RAIGAD - V (2010 Course) : WINTER - 2016

Subject : Genetics

Day : Monday
Date : 10/10/2016

31434

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) Answers to both the sections should be written in **SEPARATE** answer books.
4) Draw neat and labeled structures and diagrams **WHEREVER** necessary.

SECTION - I

Q. 1 A) Attempt **ANY ONE** of the following: **(06)**
i) Discuss the importance of genetics in breeding for improved food.
ii) State and explain Mendel's I law of genetics with suitable example.

B) Explain in detail **ANY TWO** of the following: **(10)**
i) Co-operative gene interaction
ii) Tetrad-analysis
iii) Multiple allele

Q. 2 Write short notes on **ANY FOUR** of the following: **(16)**
i) Lampbrush chromosome
ii) FISH
iii) Autosomal inheritance in human
iv) Karyotyping
v) Inheritance of Mitochondrial gene

SECTION - II

Q. 3 A) Attempt **ANY ONE** of the following: **(06)**
i) Explain in detail structural chromosomal aberrations.
ii) Explain RFLP and its application in genetic studies.

B) Explain in detail **ANY TWO** of the following: **(10)**
i) What is Genetic equilibrium? Explain factors influencing genetic equilibrium.
ii) Use of *E. coli* as a model organism in genetics.
iii) Explain dosage compensation through X chromosome inactivation.

Q. 4 Write short notes on **ANY FOUR** of the following: **(16)**
i) Pedigree analysis
ii) Variation
iii) Aneuploidy
iv) Gene mutation
v) Discontinuous genetic variation

Q. 5 Answer **ANY EIGHT** in one or two sentences: **(16)**
i) What is test cross?
ii) What are jumping jenes?
iii) What are infective particle?
iv) Name seven characters used by Mendel for his experiment.
v) What is prenatal diagnosis?
vi) What are polytene chromosomes?
vii) What is evolution?
viii) What are SNPs?
ix) What is polyploidy?

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RAIGAD - V (2010 Course) : WINTER - 2016

Subject : Recombinant DNA Technology (RDT)

Day : Thursday
Date : 13/10/2016

31435

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) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION-I

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

i) Explain the process of *invitro* packaging of Lambda DNA into phage particle.
ii) Explain in brief about various DNA modifying enzymes.

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

i) Discuss the process of purification of plasmid DNA.
ii) Give an account on pUC 18 as cloning vector.
iii) Explain the role of T_4 DNA ligases *invitro* joining of DNA molecule.

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

a) Cosmids as cloning vector
b) Homopolymer tailing
c) Ideal characteristics of plasmid as cloning vector
d) Role of methylase
e) YAC

SECTION-II

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

i) What are the genomic libraries? How they are constructed?
ii) Discuss Sanger's method of DNA sequencing?

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

i) What is recombinant insulin? Give its applications.
ii) Explain CAPture technique for full length cDNA cloning.
iii) Discuss principle and applications of Agarose gel electrophoresis.

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

a) Discuss the process of immunological screening of recombinants.
b) Explain real time quantitative PCR.
c) Describe how transgenic plants be used as bioreactor?
d) Why *E-coli* is popular model for recombinant DNA technology?
e) What is blue white screening? Give its applications.

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

a) Gene therapy
b) DNA vaccines
c) Northern blotting
d) Functional cloning
e) Oligocapping

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RAIGAD - V (2010 Course) : WINTER - 2016

Subject : Introduction to Animal Tissue Culture (ATC)

Day : Saturday
Date : 15/10/2016

31436

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) Answers to both the sections should be written in **SAME** answer books

SECTION – I

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

i) Define cell culture, explant culture and organ culture.

ii) What are common contaminating agents in animal tissue culture? How contamination in animal tissue culture laboratory is prevented?

B) Answer **ANY TWO** of the following: **[10]**

i) Define cell line. Explain the growth characteristics of normal diploid cell line.

ii) Explain the types of laminar flow hood.

iii) Explain the role of serum in tissue culture medium.

Q.2 Write short notes on **ANY FOUR** of the following: **[16]**

a) Culture vessels
b) Inverted microscope
c) Cell adhesion molecules
d) Cross contamination
e) Cell bank

SECTION – II

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

i) What is primary culture? Explain enzymatic disaggregtion method for preparation of primary culture.

ii) Enlist various ingredients of tissue culture medium giving the role of each.

B) Answer **ANY TWO** of the following: **[10]**

i) What are dye inclusion and dye exclusion methods? What is their use?

ii) Outline the steps involved in cryopreservation of cell line.

iii) Describe any one method for testing cytotoxicity of drugs.

Q.4 Write short notes on **ANY FOUR** of the following: **[16]**

a) Nunc cell factory
b) Microcarriers
c) Suspension culture
d) CO_2 incubator
e) Fixed bed reactor

Q.5 Attempt **ANY ONE** of the following: **[16]**

a) i) What are monoclonal antibodies?

ii) How are they synthesized?

iii) State their applications.

b) Describe applications of animal tissue culture in:

i) Production of vaccines and therapeutics

ii) Drug Screening

iii) Research studies

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RAIGAD - V (2010 Course) : WINTER - 2016

Subject : Biometrics, Biostatistics & Quality Control

Day : Tuesday
Date : 18/10/2016

31437

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) Both sections should be written in **SEPARATE** Answer sheet.

SECTION-I

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

a) What are biometrical techniques? How they are used in crop improvement?
b) What is correlation? Give its significance in plant breeding.

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

a) Give a brief account on Line X Tester analysis.
b) Explain various properties of quantitative traits.
c) What is path coefficient? Give its significance.

Q.2 Define the terms: **(16)**

a) Adaptation
b) Heritability
c) Outbreeding
d) Heterosis
e) Standard deviation
f) Variable
g) Null hypothesis
h) Median

SECTION-II

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

a) Write about different charts used to represent data. Give at least 3 examples.

OR

a) Find the correlation coefficient, regression coefficient (Slope) and intercept.

X=age (days)	6	7	8	9	10	11	12
Y= height (cm)	10.0	11.1	12.0	13.5	15.0	16.0	17.0

B) Write short notes on (**ANY TWO**) of the following: **(10)**

a) SPSS or PS PP
b) Randomization
c) Covariance

P.T.O.

Q.4 A) Answer the following (**ANY ONE**) **(08)**

a) Following data contains body weights of 36 animals. Create a frequency table with 5 classes. Find Mean, Mode, and Median.

34.5	34.6	23.4	25.6	37.5	38.5	29.0	39.0	36.4
34.5	24.6	23.4	25.6	33.5	18.5	29.0	39.0	36.4
24.5	34.6	22.4	25.6	37.5	38.5	29.0	29.7	36.4
34.5	24.6	23.6	25.6	27.5	28.5	29.0	29.3	36.4

OR

a) Discuss layout and the process of randomization in Randomized Block design. Explain the associated ANOVA in brief.

B) Answer the following (**ANY TWO**) **(08)**

a) Describe types of documents in bioprocess industry.
b) Write SOP for good documentation.
c) Describe process of water purification.

Q.5 Write short notes on (**ANY FOUR**) **(16)**

a) Relationship between QA, QC, GMP.
b) Statistical Quality Control
c) IPQC
d) Raw material receipt procedure
e) Importance of labelling

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