Q. P. Code: 33292

Time: 3 Hours   **Marks: 70**

Q.1 (a) If 5% of an acid dissociates into ions, what is the fraction of acid unionized? (2)

(b) State Henry's Law of solubility of gases in liquids and discuss the factors affecting the solubility. (3)

(c) Define order and molecularity of a chemical reaction and explain with a suitable example the difference between the two. (3)

(d) What is Spreading Coefficient? What is its significance? (3)

(e) What is ion selective electrode? Give one example (2)

(f) Give the classification of colloids. (2)

Q.2 (a) What is a buffer solution? Discuss the term "Tonicity of a solution". Write in brief about "biological buffers". (4)

OR

(a) What are applications of buffers in pharmaceutical industry? What is the difference between isotonic solution and iso-osmotic solution?

(b) State phase rule and define each term involved in the phase rule. Draw a neat phase diagram of any two component system. (4)

(c) Derive equation for the specific reaction rate constant of a second order reaction (a=b). (3)

Q.3 (a) What is the difference between ideal and non-ideal solution? What is partition coefficient? Comment on partition coefficient of benzoic acid between water and benzene. (4)

(b) Discuss any one method to determine order of a chemical reaction. (4)

OR

(b) Define energy of activation and give application of Arrhenius equation.

(c) What is the difference between soluble monolayer and insoluble monolayer? State Gibb's adsorption equation. (3)

Q.4 (a) Give a short account of Bronsted-Lowry and Lewis electronic theory of acid and base. (4)

(b) Give the classification of electrodes and draw a neat diagram of a glass electrode. (3)

(c) Discuss in detail the optical and kinetic properties of colloids. (4)

OR

(c) Give an account of electrical properties of colloids (Discuss either electrophoretic mobility or the zeta potential)

Q.5 (a) How does transition state theory explains the endothermic and exothermic reaction? (3)

(b) What is the difference between adsorption and absorption? Discuss "Langmuir Adsorption Isotherm". Give its application. (4)

(c) Define gold number and explain how to determine it. (4)

OR

(c) What is protective colloid? State and explain Schultz and Hardy rule.

Page 1 of 2

3A43C78EF12A14F33912714CDBD88662

Q.6 (a) If a drug decomposes by first order mechanism and its shelf life is 4 months calculate the (3)
specific reaction rate constant of the drug decomposition process.

(b) Discuss in detail drop weight method to determine the surface tension of a liquid. (4)

(c) What is a concentration cell? Explain with suitable example. Write the equation for the (4)
emf of a concentration cell.

Duration: 3 hours   **Total marks: 70**

N.B. (1) Figures on the right indicate total marks.

(2) All questions are compulsory

(3) Draw the diagrams wherever necessary.

Q.1.   10

A]   Answer the following brief (any ten)

   i)   Define and classify antidotes?

   ii)   What is meant by half-life of radioactive element?

   iii)   What causes temporary hardness of water?

   iv)   "Boric acid is for external use only". State whether true or false and justify?

   v)   Give name of two inorganic antioxidants.

   vi)   What is mechanism of action of hydrogen peroxide?

   vii)   Define ionizing radiation.

   viii) Give any two abrasives used in the dental products?

   ix)   What are the characteristics of an ideal antimicrobial agent?

   x)   Enlist different buffer systems in human body.

   xi)   Give two examples of drugs used as Ca supplement.

B]   i)   What is *Hyper natremia*? What are its symptoms and treatment?   2

     ii)   Write a note on antacid combination therapy?   3

Q. 2

A]   Write a note on gastric protective and adsorbing agents.   4

B]   Write a note on Anesthetics.   3

C]   i)   Write a note on sclerosing agents and its ideal characteristics.   4

     ii)   What are consequences of cyanide poisoning and how is it treated?

Q.3

A]   Explain the need and application of hematinic.   2

B]   Explain and compare various anticaries agents.   4

C]   i)   Write a note on biological effects of different types of radiations?   3

     ii)   Describe role of Iodine radioisotope as diagnostic agents   2

Q.4

A]   Define buffers and buffer action? Enumerate different types of pharmaceutical buffers.   4

B]   Write short notes on (any two)   4

     i)   Preservatives in pharmaceuticals

     ii)   Lubricants

     iii)   Antioxidants

C]   What are applications of radiopharmaceuticals?   3

Q.5

A]   Discuss the role of copper as essential and trace ion.   4

B]   Write a note on Chelating Agents as antidotes in metal poisoning.   3

C]   Write a note on different types of water.   4

Q.6

A]   Answer the following (any two)   6

     i)   Write a note on acid-base imbalance and measures to rectify.

     ii)   Discuss in brief the electrolyte combination therapy.

     iii)   Write a note on physiological role of chloride and bicarbonate.

B]   i) Write a brief note on calamine as a topical agent.   3

C]   What are Expectorants? Give example and explain their modes of action.   2

(3 hours)   Total Marks: 70

N.B.: **All** questions are compulsory

Q. 1a) Draw the structure of β-D glucose by using Haworth projection formula   1

b) Draw the structure of D-xylose by using Fischer projection formula   1

c) Define vitamins   1

d) Define enzyme induction and repression   1

e) Explain inversion of sucrose   1

f) Draw the structure of Lecithin   1

g) Name the proteolytic enzyme required for digestion of protein   1

h) Deficiency of Vitamin C leads to…………………..   1

i) Write the structure of any one epimer of glucose   1

j) Give name and draw the structure of an aromatic amino acids   2

k) Explain catabolism with example   2

l) Name and write the structure of coenzyme form of Vitamin B_1 2

Q. 2 a) Derive Michaelis Menten equation.   3

b) Give the role of FADH2 as an energy carrier   3

c) Discuss the biochemical role played by Vitamin B2 or Vitamin B6   3

d) Enumerate silent features of digestion and absorption of carbohydrates   2

Q. 3 a) Write a note on starch   3

b) Give detail account of vitamin folic acid   3

c) Write the reaction catalyzed by following enzymes (any two)   3

   i) Thymidylate synthetase   ii) DHFR   iii) HIV protease

d) What is the concept of free energy and standard free energy   2

Q. 4 a) Classify amino acids based on their nutritional requirement give at least two structures

   of each class   3

b) Write a note on Glycolipid or Lipoprotein   3

c) Discuss the biochemical role of pantothenic acid or nicotinamide   3

d) Explain thermodynamically favorable reaction   2

Turn Over

Q. 5 a) Write a note on diassccharides   3

    b) Explain with reaction role of retinal in the body   3

    c) Write a note on Vitamin D or Vitamin A   3

    d) Classify fatty acids with example   2

Q. 6 a) Give detail classification of lipid   3

    b) Write a note on Ascorbic acid or Biotin   3

    c) Describe α- helix structure of protein in detail   3

    d) Differentiate between fats and oils   2

Q. P. CODE:40154

(3Hours)   (Total Marks: 70)

Please check whether you have the right question paper.

N.B.:   1)   All questions are compulsory.
           2)   Figure to the right indicate full marks.
           3)   Draw neat labelled diagram wherever applicable.

1.	a)	Justify: Drug has to be dispensed in suitable dosage form.	2
	b)	Define absorption and Excretion.	2
	c)	Calculate quantity of dextrose required to prepare 250 ml of 5% dextrose solution.	1
	d)	What is importance of Rheology?	1
	e)	Elaborate on Linctus and Elixirs. OR	4
		Give a note on Artificial syrup.	
	f)	Explain Oral Rehydrating Solution.	2
	g)	Give pharmaceutical applications of complexes.	2
	h)	Explain Hixson- Crowell law.	1
2.	a)	Discuss advantages and Limitations of Rectal route of administration.	3
	b)	Write a note on Homeopathy system of medicine.	2
	c)	Give importance of Partition coefficient in preformulation studies of liquid orals.	2
	d)	What is a primary package? Elaborate on containers for packaging of liquid dosage forms.	3
	e)	Enlist different methods of analysis of Complexes.	1
3.	a)	Explain GMP with respect to Buildings.	2
	b)	Discuss in brief Pseudoplastic flow of liquids.	2
	c)	Give a note on Turbine Mixers.	2
	d)	List the derived properties of powder and explain determination of any 2 properties. OR	4
		Explain determination of particle size by Sieve analysis.	
	e)	State Fick's first law of Diffusion.	1
4.	a)	Define terms (any three): Elixir, Liniments, Dusting powder, Ointment.	3
	b)	From the following formula calculate quantity of each ingredient required to make 750 g of ointment.	2
		i) Zinc oxide 0.4 %W/W	
		ii) Calamine 0.2 %W/W	
	c)	Discuss buffers used in formulation of monophasic liquid dosage forms.	2
	d)	Explain particle size separation by Cyclone separator.	2
	e)	Explain intrinsic dissolution rate.	2

B87329C60B9BC06C8E5329E3EBE2F252

5. a) Discuss historical background of pharmacy profession in India.   2
    b) Explain measurement of flow of liquids using Ostwald viscometer.   2
    c) Discuss principle and working of any one Filtration equipment.   3
    d) Give an account of size reduction mills based on principle of impact.   4

6. a) What is Pharmacopoeia? Give an account of British Pharmacopoeia.   3
    b) Explain in brief factors affecting bioavailability.   2
    c) Describe Quality control tests for monophasic liquid dosage form.   4

        OR

        Outline the steps in large scale manufacturing of monophasic liquid
        dosage form.
    d) Give different designs of blenders for powder mixing.   2

_____

Q. P. CODE:40154

(3Hours)   (Total Marks: 70)

Please check whether you have the right question paper.

N.B.:   1)   All questions are compulsory.
         2)   Figure to the right indicate full marks.
         3)   Draw neat labelled diagram wherever applicable.

1.	a)	Justify: Drug has to be dispensed in suitable dosage form.	2
	b)	Define absorption and Excretion.	2
	c)	Calculate quantity of dextrose required to prepare 250 ml of 5% dextrose solution.	1
	d)	What is importance of Rheology?	1
	e)	Elaborate on Linctus and Elixirs. OR	4
		Give a note on Artificial syrup.	
	f)	Explain Oral Rehydrating Solution.	2
	g)	Give pharmaceutical applications of complexes.	2
	h)	Explain Hixson- Crowell law.	1
2.	a)	Discuss advantages and Limitations of Rectal route of administration.	3
	b)	Write a note on Homeopathy system of medicine.	2
	c)	Give importance of Partition coefficient in preformulation studies of liquid orals.	2
	d)	What is a primary package? Elaborate on containers for packaging of liquid dosage forms.	3
	e)	Enlist different methods of analysis of Complexes.	1
3.	a)	Explain GMP with respect to Buildings.	2
	b)	Discuss in brief Pseudoplastic flow of liquids.	2
	c)	Give a note on Turbine Mixers.	2
	d)	List the derived properties of powder and explain determination of any 2 properties. OR	4
		Explain determination of particle size by Sieve analysis.	
	e)	State Fick's first law of Diffusion.	1
4.	a)	Define terms (any three): Elixir, Liniments, Dusting powder, Ointment.	3
	b)	From the following formula calculate quantity of each ingredient required to make 750 g of ointment.	2
		i) Zinc oxide 0.4 %W/W	
		ii) Calamine 0.2 %W/W	
	c)	Discuss buffers used in formulation of monophasic liquid dosage forms.	2
	d)	Explain particle size separation by Cyclone separator.	2
	e)	Explain intrinsic dissolution rate.	2

B87329C60B9BC06C8E5329E3EBE2F252

5. a) Discuss historical background of pharmacy profession in India. 2

   b) Explain measurement of flow of liquids using Ostwald viscometer. 2

   c) Discuss principle and working of any one Filtration equipment. 3

   d) Give an account of size reduction mills based on principle of impact. 4

6. a) What is Pharmacopoeia? Give an account of British Pharmacopoeia. 3

   b) Explain in brief factors affecting bioavailability. 2

   c) Describe Quality control tests for monophasic liquid dosage form. 4
   <div align="center">OR</div>
   Outline the steps in large scale manufacturing of monophasic liquid dosage form.

   d) Give different designs of blenders for powder mixing. 2

[Time: Three Hours]   [Marks: 70]

Please check whether you have got the right question paper.

N.B: 1. **All questions are compulsory**
          2. **Figures to the right indicates full marks.**
          3. **Draw neat, Labelled diagrams wherever necessary**

Q.1 a)   Answer the following: (12 Marks)
     i)   Define the terms
           1) Vital Capacity   2) Residual volume.
     ii)   Enlist the hormones secreted by posterior pituitary gland with their
           biological role.
     iii) What is diabetes insipidus?
     iv)   Enlist the neuroglia cells of CNS with functions.
     v)   Give the signs and symptoms of Parkinson's disease.
     vi)   Discuss in short light & dark adaptation.

     b)   Answer the following: (03 Marks)
     i)   Respiratory centers are situated in _____ .
     ii)   _____ & _____ are the inhibitory neurotransmitters.
     iii) Name the bones of auditory ossicles.

Q.2 a)   Answer the following (**Any Two**):   (08 Marks)
     i)   Compare benign & malignant tumour.
     ii)   Discuss in detail cellular adaptations.
     iii) Explain the etiology of cancer.

     b)   Discuss the biology effects of (**Any one**):   (03 Marks)
     i)   UV radiation
     ii)   Nuclear radiation

                                                                           Turn over