Printing Pages :2

Paper Code: B020502T C (SVSU:2024-25/R)

Enrollment No.

Program Name: B.Sc. Chemistry/ Botany

V SEMESTER / III YEAR EXAMINATION

B020502T

REARRANGEMENTS AND CHEMISTRY OF GROUP ELEMENTS

[Time : 3:00 Hours] **[Max. Marks : 7**

Note : Attempt all the questions as per given instructions.

I Multiple Choice Questions (MCQs) [15×1=15

1. Schmidt reaction is found by the conversion of
   a) aliphatic acids b) aromatic acids
   c) both aliphatic & aromatic acids d) none
2. Which one of the following alkaline earth metals is most abundant ir the earth's crust?
   a) Be b) Ca c) Sr d) Ra
3. Efficiency of a catalyst depends upon
   a) molecular mass b) room temperature
   c) absolute temperature d) optimum temperature
4. The name catalyst was proposed by
   a) Rutherford b) Langmuir c) Graham d) Berzeliu
5. Percentage of argon in air is about
   a) 10% b) 0.1% c) < 0.1% d) 1%
6. Which of the following is expected to be diamagnetic?
   a) $CrCl_3$ b) $CuCl_2$ c) $ZnCl_2$ d) $CuSO_4$
7. The stables oxidation state of Au is
   a) I b) III c) V d) -I
8. Neptunium is radioactive and emits a beta particle giving
   a) Plutonium b) Samarium c) curium d) Californium
9. The number of bridging carbonyl groups in $Fe_3(CO)_{12}$ is
   a) 0 b) 1 c) 2 d) 3
10. Which of the following will have highest CO stretching frequency?
    a) $Cr(CO)_6$ b) $Mn(CO)_6^+$
    c) $V(CO)_6$ d) $Fe(CO_4)^{2-}$
11. _____ is bound to heme in a
    a) O_2&bent form b) O_2&linear form
    c) O_2&tetrahedral form d) O_2&Bridged form
12. Which of the following is a naturally occurring actinide?
    a) Cf b) Pu c) Th d) No
13. Which of the following has three bridging CO groups?
    a) $Co_4(CO)_{12}$ b) $Fe_3(CO)_{12}$ c) $Co_2(CO)_8$ d) $Fe_2(C$
14. During biological N_2 fixation, nitrifying bacteria convert
    a) NO^{3-} to NH^{4+} b) N_2 to NH^{4+}

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Printing Pages :2

Paper Code: B020501T C (SVSU:2024-25/R)

Enrollment No.

B.Sc. C 3rd Ye

Program Name: B.Sc. Chemistry/ Botany

V Semester / 3rd Year Examination

Subject Code: B020501T

Subject Name: ORGANIC SYNTHESIS-A

[Time : 03:00 Hours] **[Max. Marks : 75]**

Note: 1. Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01×15=15]**

I Hydrocarbons are
(a) Insoluble in water (b) Composed of carbon and hydrogen
(c) Both of these (d) None of these

II Which of the following compounds will give cyclopropane on treatment with sodium in dry ether?
(a) 1,3-Dibromopropane (b) 1,1-Dibromopropane
(c) 1,2-Dibromopropane (d) 2,2-Dibromopropane

III 2-Butene reacts with HBr to give
(a) 1-Bromobutane (b) 2,3-Dibromobutane
(c) 2-Bromobutane (d) 2,2-Dibromobutane

IV Which of the following alkenes react with HBr in the presence of a peroxide to give anti-Markawnikoff's product?
(a) 1-Butene (b) 2,3-Dimethyl-2-butene (c) 2-Butene (d) 3-Hexene

V Which of the following compounds will react with ammonical silver nitrate?
(a) 1-Butene (b) 1-Butyne (c) 2-Butene (d) 2-Butyne

VI Ozonolysis of 2-Butyne gives:
(a) Formic acid (b) Propanoic acid (c) Acetic acid (d) Butanoic acid

VII Naphthelene undergoes reduction with H_2 in the presence of Ni catalyst at high temperature and pressure to give
(a) Phthalic acid (b) Decalin (c) Benzoic acid (d) Tetralin

VIII Toluene reacts with bromine in the presence of UV light to give
(a) m-Bromotoluene (b) Benzyl bromide
(c) o-Bromotoluene (d) Benzoyl bromide

IX Ethylene glycol reacts with excess of PCl_5 to give
(a) Chloroethane (b) 1,2-Dichloroethane
(c) Hexachloroethane (d) 1,3-Dichloroethane

X When ethylene glycol is heated with concentrated HNO_3, it form
(a) Oxalic acid (b) Ethylene oxide
(c) Dioxane (d) Diethylene glycol

15. Which symbiotic bacteria are capable of fixing N_2?
a) Clostridium pasteurianum b) Rhizobia
c) Azobacter d) Nitrogenase

II Answer in long (any three) **[10×3=30]**

1. What is benzyl-benzilic acid rearrangement?
2. Explain the mechanism of enzyme reactions in detail?
3. Write the preparation and chemical properties of (i) phosphorous acid and (ii) orthophosphoric acid
4. Give the preparation of platinum compounds and its properties?
5. Define the iron porphyrins and its application.

III. Answer in short (any five) **[6×5=30]**

1. Define the types of catalysts with relevant examples.
2. What is the role of hemoglobin in living systems?
3. What are the fission fuels? How human beings get benefited from fission fuels?
4. Discuss about the extraction methods of Lanthanides from monazite.
5. Define the applications of superconducting materials.
6. Explain the color production of transition metal complexes on the basis of crystals field theory.
7. Give the preparation of the xenon tetrafluoride and what are the chemical properties?
8. Define the adsorption theory of catalyst.
9. Write about essential trace elements. How they are essential for human beings?
10. What is the role of Mg^{2+} and Ca^{2+} in biological systems?

Which group forms the strongest H-bonds to water molecules?
(a) Alcohols (b) Ethers (c) Phenols (d) All equally strong

Phenol is acidic because of
(a) Resonance (b) Electromeric effect
(c) Inductive effect (d) Peroxide effect

Diethyl ether on heating with excess concentrated HI gives
(a) Methyl iodide (b) Isopropyl iodide
(c) Ethyl iodide (d) n-Propyl iodide

Cyclic ethers with three-membered ring are called
(a) Lactones (b) Oxiranes (c) Alkoxides (d) Epoxy resins

Aryl halides are less reactive towards nucleophilic substitution as compared to alkyl halides due to
(a) Inductive effect (b) Resonance stabilization
(c) Tautomerism (d) Stereoisomerism

Answer in long (any three) **[10×3=30]**

Discuss the mechanism of electrophilic addition reactions in alkenes.

Write down the notes on aromatic electrophilic substitution reactions of naphthalene and Haworth's synthesis of naphthalene.

Describe the synthesis of glycerol from carbon and hydrogen elements.

Explain the following with reason:
(a) Phenols are more acidic than alcohols but less acidic than carboxylic acids?
(b) O-Nitrophenol has lower boiling point than p-nitrophenol?

What are alkyl halides? How are they prepared? Describe their important reactions.

Answer in short (any five) **[6x5=30]**

What are dienes? Write the general formula of dienes. How many types of dienes are found?

The C-C bonds in cyclopropane are weaker than the C-C bonds in propane. Explain this fact on the basis of molecular orbital theory.

Write a note on pyrolysis and halogenation of alkanes.

What is dissolving metal reduction of alkynes?

What happens when acetylene is passed through ammonical silver nitrate and ammonical cuprous chloride solution?

Discuss the Kekule's structure of Benzene.

How does ethylene glycol react with PCl_5 and $SOCl_2$?

Why alcohols behave as very weak acids?

Explain the term ethers with its classification and nomenclature

How will you synthesize DDT and BHC?

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Printing Pages :2

Paper Code: BCBZ/BPCM-502B B (SVSU:2024-25/R)

Enrollment No.

Program Name: B.Sc-PCM/B.Sc-CBZ

Semester V/ Year III Examination

Subject Code: BPCM-502B/BCBZ-502B

Subject Name: Industrial Chemicals and Environment

[Time : 03:00 Hours] **[Max. Marks : 7**

Note : 1. Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01×15=1**

I The Taj Mahal, Lotus Temple, Golden Temple, India Gate and oth famous heritage monuments are being affected by
(a) Air pollution (b) Water pollution
(c) Noise pollution (d) All of the above

II Which of the following is the most abundant constituent found in li organisms?
(a) Oxygen (b) Water (c) Ammonia (d) Hydrogen bicarbo

III Which of the following petroleum product is used as a solvent for c cleaning clothes?
(a) Petrol (b) Liquified petroleum gas
(c) Lubricating oil (d) All of the above

IV How much percentage of total global carbon does the atmosphere contain?
(a) 5 % (b) 50 % (c) 1% (d) 20 %

V What can be visualized as a functional unit of nature?
(a) Humans (b) Ecosystem (c) Vehicles (d) Plants

VI Smoke, fumes, ash, dust, nitric oxide and sulphur dioxide are the ma sources of _____.
(a) Primary Pollutants (b) Secondary pollutants
(c) Bio-Degradable Pollutants (d) None of the above

VII Which of the following diseases are caused by smog?
(a) Rickets (b) Bronchitis (c) Breathing Problems (d) All

VIII Out of the total quantity of global carbon, what percent of carbon is found dissolved in oceans?
(a) 50 % (b) 71 % (c) 90 % (d) 25 %

IX Which of the following climatic conditions regulate the functioning

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Printing Pages :2

Paper Code: B040501T B (SVSU:2024-25/R)

Enrollment No.

Program Name: B.Sc. (Botany, Zoology, Chemistry) – V SEM.

IIIrd YEAR EXAMINATION

Subject: Plant Physiology, Metabolism & Biochemistry

Subject Code: B040501T

[Time : 3:00 Hours] **[Max. Marks : 70]**

Note: Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01×15=15]**

I. Which element is essential for pollen germination?
(a) Na b) B
c) Mo d) Co

II. Diffusion is mainly a:
(a) mechanical process (b) physical process
(c) chemical process (d) biological process

III. When two kinds of molecules move in the opposite directions is called:
(a) Uniport (b) Symport
(c) Antiport (d) Export

IV. Which of the following is not the property of water?
(a) Nonpolar molecule (b) Excellent solvent
(c) High heat of vaporization (d) High specific heat

V. During high wind velocity, the stomata of plants:
(a) Remain open (b) Close down
(c) Open more widely (d) Remain unaffected

VI. Cohesion of water molecules is due to:
(a) Diffusion (b) Osmosis
(c) Gravitational force (d) Surface tension

VII. Name the term which is given for the movement of water through a semipermeable membrane?
(a) Diffusion (b) Osmosis
(c) Tonicity (d) Transpiration

VIII Loss of water from aerial parts of plants in the form of waters vapors is called as:
(a) Transpiration (b) Guttation
(c) Evaporation (d) all of above

X What is the chemical formula of acetylene?
(a) C_3H_3 (b) C_4H_4 (c) C_2H_2 (d) C_4H_4

XI Which of the following gases are called Greenhouse gases?
(a) Methane (b) Nitrogen (c) Carbon dioxide (d) Both a and c

XII Chlorine is used as a bleaching agent. The bleaching action is due to
(a) oxidation (b) chlorination (c) hydrogenation (d) reduction

XIII Which of the following statements is true about SMOG?
(a) SMOG is derived from the fog
(b) SMOG is derived from smoke
(c) SMOG is derived from water vapour
(d) SMOG is derived from both fog and smoke

XIV Which of the following salts are the main causes of temporary hardness?
(a) Magnesium carbonate (b) Magnesium sulphate
(c) Magnesium chloride (d) Calcium sulphate

XV Which of the following is mainly responsible for the causes of water pollution?
(a) Afforestation (b) Oil refineries
(c) Paper factories (d) Both b and c

2. Answer in long (any three) **[10×3=30]**

I How can we prepare sodium thiosulphate? Discuss the applications and properties of sodium thiosulphate.

II Discuss about pollution in brief? How many types of pollution are there? What are the sources of surface and ground water pollution.

III Describe the hydrological cycle. Explain the nitrogen cycle in detail.

IV What are the greenhouse effects? Discuss in brief the major causes of greenhouse effects.

3. Answer in short (any five) **[5x5=25]**

I Green plants use carbon dioxide for photosynthesis and return oxygen to the atmosphere, even then carbon dioxide is considered to be responsible for the greenhouse effect. Explain why?

II Write the short note on hydrogen peroxide.

III Describe biological oxygen demand and chemical oxygen demand with example.

IV Elaborate the air pollution control with examples.

V Which are the limiting factors for aquatic life?

VI What are petrochemicals? State some harmful effects of using fossil fuels.

VII Explain sources of energy with applications.

IX. Guttation is responsible in plants due to:
(a) Root pressure (b) Photosynthesis
(c)Transpiration (d) Osmosis

X. Auxins were first isolated from
(a) Corn germ oil (b) Rhizopus (c) Urine (d) Avena tip

XI. Photosynthesis occurs in:
(a) Chloroplast (b) Golgi body
(c) Endoplasmic reticulum (d) Nucleus

XII. Kranz anatomy is found in the leaves of :
(a) Wheat (b) Mustard (c) Potato (d) Sugarcane

XIII. Oxidative phosphorylation usually refers to:
(a) Anaerobic production of ATP
(b) Citric acid cycle production of ATP
(c) Alcoholic fermentation
(d) None of the above

XIV Formation of the nodule is induced by:
(a) IAA (b) NAA (c) IBA (d) Both (a) and (c)

XV. Gaseous plant hormone is—
(a) IBA (b) Ethylene (c) Abscisic acid (d) NAA

2. Answer in long (any three) **[10×3=30]**

I. What is photosynthesis? Give a detailed account on factors affecting the photosynthesis.

II. Write the roles and deficiencies of macro elements in plants.

III. Give a detailed account on transpiration and guttation.

IV What is Vernalization? Explain the physiological role of Auxin and Gibberellins in plants.

3. Answer in short (any five) **[5x5=25]**

I. Give the short notes on Ethylene hormone.

II. Describe the process of photorespiration.

III. Give the short notes on phloem structure and their functions.

IV. What are Enzymes? Discuss their mechanism of action.

V. What is role of xylem in plant?

VI. Describe the guttation in plant with suitable example.

VII. Explain about Long day plant.

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Printing Pages :2
Paper Code: B040502T C (SVSU:2024-25/R)

Enrollment No.														

Program Name: B.Sc. Botany/Chemistry/Zoology
V Semester / III Year Examination
Subject Code: B040502T
Subject Name: Molecular Biology and Bioinformatics

[Time : 03:00 Hours] **[Max. Marks : 70]**

Note : Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01×15=15]**

I Which RNA is having least age?
(a) Mrna (b) tRNA (c) rRNA (d) none of these

II Who discovered the entire genetic code?
(a) Nirenberg (b) Ochoa (c) Khorana (d) Crick

III Who performed transformation experiments in bacteria?
(a) Louis Pasteur (b) Griffith
(c) Macleod (d) Meselson and Stahl

IV What is the type of coiling in DNA?
(a) Right handed (b) Left handed (c) Opposite (d) Zig-zag

V DNA is associated with highly basic proteins called:
(a) Histone (b) Non-histone
(c) Albumins (d) All of these

VI The gene not expressing any protein is known as:
(a) Epistatic gene (b) Hypostatic gene
(c) Pseudogene (d) None of these

VII What is the role of the promoter in gene expression?
(a) It binds to the RNA polymerase
(b) It helps in protein folding
(c) It stops transcription
(d) It binds to the ribosome

VIII Which of the following databases is primarily used to store protein sequence data?
(a) GenBank (b) Uni Prot (c) PDB (d) NCBI GEO

IX Which of the following mutations will not result in a change to the protein sequence?

XI Mycellium produces white or colored umbrella shaped fruiting bodies called:
(a) Haphae (b) Basidiocarp (c) Annalus (d) Seta

XII Basidiocarp consist of a fleshy stalk called _____ and umbrella like head borne on its top called _____
(a) Hyphae and Seta (b) Seta and Annalus
(c) Annalus adn Antheridia (d) Stipe and Pileus

XIII When young fruiting body is completely enveloped by a thin membrane, it is called
(a) Mycelium (b) Rhizoids (c) Velum(veil) (d) Septate

XIV With the growth of _____ velum gets ruptured, while a part of it remained attached to stipe in the form of ring or_____.
(a) Basidiocarp and Slender (b) Pileus and Annalus
(c) Pyrenoid and Conjugation (d) Hyaline and Pyrenoid

XV On the lower side of Pileus number of vertical plates like structure are present called_____
(a) Spores (b) Organelles
(c) Mushroom Dryopteris (d) Gills

2. Answer in long (any three) **[10×3=30]**

I Write an illustrated account on cultivation of white button mushroom.

II Discuss the nutritional and medicinal value of mushroom.

III Write the procedure of any two recipe of mushroom.

IV Discuss about long term storage of mushroom.

3. Answer in short (any five) **[5x5=25]**

I How will you prepare bed for mushroom cultivation.

II What are poisonous mushrooms? Give a detailed account.

III What is low cost technology? Discuss on it.

IV Give a brief history of mushroom.

V What do you mean by short term storage? Briefly discuss on it.

VI Briefly describe about drying storage in salt solution.

VII Discuss about different research centers of mushroom.

X In eukaryotic cells, transcription occurs in the:
(a) Nucleus (b) Cytoplasm (c) Mitochondria (d) Ribosome

XI Who discovered the DNA?
(a) Freidrich Miescher (b) Watson and Crick
(c) Franklin (d) Levene

XII Which enzyme is responsible for unwinding the DNA during replication?
(a) DNA polymerase (b) Helicase (c) Ligase (d) Primase

XIII What is the function of ribosomes?
(a) Protein synthesis (b) Fat synthesis
(c) Both (d) None

XIV The operator gene of lac operon is turned on when lactose molecule binds to:
(a) Operator gene (b) Repressor gene
(c) Promotor site (d) mRNA

XV Tertiary structure of protein having amino acids cysteine in achieved through:
(a) Ionic bonds (b) Covalent bonds
(c) Disulphide bonds (d) Hydrogen bonds

2. Answer in long (any three) [10×3=30]

I Describe the process thought to be responsible for protein degradation in eukaryotes.

II Give an account of Waston and Cricks model of DNA molecule.

III Describe the structure of *E..coli* and role of RNA polymerase in RNA synthesis on DNA template.

IV Give a detailed explanation of Golden rice and Bt-cotton.

3. Answer in short (any five) [5x5=25]

I Write the short note on lac operon or Z-DNA.

II Explain the eukaryotic Transcription initiation Factors along with their functions.

III Discuss the mechanism of gene regulation in Tryptophan Operon.

IV Can nucleosome contain the DNA for one gene? Explain.

V Difference between transformation and transduction.

VI Define the scope of bioinformatics.

VII Give the short notes on first transgenic crop.

XI Mycellium produces white or colored umbrella shaped fruiting bodies called:
(a) Haphae (b) Basidiocarp (c) Annalus (d) Seta

XII Basidiocarp consist of a fleshy stalk called _____ and umbrella like head borne on its top called _____
(a) Hyphae and Seta (b) Seta and Annalus
(c) Annalus adn Antheridia (d) Stipe and Pileus

XIII When young fruiting body is completely enveloped by a thin membrane, it is called
(a) Mycelium (b) Rhizoids (c) Velum(veil) (d) Septate

XIV With the growth of _____ velum gets ruptured, while a part of it remained attached to stipe in the form of ring or_____.
(a) Basidiocarp and Slender (b) Pileus and Annalus
(c) Pyrenoid and Conjugation (d) Hyaline and Pyrenoid

XV On the lower side of Pileus number of vertical plates like structure are present called_____
(a) Spores (b) Organelles
(c) Mushroom Dryopteris (d) Gills

2. Answer in long (any three) [10×3=30]

I Write an illustrated account on cultivation of white button mushroom.

II Discuss the nutritional and medicinal value of mushroom.

III Write the procedure of any two recipe of mushroom.

IV Discuss about long term storage of mushroom.

3. Answer in short (any five) [5x5=25]

I How will you prepare bed for mushroom cultivation.

II What are poisonous mushrooms? Give a detailed account.

III What is low cost technology? Discuss on it.

IV Give a brief history of mushroom.

V What do you mean by short term storage? Briefly discuss on it.

VI Briefly describe about drying storage in salt solution.

VII Discuss about different research centers of mushroom.

Printing Pages :2 21/12/24

Paper Code: BCBZ-505B A (SVSU:2024-25/R)

Enrollment No.

B.Sc. CBZ

V SEMESTER / 3rd YEAR EXAMINATION

Animal Biotechnology

Subject code: BCBZ-505B

[Time : 3:00 Hours] **[Max. Marks : 70]**

Note: 1. Attempt all the questions as per given instructions.

I Long Question : Answer Any Three [10×3=30]

1. Define genomic library? How is cDNA library constructed?
2. What is PCR? Describe the process with the help of diagram.
3. What do you understand from blotting? Describe the Western blotting technique.
4. Describe the DNA Sequencing by Sanger method. (DNA Seq: TAGCCTATGT)
5. What do you understand by DNA Finger printing? Explain it with the help of case study.

II. Short Question: Answer any Five **[5×5=25]**

1. What is plasmid ? Discuss it with the help of diagram.
2. Write a short note on Animal cell culture.
3. Write a note on Biotechnology in medicine field.
4. Production of cloned animals by DNA microinjection.
5. Define the role of Agrobacterium to produce recombinant plate.
6. Give a brief account of M13 vector.
7. Give an account of the bacteriophage vector.
8. What are transgenic animals? Describe the production of transgenic animals.
9. Write a short note on molecular diagnosis of genetic diseases(Sickle cell anemia).
10. Write a short note on shuttle vectors.

III. Objectives Question: Answer All Question **[15×1=15]**

1. Plasmid vector discovered by
   a) Willum Hays & Joshua Lederberg b) Mel Simon
   c) Willium Hays d) Alec Jefferys
2. The first transgenic plant to be produced is
   a) Brinjal b) Tobacco c) Rice d) Cotton
3. PCR technique was invented by

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Printing Pages :2

Paper Code: BCBZ-504A C (SVSU:2024-25/R)

Enrollment No.

Program Name: B.Sc. CBZ

V Semester / III Year Examination

Subject Code: BCBZ 504A

Subject Name: Cell and Molecular Biology

[Time : 03:00 Hours] **[Max. Marks : 70]**

Note : 1. Attempt all the questions as per given instructions.
2. Fill the correct answer of MCQs

1. Multiple Choice Questions (MCQs) **[01×15=15]**

I Who is the discoverer of cell:
(a) Robert Hooke (b) Robert Brawn
(c) Both a & b (d) none of these

II Smallest cell found in—
(a) Bacteria (b) Fungi (c) Viruses (d) Ostrich

III Bacteria is –
(a) Eukaryotic (b) Prokaryotic
(c) PPLO (d) None of the above

IV **4.** Plastids are found in:
(a) Plant cell (b) animal cell
(c) Both a & b (d) none of these

V **5.** The name Bioplast was given to:
(a) Nucleus (b) Ribosome
(c) Chloroplast (d) Mitochondria

VI The function of the Nucleolus is—
(a) Synthesis of nucleoplasm (b) Osmoregulation
(c) ecretion (d) Formation of ribosomes

VII What is the function of Ribosomes?
(a) Protein synthesis (b) Fat synthesis
(c) Both (d) None

VIII Which of the following feature of plants cell?
(a) Chloroplast (b) Cellulosome
(c) Haemoglobin (d) F factor

IX What is the chemical nature of nucleic acids?
(a) Highly acidic (b) Basic (c) Mild acidic (d) Neutral

X Nucleoid is the characteristic of:
(a) Plants (b) Animals (c) Fungi (d) Bacteria

4. Plasmids are used as cloning vectors for which of the following reasons?
a) Can be multiplied in culture
b) Self-replication in bacterial cells
c) Can be multiplied in laboratories with the help of enzymes
d) Replicate freely outside bacterial cell

5. Ti plasmids are ____ plasmids.
a) Tumor inducing b) Degradation
c) High copy number d) Mammalian

6. Which of the following is not a type of plasmid?
a) F b) R c) Ti d) T4

7. B-galactosidase enzyme is responsible for colour colony produce
a) green b) brown c) yellow d) blue

8. Which of the following vectors is correctly matched according to correct base pairs they can clone
a) Plasmid————45kbb) Bacteriophage——24kb
c) Cosmid————100kbd) YAC————10kb

9. DNA finger printing is discovered by
a) Alec Jefferys b) Willium Hays
c) Boliver Rodriguiz d) Mel Simon

10. Which of following vectors have cohesive ends called cos site
a) Phage M13b) λ phage vectorsc) YACd) BAC

11. Southern blotting is
a) Attachment of probes to DNA fragments
b) Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet
c) Comparison of DNA fragments to two sources
d) Transfer of DNA fragments to electrophoretic gel from cellulose membrane

12. Chain termination is a type of_____
a) Sequencing b) Vector generation
c) Antibiotic productiond) Gene manipulation

13. The polymerase chain reaction is_____.
a) It is a DNA sequencing technique.
b) It is a DNA degradation technique
c) It is a DNA amplification technique
d) All of the above

14. How many DNA duplexes are obtained from one DNA duplex after 4 cycles of PCR?
(a) 8(b) 4(c) 32(d) 16

15. In animal cell culture the CO_2 levels in the incubators are usually maintained at

XI The mtDNA is—
(a) Bacteria DNA (b) ds DNA of mitochondrion
(c) A part of cellular DNA (d) None of the above

XII Who discovered the chromosome?
(a) Watson Krick (b) E.G. Balbiani
(c) Robert Brown (d) Mendal

XIII Who has given the cell theory?
(a) Antony von Leeuwenhoek (b) Robert Hook
(c) Robert Brown (d) Schleiden and Swan

XIV Where the plasmodesmata occur?
(a) In Plant cell (b) In bacterial cell
(c) In mycoplasma (d) In chloroplast

XV Chromatin is found in:
(a) Plasma membrane (b) Nucleus
(c) Golgi complex (d) Ribosome

2. Answer in long (any three) **[10×3=30]**

I What is endoplasmic reticulum? Explain its structure and functions with the help of appropriate diagrams.

II What is nucleosome? Describe all the models of DNA packaging.

III Give a detailed account of Plasma membrane models with suitable diagram.

IV Describe the shape, size, structure and functions of mitochondria.

3. Answer in short (any five) **[5x5=25]**

I Explain the power house of the cell.

II Write a note on protein factory of the cell.

III Describe the types of ribosomes and make the difference between.

IV Write a note on nucleoplasm and its components.

V Give a note on crossing over and chiasma.

VI What is chromatin? Explain it.

VII Write a note on nucleolus.