St. Philomena's College (Autonomous), Mysore			
PG Department of Biochemistry			
Question Bank (Revised Curriculum 2018 onwards)			
Second Year- Third Semester (2019 - 21 Batch)			
Course Title (Paper Title): Genetics and Evolution. QP Code: 54205			
Unit	**Sl. No**	**Questions**	**Marks**
1	1.	What is genetics? Explain its types	2
1	2.	Define the Laws Of Inheritance	2
1	3.	What is Dominance? Explain types of dominance	2
1	4.	What is Epistasis? Explain its types	2
1	5.	What is Pleiotropism? Give example	2
1	6.	What is Cytoplasmic Inheritances? Give example	2
2	7.	What is gene linkage? Comment on its significance	2
2	8.	What is crossing over? What is its significance?	2
2	9.	What are genetic markers? Give its significance	2
2	10.	What is coincidence and interference?	2
2	11.	What is X-Linked Inheritance? Give example	2
2	12.	What is Polygenic Inheritance? Give example	2
2	13.	What is Mitochondrial Inheritance? Give example	2
2	14.	What is Y-Chromosome Inheritance? Give example	2
2	15.	Define map unit. Give its significance	2
3	16.	What is C-value paradox? Give its significance	2
3	17.	Which are the different classes of genes?	2
3	18.	What are tandemly repeating genes? Give its significance	2
3	19.	What are pseudogenes?	2
3	20.	Comment on the features of Klinefelter's syndrome	2
3	21.	Comment on the features of patau syndrome	2
3	22.	Comment on the features of downs syndrome	2
3	23.	Comment on the features of cri du chat syndrome	2
3	24.	What is monosomy? Give example	2
3	25.	What is Robertstonian translocation?	2
3	26.	Explain mosaicism	2
3	27.	What is autopolyploidy? Give example	2
3	28.	What is allopolyploidy? Give example	2
3	29.	What is polyploidy? Give its significance	2
3	30.	What Is aneuploidy? Give examples	2

3	32.	Give the classification of ploidy with examples	2
3	33.	Differentiate between disjunction and non-disjunction	2
3	34.	Explain ploidy with examples	2
3	35.	What are karyotyping and an idiograms ?	2
3	36.	What is Karyotype? Give its types	2
3	37.	What is sex chromosome?	2
3	38.	What is dosage compensation?	2
3	39.	Which are the Types of Junk DNA?	2
3	40.	What is cut and paste transposition?	2
3	41.	What is replicative Transposition ?	2
3	42.	What is retrotransposition?	2
3	43.	What are IS elements?	2
3	44.	What are composite transposons?	2
3	45.	What are Tn3 elements?	2
3	46.	What are class I elements?	2
3	47.	What are LTR retrotransposons ?	2
3	48.	What are SINEs?	2
3	49.	What are LINEs?	2
3	50.	What are class II transposons?	2
3	51.	Give the classification of transposons	2
3	52.	Which are the 4 genes studied by Mc clintock? Give their role	2
3	53.	Explain the abnormalities in chromosome structures	2
4	54.	What is Genetic drift?	2
4	55.	What is meant by adaptive radiation?	2
4	56.	How are mutations quantified?	2
5	57.	Explain the Nature Of Mutations	2
5	58.	Give the Classification of mutations	2
5	59.	What are Spontaneous And Induced Mutations?	2
5	60.	What is Conditional Lethal (Temperature Sensitive) Mutation?	2
5	61.	What are base substitute mutations? Explain types with examples	2
5	62.	Comment on different types of point mutations	2
5	63.	What are chemical mutagens? Comment on its class with examples	2
5	64.	What are physically induced mutations? Give its types	2
5	65.	What are reverse mutations? What is its significance?	2
5	66.	What are suppressor mutations? Add a note on its types	2
5	67.	What is the significance of Ames test?	2

6	68.	What is recombination? Give its significance	2
6	69.	What is recombination? What are its different types?	2
6	70.	What is reciprocal recombination?	2
6	71.	What is non reciprocal recombination?	2
6	72.	What is site specific recombination?	2
6	73.	What is homologous recombination?	2
6	74.	Explain the limitations of Holliday model	2
7	75.	What is Darwin's concept of "Survival of the fittest"?	2
7	76.	In evolution, what is meant by "Fitness"?	2
7	77.	Explain the concept of Natural selection	2
7	78.	What was the controversy about Haekel's drawings of the embryos?	2
7	79.	What is the origin of the Eukaryotic cell?	2
7	80.	How did eukaryotic cells acquire mitochondria and chloroplast?	2
8	81.	What is "Big Bang" Theory?	2
8	82.	What were the findings of the Hubbel space telescope regarding the age of the stars?	2
8	83.	What is the Cambrian Explosion?	2
8	84.	What is Punctuated equilibrium?	2
8	85.	What are the problems with dating the fossils?	2
8	86.	What are Living Fossils? Give an example	2
1	88.	Explain law of independent assortment with an example	5
1	89.	Explain law of seggregation with an example	5
1	90.	Explain epistasis with an example	5
1	91.	Briefly explain pleiotropism with an example	5
1	92.	Give a detailed account on cytoplasmic inheritance with an example	5
1	93.	What is male sterility in plants? Explain the reason behind male sterility in plants	5
1	94.	Explain shell coiling in limnae and the reason behind it	5
2	95.	Explain mapping of genes using three point test cross	5
2	96.	Explain mapping using tetrad analysis	5
2	97.	Explain X-Linked Inheritance with an example	5
2	98.	Explain Polygenic Inheritance with an example	5
2	99.	Explain Mitochondrial Inheritance with an example	5
2	100.	Explain Y-Chromosome Inheritance with an example	5

3	101.	Explain different classes of genes and gene families	5
3	102.	Comment on tandemly repeating genes	5
3	103.	Give a detailed account on aneuploidy	5
3	104.	Give a detailed account on euploidy	5
3	105.	comment on Klinefelter's syndrome	5
3	106.	comment on patau syndrome	5
3	107.	comment on downs syndrome	5
3	108.	comment on cri du chat syndrome	5
3	109.	What is karyotyping? What are the different types of karyotypes?Explain its procedure	5
3	110.	Describe the mechanism of sex determination	5
3	111.	Describe the work and conclusions of Mc Clintocks work	5
3	112.	Give a detailed account on types of transposons	5
3	113.	Give the mechanism of Cut and paste transposition	5
3	114.	Give a detailed account on TRANSPOSABLE ELEMENTS IN BACTERIA	5
3	115.	Give a detailed account on eukaryotic Mobile genetic elements	5
3	116.	Explain abnormality In Chromosome Structure with examples	5
4	117.	Explain Hardy-Weinberg law	5
4	118.	Explain the factors favouring speciation	5
4	119.	What is sympatric and allopatric speciation?	5
4	120.	Explain mate selection behavior in Birds	5
4	121.	What is Predator-prey coevoluton? Expalin with an example	5
5	122.	Explain different types of induced mutation	5
5	123.	Explain different types of spontneous mutation	5
5	124.	Explain different types of mutagens and mutagen induced mutations	5
5	125.	Briefly explain Ames test	5
6	126.	Briefly explain site specific recombination	5
6	127.	Briefly explain The holliday model of recombination	5
7	128.	Explain evidences for and against Darwin’s theory of evolution	5
7	129.	Explain Urey-Miller experiment. What did they conclude?	5
7	130.	How did cells originate?	5
8	131.	What is Big Bang theory? Explain the drawbacks of this theory	5
8	132.	How does punctuated equilibrium go against Darwin’s phylectic gradualism?	5
8	133.	How are fossils dated? Comment on the drawbacks of these methods	5
8	134.	Explain the current controversies regarding evolution of birds	5
8	135.	Give examples of hoaxes and falsification of data generated to support the theory of evolution	5
9	136.	What is Molecular evolutionary clock? Explain	5

Q.P Code: 54205

St. Philomena's College (Autonomous) Mysore

III Semester M.Sc. Final Examination December - 2019

Subject: BIOCHEMISTRY

Title: GENETICS AND EVOLUTION(SC)

Time: 3 Hours Max Marks: 70

PART –A

Answer any TEN the following Questions: 10×2=20

1. a. What is pleiotropism? Give an example.
   b. Define pseudogenes.
   c. What is site specific recombination?
   d. What is C-Value paradox?
   e. What is Lamarck's theory?
   f. Define molecular clock.
   g. What is mutation? Name types of mutation.
   h. What is X-linked inheritance? Give example.
   i. What is speciation?
   j. What is random genetic drift?
   k. What are mis-sense and non-sense mutation?
   l. What is evolutionary time scale?

PART –B

Answer any FIVE of the following Questions: 5×10=50

2. a. What is cytoplasmic inheritance? Explain with example.
   b. Explain mapping by tetrad analysis. 5+5

PTO

3. a. What is meant by Dosage compensation? Explain with X-chromosome as an example. 5+5

   b. Write a note on mobile genetic elements.

4. a. Explain Holiday model of recombination. 5+5

   b. Describe different types of chromosome abnormalities.

5. a. Write a note on Darwin's theory of evolution. 5+5

   b. How Karyotyping is done? Explain.

6. a. Write a note on Ames test. 5+5

   b. Describe the mechanism of chemical mutagenesis.

7. a.. Explain 'co evolution' and 'punctuated equilibrium'. 5+5

   b. Explain Urey-millers experiment. Critically evaluate the conclusion.

8. a.. Explain epitasis with example. 5+5

   b. Write a note on Hardy-Weinberg law.

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