B. Pharm, Sem-IV (BSGS)
SUB - PA-I
K.T. Dec 201

Q.P. Code : 527600

3 Hours (Total marks: 70)

N.B. 1. All questions are compulsory
2. Figures to right indicate full marks.
3. Draw neat labelled diagrams wherever necessary.
4. Attempt answer of each main question on new page.

Q.1 A. Define: (4)
i. pH
ii. Buffer capacity
iii. Complexones
iv. Blank determination

B. Name/Give examples of the following: (3)
i. Reductants
ii. Factors affecting solubility of precipitates
iii. Substance assayed by back iodometry

C) Answer the following: (8)
i. Balance following half cell reactions:
a) $CrO_4^{2-} \rightarrow Cr^{3+}$
b) $IO_3^- \rightarrow I^-$
ii. Explain primary coulomeric titrations
iii. Draw a neat labelled diagram of apparatus used in electrogravimetry.
iv. 25ml aliquot of a 0.4%w/v aqueous solution of acetanilide was extracted with 100ml of ether. The ether extract was evaporated to dryness and the residue was weighed. The ether-water partition coefficient for acetanilide is 3.0. What was the weight of the residue?

Q. 2 A. Give principle and reactions for a type of precipitation titration which involves formation of coloured precipitate. (4)

B. Explain standardization of KFR as per I.P. (4)

C. Explain the characteristics of solvents used in non-aqueous titrations. (3)

Q. 3 A. What is monograph? Give principle and reaction involved in assay of dried aluminium hydroxide gel I.P. (4)

B. Write short notes on: (4)

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a) Current –voltage curve

b) Half wave potential

C. Name the analytes assayed by each of the following type of redox titrations- (3)

i. Permanganometry

ii. Cerrimetry

iii. Iodimetry

Q. 4 A. Explain mixed indicators? Add a note on choice of indicators for aqueous acid base titrations. (4)

B. i. Write short note on co-precipitation (4)

ii. Give two examples of each Organic and inorganic precipitating agents.

C. Give principle and reactions involved in assay of hydrogen peroxide **OR** dried ferrous sulphate (3)

Q. 5 A. What are EDTA indicators. Justify the role of buffers in complexometric titrations. (4)

B. Explain factors influencing liquid- liquid extraction. (4)

C. In the content uniformity assay of tablets, each containing "drug X" 500mg following data were obtained. (3)

Weights (mg): 508, 518, 493, 509, 489, 501

Calculate median and RSD.

Q. 6 A. 25 cm^3 of 0.05 M HCl is titrated with 0.05 M NaOH. Calculate the pH values at the start of titration and after addition of 5, 25, 30 cm^3 of titrant. (4)

B i. In Kjeldahl's method, ammonia obtained from 0.9 g of an organic compound completely neutralized 90ml of M/20 H_2SO_4. What is the percentage of nitrogen in the compound. (2)

ii. Give principle involved in assay of sulphacetamide sodium. (2)

C. Give chemical reactions involved in gravimetric assay of- (3)

i. Nickel by dimethylglyoxime

ii. Aluminium by oxine reagent

B. Pharm, Sem-II (CBSGS) Winter
Sub. Pharmaceutics-II K.T. D&201

Q.P. No.: 527702

(3 Hours) [Total Marks : 70

N.B.:
(1) All questions are compulsory
(2) Draw neat labeled diagrams wherever necessary
(3) Figures to right indicate full marks

1.	(a)	Define surface tension and interfacial tension. Explain its role in stabilization of disperse system.	3
	(b)	Comment on various pathways for drug penetration through skin.	2
	(c)	Explain physicochemical factors affecting rectal drug absorption.	3
	(d)	Discuss the therapeutic role of blood and blood products.	2
	(e)	Discuss importance of ' Test for Tensile Strength' for catgut.	3
	(f)	Elaborate on the desirable features of an Emulsion.	2
2.	(a)	Sedimentation studies guide the development of suspension formulation. Explain.	4
		OR	
		Draw layout for large scale manufacturing of emulsions and write a note on Silverson Homogenizer.	
	(b)	Give an account of merits and demerits of ' Theobroma Oil' as suppository base.	4
	(c)	Write short note on silk as suture.	3
3.	(a)	Give significance of following in suspension formulation: (i) Zeta potential (ii) Schulze Hardy Rule	4
	(b)	Write a note on Prothrombin **OR** Human plasma preparations	4
	(c)	Outline the softening time test for suppository.	3
4.	(a)	Classify ointment bases and describe any one in detail.	4
	(b)	Explain selection of emulsifier by Davies method and Cloud point method.	4
	(c)	Describe in brief production of clinical grade dextran **OR** 'HETA starch' as a plasma volume expander.	3
5.	(a)	Elaborate on formulation additives for topical suspension.	4
	(b)	Give an account of large scale manufacturing of creams and mention quality control test for it.	3
	(c)	Discuss problem of brittleness in Suppository.	4
		OR	
		Write a note on packaging of suppositories	
6.	(a)	Define following terms (i) Suture (ii) Ligature Give examples of natural and synthetic absorbable sutures	3
	(b)	Discuss symptoms of instability in an emulsion	4
		OR	
		Explain rheological aspects of an emulsion	
	(c)	Elaborate on methods to evaluate skin permeation.	4

B. Pharm Sem IV (CBSGS)

24-11-16

K.T. Dec 20

Microbiology

Q.P. Code : 527802

(3 Hours) [Total Marks : 70

N.B. : (1) **All** questions are **compulsory**.
(2) Draw **neat labelled diagrams** ~~wherever~~ **necessary**.

1. Answer the following :
   (a) Name aerobic & anaerobic media used for sterility tests. 2
   (b) What is the scope of Microbiology in Pharmaceutical industry ? Give contributions of Alexander Fleming. 2
   (c) Enlist the chemical indicators used in dry heat and moist heat sterilization methods. 2
   (d) Name two RNA viruses. 2
   (e) Name two infections caused by Mycobacterium species. 2
   (f) Write the causative agent and diagnostic test for typhoid. 2
   (g) Define Glycocalyx. 1
   (h) Explain Resolution limit. 1
   (i) Define disinfectant. Give one example. 1

2. (a) Differentiate between light microscopy & Electron microscopy. 4
   (b) Write a note on bacterial spore. 4
   (c) Explain the principle and method of Gram staining. 3

3. (a) Describe methods of anaerobic cultivation of bacteria. 4
   (b) Describe differential and selective culture media with suitable examples. 4
   (c) Describe chick embryo cultivation of viruses with a neat labelled diagram. 3

4. (a) Explain basic morphological features of fungi. Describe asexual reproduction in fungi. 4
   (b) Describe any one. 4
   (i) Rickettsial infections (ii) Chlamydial infections
   (c) Write a note on Turbidometric method of counting bacteria. 3

5. (a) Discuss radiation sterilization with respect to method, mode of action and applications. 4
   (b) Explain the effect of temperature, pH and osmotic pressure on growth of the bacteria. 4
   (c) Describe economic importance of algae. 3

6. (a) Write a note on mode of action and applications of phenols & phenolic derivatives as disinfectant. 4
   (b) Differntiate between bacteria and viruses. 4

   OR

   Explain lysogenic cycle of viruses.
   (c) Describe the life cycle of malarial parasite. 3

B. Pharm Sem IV (CBSGS)
Pharmacology. I

Q.P. Code : 527900

K.T Dec 2016

(3 Hours) **[Total Marks : 70**

N.B. : (1) All questions are compulsory.
(2) Figures-to the right indicate full marks

1. (a) Answer the following: **12**
(i) Define enzyme induction with an example.
(ii) What are nuclear receptors? Give examples of drugs binding to these receptors.
(iii) Classify adrenergic receptors. Give examples of agonists and antagonists at these receptors.
(iv) Give the mechanism of action of quinidine.
(v) What are the clinical uses of skeletal muscle relaxants?
(vi) Highly lipophilic drugs cross the blood brain barrier. Justify.

(b) (i) Define mutagenicity
(ii) Enlist factors modifying drug action **3**
(iii) Classify diuretic drugs

2. (a) Answer any two of the following: **8**
(i) What are functionalisation reactions? Explain the various types of reactions coming in this category with examples.
(ii) Enlist various routes of excretion of a drug. Explain briefly biliary excretion with examples of drugs undergoing this excretion.
(iii) What are the various routes of administration of a drug? Explain different routes of parenteral administration.

(b) Answer any one of the following: **3**
(i) Explain how overdosage of NSAIDs causes nephrotoxicity.
(ii) What is teratogenicity? Give examples of teratogens affecting different stages of fetal development.

3. (a) Answer any two of the following: **8**
(i) What are enzyme linked recepters? Classify them and explain their transduction mechanisms.
(ii) Explain drug antagonism. Differentiate between competitive and non competitive antagonism.
(iii) Explain drug potency, efficacy and selectivity with suitable examples.

TURN OVER

(b) Answer any one of the following: 3

(i) Write a short note on acetylcholine estorase inhibitors.

(ii) Explain the mechanism of action of:

(i) Reserpine (ii) Clonidine

4. (a) Answer any two of the following: 8

(a) Classify skeletal muscle relaxants. Differentiate between depolarizing and non depolarizing muscle relaxants.

(b) Explain the therapeutic effects of anticholinergic drugs.

(c) Describe the synthesis storage, release and metabolism of adrenaline and noradrenaline.

4. (b) Answer any one of the following: 3

(i) Classify beta adrenergic receptor antagonists. Add a note on metoprolol.

(ii) Give the pharmacological actions of acetylcholine.

5. (a) Answer any two of the following: 8

(i) What is the role of calcium channel blockers in the management of cardiovascular diseases? Classify them with examples.

(ii) Classify antihyperlipidemic drugs. Write a short note on statins.

(iii) Classify drugs used in the treatment of hypertension with examples. Comment on their mechanism of action.

(b) Answer any one of the following: 3

(i) What is the effect of digitalis on a failing heart?

(ii) Give mechanism of action of organic nitrates.

6. (a) Answer any two of the following: 8

(i) Compare and contrast loop diuretics with thiazide diuretics.

(ii) Write a short note on potassium sparing diuretics.

(iii) Classify alpha adrenergic receptors. Give location and actions on their stimulation.

(b) Answer any one of the following: 3

(i) How does age and gender affect drug action?

(ii) How do physiological factors affect drug action?

(viii) For a binomial distribution, mean=4 and variance= $\frac{4}{3}$, then the value of parameters n and p are

(a) 6 and $\frac{2}{3}$ (b) 2 and $\frac{3}{2}$ (c) 6 and $\frac{3}{2}$ (d) 3 and $\frac{4}{3}$

(ix) For a Poisson variate X, P(X=1) = P(X=2). Find P(X=4)

(a) 0.090224 (b) 0.05288 (c) 0.021100 (d) 0.07684

(b) Attempt any 1 [1]

(x) The mean and variance of Poisson distribution is:

(a) np, npq (b) λ,λ (c) σ, μ^2 (d) μ,σ^2

(xi) In a hypothesis test the Null hypothesis is accepted if:

(a) Test value is more than critical value (b) Test value is less than critical value

(c) Test value is equal to critical value (d) none of these

Q.2.(a) Attempt any 2[4 marks each] [8]

(i) The following data gives the weight distribution of students in a class. Find the average weight of the students .

Wt.(inkgs.)	41	42	43	44	45	46	47	48
No.of students	3	6	8	15	17	12	5	4

(ii) Calculate the Q.D and its co-efficient for the following data.

Wages(in Rs.)	30 - 32	32 - 34	34 - 36	36 -38	38 - 40	40 - 42	42 - 44
No. of Workers	12	18	16	14	12	8	6

(iii) Calculate the 6th decile(D_6) and 70th percentile(P_{35}) for the following data.

Marks	0 – 9.5	9.5 – 19.5	19.5 – 29.5	29.5 – 39.5	39.5 – 49.5	49.5 – 59.5	59.5 – 69.5	69.5 – 7
No.of students	4	2	18	22	21	19	10	3

(b) Attempt any 1 [3 marks] [3]

(i) Find the missing value of the variate for the following distribution whose mean is 31.87

x	12	20	27	33	-	54
f	8	16	48	90	30	8

Maths.

B. Pharm, Sem-IV (CBSGS) 03/12/16

SUB-MRS

QP Code :528002

K.T. Dec 2016

(3 Hours) [Total Marks:70]

Note: All Questions are compulsory.

Use of simple calculators is allowed.

Figures at the right indicate full marks.

Q.1.(a) Attempt any 7[2 marks each] [14]

(i) The Mean of 20 observations was found to be 16.5. It was later discovered that one observation was wrongly copied as 12 instead of 21. Find the correct mean.

(a)16.95 (b)17.85 (c)16.59 (d)17.58

(ii) If $\bar{x}$=200, S.D=16, SK_p=0.3, then the value of mode is;

(a) 185.2 (b) 195.2 (c) 196.3 (d)186.3

(iii) If 75% of the items lies above 40 and 75% of the items lies below 60, then co-efficient of Quartile deviation is

(a) 0.46 (b) 0.64 (c) 0.04 (d) 0.20

(iv) If Mode=195.2, Median=198.4, then the approximate value of mean is

(a) 200 (b) 250 (c) 210 (d) 225

(v) The degree of ——— of a distribution is measured relative to the peakedness of a symmetric bell-shaped curve.

(a) Skewness (b) Moments (c) Kurtosis (d) None of these

(vi) If Median and S.D are 50 and 20 respectively. If each item is increased by 5 then the Median and S.D will be;

(a) 50,20 (b)45,20 (c) 55,25 (d) 55,20

(vii) Two dice are thrown simultaneously . What is the probability of obtaining sum of the numbers less than 11.

(a) $\frac{17}{18}$ (b) $\frac{1}{12}$ (c) $\frac{11}{12}$ (d) None of these

(b) Attempt any 1 [3 marks] [3]

(i) Find k and hence find the expected value of a random variable x and variance for the probability Distribution:-

x	2	3	4	5
P(x)	0.1	k	0.4	0.3

(ii) A fair dice is rolled. Write down the sample space of the experiment. Find the probability that the number on the uppermost face is

(a) An odd number.
(b) A prime number.
(c) A perfect square.

Q.5(a) Attempt any 2[4 marks each] [8]

(i) An unbiased coin is tossed five times. What is the probability of getting

1. Exactly two heads. 2. At least two heads.

(ii) Fit an exponential curve $y=ab^x$, from the following data:

Year	2010	2011	2012	2013	2014
Income(in lakhs)	6	9	14	15	18

(iii) Suppose the number of telephone calls that an operator receives during a specified time-interval of the day follows Poisson distribution with mean 3. Find the probability that during this specified time-interval next day, the operator will receive

1. No telephone calls. 2. At the most one telephone call.

(b) Attempt any 1 [3 marks] [3]

(i) At a printing press, 3% of the books are found to have defective binding. Find the probability that out of 250 books bound at the printing press, exactly 4 books will have defective binding.

(ii) The height of students in Jay Bharat College follows normal distribution with mean height of 155cms. & S.D of height as 5cms. Find

1. Chance that height of a randomly chosen student from this college exceeds 158cms.

(ii) The mean monthly salary paid to 300 employees of a firm is Rs.14,700. The mean monthly salary of 200 male employees is Rs.15,050. Find the mean monthly salary of remaining female employees.

Q.3.(a) Attempt any 2[4 marks each] [8]

(i) The values of A.M and S.D of 12 observations are 22 & 3 resp. It was later discovered that one observations 32 was wrongly taken as 23. Calculate the correct values of A.M, S.D and C.V.

(ii) Calculate M.D from median and corresponding co-efficient of M.D for the following data:-

100,150,200,250,360,490,500,600,676.

(iii) Find the missing frequency for the following data given that the mode of the distribution is 44.

Age(in year)	0 – 20	20 –30	30 – 40	40 – 50	50 – 60	60– 70	70 – 80	80– 90
No.of persons	10	10	-	50	29	15	10	10

(b) Attempt any 1 [3 marks] [3]

(i) The first four moments about the origin are 1,4,10,46. Comment upon the Skewness and Kurtosis of the distribution.

(ii) Discuss about the merits of A.M over median and mode.

Q.4.(a) Attempt any 2[4 marks each] [8]

(i) Find the Karl Pearson's co-efficient of Skewness for the following data:

Class	10 - 12	12 - 14	14 - 16	16- 18	18- 20	20 -22
Frequency	5	9	15	17	10	4

(ii) Consider the following data:

Find the first,second,third & fourth central moments & hence comment on Skewness of the set of numbers: 1,4,9,12,15

(iii) A certain drug is given to two patients. Probability that the patient A will recover is 2/3 and that of Patient B will recover is 3/4. Find the probability that

(a) Both the patients will recover.
(b) Both the patients will not recover.
(c) Drug is effective.

2. Percentage of students with height less than 150cms.

3. Minimum height of tallest 10% students.

Given { Area between z = 0 to z = 0.6 is 0.2257
Area between z = 0 to z = 1 is 0.3413
P[Z>1.28] = 0.1}

Q.6 (a) Attempt any two[4 marks each] [8]

(i) Average height of a sample of 6400 persons from one population was found to be 67.85 inches with a standard deviation of 2.56 inches. Another sample 1600 persons showed a mean of 68 inches & standard deviation of 2.52 inches. Is the difference between the mean heights significant? Test the hypothesis at 1% level of significance.

(ii) Two random samples of 10 & 14 observations were drawn. The sum of squares of deviations from means for each sample were 130.5 & 148.5 resp. Test whether the difference is significant at 5% l.o.s.($F_{0.05}=(9,13)=2.71$)

(iii) To test the efficiency of a new drug a controlled experiment was conducted where in 300 patients were given a new drug & 200 other patients were not given that drug. The patients were monitored & results obtained were as follows:-

	Cured	Condition worsened	No effect	Total
Given the drug	200	40	60	300
Not given the drug	120	30	50	200
Total	320	70	110	500

(b) Attempt any 1 [3 marks] [3]

(i) A survey of 36 retired people yields a mean age for maximum income as 47 years with a S.D of 7.2 years. Find 95% confidence limits for the mean age of maximum earnings.

(ii) S.D of two samples of sizes 9 & 13 are 2.1 & 1.8 resp. Can you say that the samples are drawn From two populations with same S.D.($F_{0.05,8,12}=2.85$).

B.Pharm, Sem-IV (CBSGS) 07/11/16

SUB - PC - II K.T Dec 2016

Organic chem II Q.P. Code : 527502

(2 Hours) [Total Marks : 40

N.B. : (1) All Questions are **compulsory**.
(2) Attempt **all** subquestions **together**.

1. (a) Give the identification tests for 2
n-Propanol, Benzaldehyde

(b) Give distinguishing tests for 3
(i) Acetophenone and benzophenone
(ii) Ethanol and phenol
(iii) Aniline and nitrobezene

(c) Complete the following reactions (Any ten) 10

(i) 2 Moles of benzaldehyde $\xrightarrow{CN^{\ominus}}$

(ii) 4-Methylbenzoic acid $\xrightarrow{LiAlH_4}$

(iii) Phenol $\xrightarrow{i)\ NaOH/CO_2,\ ii)\ H^{\oplus}/H_2O}$

(iv) Phenanthrene $\xrightarrow{\text{Potassium dichromate}/H_2SO_4}$

(v) Acetaldehyde + nitroethane $\xrightarrow{OH^{\ominus}}$

(vi) Propanoyl chloride + t-butanol $\longrightarrow$

(vii) Acetophenone oxime $\xrightarrow{H^{\oplus}}$

(viii) Naphthalene $\xrightarrow[450^{\circ}C]{O_2/V_2O_5}$

(ix) Aniline $\xrightarrow{NaNO_2/HCl,\ low\ temp}$ $\xrightarrow{CuCN}$

(x) Propanamide $\xrightarrow{NaOBr}$

(xi) Phthalic acid $\xrightarrow{200^{\circ}C}$

2. (a) Answer **any two** of the following :- 4

(i) Give the mechanism involved in the conversion of benzoyl chloride to aniline by curtius reaction.

(ii) Write the product formed and mechanism involved when 2, 3-diphenylbutane - 2, 3-diol treated with acid.

(iii) Suggest two different pathways to bring about conversion of benzaldehyde to cinnamic acid.

2. (b) Attempt the following conversion. 4

(i) Benzene to anthracene

(ii) Phenol to salicyldehyde

(c) (i) State the types of strains present in cyclopropane. 1

(ii) Explain energy profile diagram for various conformers of cyclohexane. 2

3. (a) Complete the following reactions. 4

(i) Cyclopropylmethyl ketone $\xrightarrow{F_3CCO_3H}$

(ii) Two moles of ethyl acetate $\xrightarrow{NaOC_2H_5}$

(iii) Acetaldehyde $\xrightarrow{\text{Phenyl hydrazine}}$

(iv) Propanoic acid + ethanol $\xrightarrow{H^+/heat}$

3. (b) Write the mechanism of the following reactions with suitable examples **(any two)** 4

(i) Dieckmann condesation

(ii) Benzil-benzilic acid rearrangement

(iii) Steven's rearrangement

(c) Explain electrophilic substitution on phenol with reference to nitration and brominations reactions. 3

4. (a) Attempt the following conversions (**any two**) 4

(i) t-Butyl alcohol to trimethylactic acid

(ii) Salicyldehyde to catechol

(iii) Diethylmalonate to propionic acid

(b) Complete the following reactions 4

(i) $C_6H_5CH=CHCH_2OH \xrightarrow{Pb(OAc)_4}$

(ii) 2-Cyanonaphthalene $\xrightarrow[Ether]{SnCl_2/H_2O}$

(iii) Anisole $\xrightarrow{Na/Liq.NH_3}$

(iv) β-naphthol $\xrightarrow[90^\circ C]{Raney\ Ni/H_2}$

(c) (i) Draw all possible conformers of n-butane 1

(ii) Comment on optical activity of cis-and trans-1, 2-dimethylcyclohexane 2

5. (a) Give the final product and mechanism of the reaction. 4

(i) $C_6H_5CH_2\overset{\oplus}{N}(CH_3)_3 \xrightarrow{NaNH_2}$

(ii) 2 moles of acetophenone $\xrightarrow{\ominus OH}$

(b) Complete the following pathway. Identify A,B,C,D.

$C_8H_8O_2$ (A) $\xrightarrow{PCl_5}$ C_8H_7OCl (B) $\xrightarrow[\Delta]{NH_3}$ C_8H_9ON (C) $\xrightarrow{Br_2/KOH}$ C_7H_9N (D)

Compound A is soluble in saturated $NaHCO_3$ with effervescence

(c) Give two methods of syntheses of methylphenylether and discuss its reactions with HI. 3

6. (a) What are α - haloketones? Write a note on a rearrangement involving α - haloketones with base. Mention clearly about the intermediates formed and their stability. 4

(b) Write the products formed when cyclohexanone reacts with 4

(i) $Ph_3P = CHCH_3$

(ii) 2, 4-DNP

(iii) Al - isopropoxide

(iv) $K_2Cr_2O_7$

(c) Write the products of reaction of anthracene with 3

(i) Na / Isoamyl alcohol , H^+ Δ

(ii) $HNO_3 - H_2SO_4$

(iii) H_2SO_4