Sem-IV (CBSGS) 2017 B. Pharm
Sub-OC-II
11/11/2017

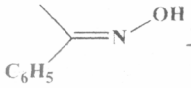
Q. P. Code: 07249
ATKT

(3 Hours)

N.B.: 1. All questions are compulsory **Total Marks: 70**
2. Answer all subquestions together
3. Figures to right indicate full marks

Q1) A] Answer the following questions
a) Discuss the following terms [04]
i) Dihedral angle ii) Bayer strain iii) Torsional strain iv) Conformation
b) Give distinguishing test for primary, secondary and tertiary alcohol. [03]
c) Draw possible resonating structures for the following compounds. [02]
i) naphthalene ii) anthracene
B] Give the products for the following reactions **(Any six)** [06]

a) **2 moles of acetaldehyde** $\xrightarrow{NaOC_2H_5}$ b) **benzoyl chloride** $\xrightarrow[2.\ H_2O]{1.NaN_3,\ CHCl_3}$

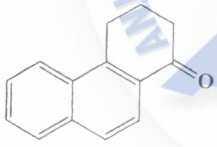
c) **acetophenone** $\xrightarrow{KOCl}$ d)  $\xrightarrow{conc.\ H_2SO_4}$

e) **2,3-dimethylbutene** $\xrightarrow{CH_3OH,\ Hg(OOCF_3)_2}$ f) **anthracene** $\xrightarrow{Na,\ EtOH}$

g) **phenyl butanoate** $\xrightarrow{AlCl_3,\ CS_2}$

Q.2 A] Give the reaction and mechanism of **any two** rearrangements. [04]
i) Lossen rearrangement reaction
ii) Pinacol-pinacolone rearrangement
iii) Favorski rearrangement
B] Complete the following reaction pathway. Give structures of A, B and C. [03]

C) Complete the following conversions [04]

i)  $\xrightarrow[ii)\ H_3O^+]{i)\ EtMgBr}$ A $\xrightarrow[ii)Pd/C,\ heat]{i)\ H^+,\ -H_2O}$ B

ii) C $\xleftarrow{O_2/V_2O_5,\ 500^oC}$ naphthalene $\xrightarrow{HNO_3,\ H_2SO_4,\ 60^oC}$ D

Q.3 A) Justify, "Cis cyclohexane-1,4-diol predominantly exists in the boat form." [02]
B) i) The preferred conformation of cis-3-tert-butyl-1-methylcyclohexane is the one in which [01]
a) the tert-butyl group is axial and the methyl group is equatorial.
b) the methyl group is axial and the tert-butyl group is equatorial.
c) both groups are axial.
d) both groups are equatorial.
ii)Discuss the chirality of 1,3-dimethyl cyclohexane and draw all possible stereoisomers [02]

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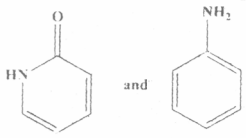
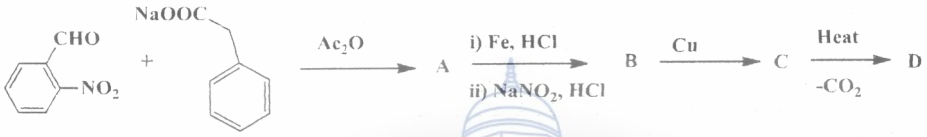
C) Convert the following. **(any three)** [06]
i) p-hydroxybenzaldehyde to quinol
ii) 3-methylaniline to 3-methyl benzoic acid
iii) ethyl adipate to 2-oxy-cyclopentane carboxylic acid
iv) acetophenone to phenylhydrazone of acetophenone

Q.4 A) i) Discuss **any two** synthetic methods involved in the preparation of ether. [02]
ii) Which hydrogen would be easily removed by the treatment of one equivalent of base from the following compounds and justify your answer [02]

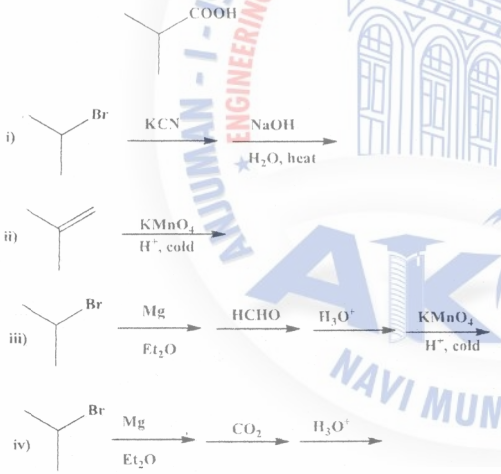


B) Complete following pathway and identify A,B,C and D. [04]



C) Illustrate all possible conformers of butane molecule and discuss the stability of conformers by depicting the energy profile diagram [03]

Q.5 A) How will you synthesize the following using toluene. [04]
i) p-amino benzoic acid ii) p-tolunitrile
B) Judge the best synthetic method applicable for 2-methylpropanoic acid from the following given reactions. Justify your answer by giving products for each of the reactions. [04]



C) Write the mechanisms for the following. [03]
Reimer Tiemann reaction of phenol **OR** Friedel Craft's alkylation reaction of 4-hydroxybenzaldehyde

Q.6 A) Complete the following reactions **(Any two).** [04]

a) Acetone $\xrightarrow{Ph_3P=CH(CH_3)}$

b) Benzaldehyde + ethyl 2-bromo propionate $\xrightarrow{Zn,\ ether,\ H_3O^+}$

c) Benzoic acid $\xrightarrow[ii.\ CH_3NH_2]{i.\ SOCl_2}$

B) i) Write reaction involved in conversion of benzoic acid to sodium benzoate and benzylalcohol[02]
ii) Draw the intermediate for the acid and basic hydrolysis of methyl ethanoate? [02]

C) Choose the correct alternatives and rewrite [03]

i) Two moles of alcohols add to carbonyl group of aldehyde to give--------- (acetoxime, aldol, acetal, ketal)

ii) ------- is a reagent of choice to convert alcohol selectively to an aldehyde ($KMnO_4$. 9-BBN,Lead acetate, DCC)

iii) In dissolving metal reductions ------ gets formed as a reaction intermediate (Benzyne, benzene, carbonium ion, nitronium ion)

Sem IV CBSGS P' analysis 13/10/17
Second half 2017

Q.P. Code : 01401

[Time: 3 Hours] [Total Marks:70]

Please check whether you have got the right question paper.

N.B:
1. All Questions are compulsory.
2. Figures to right indicate full Marks.
3. Draw neat labelled diagram wherever necessary.
4. Attempt each main question on new page.

Q.1 (a) Explain the terms. (05)

i) Buffer Capacity

ii) Common ion Effect

iii) Co-ordination number

iv) Equivalence point

v) Standard Reduction Potential

(b) Answer the following. (10)

i) State Faradays first law of Electrolysis.

ii) Give four differences of Primary standard & Secondary standard.

iii) Explain in brief polarized electrode and Decomposition potential.

iv) Balance the following equations of redox reactions.

(a) $Cr_2O_7^{-2} + I^{-1} \rightarrow Cr^{+3} + IO_3^{-1}$

(b) $MnO_4^{-2} + H_2C_2O_4 \rightarrow Mn^{+2} + CO_2$

v) A partition coefficient of a solute between water and either is 4.2. If 15 ml of an aqueous solution is extracted with 20 ml of organic solvent, what percentage of original solute will be found in either layer and in aqueous layer after extraction?

Q.2 (a) Give construction, working and advantages of Dropping Mercury Electrode. (04)

(b) i) Explain Adsorption indicator method of Argentometric titration. (04)
ii) Give principle, indicator and reactions used in Assay of KCl.

(c) Explain characteristics of solvents used in Non-aqueous titration. (03)

Q.3 (a) Enlist the contents of Pharmacopoeial monograph for formulation as per I.P. Give principle involved in Assay of soluble Aspirin Tablet. (04)

(b) i) Discuss Factors affecting limiting current (04)
ii) Explain in brief Applications of Polarography.

(c) Explain in brief Iodometry titration. Give principle & reaction involved in Assay of $KMnO_4$ (03)

Q.4 (a) Enlist unit operations involved in Gravimetry. Discuss Organic and Inorganic precipitating agents with example. (04)

(b) What are mixed indicators? Explain the Resonance theory of Neutralization Indicators? (04)

OR

Explain in brief Neutralization Curve for HCl vs NaOH titration.

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(c) Define permagnometry. Give Principle and reaction involved in Assay of Hydrogen peroxide. **(03)**

Q.5 (a) Explain in brief factors affecting solvent-solvent extraction. **(04)**

(b) (i) Discuss PM Indicators **(04)**
(ii) Explain Masking & Demasking agents

(c) Calculate mean, standard derivation & CV for following data. **(03)**
The % content of Iodine in each of five replicate analysis is as follows.
6.30, 6.40, 6.33, 6.42, 6.36

Q.6 (a) Discuss in brief nitrite titration with suitable example. **(04)**

OR

Discuss oxygen flask combustion method with suitable example.

(b) When 50 ml of 0.1 M HCl is titrated with 0.1 M NaOH. Calculate the pH values at the start of titration and after addition of 5, 10, and 15 ml of titrant. **(04)**

(c) Define Gravimetric factor. Calculate Gravimetric factor for following. **(03)**

Sr. No	Substance sought	Substance weighed
1	Fe	Fe_2O_3
2	Ag	$AgCl_2$

Atomic wt Fe: 55.84, 0:16, Cl: 35.50,
Ag: 107.87, C:12

 Sem IV Pharma - I 16/10/17

Q.P. Code :01615

[Time: 3 Hours] **[Marks:70]**

Please check whether you have got the right question paper.

N.B:
1. **All** questions are **compulsory**.
2. **Draw neat labeled diagrams wherever required**
3. **Figures** to the **right** indicate **full marks**.

Q.1 Answer the following

a) Formulating a stable disperse system is a challenge to the formulator, Comment. 03
b) Name the methods to evaluate skin penetration. Give two examples of penetration enhancer 02
c) Give the advantages and disadvantages of suppositories 03
d) State the problems associated with blood products. 02
e) How is sterility of ligatures evaluated 03
f) Define Emulsions and discuss its advantages 02

Q.2 a) Explain in detail any one equipment used in large scale manufacturing of suspensions 04

OR

Discuss in detail Quality Control of Emulsions. 04
b) Enlist the specifications of suppository bases and give the significance of any two specifications 04
c) Write a note on metallic wires used as sutures 03

Q.3 a) Describe the theoretical aspects of Sedimentation and Rheology in suspensions 04
b) Write a note on quality control aspects of blood products 04

OR

Write a note on Red Cell concentrate 04
c) Explain the Disintegration Test for suppositories 03

Q.4 a) Give an account of Formulation additives in Semisolids 04
b) Name the various methods for selection of emulsifiers and explain any one in detail. 04
c) Write a note on preparation of Dextran as a Plasma substitute 03

OR

Write a note on hydrolyzed gelatin based products as plasma substitutes 03

Q.5 a) Discuss the Precipitation method for preparation of suspensions. 04
b) Outline the large scale manufacturing of creams 03
c) Explain any one equipment for large scale manufacturing of suppositories 04

OR

Elaborate on problems encountered during formulating suppositories. 04

Q.6 a) Describe the methods of sterilization of Catguts 03
b) Write a note on Auxiliary Emulsifiers. 04

OR

Discuss Physical Stability of Emulsions 04
c) Write in detail on Penetration Enhancers 04

Sem-IV (CBSGS)
Sub - Micro - logy

Q.P. Code :02350

[Time: Three Hours] [Marks:70]

Please check whether you have got the right question paper.

N.B: 1. **All** questions are **compulsory**.
2. **Draw** a neat labelled **diagram** wherever **necessary**.

Q.1. Answer the following :-

a) Define resolving power 1
b) Define tyndallization with its applications 1
c) Explain Thermal death point 1
d) Name the organism used for positive control in sterility testing 1
e) Name two examples of gram positive rods 1
f) Name the causative agent of typhoid 1
g) Name the diagnostic test for malaria 1
h) Write Robert Koch's postulates 2
i) Name two chlamydial infections with the causative agent 2
j) Explain any two methods of isolation of pure culture 2
k) Explain principle of differential staining 2

Q. 2 a) Write a note on mechanism of action and applications of gaseous sterilization 4
b) Describe in detail structure of viruses 4
c) How to identify bacteria on the basis of morphological and colony characters. 3

Q. 3 a) Explain working of scanning electron microscopy using a neat labelled diagram. 4
b) Discuss in detail radiation sterilization and write biological indicator used. 4
c) Distinguish between (**any one**) 3
i) Gram positive and gram negative bacteria
ii) Fungi and protozoa

Q. 4 a) Explain sporulation in bacteria 4
b) Write in brief mode of action and applications of halogens as a disinfectant 4
c) Write a note on **any one** 3
i) Protozoan infections
ii) Rickettsial infections

TURN OVER

2nd half 2017 S.Y. B.P Pharm (Sem-IV) 28/10/17

Sub- Pharmacology-I

Q.P. Code :04479

[Time: 2½ Hours] [Marks:70]

Please check whether you have got the right question paper.

N.B: 1. **All** questions are **compulsory**.
2. Figure to the right indicate full marks.

Q.1 (a) Answer the following 12

(i) Explain following terms i.e. bioavailability and bioequivalence

(ii) Define

1) Pharmacodynamics

2) Pharmacokinetics

(iii) Explain the term 'receptor' and classify with examples

(iv) Classify cholinergic receptors and give example of selective antagonist for each subtype

(v) Give mechanism of action of Captopril

(vi) Why HDL is known as good cholesterol?

Q.1 (b) (i) Explain the term "inverse agonist" with example 03

(ii) Classify autonomic ganglion blockers

(iii) Enlist factors affecting drug absorption

Q.2 (a) Answer any two of the following 08

(i) Discuss in-detail pharmacological actions of adrenaline

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

(ii) Describe synthesis, storage, and hydrolysis of acetylcholine

Q.2 (b) Answer any one of the following 03

(i) Discuss nephrotoxicity and related causes

(ii) Classify routes of administration and discuss advantages and disadvantages of oral route over parental route

Q.3 (a) Answer any two of the following 08

(i) Classify beta blockers and give their role in the management of cardiovascular diseases

(ii) Classify antiarrhythmic agents and discuss the role of calcium channel blockers in-detail

(iii) Classify antihyperlipidemic drugs. Write a note on bile acid sequestrants

Q.3 (b) Answer any one of the following 03

(i) Give mechanism of action of organic nitrates

(ii) Write a note on sodium channel blockers with examples

Q.4 (a) Answer any two of the following 08

(i) Describe synthesis, storage, release, and metabolism of catecholamines

(ii) Explain in-detail the therapeutic effects of anticholinergic drugs

(iii) Classify adrenergic receptors and discuss therapeutic uses of selective agonist and antagonist for each subtype of receptor

Q.4	(b)	Answer any one of the following	03
	(i)	Classify anticholinesterases and discuss related therapeutic use	
	(ii)	Explain the mechanism of action of tyramine	
Q.5	(a)	Answer any two of the following	08
	(i)	What are GPC receptors? Explain role of secondary messengers with example.	
	(ii)	Describe enzyme-linked receptors in-detail	
	(iii)	What are nuclear receptors? Explain the mechanism of action of drugs acting on nuclear receptors	
Q.5	(b)	Answer any one of the following	03
	(i)	Discuss various routes of excretion with example of drugs	
	(ii)	Classify phase II reaction with example and write a note on any one reaction	
Q.6	(a)	Answer any two of the following	08
	(i)	Classify diuretics. Discuss role of potassium sparing diuretics in-detail	
	(ii)	Discuss therapeutic uses and complication of diuretics	
	(ii)	Compare and contrast loop diuretics with thiazide diuretics	
Q.6	(b)	Answer any one of the following	03
	(i)	How does gender and body weight affect drug action?	
	(ii)	Explain how pathological conditions affect drug action	

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Exp Nov/Dec 2017, Sem - III CBSGS 30/10/17
Sub - MRS

Q. P. Code : 09456

(3 Hours) Total Marks:70

Note: All Questions are **compulsory.**
Use of **simple calculators** is allowed.
Figures at the right indicate **full marks**.

Q1. (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) 17/18 (b) 1/12 (c) 11/12 (d) None of these

(viii) For a binomial distribution, mean=4 and variance= 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) 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

TURN OVER

(xi) If A ia any event, then which of the following inequality is more accurate?
(a) $-1 \leq P(A) \leq 1$ (b) $0 \leq P(A) \leq 1$ (c) $-1 < P(A) < 1$ (d) $0 < P(A) < 1$

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

(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 6^{th} decile (D_6) and 70^{th} 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 – 79.5
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

(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 the Characteristics of an ideal/good measure of dispersion.

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.

(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.
2. Percentage of students with height less than 150cms.
3. Minimum height of tallest 10% students.

Given: { Area between Z=0 and Z=0.6 is 0.2257 ; Area between Z=0 and Z=0.1 is 0.3413 } P(Z > 1.28)=0.

Q.6 (a) Attempt any 2 [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) 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

(iii) The following table gives the yields of 15 sample plots under three varieties of seed.

A	B	C
5	8	7
6	10	3
8	11	5
9	12	4
7	4	1

You are required to find if the average yields of land under different varieties of seed show significant differences. Use ANOVA technique, given that $F_{0.05}(2,12) = 3.89$.

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

(i) 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. [$F_{0.05}=(9,13)=2.71$]

(ii) From a random sample of size n=9 is drawn from normal population gave the following observations:

72, 74, 68, 70, 61, 63, 69, 73 and 71.

To test: $H_0 : \sigma^2 = 36$ Vs $H_1 : \sigma^2 \neq 36$ (Use at 10% l.o.s.)

(Given that table value of χ^2 with 8 d.f at 5% l.o.s. is 2.306)