Subject : Environment Biotechnology

Day : Monday
Date : 17/10/2016

31427

Time : 10.00 AM TO 01.00 PM
Max Marks : 80 Total Pages : 1

N.B.

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labeled diagrams wherever necessary.
4) Answers to both the sections should be written in the **SAME** answer book.

SECTION – I

Q.1 A) Attempt **ANY ONE** of the following : **(06)**

i) Discuss the significance of underground life in an ecosystem.
ii) What is the global scenario of biodiversity conservation?

B) Attempt **ANY TWO** of the following: **(10)**

i) Elaborate on the structure and composition of the atmosphere.
ii) Describe hydrological cycle in nature.
iii) What are natural resources? Explain need of their conservation.

Q.2 Attempt **ANY FOUR** of the following: **(16)**

a) Enlist the characteristics of biosphere.
b) What is the significance of wildlife management?
c) Give composition of lithosphere.
d) Define sustainable development and its need for today's world.
e) Differentiate between various threatened categories of species.

SECTION – II

Q.3 A) Attempt **ANY ONE** of the following : **(06)**

i) Explain activated sludge process for waste water treatment.
ii) Impact of herbicide and pesticide on environment.

B) Attempt **ANY TWO** of the following: **(10)**

i) Mention the sources of environmental pollution.
ii) Write an account on marine pollution in India.
iii) What do you mean by eutrophicaton? Explain the process and impact of it.

Q.4 A) Attempt **ANY ONE** of the following : **(06)**

i) Methods of air pollution monitoring techniques.
ii) Discuss the causes and effects of soil erosion.

B) Attempt **ANY TWO** of the following: **(10)**

i) What are biosensors? Mention their environmental applications.
ii) Give the significance of BOD and DO in water quality assessment.
iii) Discuss the effects of noise pollution on human health.

Q.5 Write short notes on **ANY FOUR** of the following: **(16)**

a) Disposal of radioactive wastes.
b) Biomedical wastes
c) Reclamation of toxic site
d) Biodegradation of pollutants
e) Explain various ways of waste reduction
f) Water pollution indicator

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Subject : Microbiology - II

Day : Wednesday
Date : 19/10/2016

31428

Time : 10.00 AM TO 01.00 PM
Max Marks : 80 Total Pages : 1

N.B:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Both sections should be written in **SEPARATE** answer books

SECTION-I

Q.1 A) Answer **ANY ONE** of the following: **(06)**

a) Discuss the structure of T4 bacteriophage in detail.
b) What is F factor? Discuss F^+ X F^- mating in bacteria.

Q.1 B) Answer **ANY TWO** of the following: **(10)**

a) Name various methods of virus cultivation. Explain virus cultivation using cell culture.
b) Explain Leaderberg and Tatum experiment which proves conjugation.
c) Describe various types of bacterial plasmids.

Q.2 Write short notes on **ANY FOUR** of the following: **(16)**

a) Lytic cycle
b) Hfr conjunction
c) One step growth curve
d) General properties of virus
e) Holiday model of recombination

SECTION-II

Q.3 A) Answer **ANY ONE** of the following: **(06)**

a) Describe pathogenesis and laboratory diagnosis of cholera.
b) Discuss Microbes- Plant interaction with reference to nitrogen fixing bacteria.

B) Answer **ANY TWO** of the following: **(10)**

a) Explain the structure of HIV with labelled diagram.
b) What are Extremophiles? Give their applications.
c) Define the term: **i)** Opportunistic pathogen **iii)** Infection **ii)** Virulence **iv)** Invasiveness **v)** Carriers

Q.4 Answer **ANY FOUR** of the following: **(16)**

a) What is host parasite relationship? Explain with reference to bacteria.
b) What are Lichens? Give its applications.
c) Discuss various preventative measures of typhoid.
d) Give an account on significance of probiotics in human health.
e) Explain different types of antigens of *S. typhi*.

Q.5 Write short notes on **ANY FOUR** of the following: **(16)**

a) HBsAg
b) Pneumonia
c) Widal test
d) PCR polymerases
e) Mycorrhizae

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RAIGAD - III (2010 Course) : WINTER - 2016

Subject : Molecular Biology - I

Day : Monday
Date : 24/10/2016

31430

Time : 10.00 AM TO 01.00 PM
Max Marks : 80 Total Pages : 2

N.B:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in the **SEPARATE** answer book.

SECTION-I

Q.1 **a)** Justify: Genetic code is triplet, commaless and non-overlapping. **(08)**

OR

Describe the structure and role of prokaryotic mRNA.

b) Attempt **ANY TWO** of the following: **(10)**

i) Describe the reactions involved in aminoacylation (charging) of tRNA molecule.
ii) Explain the mutagenic effect of base modifying agents.
iii) Explain wobble hypothesis

Q.2 Write short notes on **ANY FOUR** of the following: **(16)**

a) Satellite DNA
b) Telomer
c) Chloroplast genome
d) Poly (A) polymerase
e) Differences between DNA and RNA

SECTION-II

Q.3 **a)** Represent with the help of a diagram the structure of chromatin at molecular level showing. **(06)**

i) Arrangement of histones in octamer
ii) Linker and core DNA
iii) 10nm fiber
iv) 30 nm fiber

OR

Describe the structure of B form of DNA.

b) Attempt **ANY TWO** of the following: **(10)**

i) Give the molecular structure of dinucleotide AC on a DNA strand showing.
   a) Nucleotide structure of A and C.
   b) Phosphodiester linkage between A and C.
ii) Define:
   a) Frame shift mutations
   b) Spontaneous mutations
   c) Leaky mutations
   d) Forward mutations
   e) Transition mutations
iii) Describe the 3 types of RNAs and discuss their role in translation.

P.T.O.

Q.4 Attempt **ANY FOUR** of the following: **(16)**

a) Explain Avery's transformation experiment to prove DNA as genetic material.

b) The linear chromosome of phage T2 is 52 μm long. The chromosome consists of double stranded DNA with 0.34nm between each base pair. How many base pairs does a chromosome of T2 contain?

c) Describe the organization of bacterial genome.

d) Analysis of DNA from a bacterial virus indicates that it contains 33% A, 26% T, 18% G and 23%C. Interpret the data.

e) Discuss the vallidation of genetic code using poly U and poly A.

Q.5 Attempt **ANY FOUR** of the following: **(16)**

a) Justify: As we climb the evolutionary tree, the relationship between complexity of organism and content of DNA becomes obscure.

b) Differentiate between interrupted and uninterrupted genes.

c) Write a short note on catalytic RNA.

d) Name the physical and chemical mutagenic agents.

e) Discuss the properties of DNA.

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