Rai University
EVOLVING THINKING MINDS
A LEADING RESEARCH DRIVEN UNIVERSITY

School of Engineering and Applied Sciences

B.Tech. Biotechnology
Semester IV
Major Assignment

Important Instructions to Student:

1. Last date for Assignment Submission – **30-May-2020**
2. This assignment carries major **weightage of 50 Marks**. Kindly prepare it very carefully and in a very detailed manner. For any help in this regard, kindly contact your faculties.
3. Front Page of Assignment should clearly include details like:
    - **a.** Your Name
    - **b.** UID Number
    - **c.** Subject
    - **d.** Class
    - **e.** Semester

    In the event of no such information, we may not be able to assign marks for your assignment, for which responsibility lies with students.
4. You can write and submit assignment through any of the following options:
    a. Handwritten Assignment – Prepare softcopy of your assignment through suitable apps and send the assignment as one PDF to your respective faculty as mentioned above.
    b. Typed Assignment – Prepare Assignment with following font setting and submit the assignment to your respective faculty as mentioned above.
        i. Font Type – Times New Roman or Arial
        ii. Headings – Font Size 14
        iii. Text (Except Heading) – 12
        iv. Normal Margin and Line Spacing maximum 1.15
5. After this lockdown ends, you all have to submit the physical assignment copies to your respective Faculties. So, keep the assignment carefully for submission.
6. While submitting assignment through email, kindly use subject line as Name of the Programe_Name of Course/Branch_Semester_Name o the the Subject. For Example B.Tech._Mechanical_IV_Theory of Machines

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English Communication and Life Skills – IV **Prof. Rakhi Pandey**	**Mode of Submission –Email** **Email –** rbs.raiuniversity@gmail.com **Subject Line:** B.Tech. BT IV ECLS-IV
1.	Explain All Forms Of Tenses In Detail
2.	Explain 4 Stages Of Team Building In Detail
3	Explain The Following Interview: a. Panel interview b. Group interview c. Stress interview d. Exit interview e. Technical interview
4	Explain the Parts Of Speech In Detail
5.	Explain The All Degree forms Of In Detail

Genetics **Prof. Veerendra S. Nagoria**	**Mode of Submission : Email** **Email** – veerendra.nagoria31@gmail.com **Subject Line:** Major Assignment_B.Tech. BT IV Genetics

1. In the guinea pig, one locus involved in the control of coat color may be occupied by any of four alleles: *C* (full color), *ck* (sepia), *cd* (cream), or *ca* (albino), with an order of dominance of: *C* > *ck* > *cd* > *ca*. (*C* is dominant to all others, *ck* is dominant to *cd* and *ca*, but not *C*, etc.) In the following crosses, determine the parental genotypes and predict the phenotypic ratios that would result:

a) sepia x cream, where both guinea pigs had an albino parent
b) sepia x cream, where the sepia guinea pig had an albino parent and the cream guinea pig had two sepia parents
c) sepia x cream, where the sepia guinea pig had two full-color parents and the cream guinea pig had two sepia parents

sepia x cream, where the sepia guinea pig had a full-color parent and an albino parent and the cream guinea pig had two full-color parents

2. A population called the "founder generation" consisting of 2000AA individuals, 2000Aa individuals and 6000 aa individuals is established on a remote island. Mating within this population is random, the three genotypes are selectively neutral and mutation occurs at a negligible rate.

a. What are the frequencies of allels A and a in the founder generation?
b. Is the founder generation at Hardy-Weinberg equilibrium?
c. What is the frequency of the A allele in the second generation?
d. What are the frequencies of AA, Aa and aa genotypes in the second generation?
e. Is the second generation at Hardy-Weinberg equilibrium?

3. Explain the Morgan's Experiment with suitable cross and explanation.

4. Write in detail about the genetic condition 47,XYY. Explain the experimental observation and studies involved with comments as why the it was debated and later the study was disposed?

5. In a three-point test cross $\frac{ABC}{abc} X \frac{abc}{abc}$ following data are obtained(only phenotypes are given):

ABC	Abc	aBc	AbC	ABc	abC	aBC	Abc	Total
230	240	96	104	138	142	12	8	970

Find out the correct linear order of the genes. Calculate the map distance between the genes and the coefficient coincidence.

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Principle of Business Management **Prof. Ashish S. Rami**	**Mode of Submission:** Google Form and/or Email **Link:** https://forms.gle/QH8vGE9N3Zqpfuts5 **Email:** ashish.rami@raiuniversity.edu **Subject:** B.Tech. BT IV POBM-IV
1.	What is production management? Why management concepts are required in engineering field?
2	What is formal and informal group? Why informal groups are required in the organization?
3.	Visit an organization. Identify the reasons of stress faced by their employees. Which are the remedies to reduce stress?
4.	Write a note on functions of management. Which are the management functions used in your life? How?
5.	What are social responsibilities of business? Identify various social responsibilities carried out by various companies.
Genomics and Proteomics **Prof. Afsana Dholakiya**	**Mode of Submission: Google Form** **Link:** https://forms.gle/R3WxYwWVoEoDMpTR8 **Email:** afsana.dholakiya@raiuniversity.edu **Subject Line:** B.Tech. BT IV Genomics & Proteomics
1.	Explain: Structural organization of genome in eukaryotes.
2.	What is gene prediction? Explain gene prediction methods in detail.
3.	Discuss protein folding in detail.
4.	What is genome analysis? Explain genome analysis tools – RFLP and RAPD
5.	Explain protein analysis with the help of SDS-PAGE and 2-D gel electrophoresis.
Immunology **Prof. (Dr.) Swapnaja Mahajan**	**Mode of Submission: Google Form** **Class code** 446xmuz https://classroom.google.com/w/NTUzMTcxODczOTda/tc/MTI1NjA0MTg4Mjc3 **Email:** swapnaja.mahajan@raiuniversity.edu **Subject Line: B.Tech. BT IV Immunology**
1.	Explain phygocytosis
2.	A) Write short note on IgG with structure. B) Write short note on IgM with structure
3.	Explain requirements for antigenicity.
4.	Describe action of antibody.
5.	Described MHC molecules with appropriate diagram.
Mechanical Operations & Heat Transfer **Prof. Vihar Chauhan**	**Mode of Submission:** Google Form and/or Email **Link:** https://forms.gle/zvKFssoEfCe9mbZk7 **Email:** vihar.chauhan@raiuniversity.edu **Subject Line:** B.Tech. BT IV MOHT
1.	Explain conduction with Fourier's law
2	Explain all three modes of Heat Transfer in detail.
3.	Explain convective heat transfer in detail with appropriate examples.
4.	What are heat exchangers? State the two major types of flow arranged in a heat exchangers. Also write the expression of LMTD for both types of flow.

5.	Explain Shell and Tube Heat Exchanger with neat sketch..

NOTE: After completing your assignments, contact your respective faculty member and submit the assignment for assessment.