

CENTRAL UNIVERSITY OF HARYANA

End Semester Exams, December 2018

Programme : B.Voc. Biomedical Sciences

Semester : 1st Semester

Paper Name : Human physiology

Paper Code : BMS-101

Max Marks : 50

Max Time : 3 hrs

Attempt all 5 questions. Each question carries 10 marks.

Q1: (a) to (e) carries one mark and (g) to (h) carries two marks each.

(a) Define Action Potential

(b) Define Peristalsis

(c) Define GFR

(d) Concept of Blood Brain Barrier was given by

or

(d) Diencephalon consist of.....and.....

(e) Which part of brain is effected by alcohol?

(f) What is the function of parietal cells?

(g) Differentiate between Paracrine and endocrine secretion

or

(g) Differentiate between Polycythemia and sickle cell anemia

(h) Differentiate between Primary and secondary lymphoid organ

or

(h) Differentiate between lipid soluble hormone and water-soluble hormone

Question 2:

(a) What is joint diastole? How is it different from ventricular systole? **(5 marks)**

(b) Comment on the role of thrombin and calcium ions in blood clot formation
(5 marks)

or

(a) Hemoglobin is a protein, which plays role in oxygen transport. State two forms of hemoglobin involved in transport of oxygen. **(3 marks)**

- (b) How presence of 2,3 bisphosphoglycerate present inside RBC cells regulate Oxygen delivery? **(4 marks)**
- (c) Besides binding to oxygen, Hb also binds to CO gas. Comment on the affinity of Hb towards the CO **(3 marks)**

Question 3:

- (a) How is the rate of respiration controlled by brain? **(3 marks)**
- (b) What is the function of pulmonary circulatory system? **(2 marks)**
- (c) Differentiate between asthma and pneumonia. **(2 marks)**
- (d) Comment on role of 2,3-BPG in oxygen transport in cell. **(3 marks)**

or

Write a short note on the following with diagram: - **(Each 2 marks)**

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

Question 4:

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? **(10 marks)**

or

- (a) Define Neurotransmitters? Give three examples? **(2 marks)**
- (b) What are ion channels? Explain its types? **(5 Marks)**
- (c) What is resting phase potential? What are the factors that contribute to it? **(3 marks)**

Question 5:

- (a) Insulin is water-soluble hormone, which regulate the glucose level in blood plasma. What is the role of insulin in type I and type II diabetes mellitus. **(5 marks)**
- (b) What is autocrine mode of hormone secretion? How it is different from other two modes? **(5 marks)**

or

- (a) Describe the process of urine formation in human body? **(7 marks)**
- (b) Name three hormones, which regulates the concentration of urine in human body. Define their functions? **(3 marks)**

Central University of Haryana
End Semester Examination, December 2018
(Regular, July 2018 Admission)

Program : B Voc Biomedical Sciences
Semester : I
Paper Name : Concepts in Chemistry-I
Paper code : BMS -102
Max Marks : 50
Max Time : 3 hours

Question No. 1 is compulsory. Attempt one question from each Unit

Question No.1 Attempt any 10 questions. Each question carries 1 mark.

1. State Le Chatelier's Principle.
2. Why indicators are used in titrations?
3. What are aprotic solvents?
4. Give electronic configuration of oxygen atom.
5. Define Molarity.
6. What is a hypertonic solution?
7. Write electronic configuration of Boron.
8. Write a note on Diels-Alder reaction.
9. Draw the structures of diphenylmethane and triphenylmethane.
10. Write a note on hydrogenation of oils.
11. How will you prepare amines?
12. Differentiate soaps and detergents.
13. What do you mean by rancidification of oils?
14. Arrange the following carbocations according to their stability. Justify your answer.
a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2^+$ b) $(\text{CH}_3)_3\text{C}^+$ c) $\text{CH}_3\text{CH}_2\text{CH}^+\text{CH}_3$

Unit 1

Question No 2 (10 marks)

- 1) Derive the law of Chemical Equilibrium in terms of partial pressure.
- 2) (i) Calculate the pH of an aqueous solution obtained by mixing 50 ml of 2.0M HCl and 50 ml 0.1M NaOH. (2)
(ii) Calculate the gram of NaCl required for making 100 ml of 1% isotonic Atropine Sulfate solution using NaCl method.
E value of Atropine Sulfate = 0.13 (3)

OR

Question No 3 (10 marks)

- a) State the law of Mass Action and the law of Chemical Equilibrium. Derive Van't Hoff reaction isotherm. (5)
- b) Write a short note on Arrhenius Concept of acids and bases. (2)
- c) Calculate K_p , K_c and K_x at 25°C and 1 bar total pressure for the reaction. (3)
 $\text{H}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g}) \leftrightarrow \text{H}_2\text{O}(\text{g})$
Given $\Delta G^\circ = -228.572 \text{ kJ}$

Unit 2

Question No 4

- Write a short note on inert pair effect. (5)
- Why is Sc^{3+} colourless while Ti^{3+} coloured? ($\text{Sc}=21$, $\text{Ti}=22$) (2)
- How does the size of atoms vary from left to right in a period and on descending a group in the periodic table? What are the reasons for these changes? (3)

OR

Question No 5

- Write a short note on diagonal relationship. (5)
- Explain catalytic activity of transition metals. (2)
- Differentiate between Lanthanoids and Actinoids. (3)

Unit 3

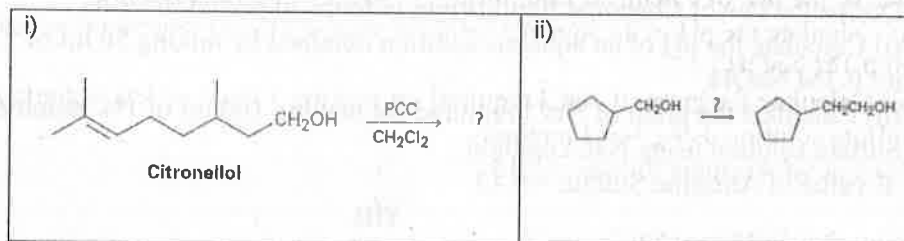
Question No 6 (10 marks)

- How are aldehydes and ketones prepared? What happens when acetaldehyde is treated with a) HCN b) CH_3MgI c) NH_2OH . (5)
- Generate structure for the following molecules i) 5-chloro pent-1-yne ii) *E*-2,5,5-Trimethyl-4-oxo-2-heptenoic acid iii) 4-methyl-3-penten-2-ol. (3)
- How will you generate carbenes? Draw the structures of singlet and triplet carbene with a mention about hybridisation. (2)

OR

Question No 7

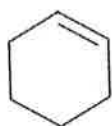
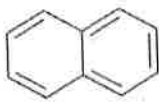
- Write notes on i) ozonolysis ii) aldol reaction iii) Hoffmann degradation Reaction. (5)
- Describe the hemolysis and heterolysis of a covalent bond with suitable Examples. (2)
- Predict the missing parts. (3)



Unit 4

Question No 8 (10 marks)

- a) Identify the aromatic compounds and justify your answer with the help of Huckel Rule. (5)

i)  cycloheptatrienyl cation	ii) 	iii) 	iv) 	v) 
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- b) Describe one industrial method for the preparation of soap. (3)
c) Give the mechanism for the conversion of benzene to acetophenone. (2)

OR

Question No 9 (10 marks)

- a) Describe the structure of benzene according to molecular orbital theory. (5)
b) What are the limitations of Friedel-Crafts alkylation reactions? (2)
c) How will you prepare a detergent? What are the different types of detergents? (3)

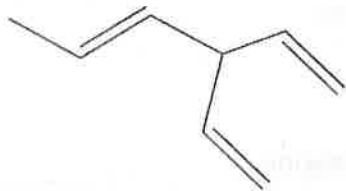
Central University of Haryana
End Semester Examination (Regular), December 2018

Program : B. Voc. Biomedical Sciences
Semester : III (Batch July 2017)
Paper Name : Concepts in Chemistry-II
Paper code : BMS -303
Max Marks : 25
Max Time : 3 hours

Question No. 1 is compulsory. Attempt one question from each Unit

Question No.1 Attempt any 5 questions. Each question carries 1 marks

- a) Why formic acid is stronger acid than acetic acid?
- b) Give IUPAC nomenclature for:



- c) Give products for the following reaction:



- d) What is resolution of racemic mixture?
- e) Define BOD.
- f) What do you understand by pH of a solution?

Unit 1

Question No 2 (2+3 marks)

- a) Write short note on Resonance effect.
- b) Differentiate between E1 and E2 mechanism.

OR

Question No 3 (5 marks)

Write a short note on S_N^2 mechanism.

Unit 2

Question No 4 (5 marks)

Write a short note on Oxymercuration- Demercuration reaction.

OR

Question No 5 (5 marks)

Write short note on Reimer –Tiemann reaction.

Unit 3**Question No 6 (5 marks)**

Give stereochemical formulas for all possible structure of tartaric acid. Label pair of enantiomers and meso compounds. Tell which isomers, if separated from all other stereoisomers, will be optically active. Give R/S specifications.

OR

Question No 7 (5 marks)

Define Racemization. Give different method of Racerization.

Unit 4**Question No 8 (5 marks)**

Derive the law of Chemical Equilibrium in terms of mole fraction.

OR

Question No 9 (2+3 marks)

- Write a short note on Arrhenius concept of acids and bases.
- Calculate the pH and $[H^+]$ and $[OH^-]$ of $3.2 \times 10^{-3}M$ solution of $Ba(OH)_2$ in water at $25^\circ C$.

CENTRAL UNIVERSITY OF HARYANA
End Semester Exams(Regular), December 2018

Programme : B.Voc. Biomedical Sciences
Semester : 3rd Semester
Paper Name : Medical Biochemistry
Paper Code : BMS-301
Max Marks : 50
Max Time : 3 hrs

Attempt all 5 questions. Each question carries 10 marks.

Q1: Do any five. Each part carries two marks

- (a) Anomers
- (b) Activation energy
- (c) K_m
- (d) Specific activity
- (e) Anaplerotic reactions
- (f) α helix
- (g) Isoelectric point (pI)
- (h) Substrate level of phosphorylation
- (i) Turnover number
- (j) Coenzyme

Q2: Write down the steps involved in glycolysis with all the enzymes involved and energy yield per molecule of glucose **(10 marks)**

Or

- (a) Name different ketone bodies formed in humans. When do ketone bodies are overproduced? **(5 marks)**
- (b) What is acidosis and ketosis? **(5 marks)**

Or

Q3: Draw the Urea cycle with all intermediates and enzymes. **(10 marks)**

Or

Draw Krebs cycle with all intermediates and enzymes **(10 marks)**

Q4: (a) How many turns of the fatty acid oxidation cycles are required for complete oxidation of palmitoyl acid to acetyl-CoA (16:0). **(2 marks)**

(b) How many ATPs are produced when palmitoyl acid is completely oxidized into CO_2 . **(2 marks)**

(c) How does a fatty acid having more than 12 chain length entry into mitochondria? **(6 marks)**

Or

(a) Define Michaelis Menten constant. What are the two assumptions of Michaelis Menten saturation kinetics? State the relationship between K_m and enzyme affinity. **(5 marks)**

(b) During purification of protein, enzyme activity decreases whereas specific activity increases. Comment on the statement with explanation. **(5 marks)**

Q5: (a) Write short note on Watson and Crick model of DNA **(5 marks)**
(b) Differentiate between A, B and Z form of DNA **(5 marks)**

Or

What enzyme inhibition. Explain the types of inhibition with suitable graphs. **(10 marks)**

CENTRAL UNIVERSITY OF HARYANA

End Semester Exams, December 2018

Programme : B.Voc. Biomedical Sciences

Semester : 3rd Semester

Paper Name : Cell Biology

Paper Code : BMS-302

Max Marks : 50

Max Time : 3 hrs

Attempt all 5 questions. Each question carries 10 marks.

Q1: Do any five. Each part carries two marks

- (a) Average size of animal and plant cells
- (b) Nuclear lamina
- (c) Number of mRNA, tRNA and rRNA encoded by human mitochondrial DNA
- (d) Two extracellular matrix adhesion proteins
- (e) Paracrine signaling
- (f) Expand MTOC
- (g) Phases of cell cycle where division of oocytes is arrested
- (h) Pluripotency

Q2: Differentiate between plant and animal cells with labelled diagrams. (10 marks)

OR

(a) Explain structure of nucleus with labelled diagram. (5 marks)

(b) Describe vesicular transport of proteins. (5 marks)

Q3: (a) Describe structure of mitochondrion with labelled diagram. (5 marks)

(b) Why mitochondrion is known as semi – autonomous organelle? (5 marks)

OR

(a) Describe active transport of small molecules with suitable examples. (6 marks)

(b) Define a cell junction. Write names of four cell - cell junctions? (4 marks)

Q4: What is meant by Signal Transduction? What are the general steps by which signal transduction occur by describing the mechanism of action via Receptor Tyrosine Kinase? (10 marks)

OR

Explain mechanism of muscle contraction in detail with labelled diagram. (10 marks)

Q5: What are different phases of mitotic cell division? Specify events occurring in each phase. (10 marks)

OR

(a) Discuss the role of stem cells in maintenance of adult tissues. (5 marks)

(b) Describe autophagy with labelled diagram. (5 marks)

Central University of Haryana
End Semester Examination, December 2018
(Reappear; July 2017 Admission)

Program : B. Voc. Biomedical Sciences
 Semester : I
 Paper Name : Concepts in Chemistry-I
 Paper code : BMS -102
 Max Marks : 50
 Max Time : 3 hours

Question No. 1 is compulsory. Attempt one question from each Unit

Question No.1 Attempt any 5 questions. Each question carries 2 marks.

- a) Define atomic number
- b) What are symbols of i) nitrogen ii) calcium iii) helium iv) chlorine
- c) Write a note on groups of periodic table.
- d) What is electronegativity?
- e) What are acids?
- f) What are the melting point and boiling point of water?
- g) Define covalent bond
- h) Define surface tension.

Unit 1

Question No 2 (10 marks)

- a) What are the molecular formulae of i) water ii) ammonia iii) methane iv) sodium chloride v) sulphuric acid (5)
- b) Define the following terms i) mole ii) atomic radius iii) atomic mass. (5)

OR

Question No 3 (10 marks)

- a) State Dalton's atomic theory. (5)
- b) Give examples of diatomic and triatomic molecules. (3)
- c) Calculate the number of moles in 18 g of water. (2)

Unit 2

Question No 4 (10 marks)

- Write a note on Long form of periodic table. (5)
- What are d block elements? What is their general outer electron Configuration? (3)
- Define i) ionisation energy ii) electron affinity. (2)

OR

Question No 5 (10 marks)

- Write a note on s and p block elements. (5)
- What is the periodic trend of electron affinity and ionization energy? (5)

Unit 3

Question No 6 (10 marks)

- What do you mean by pH? How will you distinguish acids, bases and neutral compounds by pH? What are the applications of pH? (5)
- Define i) osmosis ii) evaporation iii) density iv) absorbance. (5)

OR

Question No 7 (10 marks)

- What is the difference between acids and bases? Give examples for each. (5)
- What is difference between condensation and evaporation? (3)
- Define diffusion. (2)

Unit 4

Question No 8 (10 marks)

- Give examples 5 physical properties of liquids. (5)
- What do you mean by surface tension? What are its applications? (3)
- What are the applications of viscosity? (2)

OR

Question No 9 (10 marks)

- How will you measure surface tension? (5)
- What is viscosity? What is its relation with temperature? (3)
- What are the applications of refractive index? (2)

III Semester UG Term Examination. 2018

Name of Programme	: B. Voc (Industrial Waste Management/Biomedical Sciences)
Year & Semester	: December, 2018, Semester-III (Reappear)
Course Name	: Introductory Mathematics
Course Code	: BMS-302
Maximum Marks	: 25
Duration: 3Hrs	

Attempt any five questions selecting one question from each unit. Question 1 is compulsory. (1x5)

Question 1. Do any five:

1. In a class of 60 students if 45% are girl students, find the number of boy student in the class.
2. Find H.C.F. of 25 and 115.
3. Define rational number with an example.
4. Find simple interest on a sum of money 2000, @5% for two years.
5. Find area of circle with radius 21cm.
6. If a square is inscribing a circle of radius 4, then find area of square.
7. What will be the mean of first ten natural numbers?
8. Find mode of the data: 40, 43, 39, 40, 38, 40, 42.

(3, 2)

Question 2.

1. Find square root of 729.
2. Write a short note on BODMAS rule of solving a mathematical expression.

OR

1. If a square of side 4cm has been cut out from a big square of side 10 cm, then find the area of remaining piece of big square.
2. Represent $0.999999\ldots$ in the form of p/q .

(3, 2)

Question 3.

1. A shopkeeper marks an article 5% above the actual price. If Sale Price of this article is Rs. 420, then find the actual price.
2. Give an example of bar graph.

OR

1. Two equal amounts of money are deposited in two banks, each at 9% per annum, for $9/2$ and $13/2$ years. If the difference between their interests is Rs.288, then find sum?

2. If sell price of an article is 120 and cost price is 90 find loss or gain percentage?

(3, 2)

Question 4.

1. Find radius of a big circle, whose area is equal to the sum of areas of two smaller circles of radii 3cm and 4cm
2. Find volume of a cylinder of radius 3cm and height 7cm.

OR

1. A rectangular path 4m wide has been made around a rectangular park of length 30m and breadth 24m. Find area of the path?
2. Prove that angle subtended by a semicircle is right angle.

Question. 5.

(3, 2)

1. The following table shows the expenses of a locality. Find the mean of expenses.

Expenses (in Rs.)	100-200	200-300	300-400	400-500	500-600
Number of person	7	8	6	5	4

2. Define Mean of a given data.

OR

1. Find median of following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Number of students (f)	6	4	7	2	4	8	5	3	2	9

2. Write significant number up to two places of decimal for the following numbers

- i. 10.236
- ii. 65.123