

**CENTRAL UNIVERSITY OF HARYANA**

**End Semester Exams (Regular), June- 2022**

Programme : B.Voc. Biomedical Sciences  
Semester : 6<sup>th</sup> Semester  
Paper Name : Immunology  
Paper Code : BMS-601

Max Marks : 50  
Max Time : 3 hrs

**Attempt all 5 questions. Each question carries 10 marks.**

**Q1.** State whether the following statements are True or false. Give reason in support of your answer. Attempt any ten. (10 marks)

- (i) Innate immunity has memory.
- (ii) Hapten alone can activate immune system
- (iii) B-cell mature in thymus.
- (iv) Class switching occur result in antibody with high affinity
- (v) B-cell react with Tc cells.
- (vi) Adaptive immunity is not antigen dependent.
- (vii) Membrane attack complex is common in all type of complement system.
- (viii) Attenuated Vaccines revert back into virulent strain.
- (ix) IgG is more potent in activating complement system compared to IgM.
- (x) Somatic hypermutation occur in constant region of light chain.
- (xi) Polyvalent antibodies are produced by hybridoma technology.
- (xii) Protein are antigenic not immunogenic.

**Q2.** Define following terms : (10 marks)

- (i) Affinity maturation
- (ii) Clonal selection theory
- (iii) Allotypes
- (iv) Avidity
- (v) Adjuvant

**Or**

Describe in detail the structure of an antibody. (10 marks)

**Q3.** Describe the different types Vaccination with suitable example.

**Or**

Describe the classical complement system. (10 marks)

**Q4.** Describe the immunoelectrophoresis. (10 marks).

**Or**

Describe ELISA technique. (10 marks)

**Q5.** Describe Type 3 hypersensitivity. (10 marks)

**Or**

Describe (i) Primary and secondary immune response (5 marks)

(ii) Draw diagram of antigen presenting cell interacting with T<sub>H</sub> cell.(5marks)



# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June-2022

Programme: B.Voc. Biomedical Sciences

Session: 2021-22

Semester: IV

Max. Time: 3 Hours

Course Title: PHARMACOLOGY (Regular/Reappear)

Max. Marks: 50

Course Code: BMS-402

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) Define drug?
- b) Define Pharmacokinetics?
- c) Define Pharmacodynamics?
- d) What is Placebo effect?
- e) Activated Charcoal show its therapeutic activity due to its property of .....
- f) Females have smaller body size and require doses that are on the lower side of the therapeutic range (True/False).
- g) Define Pharmacogenetics?
- h) Expand NSAIDs?
- i) What is the function of diuretic drug?
- j) Muscarinic is a type of ..... receptor.
- k) What are catecholamines?
- l) Which amino acid is used as precursor molecule for the synthesis of catecholamines?
- m) Give one example of B2 agonist?
- n) Nicotinic receptor is blocked by .....

Q 2. (10)

- a) What is difference between the generic name and proprietary name of a drug? (3)
- b) What is the difference between pharmacopeia and formularies? (2)
- c) What is Bioavailability? How is it calculated? (2)
- d) What is the significance of bioequivalence? (2)
- e) What is apparent volume of distribution? (1)

Or

Q 2. (10)

- a) Describe the systemic route of drug administration? (5)
- b) What is biotransformation? Citing one example, demonstrate how a drug is metabolized by phase I and phase II reactions? (5)

Q 3. (10)

- a) Why clinical trials are done? Describe its different phases? (5)
- b) What are the types and subtypes of adrenergic receptors? (2)
- c) What is therapeutic index? How is it calculated? (2)
- d) Give one example of chemical antagonism? (1)

Or

Q 3. (10)

- a) Describe the concept of randomization and masking in context of clinical trials? (2)
- b) Describe the rules to decide the expiry date of pharmaceuticals? (3)
- c) Describe the effect of drug potency and drug efficacy? What is its relevance in choosing the drug for prescription against a particular disease? (5)

Q 4. (10)

- a) In flowchart, describe how catecholamines are synthesized? (4)
- b) What are the types and subtypes of adrenergic receptors? (2)
- c) Mention the type of cholinergic neurotransmitters and give one example of their agonist and antagonist? (4)

Or

Q 4. (10)

- a) Describe the process of synthesis of acetylcholine, its storage and destruction in a nerve cell? (5)
- b) Mention two physiological actions of atropine? (2)
- c) Give example of tissue/organs where muscarinic and nicotinic receptors are present? (2)
- d) What is anti-cholinesterase's? (1)

Q 5. (10)

- a) What is the mechanism of action of any diuretic drug? (5)
- b) Mention five mechanism by which antibacterial drugs show antibacterial activity. Give one example in each category? (5)

Or

Q 5. (10)

- a) Describe the mechanism of action of anti-inflammatory drugs? (5)
- b) Name one anti-cancer drug and describe its mechanism of action? (5)

**CENTRAL UNIVERSITY OF HARYANA**

End Semester Examinations June-2022

**Programme: B.Voc Biomedical Sciences**

**Session: 2021-22**

**Semester: VI**

**Max. Time: 2 Hours**

**Course Title: Medicinal Chemistry (Regular)**

**Max. Marks: 25**

**Course Code: BMS-603**

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**Instructions:**

1. Question no. 1 has seven parts and students need to answer any five. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 5 marks. Attempt any one part.

Q 1. (1X5=5)

- a) Diazepam is the derivative of .....
- b) SAR
- c) What is the need of lead modification?
- d) HTS
- e) Lead molecule
- f) Desensitization
- g) Bioisosteres

Q 2. (5)

Write a note on the process of modern rational drug design?

Or

Q 2. (5)

Describe the discovery of Librium as an example of drug discovery without rational drug design?

Q 3. (5)

- a) What is the difference between a pharmacophore and auxophore? (2)
- b) According to Lipinski, what are the properties of drug like molecules? (3)

Or

Q 3. (5)

Write a note on the sources of lead molecule? (5)

Q 4. (5)

Write a detailed note the structural modifications to increase the potency, therapeutic index and ADME properties? (5)

Or

Q 4. (5)

Describe the significance of Hansh's equation and Taft's equation? (5)

Q 5. (5)

Citing one example, describe the mechanism of action of alkylating agents?

Or

Q 5. (5)

- a) What factors are to be considered while designing the agonists? (2)
- b) What is the concept of tolerance and dependence? (2)
- c) What is partial antagonism? (1)



CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B. Voc. Biomedical Sciences

Session: 2021-22

Semester: 2<sup>nd</sup>

Max. Time: 3 Hours

Course Title: Concepts in Chemistry-II

Max. Marks: 50

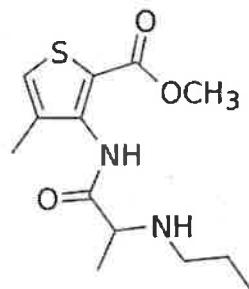
Course Code: BMS-201 (Reappear)

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries two and half Marks.
2. Question no. 2 to 5 have three parts and student need to answer any two parts of each question. Each part carries five marks.

Q 1. (4X2.5=10)

- Explain second law of thermodynamics.
- What are BOD and COD?
- What are the applications of IR spectroscopy?
- Arrange and explain the order of Aromaticity in following compounds:  
Pyrrole, Furan Benzene, and Thiophene.
- Identify the heterocyclic compound present in the following drug.



Q 2. (2X5=10)

- Write a short note on collision theory.
- Give the applications of colloidal solution.
- Explain the ways by which hardness of water can be removed.

Q 3. (2X5=10)

- What are the applications of UV spectroscopy?
- Describe the various modes of vibrations in a molecule joined by covalent bond.
- Explain the applications of IR spectroscopy.

Q 4. (2X5=10)

- State the applications of chelates in pharmaceutical preparations?
- Write the different forces which are responsible for the formation of complexes.
- Write down the structure of EDTA. State its various applications.

Q 5. (2X5=10)

- Write a short note on synthesis of Thiophene
- Pyridine is more basic than pyrrole. Explain.
- Why Pyrrole have higher boiling point as compared to furan and thiophene?





# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B.Voc Biomedical Sciences

Session: 2021-22

Semester: IV

Max. Time: 3 Hours

Course Title: CELL BIOLOGY (Regular/Reappear)

Max. Marks: 50

Course Code: BMS-401

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) .....is the marker molecule of lysosome.
- b) ..... is the motor protein which take cargo to negative end of the cell.
- c) ..... is the technique used to detect whether two proteins are interacting inside the cell.
- d) ..... are the cell in which intermediate filaments are absent.
- e) If individuals' units of lipids are wedged shape, ..... structure is formed by lipid molecule.
- f) The hydropathy analysis predicts ..... hydrophobic helix for glycophorin.
- g) ..... and..... are two oxidative enzymes of peroxisomes.
- h) Define Autocrine signaling?
- i) Define nucleoplasm?
- j) pH of lysosome is basic. (True/False)
- k) Nuclear Lamina is composed of ..... filaments.
- l) Expand CDKs
- m) Oncogenes
- n) Metastasis

Q 2. (10)

- a) Describe the process of selective transport of protein to and from the nucleus? (3)
- b) What is endo-symbiotic theory of evolution of eukaryotic cell? (3)
- c) Describe how the proteins are imported into endoplasmic reticulum by post-translational translocation? (4)

Or

Q2.

- a) Describe RNA world theory? (3)
- b) Describe the mechanism of protein folding in the endoplasmic reticulum? (5)
- c) What is the function of flippase enzyme? (2)

Q 3. (10)

- a) Why mitochondria is called semiautonomous organelle? (2)
- b) Draw Fluid mosaic model of plasma membrane. (3)
- c) What are factors on which fluidity of membrane depend? (5)

Or

Q3. Write short note on

- (a) Peroxisomes (5)
- (b) FRAP Technique (5)

Q 4. (10)

- a) Discuss Fish fin experiment to show microtubules filaments have tendency to find center of the cell? (5)
- b) Describe the process of cell signaling through Receptor tyrosine pathway? (5)

Or

Q4.

- (a) Explain structure and function of actin filament. (5)
- (b) Describe the process of cell signaling through GPCR pathway? (5)

Q5. (10)

- a) Describe how p53 surveillance system regulates the cell cycle? (6)
- b) Describe intrinsic pathway of apoptosis? (4)

Or

Q5.

- a) Describe the mechanism by which antiproliferative signaling pathway regulates the cell cycle? (6)
- b) Name two cancer causing viruses? (2)
- c) What is the difference between carcinoma and sarcoma? (2)

# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B.Voc Biomedical Sciences

Session: 2021-22

Semester: I

Max. Time: 3 Hours

Course Title: Human Physiology (Reappear)

Max. Marks: 50

Course Code: BMS-101

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) RBC count of the blood is .....
- b) Amount of Hemoglobin present in blood is .....
- c) Function of Insulin is .....
- d) pH of Urine is .....
- e) Function of saliva is .....
- f) Exocrine glands .....
- g) Anemia
- h) Peristalsis
- i) Grey Matter
- j) In which organ islets of langerhans is present
- k) Leucopenia
- l) pH of buccal cavity is .....
- m) Function of melanin is .....
- n) Full form of GFR is .....

Q 2. (10)

- a) Describe the three classes of proteins present in blood plasma? (5)
- b) Classify leukocytes on the basis of their lineage, their main structural features and their primary function? (5)

Or

Q2.

- a) Explain the events of the cardiac cycle? (10)

Q 3. (10)

- a) Describe the principle of oxygen transport? (5)
- b) How the respiratory centers in the brain controls and regulates pulmonary ventilation?(5)

Or

Q3. Write a short note on the following (10)

- a) Meninges (b) Reflex arc (c) Ventricles of brain (d) Spinal cord (e) Types of neurons

Q 4. (10)

Describe the major divisions of digestive tract. Explain in detail how the hormones and enzymes released by different parts of digestive tract help in digestion?

Or

Q4.

Describe the components of the membrane that establish the resting membrane potential and changes that occur to the membrane that result in the action potential?

Q5. (10)

- a) Describe the process of urine formation in human body? (5)  
b) Name three hormones that regulate the concentration of urine in human body. Define their functions? (5)

Or

Q5.

- a) Name and mention the function of the hormones released by posterior pituitary and anterior pituitary? How the process of hormone release from anterior and posterior pituitary is different? (10)

**CENTRAL UNIVERSITY OF HARYANA**

End Semester Examinations June 2022

**Programme: B. Voc. Biomedical Sciences**

**Session: 2021-22**

**Semester: 3<sup>rd</sup>**

**Max. Time: 3 Hours**

**Course Title: Concepts in Chemistry-III**

**Max. Marks: 25**

**Course Code: BMS-303 (Reappear)**

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**Instructions:**

1. Question no. 1 has seven parts and students need to answer any five. Each part carries one Mark.
2. Question no. 2 and 3 have three parts and student need to answer any two parts of each question. Each part carries five marks.

Q 1. (5X1=5)

- a) Explain Saytzeff rule.
- b) What is Hofmann rule?
- c) Why benzaldehyde don't undergo aldol condensation?
- d) Which alkene gives only acetone on ozonolysis?
- e) Name different types of organic reactions.
- f) Out of  $S_N^1$  and  $S_N^2$ , which follows single step mechanism?
- g) What are condensation reactions?

Q 2. (2X5=10)

- a) Differentiate between E1 and E2 elimination.
- b) Explain the initiation, propagation and termination steps in free radical reaction using an example.
- c) Write a short note on cycloaddition reactions.

Q3. (2X5=10)

- a) Write short note on Aldol Condensation.
- b) Write short note on Diels- Alder Reaction.
- c) Write short note on Ozonolysis.



# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

**Programme: B.Voc Biomedical Sciences**

**Session: 2021-22**

**Semester: V**

**Max. Time: 3 Hours**

**Course Title: Medical Genetics (Reappear)**

**Max. Marks: 50**

**Course Code: BMS-501**

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) Turner Syndrome is a genetic disease. (True/False)
- b) Huntington disease is a genetic disease. (True/False)
- c) Define allele?
- d) Define gene?
- e) Genetic drift
- f) Barr bodies
- g) Genomic imprinting
- h) How many genes are present in mitochondrial genome in humans?
- i) Karyogram
- j) Full form of FISH is .....
- k) Pharmacogenomics
- l) Tip of chromosome is called Telomere (True/False)
- m) If the centromere occurs in the middle of chromosome, the chromosome is said to be.....
- n) Oncogenes

Q 2. (10)

- a) What is Medical Genetics? What is its scope? (5)
- b) Write a note on the types of genetic diseases? (5)

Or

Q2.

- a) What is mutation? What are different types of mutation? (5)
- b) What is sickle cell anemia? How is it caused? (5)

Q 3. (10)

- a) Write a note on Mendelian principles? (5)
- b) Describe the factors that cause expression of disease-causing genes? (5)

Or

Q3.

- a) Write a note on sex linked inactivation? What is its mechanism?
- b) Write a note on mitochondrial genes and mitochondrial disorders? (5)

Q 4.

(10)

- a) What is banding. Describe its different types? (5)
- b) Write a note on the importance of gene mapping? (5)

Or

Q4.

Write a detailed note on the abnormalities related to chromosome structure and number? (10)

Q5.

(10)

Write a detailed note on disorders caused by defects in protein and lipid metabolism?

Or

Q5.

- a) What is cancer? What are its causes? (5)
- b) Write a note on prenatal diagnosis of genetic disorders (5)



**III Semester UG Term End Semester Examination June. 2022**

**Re-appear**

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<b>Name of Programme</b>	<b>: B. Voc (Industrial Waste Management)</b>		
<b>Year &amp; Semester</b>	<b>: June. 2022, Semester-III</b>		
<b>Course Name</b>	<b>: Microbiology</b>		
<b>Course Code</b>	<b>:IWM-303</b>		
<b>Maximum Marks</b>	<b>:50</b>	<b>Duration</b>	<b>: 3Hrs</b>

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**Attempt any five questions selecting one question from each unit. Question 1 is compulsory.**

**Question 1. Define/write a short note on any five:-** (2x5)

- a. Microbiology
- b. Prokaryotic cell
- c. Gram staining bacteria
- d. Biosensors
- e. Xenobiotics
- f. Name any 4 thermophiles
- g. Fermentation
- h. Name any 4 diseases involved in parasitic infections

**UNIT-I**

**Question 2.** (10)

- A. Definition and scopes of microbiology. Explain.
- B. Write a note on microbial diversity in environment.

OR

- A. What are bioindicators? Explain use and working of any one bioindicator in detail.
- B. Differentiate between gram positive and gram negative bacteria.

**UNIT-II**

**Question 3.** (6, 4)

- A. Explain role of microbes in carbon cycle.

B. Discuss ammonification and nitrification steps involved in nitrogen cycle.

OR

A. Explain bioremediation technique in detail.

B. Write a note on microbial metal resistance process.

### UNIT-III

**Question 4.**

(6, 4)

A. Explain microbial leaching of low grade minerals.

B. What are thermophiles and acidophiles? Name 2 microbes for each.

OR

A. Explain various steps involved in biofuel production.

B. Write a note on fermentation technique.

### UNIT-IV

**Question. 5.**

(6, 4)

A. How poor waste disposal is a causative agent for infectious diseases? Explain.

B. Explain relation between normal microbiota and host.

OR

A. What is bacterial infection? Discuss any one bacterial infection in detail.

B. How measles spread? What are causative agents? Explain.

**CENTRAL UNIVERSITY OF HARYANA**

**VI Semester UG Term End Semester Examination June, 2022**

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<b>Name of Programme</b>	<b>: B. Voc. (Industrial Waste Management)</b>	
<b>Year &amp; Semester</b>	<b>: June, 2022, Semester-VI</b>	
<b>Course Name</b>	<b>: Hazardous, Radioactive &amp; E-wastes</b>	
<b>Course Code</b>	<b>: IWM- 603</b>	
<b>Maximum Marks</b>	<b>: 50</b>	<b>Duration: 3Hrs</b>

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**Attempt any five questions selecting one question from each unit. Question 1 is compulsory.**

**Question 1.** Define/ short note on any five:- (2x5)

- Fingerprint analysis of hazardous waste
- Essential components of HW landfill
- TSDf concept
- Incineration of HW
- Radioactive decay
- Stabilization and solidification of HW
- WEEE directive
- Basel convention

**UNIT-I**

**Question 2.** (6,4)

- Define sampling. Explain various sampling methods for hazardous waste in detail.
- Define hazardous waste and its characteristics.

OR

- Write a note on transport, handling and storage of hazardous waste.
- How is a sanitary landfill designed and operated?

**UNIT-II**

**Question 3.** (6,4)

- Explain various physical treatment methods of hazardous waste.
- What is the acceptance criteria of hazardous waste to dispose it into a sanitary landfill?

OR

- Write a note on acid base neutralization and chemical precipitation methods to treat HW?
- Define biomedical waste. What are the main categories of biomedical waste?

**UNIT-III**

**Question 4.** (6,4)

- Define radioactive waste. Classify radioactive waste on the basis of their radioactivity and half life.
- Discuss harmful effects of radioactive waste on human and environment.

OR

- Write a detailed note on ICRP and AERB .
- How is the radioactive waste managed?

**UNIT-IV**

**Question. 5.** (6,4)

- Define e-waste. What are sources of e-waste? How can it be managed?
- Discuss harmful effects of e-waste on human and environment.

OR

- Explain various treatment levels for e-waste.
- What is composition of e-waste? Explain Indian scenario of e-waste.



**IV Semester UG Term End Semester Examination June, 2022**

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<b>Name of Programme</b>	<b>: B.Voc. (Industrial Waste Management)</b>	
<b>Year &amp; Semester</b>	<b>: June 2022, Semester-IV</b>	
<b>Course Name</b>	<b>: Solid Waste Management</b>	
<b>Course Code</b>	<b>: IWM-402</b>	
<b>Maximum Marks</b>	<b>: 50</b>	<b>Duration: 3Hrs</b>

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**Attempt any five questions selecting one question from each unit. Question 1 is compulsory.**

**Question 1.** Define/write a short note on any five:- (2x5)

- a. Proximate analysis
- b. Risk associated with solid waste
- c. Transfer station
- d. Incineration
- e. Baling of solid waste
- f. Landfill sections
- g. Disadvantages of a landfill
- h. Gasification

**UNIT-I**

**Question 2.** (6,4)

- A. Define solid waste. What are the main physical characteristics of solid waste?
- B. Explain the hierarchy of waste management options.

OR

- A. What are the main factors which affect type and quality of solid waste?
- B. How would you classify different type of solid wastes?

**UNIT-II**

**Question 3.** (6,4)

- A. Explain different methods for handling and processing of the solid waste.
- B. How would you determine the heat content of MSW?

OR

- A. What are the main methods for collection of solid waste?
- B. Write a detailed note on storage and transportation of solid waste.

**UNIT-III**

**Question 4.** (6,4)

- A. What is the site selection criterion for a landfill?
- B. How is MSW landfill is designed and operated?

OR

- A. Explain different biochemical processes occurring in a landfill.
- B. What are the management options for leachate produced in landfill?

**UNIT-IV**

**Question 5.** (6,4)

- A. Define composting. Explain the mechanism of aerobic and anaerobic composting.
- B. What are main factors which affect the rate of composting?

OR

- A. Write a detailed note on Vermicomposting.
- B. Explain Indore and Coimbatore methods of composting.



VI Semester UG Term End Semester Examination June. 2022

(Regular)

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Name of Programme : B.Voc (Industrial Waste Management)  
Year & Semester : June. 2022, Semester-VI  
Course Name : Environmental Policies and Laws  
Course Code : IWM-602  
Maximum Marks : 50 Duration: 3Hrs

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Attempt any five questions selecting one question from each unit. Question 1 is compulsory.

(2x5)

**Question 1: Very short type or definitions:**

- A. What is the main goal of UNFCCC.
- B. Write a short note on Eco mark scheme.
- C. What are the objectives of the Air (Prevention & control of pollution) Act, 1981?
- D. What are the constitutional provisions for protection of the environment in India?
- E. Write down the composition & uses of fly ash.
- F. Define municipal solid waste.
- G. Explain neutralization and precipitation treatment method of hazardous waste?
- H. Write any two biological methods for treatment of hazardous waste.

**UNIT-I**

**Question 2:**

(6,4)

- A. What is Stockholm conference? Also discuss important principles and outcomes of Stockholm conference.
  - B. What is Kyoto protocol and why is it important?
- OR
- A. Explain Earth Summit 2002 with objectives and important principles.
  - B. What are the objectives and functions of UNEP?

**UNIT-II**

**Question 3:**

( 6,4)

- A. What is Air act 1981? Explain its salient features and importance.
  - B. What are the salient features of the Water Act 1974?
- OR
- A. Discuss power and functions of CPCB in Water act 1974.
  - B. Write constitution of SPCB in Air act 1981.

**UNIT-III**

**Question 4:** (6,4)

- A. Discuss storage, treatment and disposal methods of medical waste.
- B. Write application of Biomedical waste (Management and handling) Rules 1988.

OR

- A. Explain Fly ash management rule 1999.
- B. Write a note on treatment and disposal of Municipal solid waste.

**UNIT-IV**

**Question 5:** (6,4)

- A. Define hazardous waste. Write physical and chemical treatment methods of hazardous waste.
- B. Write a note on procedures of storage and transport of hazardous waste.

OR

- A. Discuss Grant of authorization for handling hazardous wastes.
- B. Write application of Hazardous waste management and handling rules 1989.



III Semester UG Term End Semester Examination June, 2022 (Reappear)

Name of Programme	: B.Voc. (Industrial Waste Management)	
Year & Semester	: June 2022, Semester-III	
Course Name	: Fundamentals of Mathematics and Statistics	
Course Code	: IWM- 302	
Maximum Marks	: 25	Duration: 3Hrs

Attempt any five questions selecting one question from each unit. Question 1 is compulsory.

Question 1. (1x5)

- Find the average of numbers 70,64,86,90,75,65.
- If  $U = \{1,3,5,7,9\}$  and  $A = \{5,7\}$ , determine  $A'$ .
- In what condition, the cross product of two vectors will be zero?
- What is the value of  $\int x^3 dx$ ?
- Differentiate  $y = \sin(3x+5)$ .
- What is a pie chart?
- If  $P = \{1,3\}$  and  $Q = \{2,3,5\}$ , find the number of relations from P to Q.
- Differentiate between equal set and equivalent set.

UNIT-I

Question 2. (3,2)

- Find compound interest on Rs. 16000 at the rate 5% for 2 years, compounded annually.
- Solve the equation  $3x^2 - 5x + 2 = 0$ .

OR

- A man spends 40% on food, 20% on house rent, 12% on travel and 10% on education. After all these expenditures he saved Rs. 7200. Find the amount spent on travel.
- Divide 3200 among P,Q,R in the ratio 5:2:9. Find the amount received by Q.

UNIT-II

Question 3. (3,2)

- Find the direction cosines of the vector joining the points A (1, 2, -3) and B (-1, -2, 1) directed from A to B.
- What is the difference between equally likely events and mutually exclusive events?

OR

- A and B are two mutually exclusive events of an experiment. If  $P(\text{'not A'}) = 0.65$  and  $P(A \cup B) = 0.65$  and  $P(B) = p$ , find the value of p.
- $y = x \sin x$ . Find  $dy/dx$ .

UNIT-III

Question 4. (3,2)

- What is ogive? What are the steps to obtain an ogive for a less than series?
- If a line has direction ratios 2, -1, -2, determine its direction cosines.

OR

- Find the median of the data using an empirical formula, when it is given that mode = 35.3 and mean = 30.5.
- What are stem and leaf plots?

UNIT-IV

Question 5. (3,2)

A. Find the mean deviation about the median for following data:

340,150,210,240,300,310,320.

B. What are the limitations of mean deviation?

OR

A. The scores of a batsman A in 10 innings were 38,70,48,34,42,55,63,46,54,44 Find the variance of the scores.

B. What are the measures of dispersion?

V Semester UG Term End Semester Examination June, 2022

Reappear

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Name of Programme	: B. Voc (Industrial Waste Management)		
Year & Semester	: June, 2022, Semester-V		
Course Name	: Wastewater Management		
Course Code	: IWM-502		
Maximum Marks	: 50	Duration	: 3Hrs

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Attempt any five questions selecting one question from each unit. Question 1 is compulsory.

Question 1. Define/write a short note on any five:- (2x5)

- Grit chamber
- Principle of Sedimentation
- Full form of ASP
- Advantages of trickling filter
- Rotating biological contractors (RBC).
- Ultrafiltration
- Reverse osmosis
- Ozonation

UNIT-I

Question 2. (6, 4)

- Write short note on sampling of wastewater.
- Give characterization of wastewater.

OR

- Differentiate between organic pollutants and inorganic pollutants.
- Discuss the various difficulties arising during treatment of industrial wastewater.

## UNIT-II

**Question 3.** (6, 4)

- A. Explain sedimentation tank, give its principle, theory and basic design parameters.
- B. What is trickling filter? Discuss the design parameters of trickling filters.

OR

- A. Explain theory and designing of activated sludge process.
- B. What do you understand by self-purification of water bodies?

## UNIT-III

**Question 4.** (6, 4)

- A. Discuss various sludge disposal and treatment techniques
- B. What is oxidation pond, how it is different from extended aeration technique.

OR

- A. Give a complete detail of rotating biological contractors: theory, design and diagram.
- B. Write a short note on equalization and neutralization treatment techniques.

## UNIT-IV

**Question. 5.** (6, 4)

- A. Differentiate between tertiary treatment and advanced oxidation techniques.
- B. Differentiate between reverse osmosis and membrane filtration techniques.

OR

- A. What is electro dialysis process? Explain with diagram.
- B. Differentiate between incineration and WAO techniques.

**II Semester UG Term End Semester Examination June. 2022**

**(Reappear)**

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<b>Name of Programme</b>	<b>: B. Voc (Industrial Waste Management)</b>		
<b>Year &amp; Semester</b>	<b>: June. 2022, Semester-II</b>		
<b>Course Name</b>	<b>: Environmental Pollution</b>		
<b>Course Code</b>	<b>:IWM-203</b>		
<b>Maximum Marks</b>	<b>:25</b>	<b>Duration</b>	<b>: 3Hrs</b>

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**Attempt any five questions selecting one question from each unit. Question 1 is compulsory.**

**Question 1.** Define/write a short note on any five:- (1x5)

- a. Air Pollution
- b. Secondary air pollutants
- c. Examples of gaseous air pollutants
- d. Water pollution
- e. Characteristics of domestic waste
- f. Soil pollution
- g. Fertilizers
- h. Radioactive pollution
- i. Unit of noise pollution

**UNIT-I**

**Question 2.** (3, 2)

- A. What are various sources of water pollution?
- B. Write short note on marine pollution

OR

- A. Discuss a case study on water pollution.
- B. Write a note on Eutrophication of water bodies?

**UNIT-II**

**Question 3.** (3, 2)

- A. What are various sources of soil pollution?



B. Discuss soil pollution from use of fertilizer.

OR

A. What are various effects of soil pollution?

B. Describe various remedial measures of soil pollution,

### UNIT-III

**Question 4.**

(3, 2)

A. What are various sources of air pollution?

B. Classify air pollution according to their chemical composition.

OR

A. What are criteria air pollutants? Discuss in detail.

B. Discuss effects of air pollution on plants.

### UNIT-IV

**Question. 5.**

(3, 2)

A. What is sound level meter? Discuss its various functional parts.

B. What is loudness? What are its units? How they related to noise pollution's unit?

OR

A. What are various noise pollution control methods?

B. What is radioactive pollution? Explain various sources of radioactive pollution





**II Semester UG Term End Semester Examination June. 2022**

**(Reappear)**

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<b>Name of Programme</b>	<b>: B. Voc (Industrial Waste Management)</b>		
<b>Year &amp; Semester</b>	<b>: June. 2022, Semester-II</b>		
<b>Course Name</b>	<b>: Environmental Pollution</b>		
<b>Course Code</b>	<b>:IWM-203</b>		
<b>Maximum Marks</b>	<b>:25</b>	<b>Duration</b>	<b>: 3Hrs</b>

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**Attempt any five questions selecting one question from each unit. Question 1 is compulsory.**

**Question 1.** Define/write a short note on any five:- (1x5)

- a. Primary air pollutants
- b. Classification of air pollutants according to state of matter
- c. Eutrophication
- d. Characteristics of agricultural waste
- e. Pesticides
- f. Surfactants
- g. Noise pollution
- h. Loudness

**UNIT-I**

**Question 2.** (3, 2)

- A. Discuss various effects of water pollution
- B. Differentiate between toxic chemical effects and nutrients effects of water pollution.

OR

- A. What are various control measures of water pollution?
- B. What are the discharge standards of BOD and COD?



## UNIT-II

### Question 3.

(3, 2)

- A. Discuss soil pollution from use of pesticides and fertilizers.
- B. How soil pollution increased due to industrial pollution?

OR

- A. Write a note on soil erosion.
- B. Discuss soil as a sediment and its remedial methods.

## UNIT-III

### Question 4.

(3, 2)

- A. What are various effects of air pollution on human health?
- B. Classify air pollutants according to origin.

OR

- A. What is plume behavior? Explain various types of plume behavior with their graphical representation.
- B. What are source correction method for air pollution?

## UNIT-IV

### Question. 5.

(3, 2)

- A. Explain about various sources of noise pollution.
- B. Explain noise pollution, how its unit is measured?

OR

- A. What are various effects of radioactive pollution?
- B. What are various control measure of radioactive pollution?



# CENTRAL UNIVERSITY OF HARYANA

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<b>Programme</b>	:	<b>B. Voc. Retail and Logistics Management (RLM)</b>
<b>Semester</b>	:	<b>IV (Regular)</b>
<b>Paper Name</b>	:	<b>Business Environment</b>
<b>Paper Code</b>	:	<b>RLM-403</b>
<b>Max Marks</b>	:	<b>37.5</b>
<b>Max Time</b>	:	<b>3 hours</b>
<b>Batch</b>	:	<b>July 2020</b>

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**Question No.1 is compulsory. Attempt one question from each unit.**

- Q.1 Attempt any five questions.** (1.5\*5=7.5)
- A. What is money market?
  - B. What are the important factors for environmental scanning?
  - C. List out major stock exchanges of India.
  - D. What is repo rate and reverse repo rate?
  - E. What are scheduled commercial banks?
  - F. List out various components of internal business environment.
  - G. What are various types of MNCs?
  - H. Explain anti-competitive agreements according to Competition Act,2002.

## UNIT-I

- Q.2 (A)** Discuss external environment of business. (5)
- (B) What are the approaches to environment scanning? (2.5)

**Or**

- Q.3 (A)** Elaborate Porter's five forces model of competition. (5)
- (B) Discuss the impact of change in government policy on business and industry. (2.5)

## UNIT-II

- Q.4 (A)** What is monetary policy? Explain various instruments of monetary policy. (5)
- (B) Write a note on Bombay Stock Exchange? (2.5)

**Or**

- Q.5 (A)** Explain SEBI, its working and major functions. (5)
- (B) Write a short note on Indian Financial System. (2.5)

### UNIT-III

**Q.6 (A)** Write a note on Competition Commission of India. (5)

(B) Why SEZ are established in any country? (2.5)

**Or**

**Q.7 (A)** What is Liberalisation. Write its advantages and disadvantages in Indian context. (5)

(B) What are the benefits of Privatization? (2.5)

### UNIT-IV

**Q.8(A)** What are the advantages and disadvantages of MNCs in any country. (5)

(B) What are the various routes for FDI? (2.5)

**Or**

**Q.9(A)** What is globalisation and how it impacts on Indian economy? (5)

(B) What are the functions of EXIM bank? (2.5)

**IV Semester UG Term End Semester Examination June, 2022**

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<b>Name of Programme</b>	<b>: B.Voc. (Industrial Waste Management)</b>	
<b>Year &amp; Semester</b>	<b>: June 2022, Semester-IV</b>	
<b>Course Name</b>	<b>: Bioprocessing and utilization of agriculture waste</b>	
<b>Course Code</b>	<b>: IWM- 401</b>	
<b>Maximum Marks</b>	<b>: 25</b>	<b>Duration: 3Hrs</b>

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**Attempt any five questions selecting one question from each unit. Question 1 is compulsory.**

**Question 1.** Define/write a short note on any five:- (1x5)

- a. Composition of biogas
- b. Pyrolysis
- c. Biomass pretreatment.
- d. Rural energy needs
- e. Biofuel
- f. Fermentation
- g. Functions of cell wall in plants
- h. Improved biomass cookstoves

**UNIT-I**

**Question 2.** (3,2)

- A. Explain composition and properties of biomass..
- B. Give the key benefits of bioenergy.

OR

- A. Classify the agroforestry systems on the basis of their structure and functions.
- B. What are the methods used for treatment of agriculture waste?

**UNIT-II**

**Question 3.** (3,2)

- A. What are the characteristics of an effective biomass pretreatment?
- B. Write a detailed note on biological pretreatment of biomass.

OR

- A. Write a note on dilute acid/alkali pretreatment of biomass.
- B. Explain steam explosion pretreatment method to treat biomass.

**UNIT-III**

**Question 4.** (3,2)

- A. Explain various factors affecting biogas generation.
- B. Differentiate between batch and continuous type biogas plants.

OR

- A. Explain floating gas holder and fixed dome type biogas plants.
- B. How would you handle the slurry produced from biogas production?

**UNIT-IV**

**Question 5.** (5)

- A. Explain biochemical conversion of lignocellulose to bioethanol.

OR

- B. Write a detailed note on CBP.





**CENTRAL UNIVERSITY OF HARYANA**

**End Semester Exams (Regular), June- 2022**

Programme : B.Voc. Biomedical Sciences  
Semester : 6<sup>th</sup> Semester  
Paper Name : Immunology  
Paper Code : BMS-601

Max Marks : 50  
Max Time : 3 hrs

**Attempt all 5 questions. Each question carries 10 marks.**

**Q1.** State whether the following statements are True or false. Give reason in support of your answer. Attempt any ten. (10 marks)

- (i) Innate immunity has memory.
- (ii) Hapten alone can activate immune system
- (iii) B-cell mature in thymus.
- (iv) Class switching occur result in antibody with high affinity
- (v) B-cell react with Tc cells.
- (vi) Adaptive immunity is not antigen dependent.
- (vii) Membrane attack complex is common in all type of complement system.
- (viii) Attenuated Vaccines revert back into virulent strain.
- (ix) IgG is more potent in activating complement system compared to IgM.
- (x) Somatic hypermutation occur in constant region of light chain.
- (xi) Polyvalent antibodies are produced by hybridoma technology.
- (xii) Protein are antigenic not immunogenic.

**Q2.** Define following terms : (10 marks)

- (i) Affinity maturation
- (ii) Clonal selection theory
- (iii) Allotypes
- (iv) Avidity
- (v) Adjuvant

**Or**

Describe in detail the structure of an antibody. (10 marks)

**Q3.** Describe the different types Vaccination with suitable example.

**Or**

Describe the classical complement system. (10 marks)

**Q4.** Describe the immunoelectrophoresis. (10 marks).

**Or**

Describe ELISA technique. (10 marks)

**Q5.** Describe Type 3 hypersensitivity. (10 marks)

**Or**

Describe (i) Primary and secondary immune response ( 5 marks)

(ii) Draw diagram of antigen presenting cell interacting with T<sub>H</sub> cell.(5marks)

# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June-2022

Programme: B.Voc. Biomedical Sciences

Session: 2021-22

Semester: IV

Max. Time: 3 Hours

Course Title: PHARMACOLOGY (Regular/Reappear)

Max. Marks: 50

Course Code: BMS-402

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) Define drug?
- b) Define Pharmacokinetics?
- c) Define Pharmacodynamics?
- d) What is Placebo effect?
- e) Activated Charcoal show its therapeutic activity due to its property of .....
- f) Females have smaller body size and require doses that are on the lower side of the therapeutic range (True/False).
- g) Define Pharmacogenetics?
- h) Expand NSAIDs?
- i) What is the function of diuretic drug?
- j) Muscarinic is a type of ..... receptor.
- k) What are catecholamines?
- l) Which amino acid is used as precursor molecule for the synthesis of catecholamines?
- m) Give one example of B2 agonist?
- n) Nicotinic receptor is blocked by .....

Q 2. (10)

- a) What is difference between the generic name and proprietary name of a drug? (3)
- b) What is the difference between pharmacopeia and formularies? (2)
- c) What is Bioavailability? How is it calculated? (2)
- d) What is the significance of bioequivalence? (2)
- e) What is apparent volume of distribution? (1)

Or

Q 2. (10)

- a) Describe the systemic route of drug administration? (5)
- b) What is biotransformation? Citing one example, demonstrate how a drug is metabolized by phase I and phase II reactions? (5)

# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June-2022

Programme: B.Voc Biomedical Sciences

Session: 2021-22

Semester: VI

Max. Time: 2 Hours

Course Title: Medicinal Chemistry (Regular)

Max. Marks: 25

Course Code: BMS-603

## Instructions:

1. Question no. 1 has seven parts and students need to answer any five. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 5 marks. Attempt any one part.

Q 1. (1X5=5)

- a) Diazepam is the derivative of .....
- b) SAR
- c) What is the need of lead modification?
- d) HTS
- e) Lead molecule
- f) Desensitization
- g) Bioisosteres

Q 2. (5)

Write a note on the process of modern rational drug design?

Or

Q 2. (5)

Describe the discovery of Librium as an example of drug discovery without rational drug design?

Q 3. (5)

- a) What is the difference between a pharmacophore and auxophore? (2)
- b) According to Lipinski, what are the properties of drug like molecules? (3)

Or

Q 3. (5)

Write a note on the sources of lead molecule? (5)

Q 4. (5)

Write a detailed note the structural modifications to increase the potency, therapeutic index and ADME properties? (5)

Or

Q 4. (5)

Describe the significance of Hansh's equation and Taft's equation? (5)

Q 5. (5)

Citing one example, describe the mechanism of action of alkylating agents?

Or

Q 5. (5)

- a) What factors are to be considered while designing the agonists? (2)
- b) What is the concept of tolerance and dependence? (2)
- c) What is partial antagonism? (1)

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B. Voc. Biomedical Sciences

Session: 2021-22

Semester: 2<sup>nd</sup>

Max. Time: 3 Hours

Course Title: Concepts in Chemistry-II

Max. Marks: 50

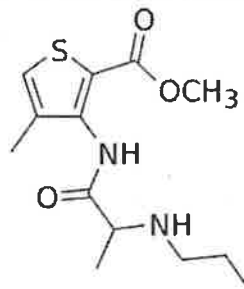
Course Code: BMS-201 (Reappear)

**Instructions:**

1. Question no. 1 has seven parts and students need to answer any four. Each part carries two and half Marks.
2. Question no. 2 to 5 have three parts and student need to answer any two parts of each question. Each part carries five marks.

Q 1. (4X2.5=10)

- a) Explain second law of thermodynamics.
- b) What are BOD and COD?
- c) What are the applications of IR spectroscopy?
- d) Arrange and explain the order of Aromaticity in following compounds:  
Pyrrole, Furan Benzene, and Thiophene.
- e) Identify the heterocyclic compound present in the following drug.



Q 2. (2X5=10)

- a) Write a short note on collision theory.
- b) Give the applications of colloidal solution.
- c) Explain the ways by which hardness of water can be removed.

Q 3. (2X5=10)

- a) What are the applications of UV spectroscopy?
- b) Describe the various modes of vibrations in a molecule joined by covalent bond.
- c) Explain the applications of IR spectroscopy.

Q 4. (2X5=10)

- d) State the applications of chelates in pharmaceutical preparations?
- e) Write the different forces which are responsible for the formation of complexes.
- f) Write down the structure of EDTA. State its various applications.

Q 5. (2X5=10)

- a) Write a short note on synthesis of Thiophene
- b) Pyridine is more basic than pyrrole. Explain.
- c) Why Pyrrole have higher boiling point as compared to furan and thiophene?

# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B.Voc Biomedical Sciences

Session: 2021-22

Semester: IV

Max. Time: 3 Hours

Course Title: CELL BIOLOGY (Regular/Reappear)

Max. Marks: 50

Course Code: BMS-401

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) .....is the marker molecule of lysosome.
- b) ..... is the motor protein which take cargo to negative end of the cell.
- c) ..... is the technique used to detect whether two proteins are interacting inside the cell.
- d) ..... are the cell in which intermediate filaments are absent.
- e) If individuals' units of lipids are wedged shape, ..... structure is formed by lipid molecule.
- f) The hydrophathy analysis predicts ..... hydrophobic helix for glycophorin.
- g) ..... and..... are two oxidative enzymes of peroxisomes.
- h) Define Autocrine signaling?
- i) Define nucleoplasm?
- j) pH of lysosome is basic. (True/False)
- k) Nuclear Lamina is composed of ..... filaments.
- l) Expand CDKs
- m) Oncogenes
- n) Metastasis

Q 2. (10)

- a) Describe the process of selective transport of protein to and from the nucleus? (3)
- b) What is endo-symbiotic theory of evolution of eukaryotic cell? (3)
- c) Describe how the proteins are imported into endoplasmic reticulum by post-translational translocation? (4)

Or

Q2.

- a) Describe RNA world theory? (3)
- b) Describe the mechanism of protein folding in the endoplasmic reticulum? (5)
- c) What is the function of flippase enzyme? (2)

# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B.Voc Biomedical Sciences

Session: 2021-22

Semester: I

Max. Time: 3 Hours

Course Title: Human Physiology (Reappear)

Max. Marks: 50

Course Code: BMS-101

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) RBC count of the blood is .....
- b) Amount of Hemoglobin present in blood is .....
- c) Function of Insulin is .....
- d) pH of Urine is .....
- e) Function of saliva is .....
- f) Exocrine glands .....
- g) Anemia
- h) Peristalsis
- i) Grey Matter
- j) In which organ islets of langerhans is present
- k) Leucopenia
- l) pH of buccal cavity is .....
- m) Function of melanin is .....
- n) Full form of GFR is .....

Q 2. (10)

- a) Describe the three classes of proteins present in blood plasma? (5)
- b) Classify leukocytes on the basis of their lineage, their main structural features and their primary function? (5)

Or

Q2.

- a) Explain the events of the cardiac cycle? (10)

Q 3. (10)

- a) Describe the principle of oxygen transport? (5)
- b) How the respiratory centers in the brain controls and regulates pulmonary ventilation?(5)

**CENTRAL UNIVERSITY OF HARYANA**

End Semester Examinations June 2022

**Programme: B. Voc. Biomedical Sciences**

**Session: 2021-22**

**Semester: 3<sup>rd</sup>**

**Max. Time: 3 Hours**

**Course Title: Concepts in Chemistry-III**

**Max. Marks: 25**

**Course Code: BMS-303 (Reappear)**

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**Instructions:**

1. Question no. 1 has seven parts and students need to answer any five. Each part carries one Mark.
2. Question no. 2 and 3 have three parts and student need to answer any two parts of each question. Each part carries five marks.

Q 1. (5X1=5)

- a) Explain Saytzeff rule.
- b) What is Hofmann rule?
- c) Why benzaldehyde don't undergo aldol condensation?
- d) Which alkene gives only acetone on ozonolysis?
- e) Name different types of organic reactions.
- f) Out of  $S_N^1$  and  $S_N^2$ , which follows single step mechanism?
- g) What are condensation reactions?

Q 2. (2X5=10)

- a) Differentiate between E1 and E2 elimination.
- b) Explain the initiation, propagation and termination steps in free radical reaction using an example.
- c) Write a short note on cycloaddition reactions.

Q3. (2X5=10)

- a) Write short note on Aldol Condensation.
- b) Write short note on Diels- Alder Reaction.
- c) Write short note on Ozonolysis.

# CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations June 2022

Programme: B.Voc Biomedical Sciences

Session: 2021-22

Semester: V

Max. Time: 3 Hours

Course Title: Medical Genetics (Reappear)

Max. Marks: 50

Course Code: BMS-501

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## Instructions:

1. Question no. 1 has fourteen parts and students need to answer any ten. Each part carries one mark.
2. Question no. 2 to 5 carry two parts. Each part carries 10 marks. Attempt any one part.

Q 1. (1X10=10)

- a) Turner Syndrome is a genetic disease. (True/False)
- b) Huntington disease is a genetic disease. (True/False)
- c) Define allele?
- d) Define gene?
- e) Genetic drift
- f) Barr bodies
- g) Genomic imprinting
- h) How many genes are present in mitochondrial genome in humans?
- i) Karyogram
- j) Full form of FISH is .....
- k) Pharmacogenomics
- l) Tip of chromosome is called Telomere (True/False)
- m) If the centromere occurs in the middle of chromosome, the chromosome is said to be.....
- n) Oncogenes

Q 2. (10)

- a) What is Medical Genetics? What is its scope? (5)
- b) Write a note on the types of genetic diseases? (5)

Or

Q2.

- a) What is mutation? What are different types of mutation? (5)
- b) What is sickle cell anemia? How is it caused? (5)

Q 3. (10)

- a) Write a note on Mendelian principles? (5)
- b) Describe the factors that cause expression of disease-causing genes? (5)