CENTER: SURAT

Supervisor Sign: _____ Reg. No.:_____ Uni. Seat No.:_____

NAVSARI AGRICULTURAL UNIVERSITY
NAVSARI
FIRST SEMESTER B. TECH. (BIOTECHNOLOGY)(REGULAR) END EXAMINATION-2017-18
COURSE NO. Biotech. 103 TITLE: Introduction to Biotechnology (2+1)

DATE : 06 / 01 /2018 **TIME : 9.00 to 11.00 AM**
DAY: Saturday **MARKS : 50.00**

Q.1 Choose and write the correct answer in the parenthesis provided in the right side of each questions. (5.0)

1) Thermophiles are the organism which ( )
   A. Can survive at extreme high temperature B. Can survive at extreme low temperature
   C. Both A and B D. None of the above
2) _____has been used for mapping of human chromosome in "Human genome Project". ( )
   A. YAC B. Plasmid
   C. Cosmid D. BAC
3) In *Bt* cotton, a transgenic plant, *Bt* refers to ( )
   A. Beta B. Biotechnology
   C. Botanical D. *Bacillus thuringiensis*
4) Plasmid has a cloning capacity of ( )
   A. Up to 5 kb B. Up to 15 kb
   C. Up to 300kb D. Up to 2000kb
5) DST is ( )
   A. Department of Space Technology B. Division of Space Technology
   C. Division of Science and Technology D. Department of Science and Technology
6) An extra chromosomal element used as a vector is ( )
   A. Intron B. Plasmid
   C. Exon D. Promoter
7) The insulin prepared through genetic engineering is called as ( )
   A. Humulin B. Microbial insulin
   C. Bioinsulin D. Human insulin
8) _____ known as "Molecular Scissor". ( )
   A. Restriction enzymes B. DNA ligases
   C. Reverse Transcriptase D. T4 Polynucleotide kinase
9) Marine biotechnology is also known as ( )
   A. Red Biotechnology B. Blue Biotechnology
   C. Green Biotechnology D. White Biotechnology
10) Genome size of *Escherichia coli* is ( )
   A. 4.21 Mb B. 1.83 Mb
   C. 4.64 Mb D. 1.56 Mb

Q.2 Write "True" or "False" for the following sentences. (5.0)

1) Monoclonal antibodies are used primarily to fight off cancer cells. ( )
2) Totipotency is a potential of a cell to differentiate into an unlimited number of specialized cell types. ( )

3) Bacteriophages are the viruses that infect the bacteria. ( )
4) *EcoRI* is isolated from the bacterium *Thermus aquaticus*. ( )
5) Telomeres are present on the plasmids. ( )
6) Interferons are virus-induced proteins produced by virus-infected cells. ( )
7) 3rd generation sequencing methods are also called as Single molecule sequencing (SMS) methods. ( )
8) Cosmids are hybrids formed between plasmids and bacteriophages. ( )
9) Biofortification is being used to clean up sewage, sludge, seafood wastes, and toxins in marine areas. ( )
10) SWISS PROT is a catalogue of human genetic disorder. ( )

Q.3 Match the following. **(5.0)**

1)	pBR322	A	Antibiotic
2)	Edward Jenner	B	Isoenzymes
3)	Rennin	C	Beer production
4)	*Hind III* and *Hsu I*	D	Reverse transcriptase
5)	Yeast	E	4.37 Kb
6)	*Eco K* and *Eco B*	F	Cheese production
7)	Alexander Fleming	G	Vaccine
8)	pUC19	H	6.4 Kb
9)	Temin and Baltimore	I	Type I restriction endonucleases
10)	Phage M13	J	2.67 Kb

Q.4 Give full form of the following (Any seven). **(7.0)**

1) BAC 2) PCR 3) DDBJ 4) ICAR
5) NCBI 6) IARI 7) GEAC 8) NDRI

Q.5 Define/Explain (Any seven). **(7.0)**

1) Nanobiotechnology 2) Transgenic plant 3) Genome 4) Isoenzymes
5) Stem cell 6) Shuttle vector 7) Bioinformatics 8) Biotechnology

Q.6 Answer the following questions (Any six). **(12.0)**

1) Which is the major requirement for the activity of DNA polymerase?
2) Enlist different type II restriction endonucleases with its recognition sequence.
3) What is the role of alkaline phosphatase?
4) Draw labeled diagram of bacterial plasmid.
5) Give classification of different risk groups.
6) Which are the different fermentation products produced by microorganisms?
7) What is the role of DNA ligases in rDNA technology?

Q.7 Write short note (Any three). **(9.0)**

1) Properties of a vector
2) Steps involved in recombinant DNA technology
3) Nucleases
4) Plant Biotechnology

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NAVSARI
FIRST SEMESTER B. TECH. (BIOTECHNOLOGY) (REGULAR) END EXAMINATION
2017-18
COURSE NO.: Biotech. 102 TITLE: BASIC GENETICS (2+1)

DATE : 03/01/2018 **TIME :9.00 to 11.00 AM**

DAY : WEDNESDAY **MARKS : 50.00**

Q. 1 Choose and write the correct answer **(05.0)**

1 Dicentric chromosome contains ( )

A) Four centromere B) Three centromere
C) Two centromere D) One centromere

2 Who is known as father of genetics? ( )

A) Jansen B) Mendel
C) Morghan D) Muller

3 The epistasis term was given by ( )

A) Muller B) East
C) Bateson D) Davenport

4 Which one is stop codon ( )

A) UAG B) GCC
C) CAG D) All of these

5 Sharbati Sonora mutant was developed by ( )

A) B.P. Pal B) M.S. Swaminathan
C) Goulden D) Hull

6 ..... blood group is universal donor. ( )

A) A B) B
C) O D) AB

7 Chinchila fur colour in rabbit is .....over white. ( )

A) Recessive B) Codominant
C) Both A and B D) Dominant

8 If population is in Hardy-Weinberg equilibrium then ( )

A) $p + q = 2$ B) $p + q = 4$
C) $p + q = 1$ D) $p + q = 3$

9 Genetic makeup of an organism is known as ( )

A) Genotype B) Phenotype
C) Both of these D) None of these

10 The ABO blood group in man was first discovered by ( )

A) Davenport B) Stern
C) Shull D) Landsteiner

Q. 2 Match the appropriate term of column 'A' with column 'B' **(05.0)**

	A		B
1	Trisomic	a	Hugo de vries (1900)
2	Muton	b	100% survival
3	Cytological Proof of Crossing Over in Drosophila	c	2n+2
4	Sex-linkage in Drosophila	d	Centimorgan
5	Mutation term given by	e	AUG
6	Autooctaploid	f	Curt Stern(1931)
7	Tetrasomic	g	Site of mutation
8	Start codon	h	2n+1
9	Vital mutation	i	T.H. Morgan
10	Chromosome map unit	j	Eight copies of same genome

Q. 3 Write true or false **(05.0)**

1 Charles Darwin explained the mechanism of evolution through his theory of natural selection.
2 Sickle cells live only for about 15 days.
3 Haemophilia C occurs equally in both sexes.
4 Duplications are less harmful than deletions
5 People with Down syndrome have normal physical appearance.
6 Twins can be either dizygotic (fraternal) or monozygotic (identical).
7 XX (Disomic) is abnormal female.
8 The XX-XO type of sex determination is seen in bugs, cockroaches and grasshoppers.
9 The frequency of non-sense mutations is much lower than missense mutations.
10 Deletion refers to addition of a portion of segment in a chromosome

Q. 4 Define the following terms: **(10.0)**

1 Interphase
2 Codons
3 Duplication
4 Chromatid
5 Telocentric chromosome
6 Multiple alleles
7 Dominant character
8 Genetics
9 Cytokinesis
10 Crossing over

Q. 5 Write short notes on the following (Any five) **(10.0)**

1 Klinefelter syndrome
2 Speciation
3 Sickle cell anemia
4 Haemophilia
5 Trisomy 21 (Down syndrome)
6 Autosomes and Allosomes

Q. 6 Answer the following questions in brief. **(15.0)**

1 Describe meiosis in brief with the labelled diagram.
2 Who was Mendel? Describe his different laws with suitable examples.
3 Define mutation .Write down the brief classification of mutation.
4 Describe sex determination systems in brief.
5 What are the chromosomal aberrations? Describe in brief with the help of suitable diagram.

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NAVSARI AGRICULTURAL UNIVERSITY
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FIRST SEMESTER B. Sc. (BIOTECHNOLOGY) REGULAR END EXAMINATION: 2017-18
COURSE NO.: BIOTECH. 101 TITLES: CELL BIOLOGY (2+0)

DATE: 10/12/2017 **TIME: 9.00 - 11.00 AM**
DAY: WEDNESDAY **MARKS: 50.00**

Q. A.	**Choose and write the correct answer in the parenthesis provided in the right side of each questions.**	**(15.00)**
1.	DNA polymerase helps in a. replication b. transcription c. translation d. all	( )
2.	RNA polymerase helps in a. replication b. transcription c. translation d. all	( )
3.	Leaves appears green due to presence of a. chlorophyll b. plastids c. carotene d. all	( )
4.	Translation occurs in a stroma b.thylakoids c.cytosol d. nucleus	( )
5.	RNA processing occurs in a nucleus b.mitochondria c.chloroplast d. cytosol	( )
6.	Biomolecule of cell is/are a. protein b. carbohydrate c. lipid d. all	( )
7.	Semiconservative mode of DNA replication given by a. Messelson and Stahl b. Watson c. Crick d. R. Brown	( )
8.	5' Cap used in a. DNA b. RNA c. Protein d. amino acid	( )
9.	Light reaction occurs in a stroma b.thylakoids c. cytosol d. nucleus	( )
10.	Division of somatic cell occurs through a Mitosis b. Meiosis c. Fission d. all	( )
11.	Meiosis occurs in a. germ cell b. somatic cell c. both d. none	( )
12.	Protein synthesized on a. Rough endoplasmic reticulum b. Smooth endoplasmic reticulum c. Golgi bodies d. None	( )
13.	Lipid synthesized on a. Rough endoplasmic reticulum b. Smooth endoplasmic reticulum c. Golgi bodies d. None	( )
14.	Ribosome present on a.Rough endoplasmic reticulum b.Smooth endoplasmic reticulum c. Golgi bodies d. None	( )
15.	In the thylakoid membranes, what is the main role of the antenna pigment molecules? a. harvest photons and transfer light energy to the reaction-center chlorophyll	( )

	b. synthesize ATP from ADP and Pi c. split water and release oxygen to the reaction-center chlorophyll d. transfer electrons to ferredoxin and then NADPH	
16.	Protein packaging and shipment occurs in a. ER and golgi bodies b. Protein. c. Cholesterol d. Glycolipid.	( )
17.	Cell theory given by a. Robert Hook b. Lamark c. Schlieden and Schwan d. Robert Brown	( )
18.	Kreb's cycle occurs in a. mitochondria b. chloroplast c. peroxisome d. all	( )
19.	DNA model given by a. Robert Sanger b. Watson and Crick c. Crick d. Robert Brown	( )
20.	Cells which require large amounts of energy would likely contain relatively high numbers of a. centrioles b. chloroplasts c. Golgi bodies d. mitochondria	( )
21.	Which of the following is monosachharide a. glucose b. sucrose c. starch d. none	( )
22.	Central dogma given by a. Went b. Crick c. Watson d. Sanger	( )
23.	Structural component of cell wall is a. Pectin b. Vitamin c. lipid d. none	( )
24.	Replication occurs in a.cytosol b. nucleus c. mitochondria d.all	( )
25.	Crossing over occurs at a.pachytene b.leptotene c.zygotene d.diplotene	( )
26.	Phospholipid in cell present in a. cell wall b. plasma membrane c. cytosol d. all	( )
27.	Toxic material in plant cell stored in a. cell wall b. plasma membrane c. cytosol d. Vacuole	( )
28.	Tonoplast present in a. cell wall b. plasma membrane c. cytosol d. Vacuole	( )
29.	Spindle fibre attached with chromosome at a. Kinetochore b. Centromere c. Centrosome d. none	( )
30.	Chromosome at equator seen in a. metaphase b. anaphase c. telophase d.prophase	( )

Q.B. Define the following: **(8.00)**

1.	Macromolecule	**(1.00)**
2.	Micromolecule	**(1.00)**
3.	Integral protein	**(1.00)**
4.	Translation	**(1.00)**
5.	Transcription	**(1.00)**
6.	RNA Processing	**(1.00)**

7.	Centromere	**(1.00)**
8.	Binary fission	**(1.00)**

Q.C.	**Write short notes on the following:**	**(20.00)**
1.	Endoplasmic reticulum	**(2.50)**
2.	Golgi bodies	**(2.50)**
3.	Chromosome	**(2.50)**
4.	DNA replication	**(2.50)**
5.	Vacuole	**(2.50)**
6.	Chloroplast	**(2.50)**
7.	Mitochondria	**(2.50)**
8.	Interphase	**(2.50)**

Q.D.	**Answer the following questions:**	**(07.00}**
1.	Describe mitosis with labeled diagram.	**03.00**
2.	Describe meiosis I with labeled diagram.	**04.00**

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