoxins with respect to classification, mechanism of action and examples.
b) Arthropod bone transmission and food borne transmission of diseases.

Q.8 Explain in detail **ANY TWO:** **(10)**

a) Different methods of cultivation of plant viruses.
b) Characteristics of antibiotics that qualify them as chemotherapeutic agents.
c) Infection of blood and infection of lymphatic system.

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

Subject : Biochemistry - II

Day : Wednesday
Date : 19/10/2016

31418

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) Answer **ANY TWO** questions from Q.No. 2 to Q.No.4 in Section – I.
3) Answer **ANY TWO** questions from Q.No. 6 to Q.No.8 in Section – II.
4) Answers to both the sections should be written in **SEPARATE** answer book.
5) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 Attempt **ANY FIVE** of the following: **[10]**

a) Draw the structure of ATP.
b) What are different industrial applications of enzymes?
c) Give two features of enzyme active site.
d) What are catabolic and anabolic metabolic reactions?
e) Name the various classes of enzyme.
f) Define the term - entropy, spontaneous change.

Q.2 Answer the following: **[10]**

a) Discuss various factors affecting enzymes activity.
b) Explain second law of thermodynamics with suitable biological example.

Q.3 Explain the following: **[10]**

a) Allosteric enzymes.
b) Describe the oxidation and reduction reactions in biological system with suitable example.

Q.4 Write short notes on: **[10]**

a) Feed back inhibition
b) ATP (Adenosine Triphosphate) – a high energy compound

SECTION – II

Q.5 Attempt the following: **[10]**

a) Describe electron transport chain and its component.
b) Explain β – oxidation for any saturated fatty acid.

Q.6 Answer the following: **[10]**

a) Explain the reactions involved in citric acid cycle in detail.
b) What are ketone bodies? Explain its physiological significance.

Q.7 Answer the following: **[10]**

a) Write a note on transamination reactions.
b) Describe the cellular location of glycolysis and various reactions involved in it.

Q.8 Answer in brief: **[10]**

a) Urea cycle.
b) What is gluconeogenesis? Explain the reactions occur in this.

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

Subject : Principles & Techniques in Molecular Biology

Day : Friday
Date : 21/10/2016

31419

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 & Q.4 and from Q.6, Q.7 and Q.8.
3) Figures to the **RIGHT** indicate full marks.
4) Both the sections should be written in **SEPARATE** answer book.

SECTION – I

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

a) Draw the structure of bases: Adenine and cytosine.
b) How phosphodiester bonds are formed?
c) What are palindromes?
d) What are transposons? Mention its role.
e) Define mutation rate.
f) What is hyperchromicity?

Q.2 Attempt the following:

a) Explain the Griffith's experiment of transformation. **(05)**
b) Describe the structure of mRNA in detail with labeled diagram. **(05)**

Q.3 Attempt the following

a) Give an overview of bacterial chromosome. **(05)**
b) Explain the mode of action of base modifying agents on DNA. **(05)**

Q.4 Attempt any **TWO** of the following: **(10)**

a) Explain the Watson and Crick model of DNA.
b) What is third base degeneracy? Explain Wobble hypothesis in brief.
c) What is the role of centromere and telomere in eukaryotic chromosome?

SECTION – II

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

a) Describe the Southern blotting technique in brief. Give its applications.
b) Explain the mechanism to compact /condense eukaryotic DNA.
c) Give an outline on real time quantitative PCR.

Q.6 Attempt the following:

a) Describe organization of mitochondrial genome. **(05)**
b) Discuss Sanger's method of DNA sequencing in brief. **(05)**

Q.7 Write short notes on:

a) Types of repetitive DNA sequence. **(05)**
b) DNA microarray technique. **(05)**

Q.8 Give an account on:

a) Clusters, repeat and satellite DNA sequence. **(05)**
b) Role of DNA gyrase enzyme in prokaryotes. **(05)**

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

Subject : Immunology

Day : Monday
Date : 24/10/2016

31420

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) Attempt **ANY TWO** from Q. 2, Q.3 and Q. 4 in Section-I and **ANY TWO** from Q.6, Q.7 and Q.8 in Section-II.
3) All questions carry **EQUAL** marks.
4) Answer the questions of Section-I and Section-II in **SEPARATE** answer books.

SECTION-I

Q.1 Answer in brief (**ANY FIVE**): **(10)**

a) Define adjuvant.
b) Give two examples of Natural acquired immunity.
c) What is idiotype?
d) Explain antigenic determinant.
e) Name any two secondary lymphoid organs with their functions.
f) What is herd immunity?

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

a) With the help of a diagram describe the basic structure of IgG molecule.
b) Explain various mechanisms of innate immunity.

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

a) With the help of a diagram explain the alterative pathway of complement activation.
b) What are cytokines? Describe briefly the properties cytokines.

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

a) Splcen
b) Zone of equivalence
c) Primary and secondary immune response

SECTION-II

Q.5 Answer in brief (**ANY FIVE**): **(10)**

a) Name two cytokines secreted by B-cells.
b) Enlist two dyes used in immuno-fluorescence technique
c) What is polyclonal antibody response?
d) Enlist types of autoimmune diseases.
e) Draw the structure of T-cell receptor.
f) Explain the role of T_H and T_S cells.

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

a) With the help of a diagram explain structure and function of MHC-I molecule in immune activation.
b) Explain T-cell maturation in the thymus.

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

a) Giving suitable examples explain applications of monoclonal antibodies.
b) With the help of a suitable diagram explain Type-II hypersensitivity.

Q.8 Giving applications, explain different types / modification of agglutination technique. **(10)**

OR

Discuss the difference in the structure of TD and T1 antigens and the characteristics of the humoral response induced by them.

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