



UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part – II

Annual Examination – 2019

Roll No.

MAX. TIME: 2 Hrs. 30 Min.

MAX. MARKS: 21

Subject: Genetics-II

PAPER: A (Molecular and Microbial Genetics)

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Note: Attempt any THREE questions. All questions carry equal marks.

Q3	a. In table form briefly describe in your own words the key differences between protein synthesis in prokaryotes & eukaryotes. b. Give definitions for each of these terms: A. Polycistronic B. Polysome C. Poly-A tail	04 03
Q4	a. What is transduction? Explain generalized and specialized transduction? b. How Bernard Davis tested whether cell-to-cell contact was required in conjugation?	04 03
Q5	a. How the different Mutation in bacteria can be classified? b. Define Mutagens and briefly give detail of Mutagens c. Define Purine and pyrimidine? Briefly explain their structure.	03 02 02
Q6	a. What is genetic Recombination? Give one example of any product produce by this process. b. Define and draw Holliday Junction in recombination? c. Define restriction enzymes? Give two examples.	02 03 02
Q7	a. What are ascospores? Give examples of ascospore forming microbes. b. Define parental ditype and non-parental ditype. c. Draw the life cycle of Neurospora?	03 02 02



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MAX. TIME: 30 Min.
MAX. MARKS: 14

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.

Attempt this Paper on this Question Sheet only.

Please encircle the correct option. Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q1.	Multiple choice questions	
1.	During mRNA splicing, a 2'-5' bond is formed between which two nucleotides? a) G and C b) G and T c) G and U d) G and A e) U and A	07
2.	Co-repressors (a) trigger the shutdown of gene translation. (b) trigger the shutdown of gene transcription. (c) trigger the shutdown of cell replication. (d) trigger the shutdown of the immune system.	
3.	The following DNA fragment contains a gene's translation initiation codon. Translation start 3' TCCGGTGAAC TATAA 5' 5' CGCCACATTGATATT 3' ← template strand The orientation of the template strand for mRNA synthesis must be: a) upper strand, 3' → 3' orientation b) lower strand, 3' → 5' orientation c) lower strand, 5' → 3' orientation d) upper strand, 3' → 5' orientation e) none of the above.	
4.	If the AAUAAA sequence is removed from a eukaryotic mRNA, which event will not occur? a) 5' cap addition b) Cleavage and poly-adenylation of the mRNA c) Splicing of introns d) Transport to the cytoplasm e) None of the above	
5.	A tRNA with the anticodon 3' UCG 3' would base pair with which codon(s)? a) 5' AGC 3' and 3' AGU 3' b) 5' AGC 3' only c) 5' CGA 3' and 5' CCG 3' d) 5' CGA 3' only e) 5' CGA 3', 5' CCG 3' and 3' CCG 3'	
6.	What is the function of EF-Tu during translation in prokaryotes? a) Brings N-formylmethionine-tRNA to the ribosome P site. b) Releases EF-Ts from the ribosome c) Brings aminoacyl tRNAs to the ribosome A site d) Binds to stop codons in the ribosome A site e) Causes the formation of a peptide bond during elongation	
7.	β-galactosidase converts: a) lactose to two glucose molecules b) Glucose to galactose c) Galactose to lactose d) lactose to glucose and galactose e) Galactose to glucose and lactose	
	Fill in the blanks	
	During conjugation, the genetic material will be transferred through _____	07
Q2.	_____ radiation induces mutation because it causes abnormal bonds to form in DNA.	
1.	Drug resistance in bacteria is mediated by _____	
2.	The bacterial cells participated in conjugation are called _____	
3.	_____ first gave the experimental evidence that DNA is the genetic material.	
4.	Griffith (1928) reported the phenomenon of transformation first in _____	
5.	Bacteriophage capable of only lytic growth is called _____	
6.	_____	
7.	_____	



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PAPER: B (Genetics of Eukayotes)

MAX. TIME: 30 Min.

MAX. MARKS: 14

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.

Attempt this Paper on this Question Sheet only.

Please encircle the correct option. Division of marks is given in front of each question.

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Q1.	<p>Encircle the correct answer.</p> <p>1. If pyrimidine is replaced by purine, resulting mutation termed as:</p> <ul style="list-style-type: none">a) Point mutationb) Frameshift mutationc) Transitionsd) Transversion <p>2. Arabidopsis is advantageous for plant genetic research because:</p> <ul style="list-style-type: none">a) it is commercially important as a food cropb) it is an endangered speciesc) it is the closest to humans of any existing plantd) it is a small plant with a small genome size which can be raised inexpensively <p>3. In Klinefelter's syndrome, phenotypical males, having:</p> <ul style="list-style-type: none">a) XXYb) XXXc) XYYd) XO <p>4. First hormone that is synthesized by Recombinant DNA technology, known as:</p> <ul style="list-style-type: none">a) Progesteroneb) Estrogenc) Steroidsd) Insulin	07
	<p>5. What is a probe?</p> <ul style="list-style-type: none">a) Chemically synthesized DNAb) Purified DNAc) Fragmented DNA duplexd) Either purified or synthesized single stranded DNA <p>6. Trisomy 21 is better known as:</p> <ul style="list-style-type: none">a) Edwards syndromeb) Patua syndromec) Down syndromed) Warkany syndrome <p>7. Inbreeding increases frequency of</p> <ul style="list-style-type: none">a) homozygousb) heterozygousc) genetic diversityd) genetic linkage	

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Q3. (a)	What is genetic counseling?	02
Q3. (b)	Give at least three different reasons that a person might seek genetic counseling.	03
Q3. (c)	Is the following statement correct? Explain why you think it is correct or not. "The primary purpose of genetic counselling is to reduce the incidence of genetic disease in the population".	02
Q4. (a)	Who is the proband in a pedigree?	02
Q4. (b)	What do you know about genetic engineering?	02
Q4. (c)	What is Acclimatization?	03
Q5. (a)	Define the following: 1. Hybridization 2. X linked inheritance 3. Inbreeding depression 4. Heterosis 5. Autopolyploid	05
Q5. (b)	Give the reasons why maintenance of genetic diversity is important in a plant breeding programs.	02
Q6. (a)	Explain in brief (2-4 sentences for each) the following terms: 1. Down Syndrome 2. Penetrance 3. Mutation Breeding 4. Artificial Insemination	04
Q6. (b)	What is Recombinant DNA technology? Describe the importance of recombinant DNA techniques.	03
Q7. (a)	Describe some of the most important findings of the human genome project.	03
Q7. (b)	What is the difference between genetics and genomics?	02
Q7. (c)	What is proteomics?	02