c. Promotor

M.Sc. BOTANY FOURTH SEMESTER CYTOGENETICS & PLANT BREEDING MSB-402 A

(Use separate answer scripts for Objective & Descriptive) Duration: 3 hrs. Full Marks: 70 [PART-A : Objective] Time: 20 min. Marks: 20 Choose the correct answer from the following: 1x20 = 201. DNA replication occurs in: a. S Phase c. G2 Phase d. M Phase b. G1 Phase 2. The pairing of homologous chromosome is called: a. Tetrads b. Crossing over c. Synapsis d. Terminalisation 3. Which is a general term for enzymes that activate or inactivate other proteins by phosphorylating them? a. MPF b. Cyclin c. Protein Kinase d. Cdk 4. The cell cycle of a germinal cell has: a. Two successive mitotic divisions. Two successive reduction divisions. c. Very short prophase in first division. d. One reduction division followed by mitotic division. 5. Which of these describes a Holliday junction? a. A section of DNA where base pairing is not exact. b. A strand of DNA containing genetic material from two different chromosome. c. An interaction of two strands of DNA from homologous chromosome. d. A three stranded DNA structure where single stranded DNA has invaded a double helix. 6. The preinitiation complex during protein synthesis in prokaryotic include: a. Initiation factor, mRNA, 30S subunit, 50S subunit. b. Initiation factor, mRNA, 30S subunit, GTP. c. Initiation factor, ATP, 30S subunit, 50S subunit. d. Initiation factor, mRNA, 30S subunit, 50S subunit, GTP. 7. Sequence remaining after splicing: d. Axioms a. Axons b. Introns c. Exons 8. RNA splicing mechanism in *Tetrahymena* involves: a. Splicing endonuclease b. Spliceosomes c. Autocatalytic Splicing d. Restriction endonuclease 9. An operon is made up of: a. Regulator b. Operator

d. All of these

10.	In Jacob-Monad a. Repressor c. Expressor	model, operator p	prevent bin	ding of b. Ope d. Telo	rator		
	Golden Rice is a meant for biosyr a. Vitamin A c. Vitamin C	genetically modif nthesis of:	fied crop pl	b. Vita		orated genes ar	e
12.		antisense RNA to iptional Gene Sile		b. RNA	m functioning A Splicing erse Transcrip		as:
13.	Muller was the f a. Paramecium c. Drosophila	first to produce in	duced mut		pidopsis	oosing them to	X-rays.
14.	Which of the fol a. H1	lowing is not pres b. H2A	sent in nucl c. H2B	eosome	structure? d. H3		
15.	Which of the fol a. X ray c. Gamma ray	lowing is not ioni	zing radiat	ion? b. Beta d. UV			
		at appears after in ning with Geimsa		b. R-ba	romosome in l anding anding	not buffer phos	phate
17.	An example of plantibodies is: a. Potatoes that don't change colour when peeled. b. Corn plants used to synthesize human antibodies. c. Corn plants that produce protein toxic to insects. d. Tomatoes that don't rot as fast.						
18.	The reverse tran	scriptase enzyme b. Env	of Rous sa c. Pol	rcoma v	rirus is encode d. Src	d by which en:	zyme?
19.	a. The intron is b. The exon is a c. Both intron a	g split genes, it is a part of gene, th a part of the gene, and exon are func on nor exons are f	e exon is no the intron tional part	ot. is not. of the g	ene.		
20.	a. Any change mutation.b. A point mutation.	at(s) about mutation in the nucleic acid ation involves a commutation causes a	d (whether omplete co	good or don ratl	ner than a sing	le nucleotide.	

[PART-B: Descriptive]

Time: 2 hrs. 40 min. Marks: 50 [Answer question no.1 & any four (4) from the rest] 1. Write a note on the regulation of the cell cycle with proper diagram. 10 2. Write notes on: 5+5=10 a. C-value paradox. b. Karyotyping. 3. What is operon concept? Write in brief the working of lac operon. Give 4+6=10 4. What is antisense RNA technology? Give few applications of plantibodies. 6+4=10 5. Write notes on: 5+5=10 a. Ethical concern of Genetic engineering. b. Satellite DNA. 6. What is mutation? Write a note on the molecular basis of gene mutation. 2+8=10 7. Write a note on the different DNA repair mechanisms caused by UV 10 radiation. 8. What is RNA splicing? Write note on the different methods of RNA 2+8=10 splicing.

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d. All of the above.