Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Agriculture

End Sem (Even) Examination May-2022

AG3CO07 Fundamentals of Genetics

Programme: B.Sc. (Hons.) Branch/Specialisation: Agriculture

Duration: 3 Hrs. **Maximum Marks: 50**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Mendal presented his paper before National History Society of Brunn in the year..... **1**
(a) 1888 (b)1865 (c)1867 (d)1889

ii. Mendal died in the year- **1**
(a) 1884 (b)1986 (c)1887 (d)1881

iii. Mitosis is also called as- **1**
(a) Equivalent division (b) Somatic division
(c) Both (a) and (b) (d) None of these

iv. Meosis is also known as- **1**
(a) Reductional division (b) Somatic division
(c) Both (a) and (b) (d) None of these

v. X/A ratio of 0.67 will give rise to- **1**
(a) Super female (b) Super male
(c) Normal male (d) Intersex

vi. X/A ratio of 0.50 will give rise to- **1**
(a) Super female (b) Super male
(c) Normal male (d) Intersex

vii. Example of physical mutagen- **1**
(a) Gamma rays (b) Alpha rays
(c) Beta rays (d) All of these

viii. Example of chemical mutagens- **1**
(a) Ethylmethane sulphonate
(b) Methylmethane sulphonate
(c) Both (a) & (b)
(d) None of these

ix. Transformation experiment initially conducted during- **1**
(a) 1928 (b) 1900 (c) 1866 (d) 1885

x. R-II strain of pneumococcus is- **1**
(a) Dead (b) Virulent (c) Non-virulent (d) Unknown

Q.2 i. Define heredity. **1**
ii. Describe polytene chromosome in brief. **2**
iii. What is the law of purity of segregation? **5**
OR iv. Sketch the well labelled diagram of a typical chromosome. **5**

Q.3 i. What do you understand by karyokinesis? **1**
ii. Describe cell cycle. **3**
iii. Write difference between mitosis and meiosis. **4**
OR iv. Explain epistasis gene interaction with suitable examples. **4**

Q.4 i. What is sex linked chromosomes? **2**
ii. Explain non-cross overs, single crossovers and double crossovers with suitable examples. **6**
OR iii. Describe structural changes with suitable examples. **6**

Q.5 i. Write the name of four physical mutagen. **2**
ii. Write the name of four chemical mutagen. **2**
iii. Differentiate between qualitative and quantitative traits **4**
OR iv. Describe alloploidy with suitable examples. **4**

Q.6 Attempt any two:
i. Describe the replication of DNA of semi-conservative nature. **4**
ii. Explain protein synthesis in brief. **4**
iii. Describe transcription and translation mechanism in brief. **4**

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Marking Scheme
AG3CO07 Fundamentals of Genetics

Q.1	i.	Mendal presented his paper before National History Society of Brunn in the year..... (b)1865		**1**
	ii.	Mendal died in the year- (a) 1884		**1**
	iii.	Mitosis is also called as- (c) Both (a) and (b)		**1**
	iv.	Meosis is also known as- (a) Reductional division		**1**
	v.	X/A ratio of 0.67 will give rise to- (d) Intersex		**1**
	vi.	X/A ratio of 0.50 will give rise to- (c) Normal male		**1**
	vii.	Example of physical mutagen- (d) All of these		**1**
	viii.	Example of chemical mutagens- (c) Both (a) & (b)		**1**
	ix.	Transformation experiment initially conducted during- (a) 1928		**1**
	x.	R-II strain of pneumococcus is- (c) Non-virulent		**1**
Q.2	i.	Definition of heredity.		**1**
	ii.	Polytene chromosome		**2**
	iii.	Law of purity of segregation As per explanation		**5**
OR	iv.	Diagram of a typical chromosome Explanation	2 marks 3 marks	**5**
Q.3	i.	What do you understand by karyokinesis?		**1**
	ii.	Describe cell cycle.		**3**
	iii.	Difference between mitosis and meiosis 1 mark for each difference	 (1 mark * 5)	**4**
OR	iv.	Epistasis gene interaction Definition Examples	 1 mark 3 marks	**4**
Q.4	i.	Sex linked chromosomes?		**2**
	ii.	Non-cross overs Single crossovers Double crossovers	2 marks 2 marks 2 marks	**6**
OR	iii.	Any four structural changes with examples 1.5 mark for each	 (1.5 marks * 4)	**6**
Q.5	i.	Name of four physical mutagen.		**2**
	ii.	Name of four chemical mutagen.		**2**
	iii.	Differentiate between qualitative and quantitative traits 1 mark for each difference	 (1 mark * 4)	**4**
OR	iv.	Alloploidy Examples	1 mark 3 marks	**4**
Q.6		Attempt any two:		
	i.	Replication of DNA of semi-conservative nature As per the explanation		**4**
	ii.	Protein synthesis As per the explanation		**4**
	iii.	Transcription mechanism Translation mechanism	2 marks 2 marks	**4**

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