

Total No. of Printed Pages:2

**SUBJECT CODE NO:- B-2023**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.Sc. T.Y.(Sem-V) Examination Oct/Nov 2019**  
**Botany Paper- XV**  
**Cell Biology & Molecular Biology**

[Time: 1:30 Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- i) Attempt all questions.
- ii) Draw neat and well-Labeled diagram whenever necessary.

- Q.1 Describe structure and function of Lysosome 20  
 OR  
 What is Meiosis? Explain the process in detailed with its significance 20
- Q.2 Define giant Chromosome. Explain the structure of polytene and Lampbrush Chromosome 20  
 OR  
 Write Short note on (any four) 20
- a) Function of nucleus
  - b) Significance of mitosis
  - c) Duplication
  - d) Function of DNA
  - e) Endoplasmic Reticulum
  - f) Telomere
- Q.3 Multiple Choice Question 10
- 1) The term chromosome was coined by
    - a) W – Flemming
    - b) W – Roux
    - c) Walldeyer
    - d) Sutton
  - 2) Chromatin is composed of
    - a) DNA
    - b) DNA and Proteins
    - c) DNA, RNA and Proteins
    - d) None of these
  - 3) Which of the following does not contain phosphate
    - a) A nucleotide
    - b) Nucleotide
    - c) DNA
    - d) RNA
  - 4) In Cycle, DNA replication occurs during
    - a) G<sub>1</sub> phase
    - b) G<sub>2</sub> phase
    - c) Metaphase
    - d) S-Phase

- 5) Polytene Chromosomes were first observed by
  - a) Batanetzky – 1980
  - b) Heitz and Bauce – 1935
  - c) Balbiani – 1981
  - d) Steven Sand Wilson – 1905.
  
- 6) Centromere is a part of Chromosome which helps in the
  - a) Division of Centrosomes
  - b) Formation of Spindle fibres
  - c) Movement of Chromosomes
  - d) Formation of nuclear Spindle
  
- 7) The rough endoplasmic reticulum has -----Located on
  - a) Lysosome
  - b) Cytosol
  - c) Ribosome
  - d) Proteins
  
- 8) When DNA Polymerase is in contact with Guanine in the parental strand what does it add to the growing daughter strand
  - a) Phosphate
  - b) Cytosine
  - c) Uracil
  - d) Adenine
  
- 9) The 5' and 3' numbers are related to the
  - a) Length of DNA strand
  - b) Carbon number in Sugar
  - c) The number of prophase
  - d) The base pair rule
  
- 10) DNA Replication takes place in which direction?
  - a) 3' to 5'
  - b) 5' to 3'
  - c) Randomly
  - d) Vary from organism to organism

Time: One Hour

Max. Marks: 50

## Instructions

- Solve any 25 questions from Q1 to Q30
- Solve any 25 questions from Q31 to Q60

- Cell is discovered by \_\_\_\_\_  
(A)Robert Hooke (B)Flemming (C)Bateson (D)Correns
- Cell theory is introduced by \_\_\_\_\_  
(A)Virchow (B)Schleiden and Schwann (C)Sedgwick (D)Weissman
- Following is not prokaryotic cell.  
(A)Bacteria (B)Blue-green algae (C)Chara (D)Mycoplasma
- Characteristic feature of eukaryotic cell is-  
(A)Membrane bound cell organelles (B)circular DNA (C)70 S ribosomes (D)capsid
- Cell wall in Plant cell contains \_\_\_\_  
(A)Vacuoles (B)Centrioles (C)Amino acids (D)Cellulose
- Function of Golgi apparatus is \_\_\_\_\_  
(A)Secretion (B)muscle contraction (C)RNA synthesis (D)Protein synthesis
- Nucleus does not contains \_\_\_\_\_  
(A)Nucleases (B)Ligases (C)DNA Polymerase (D)RNA polymerase
- Nuclear membrane is \_\_\_\_\_  
(A)Single layered (B)double layered (C)Triple layered (D)multi layered
- Endoplasmic reticulum contains \_\_\_\_\_  
(A)70 S ribosomes (B)80 S ribosomes (C)linear DNA (D)vesicles
- Function of nucleolus  
(A)transcription of the genes that code for r-RNA (B)carbohydrate synthesis (C)translation (D)fatty acid synthesis
- Following is a function Endoplasmic reticulum.  
(A)Synthesis of ribosomes (B)Synthesis of DNA (C)Synthesis of RNA (D)Detoxify the drug
- Following is not a part Golgi complex  
(A)cisternae (B)small vesicles (C)large vesicles (D)thylakoid
- Acrosome or sperm head is related to \_\_\_\_\_  
(A)ribosomes (B)lysosome (C)centriole (D)mitochondria
- Intercellular communication is done by  
(A)plasmodesmata (B)vesicles (C)cisternae (D)peroxisome
- Chromatin is made up of \_\_\_\_\_  
(A)DNA (B)Fatty acids (C)ribosomes (D)lysosome
- function of Nucleus is \_\_\_\_\_  
(A)Transcription (B)translation (C)amino acid synthesis (D)glycolysis
- Nucleus is discovered by \_\_\_\_\_  
(A)Miescher (B)Waldeyer (C)O.T.Avery (D)Robert Brown
- In Bacteria rod like structure of the cell is known as  
(A)coccus (B)spherical (C)bacillus (D)spirilla
- In bacterial cell circular DNA is packed in a  
(A)nucleus (B)chromatin (C)chromosomes (D)nucleoid
- Chromatophores in cyanobacteria are functions as \_\_\_\_  
(A)mitochondrion (B)endoplasmic reticulum (C)chloroplast (D)chromosomes
- Orderly sequence of events happens in cells life is called as \_\_\_\_  
(A)Cell division (B)cell multiplication (C)cell cycle (D)cyclosis
- G<sub>1</sub> phase is responsible for\_  
(A)Synthesis of DNA (B)Synthesis of glucose (C)synthesis of RNA (D)Synthesis fats
- Following is the longest phase in the life span of a cell.  
(A)metaphase (B)interphase (C)anaphase (D)telophase
- In case of mitosis what is true  
(A)equational division (B)it takes place in vegetative cell (C)ploidy level remains same (D)all the above are true
- Nucleolar organizer is active in  
(A)prophase (B)metaphase (C)anaphase (D)telophase
- In anaphase chromatids are

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- (A)arranged on equatorial plate (B)dragged towards pole (C)highly coiled (D)degenerate
- 27 Spindle fibres are made up of  
(A)tubulins (B)insulin (C)tryptophan (D)adenine
- 28 Cell plate formation related with  
(A)prophase (B)metaphase (C)anaphase (D)telophase
- 29 Homologous chromosomes pairs together is known as  
(A)Synapsis (B)symbiosis (C)cytokinesis (D)karyokinesis
- 30 Crossing over takes place between  
(A)homologous chromosomes (B)non-homologous chromosomes (C)extra chromosomes (D)none of the above
- 31 Chiasmata appear in which of the following phase?  
(A)leptotene (B)zygotene (C)diplotene (D)diakinesis
- 32 At the end of meiosis II products are  
(A)two daughter cells (B)four daughter cells (C)eight daughter cells (D)none of the above
- 33 The process of meiosis is responsible for  
(A)keep chromosome number constant (B)double the chromosome number (C)change the chromosome number (D)none of the above
- 34 In DNA sugar contains\_\_  
(A)six carbon (B)five carbon (C)twelve carbon (D)four carbon
- 35 In DNA Adenine is pairs with  
(A)Guanine (B)Cytosine (C)Urasil (D)Thymine
- 36 Following is a purine type of nitrogen base  
(A)urasil (B)thymine (C)cytosine (D)adenine
- 37 t-RNA is known as a  
(A)soluble RNA (B)messenger RNA (C)ribosomal RNA (D)insoluble RNA
- 38 m-RNA is involved in  
(A)transcription (B)translation (C)transduction (D)transfer of amino acids
- 39 RNA in eukaryotic organisms is  
(A)genetic RNA (B)double stranded (C)non-genetic RNA (D)none of the above
- 40 Flow of information from RNA to DNA is known as  
(A)Protein synthesis (B)transcription (C)reverse transcription (D)none of the above
- 41 Spherical bead like structure found in chromatin is known as  
(A)nucleosome (B)chromatids (C)nucleoid (D)chromonema
- 42 following is not part of core of nucleosome  
(A)H1 (B)H2a (C)H2b (D)H3
- 43 Classification of Chromosomes is based on  
(A)position of secondary constriction (B)length of chromosome (C)position of centromere (D)width of chromosome
- 44 Chromosome is longitudinally split into two parts those are  
(A)chromonema (B)chromomers (C)chromatids (D)telomers
- 45 Barr body is an example of  
(A)heterochromatin (B)hyperchromatin (C)euchromatin (D)none of the above
- 46 Polytene chromosome is also known as  
(A)adrenal gland chromosome (B)long chromosome (C)salivary gland chromosome (D)tiny chromosome
- 47 Lampbrush chromosome is found in  
(A)chironomous larvae (B)buccal cavity of larvae (C)oocyte of amphibeans (D)none of the above
- 48 Euchromatin in chromosome is  
(A)transcriptionally non active (B)transcriptionally active (C)translationally non active (D)translationally active
- 49 A chromosome in which centromere is located at the end is known as  
(A)telocentric (B)acrocentric (C)metacentric (D)submetacentric
- 50 Nucleosomes are made up of DNA and  
(A)RNA (B)Non histon proteins (C)histone proteins (D)lipids
- 51 Down's syndrome is an example of  
(A)Trisomy (B)tetrasomy (C)polyploidy (D)haploidy
- 52 Bread wheat is an example of  
(A)Triploidy (B)tetraploidy (C)diploidy (D)hexaploidy
- 53 Duplication is takes place between  
(A)same chromosome (B)homologous chromosome (C)different chromosome (D)none of the above
- 54 A part of chromosome breaks and attaches to another non homologous chromosome in the process  
(A)deletion (B)translocation (C)inversion (D)none of the above
- 55 When number of sets of chromosomes is changes it is

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- (A)aneuploidy (B)euploidy (C)inversion (D)none of the above
- 56  $2n-1$  is an example of  
(A)deletion (B)translocation (C)inversion (D)monosomy
- 57 Inversion is an example of  
(A)euploidy (B)aneuploidy (C)structural aberrations (D)none of the above
- 58 following is the function of the chromosome  
(A)to carry information from one generation to next (B)to carry information from one cell to another cell (C)to carry information from one part to another (D)none of the above
- 59 Ends of the chromosome are known as  
(A)telomers (B)telocentres (C)chromotids (D)none of the above
- 60 Coloured bodies appears at the time of cell division are known as  
(A)Chromosomes (B)chromomers (C)chromotids (D)none of the above

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**SUBJECT CODE NO:- B-2041**  
**FACULTY OF SCIENCE & TECHNOLOGY**  
**B.Sc. T.Y. (Sem-V)**  
**Examination November/December- 2022**  
**Botany Paper- XV**  
**(Cell Biology & Molecular Biology)**

[Time: 1:30 Hours]

[Max. Marks:50]

Please check whether you have got the right question paper.

N.B

- i) Attempt all questions-
- ii) Draw neat and well-labelled diagrams wherever necessary.

Q.1 Describe in details structure and functions of nucleus. 20

OR

Describe in details double helical structure of DNA.

Q.2 What is Giant chromosome? Write in detail polytene and Lampbrush chromosome. 20

OR

Write short notes on (Any four)

- a) Lysosomes
- b) Prokaryotic cell
- c) Cell cycle
- d) Cytokinesis
- e) Heterochromatin
- f) Trisomy

Q.3 Multiple choice questions 10

- 1) Following is an example of prokaryotic organism
  - a) E. coli      b) Chara      c) China rose      d) Cycas
- 2) Golgi bodies are made up of
  - a) cisternae      b) thylakoids      c) quantasome      d) chromatin

- 3) The space between nuclear membranes is known as  
a) Intercellular space    b) Nuclear pore    c) Perinuclear space    d) Lamella
- 4) \_\_\_\_\_ is a preparatory phase in cell division  
a) Prophase    b) Interphase    c) Anaphase    d) Pachytene
- 5) Subunit of 80 s ribosomes are  
a) 60 S + 40 S    b) 50 S + 30 S    c) 100 S    d) 80 S + 20 S
- 6) Anticodons are present on  
a) M-RNA    b) t-RNA    c) r-RNA    d) all the above
- 7)  $2n+2$  condition is known as \_\_\_\_\_  
a) Trisomy    b) Monosomy    c) Nullisomy    d) Tetrasomy
- 8) Centromere is located at end of chromosome in  
a) Metacentric    b) Submetacentric    c) Acrocentric    d) Telocentric
- 9) If the cell has a  $2n-2$  genomic formula, then this condition is known as \_\_\_\_\_  
a) Monosomic    b) Nullisomic    c) Trisomy    d) Tetrasomy
- 10) In \_\_\_\_\_ two non-homologous chromosomes exchange their segments  
a) Duplication    b) Deletion    c) Translocation    d) Inversion

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**SUBJECT CODE NO: - Y-2041**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.Sc. T.Y (Sem-V)**  
**Examination March / April – 2023**  
**Botany Paper- XV/ (Cell Biology & Molecular Biology)**

**[Time: 1:30 Hours]**

**[Max. Marks: 50]**

Please check whether you have got the right question paper.

N. B

- 1) Attempt all questions.
- 2) Draw neat and well labelled diagrams wherever necessary.

Q1 Describe structure and function of nuclear 20

**OR**

Write in detail structure and function of mANA and RNA.

Q2 What is chromosomal aberration? Add note on euploidy and aneuploidy 20

**OR**

Write short note on (any four)

- a) Cell wall
- b) Lysosome
- c) Cell cycle
- d) Nucleotide
- e) Nucleosome
- f) Lampbrush chromosome

Q3 Multiple choice question 10

- 1) The fluid mosaic model of plasma membrane was proposed by \_\_\_\_\_
  - a) Singer and Nicolson
  - b) Davson and Danielli
  - c) Singer and Davson
  - d) Gorter and Grendel



- 2) Secondary lysosomes are produced by fusion of \_\_\_\_\_
  - a) Phagosome and pinosome
  - b) Phagosome and primary lysosome
  - c) Phagosome and Golgi apparatus
  - d) Pinosome and Golgi apparatus
- 3) The size of the nucleus depends on \_\_\_\_\_
  - a) The size of the cytoplasm
  - b) The size of the organism
  - c) The chromosome number of the cell
  - d) All of these
- 4) Which of the following enzymes is useful in unwinding of DNA during replication?
  - a) DNA polymerase
  - b) Helicase
  - c) DNA ligase
  - d) Endonuclease
- 5) In meiosis, crossing over takes place in which of the following phases?
  - a) Leptonema
  - b) Pachynema
  - c) Zygotene
  - d) Diplotene
- 6) Nuclear DNA replicates in which of the following phases of the cell cycle?
  - a) G1 phase
  - b) G2 phase
  - c) M phase
  - d) S phase

- 7) In plant cell DNA is present in \_\_\_\_\_
- a) Nuclear only
  - b) Nuclear, mitochondria and chloroplast
  - c) Nuclear and lysosome
  - d) Nuclear and vacuole
- 8) Which of the following is condition of trisomy in human?
- a)  $2n + 2$
  - b)  $2n-2$
  - c)  $2n+1$
  - d)  $2n$
- 9) Cri du chat is caused due to \_\_\_\_\_ in chromosome
- a) Deletion
  - b) Duplication
  - c) Translocation
  - d) All of the above
- 10) Polytene chromosome was first reported by \_\_\_\_\_
- a) Robert Brown
  - b) Mendel
  - c) Linber
  - d) E.G Balbiani

Total No. of Printed Pages:03

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**B.Sc. T.Y (Sem-V)**  
**Examination March / April – 2023**  
**Botany Paper- XV/ (Cell Biology & Molecular Biology)**

**[Time: 1:30 Hours]****[Max. Marks: 50]**

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Write in detail structure and function of mANA and RNA.

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Write short note on (any four)

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- d) Nucleotide
- e) Nucleosome
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  - c) Phagosome and Golgi apparatus
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- 3) The size of the nucleus depends on \_\_\_\_\_
  - a) The size of the cytoplasm
  - b) The size of the organism
  - c) The chromosome number of the cell
  - d) All of these
- 4) Which of the following enzymes is useful in unwinding of DNA during replication?
  - a) DNA polymerase
  - b) Helicase
  - c) DNA ligase
  - d) Endonuclease
- 5) In meiosis, crossing over takes place in which of the following phases?
  - a) Leptotene
  - b) Pachytene
  - c) Zygotene
  - d) Diplotene
- 6) Nuclear DNA replicates in which of the following phases of the cell cycle?
  - a) G1 phase
  - b) G2 phase
  - c) M phase
  - d) S phase

- 7) In plant cell DNA is present in \_\_\_\_\_
- a) Nuclear only
  - b) Nuclear, mitochondria and chloroplast
  - c) Nuclear and lysosome
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