ATKT Exam, Sem-I

FYBSC-BT

March-2024

FYBSc-BT

ATKT Exam

Sem-I

March-2024

D.B.J. College, Chiplun
AIKT Exam March 2024
Sem I
FYBSC (Bio Tech)
Sub: Ability Enhancement course

FYBSC B.T
2/3/24

Time – 2 1/2 hours Marks–75

Note: Attempt **all** questions.
All questions carry **equal** marks.
For **Q.2,Q.3 and Q.4** attempt A and B **OR** C and D
Draw **neat labeled diagrams** wherever necessary.

Q.1 **A) Answer the following. (Any fifteen)** (15)

1. Why is cover letter important?
2. Enlist any two features of functional resume.
3. What is on-site interview?
4. Can I come with you to the book fair? (identify the type of sentence)
5. Why planning presentation is important?
6. Enlist the types of group discussion.
7. The climate in Kodaikanal is very pleasant. (Identify the parts of speech)
8. What is communication?
9. Give tips for web interview etiquette.
10. How is personal grooming important in Personality development?
11. Why is EQ more important than IQ?
12. What are the features of non-verbal communication?
13. What do you mean by introvert?
14. How do you define being amicable?
15. Creativity can be achieved by ---------- thinking.
16. Give the significance of wearing a black hat based on the six thinking hats method.
17. Give the importance of work ethics.
18. Define unlearning.
19. WATNA stands for ----------.
20. Give any two qualities of a good leader.

Q.2 **A)** What is cover letter? Explain the main parts of a cover letter. **(08)**

Q.2 **B)** Elaborate on various delivery modes of presentation. **(07)**

OR

Q.2 **C)** Describe in brief the preparatory steps for job interview. **(08)**

Q.2 **D)** Describe and explain the types of Group Discussion. **(07)**

Q.3 **A)** Explain the importance of positive thinking for personality development. **(08)**

Q.3 **B)** What is self-management? Explain the virtues of self-management. **(07)**

OR

Q.3 **C)** Explain the difference between etiquette and mannerism with examples. **(08)**

Q.3 D) Describe the use of communication technologies in a digital world. (07)

Q.4 A) Discuss in detail the importance of decision making and negotiations at the workplace. (08)

Q.4 B) Explain whether you can avoid stress and does stress reflect on your physical health. (07)

OR

Q.4 C) Explain in detail the current leadership trends. (08)

Q.4 D) Describe the elements of capacity building in detail. (07)

Q.5 **Write short notes on any three of the following.** (15)

a. Debate
b. Panel Discussion
c. Email Etiquette
d. Importance of work ethics
e. Role of leader in nurturing creativity of an employee

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D B J College, Chiplun
ATKT Exam March 2024
Sem I
FYBSC (Bio Tech)
Sub: Fundamentals of Bio Tech.

FYBSC B.T
4/3/24

Time – 2 ½ hours Marks–75

Note: Attempt **all** questions.
All questions carry **equal** marks.
Under **Q.2.Q.3 and Q.4** attempt A and B **OR** C and D
Draw **neat labelled diagrams** wherever necessary.

Q.1 A) Answer the following (any fifteen). (15)

1. _____ is regarded as father of biotechnology.
2. Give the name of an insect resistant plant.
3. ICMR stands for _____.
4. The traditional biotechnology includes the process that are not based on the natural capabilities of microorganisms.(State true or False)
5. Write the role of *lactobacillus lactis* in fermentation.
6. Define white biotechnology.
7. What is the advantage of using GMO's?
8. If a promotor inserted along with the genes of interest into a crop is expressed only in leaves, then the trait is effective in all plant parts. (State true or False)
9. Write the role of psy gene.
10. What is the significance of *Bacillus thuringiensis* for production of insect resistant transgenic plants.
11. Plantbodies against dental caries are expressed in _____.
12. Dolly is the first _____ animal.
13. Give any two examples of promoter.
14. PRSV is transmitted by _____.
15. Carbon or energy requirements are usually met from carbohydrates.(State true or false)
16. Define fermentor.
17. Give disadvantages of using microbial enzymes.
18. After inoculation of a culture into a nutrient medium, the period during which growth rate of cells gradually increases is called _____ phase.
19. Enlist the names of any two antibiotics.
20. Define batch fermentation.

Q.2 A) Describe various areas of plant biotechnology. **(08)**

Q.2 B) Give an account of global impact of biotechnology. **(07)**

OR

Q.2 C) Explain in detail red biotechnology. **(08)**

Q.2 D) Discuss in brief about modern biotechnology. **(07)**

Q.3 A) Explain with diagram the transformation of *Agrobacterium tumefaciens* cells and production of transgenic plants. **(08)**

Q.3 B) Elaborate on the abatement of pollution by using GMO's. **(07)**

OR

Q.3 C) Explain in detail the production of genetically engineered rice developed to treat the deficiency of vitamin A. **(08)**

Q.3 D) Describe in detail Bt cotton. (07)

Q.4 A) Define secondary screening. Explain in detail any two methods of secondary screening. (08)

Q.4 B) Describe in detail fermentation. Give the major groups of commercially important fermentation processes. (07)

OR

Q.4 C) Discuss the basic components of a fermentation process. (08)

Q.4 D) Explain in detail the fed batch fermenters. (07)

Q.5 **Write short notes on any three of the following.** (15)

a. Marine biotechnology
b. Edible vaccines
c. pH control
d. GM papaya
e. Anaerobic batch fermenters

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D.B.J College, Chaplum
ATKT Exam, March 2024, Sem I
FYBSC (Bio Tech) FYBSC BT
Sub: Microbiology I
5/3/24

Time – 2 $^{1/2}$ hours Marks 75

Note: Attempt **all** questions.
All questions carry **equal** marks.
For **Q.2.Q.3 and Q.4** attempt A and B **OR** C and D
Draw **neat labeled diagrams** wherever necessary.

Q.1 A) Do as directed. (Any fifteen) **(15)**

1. Define spontaneous generation.
2. Typhoid disease caused by specific *S.typhi*.(State true or false)
3. What is the photoautotrophs?
4. Give the examples of Chemolithotrophic heterotrophy.
5. Write the examples of algae.
6. State the function of agar.
7. The *Leuconostoc mesenteroids* microorganism require ----------vitamin.
8. Write significance of dry heat in sterilization.
9. Define Disinfection.
10. What is the incineration?
11. Write application of U.V. rays in sterilization.
12. Methyl alcohol is effective against fungal spores.(State true or false)
13. Give examples of phenolic compounds.
14. Write the examples of cationic detergent.
15. Give examples of fixative.
16. What is Focal length?
17 Write example of acidic dyes.
18 *Mycobacterium tuberculosis* bacteria stained by ---------- method.
19 What is Mordant?
20. *E.coli*is Gram negative bacteria.(State true or false)

Q.2 A) Explain the experimental study used for discovery of microorganism. **(08)**

Q.2 B) Compare between eukaryotic and prokaryotic cell. **(07)**

OR

Q.2 C) Describe in detail isolation techniques used for isolation of bacteria. **(08)**

Q.2	D)	Give an account on Whittaker's five kingdom classification system for organism.	(07)
Q.3	A)	Discuss in brief mode of action and practical application of Alcohols and halogens.	(08)
Q.3	B)	Describe in detail destruction of microbe by steam under pressure.	(07)
		OR	
Q.3	C)	Give an account on filtration and radiation method used in control of microorganism.	(08)
Q.3	D)	Explain in detail agar plate technique for evaluation of antimicrobial chemical agent.	(07)
Q.4	A)	Explain in detail working and principal of Compound Microscope.	(08)
Q.4	B)	Discuss in brief natural and synthetic Dyes.	(07)
		OR	
Q.4	C)	Describe in detail Gram staining method with diagrammatic representation.	(08)
Q.4	D)	Explain the two chemical groups of stain with example.	(07)
Q.5		**Write short notes on any three of the following.**	(15)

a. Major Fields of applied microbiology
b. Introduction to Bergey s Manual
c. Quaternary ammonium compounds
d. Practical application and mode of action of ethylene oxide
e. SEM

D.B.J. College, Chiplun
ATKT Exam March, 2024
Sem I
FYBSC. (Bio Tech)
Sub: Basic Chemistry I

FYBSC. BT
6/3/24

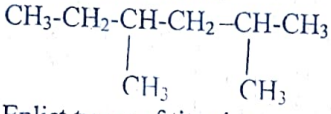
Time – 2 1/2 hours

Marks–75

Note: Attempt all questions.
All questions carry equal marks.
Under Q.2,Q.3 and Q.4 attempt A and B OR C and D.

Q.1 **A) Attempt any fifteen of the following.** **(15)**

1. Write the geometry of H_2O molecule
2. Enlist types of hydrogen bond.
3. What is suffix?
4. Write functional group of ketone.
5. Give bond angle in CH_4 molecule.
6. State IUPAC name.
   CH_3-CH_2-CH_2-CO-CH_3
7. State IUPAC name.



8. Enlist types of titration.
9. Give significance of Ignition in gravimetric analysis.
10. Define heterogeneous nucleation.
11. What is mean by end point of titration?
12. Give example of indicator used for the complexometric titration.
13. Define titrand.
14. Define flocculation.
15. What is functional isomerism?
16. Name any two compounds which are chain isomers of each other.
17. Draw cis and trans isomer of 3,4 dimethyl 3-heptene.
18. Define diastereomers.
19. Define meso isomers.
20. Define stereogenic centre.

Q.2 **A)** Describe the structure of Beryllium dichloride and Boron triflouride. **(08)**

Q.2 **B)** State the basic rules of IUPAC nomenclature in carboxylic acid. **(07)**

OR

Q.2 **C)** Compare and contrast between covalent and Ionic Bond. **(08)**

Q.2 **D)** Draw the structure of the following organic compounds. **(07)**

(i) Ethoxy methane
(ii) 3Methyl hexane
(iii) 2-Nitrobutanal
(iv) Butanedioic acid

Q.3 A) What are colloids? Explain formation of electrical double layer on colloids. (08)

Q.3 B) Explain primary standards and its characteristics. (07)

OR

Q.3 C) Give an account of co-precipitation and post-precipitation. (08)

Q.3 D) Explain the role of indicators in acid-base titrations. (07)

Q.4 A) What is stereoisomerism? Explain the properties of stereoisomers. (08)

Q.4 B) Differentiate between configuration and conformation using example. (07)

OR

Q.4 C) What is meant by projection formula? Explain Sawhorse projection formula. (08)

Q.4 D) What is chirality? Explain chiral centres with examples. (07)

Q.5 **Write short notes on any three of the following.** (15)

a. Hydrogen bond
b. Van der Waals force
c. Equivalence point
d. Ageing of precipitate
e. Racemic mixture

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D.B.J. College, Chiplun
AIKI Exam, March, 2024
Sem I
FYBSC (Bio Tech.)
Sub. Concept of Biomolecules

FY BT
11/3/24

Time - 2 ½ hours

Marks 75

Note: Attempt **all** questions.
All questions carry **equal** marks.
Under **Q.2, Q.3 and Q.4** attempt A and B **OR** C and D
Draw **neat labeled diagrams** wherever necessary.

Q.1 **A) Attempt any fifteen of the following.** (15)

1. What is the full form of ppm?
2. Define Normality.
3. What is Mole fraction?
4. State true or false: Water is a polar solvent.
5. State true or false:The H-O-H bond angle in water molecule is 104.5^0
6. ----------is example of secondary standard.
7. State true or false: Carbohydrate is polyhydroxy aldehyde or ketone with general formula $(CH_2O)n$.
8. State true or false: Fructose is example of ketose sugar.
9. Draw structure of glucose.
10. Define epimers.
11. What is mutarotation?
12. State true or false: Starch is the storage polysaccharide that is found in plants.
13. Which type of glycosidic bond is present in lactose?
14. ----------is an example of monounsaturated fatty acid.
15. What is full form of PUFA?
16. Give role of phosholipase.
17. The degree of unsaturation of lipids can be measured as----------.
18. What is mixed triacylglycerol?
19. Draw the structure of phosphatidylserine.
20. Define the term rancidity.

Q.2 A) Explain derivation of Henderson-Hasselbalch equation. **(08)**

Q.2 **B)** Describe principle and working of volumetric analysis. **(07)**

OR.

Q.2 **C)** Describe carbonate –bicarbonate buffer system. **(08)**

Q.2 **D)** Describe the primary standard and enlist examples. **(07)**

Q.3 **A)** Describe the biologically important derivatives of hexoses. **(08)**

Q.3 **B)** Explain the storage polysaccharide present in animals and give its functions. **(07)**

OR

Q.3 **C)** Elaborate on the structure and applications of sucrose. **(08)**

Q.3 D) Describe the structural homopolysaccharides and give its function. (07)

Q.4 A) Discuss the saturated and unsaturated fatty acids along with their structure. (08)

Q.4 B) What is steroid? Describe the structure and function of cholesterol. (07)

OR

Q.4 C) Describe in detail classification and functions of lipid. (08)

Q.4 D) What is triacylglycerol? Describe their properties in detail. (07)

Q.5 **Write short notes on any three of the following.** (15)

a. Acetate buffer.
b. Structure and functions of water.
c. Chemical reactions of monosaccharide.
d. Glycosidic bond.
e. Saponification number.

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D B J College, Chiplun
ATKT Exam March 2024
Sem I
FYBSC (Bio-Tech)
Sub: Genetics

FYBSC BT
12/3/24

Time – 2 1/2 hours

Marks–75

Note: Attempt **all** questions.
All questions carry **equal** marks.
Under **Q.2, Q.3 and Q.4** attempt A and B **OR** C and D
Draw **neat labeled diagrams** wherever necessary.

Q.1 **A) Attempt any fifteen of the following.** (15)

1. Define monohybrid cross.
2. The F_2 generation genotypic ratio of a monohybrid cross is----------
3. State true or false: Alleles are the alternate forms of genes.
4. What is principle of segregation?
5. The phenotypic ratio of F_2 generation in duplicate dominant epistasis is----------.
6. Define multiple allele.
7. What is complete dominance?
8. Define transformation.
9. The transfer of genes from one cell to another by a bacteriophage is known as ----------.
10. Define auxotrops.
11. Define prophage.
12. Enlist example of virulent phage.
13. Define specialized transduction.
14. What is complete medium?
15. What is bottlenecks effect?
16. Enlist methods of genetic variation measurement.
17. State true or false: Demography defines the study of the characteristics and parameters of the population.
18. What is SNP?
19. Define heterozygote superiority.
20. What is postzygotic isolation?

Q.2 **A)** Explain the principle of independent assortment and dihybrid cross. **(08)**

Q.2 **B)** Describe with suitable example duplicate recessive epistasis. **(07)**

OR

Q.2 **C)** Describe the effects of environment on gene expression. **(08)**

Q.2 **D)** What is pedigree analysis? Describe in detail dominant human genetic trait. **(07)**

Q.3 **A)** Discuss the mechanism of transformation in bacteria. **(08)**

Q.3 **B)** Describe the lytic cycle of bacteriophage. **(07)**

OR

Q.3 C) Compare and contrast between specialized and generalized transduction process. (08)

Q.3 D) What is conjugation? Explain in detail transfer of genetic material by conjugation in *F Coli* (07)

Q.4 A) State Hardy Weinbergs law and discuss the assumptions of Hardy Weinbergs law. (08)

Q.4 B) Elaborate on natural selection. (07)

OR

Q.4 C) Describe measurement method of genetic variation at protein level. (08)

Q.4 D) Discuss the role of population genetics in conservation biology. (07)

Q.5 **Write short notes on any three of the following.** (15)

a. Expressivity.
b. ABO blood group.
c. Sex factor F.
d. Lysogeny in bacteriophage.
e. Migration.

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Time: 2½ hours

Marks: 75

Note: Attempt **all** questions.
All questions carry **equal** marks.
For **Q.2,Q.3 and Q.4** attempt A and B **OR** C and D.
Draw **neat labeled diagrams** wherever necessary.

Q.1 **A) Answer the following (Any fifteen)** (15)

1. Name the genome present in reo-virus.
2. Define DNA.
3. What is nucleoside?
4. Give any two examples of pyrimidine.
5. Give the role of topoisomerase.
6. What are histones?
7. The percentage of cytosine in a double-stranded DNA is 17, then what is the percentage of adenine?
8. Define replication.
9. Why proofreading is important in DNA replication?
10. SSB protein in replication stands for ----------.
11. Give the role DNA helicase.
12. What are Okazaki fragments?
13. Define replicator.
14. Give the importance of Magnesium ions in replication.
15. What is neutral mutation?
16. Define Mutagenesis.
17. A silent mutation also known as a ---------- mutation.
18. Give examples of Base-modifying agents.
19. What are mutagens?
20. A forward mutation changes a wild-type gene to a mutant gene. (State True/False)

Q.2 **A)** Explain in detail Watson and Crick's double helix model of DNA. **(08)**

Q.2 **B)** Differentiate between prokaryotic and eukaryotic chromosomes. **(07)**

OR

Q.2 **C)** Describe in detail types of chromosomal banding techniques. **(08)**

Q.2 **D)** Elaborate on the structure of chromatin and function of histones and non-histones protein in them. **(07)**

Q.3 **A)** Explain model for the events occurring around a single replication fork of the E. coli chromosome. **(08)**

Q.3 **B)** Describe theprocess of DNA replication in detail. **(07)**

OR

Q.3 **C)** Elaborate on enzymology of DNA synthesis in eukaryotes. **(08)**

Q.3 D) Explain DNA replication and role of proteins involved in Eukaryotes in detail. (07)

Q.4 A) Explain in detail Base Excision Repair and Nucleotide Excision Repair. (08)

Q.4 B) Describe in detail on Reverse and Suppressor Mutations. (07)

OR

Q.4 C) Discuss in detail Induced Mutation with examples. (08)

Q.4 D) Explain Chemical Mutagens with suitable example. (07)

Q.5 **Write short notes on any three of the following.** (15)

a. Heterochromatin
b. Leading and lagging strand
c. Replicons
d. Depurination
e. Intercalating agents

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