

**Kurukshetra University Kurukshetra**  
**Scheme and Syllabi**  
**for B.Sc. Part-I, Part-II and Part-III (Chemistry) w.e.f. 2014-2015, 2015-2016**  
**and 2016-2017**

**B.Sc. Part-I (Ist Semester)**

Paper No.	Code No.	Nomenclature	Max. Marks Written + I.A.#.	Time
I	CH-101	Inorganic Chemistry (Th)*	32 + 8	3 hrs.
II	CH-102	Inorganic Chemistry (Th)	32 + 8	3 hrs.
III	CH-103	Organic Chemistry (Th)	32 + 8	3 hrs.

\*Th means Theory, # I.A. means Internal Assessment.

**B.Sc. Part-I (IInd Semester)**

Paper No.	Code No.	Nomenclature	Max. Marks Written + I.A.	Time
IV	CH-104	Inorganic Chemistry (Th)	32 + 8	3 hrs.
V	CH-105	Physical Chemistry (Th)	32 + 8	3 hrs.
VI	CH-106	Organic Chemistry (Th)	32 + 8	3 hrs.
VII	CH-107	Practicals	60 ( No Internal Assessment in Practical Exam)	7 hrs.

**Note: Practical Exam will be held at the end of 2<sup>nd</sup> Semester**

**Total Marks of I & II Semesters = 120 + 120 + 60 = 300**

**B.Sc. Part-II (IIIrd Semester)**

Paper No.	Code No.	Nomenclature	Max. Marks Written + I.A.	Time
VIII	CH-201	Inorganic Chemistry (Th)	32 + 8	3 hrs.
IX	CH-202	Physical Chemistry (Th)	32 + 8	3 hrs.
X	CH-203	Organic Chemistry (Th)	32 + 8	3 hrs.

**B.Sc. Part-II (IVth Semester)**

Paper No.	Code No.	Nomenclature	Max. Marks Written + I.A.	Time
XI	CH-204	Inorganic Chemistry (Th)	32 + 8	3 hrs.
XII	CH-205	Physical Chemistry (Th)	32 + 8	3 hrs.
XIII	CH-206	Organic Chemistry (Th)	32 + 8	3 hrs.
XIV	CH-207	Practicals	60 ( No Internal Assessment in Practical Exam)	7 hrs.

**Note: Practical Exam will be held at the end of 4th Semester**

**Total Marks of III & IV Semesters = 120 + 120 + 60 = 300**

**B.Sc. Part-III (Vth) Semester**

Paper No.	Code No.	Nomenclature	Max. Marks Written + I.A.	Time
XV	CH-301	Inorganic Chemistry (Th)	32 + 8	3 hrs.
XVI	CH-302	Physical Chemistry (Th)	32 + 8	3 hrs.
XVII	CH-303	Organic Chemistry (Th)	32 + 8	3 hrs.

**B.Sc. Part-III (VIth Semester)**

Paper No.	Code No.	Nomenclature	Max. Marks Written + I.A.	Time
XVIII	CH-304	Inorganic Chemistry (Th)	32 + 8	3 hrs.
XIX	CH-305	Physical Chemistry (Th)	32 + 8	3 hrs.
XX	CH-306	Organic Chemistry (Th)	32 + 8	3 hrs.
XXI	CH-307	Practicals	60 ( No Internal Assessment in Practical Exam)	7 hrs.

**Note: Practical Exam will be held at the end of 6<sup>th</sup> Semester**

**Total Marks of V & VI Semesters = 120 + 120 + 60 = 300**

**TOTAL MARKS OF CHEMISTRY in B.Sc. degree = 300 × 3 = 900**

**B.Sc. I Year**  
**Paper-VII (CH-107) Practicals**

**M.Marks:60**

**Time: 7 Hrs.**

**(One day in two sessions i.e. 9:00AM-12:30PM and 1:30PM-5:00PM)**

**Section-A (Inorganic)**

**Volumetric Analysis**

1. Preparation of reference solutions.
2. **Redox titrations:** Determination of  $\text{Fe}^{2+}$  ,  $\text{C}_2\text{O}_4^{2-}$  ( using  $\text{KMnO}_4$  ,  $\text{K}_2\text{Cr}_2\text{O}_7$ )
3. **Iodometric titrations:** Determination of  $\text{Cu}^{2+}$  (using standard hypo solution).
4. **Complexometric titrations:** Determination of  $\text{Mg}^{2+}$  ,  $\text{Zn}^{2+}$  by EDTA.

**Paper Chromatography**

Qualitative Analysis of any one of the following Inorganic cations and anions by paper chromatography ( $\text{Pb}^{2+}$  ,  $\text{Cu}^{2+}$  ,  $\text{Ca}^{2+}$  ,  $\text{Ni}^{2+}$  ,  $\text{Cl}^-$  ,  $\text{Br}^-$  ,  $\text{I}^-$  and  $\text{PO}_4^{3-}$  and  $\text{NO}_3^-$  ).

**Section-B (Physical)**

1. To determine the surface tension of at least two liquids using stalagmometer by drop no. and drop weight methods (Use of organic solvents excluded).
2. To study the effect of surfactant on surface tension of water.
3. To determine the viscosity of at least two liquids by using Ostwald's viscometer (Use of organic solvents excluded).
4. To determine the specific refractivity of at least two liquids.

**Section-C (Organic)**

1. Preparation and purification through crystallization or distillation and ascertaining their purity through melting point or boiling point
  - (i) Iodoform from ethanol (or acetone)
  - (ii) *m*-Dinitrobenzene from nitrobenzene (use 1:2 conc.  $\text{HNO}_3$ - $\text{H}_2\text{SO}_4$  mixture if fuming  $\text{HNO}_3$  is not available)
  - iii) *p*-Bromoacetanilide from acetanilide
  - iv) Dibenzalacetone from acetone and benzaldehyde
  - v) 2,4-DNP derivative of Benzophenone/Acetophenone.
2. To study the process of (i) sublimation (ii) Crystallization of camphor and phthalic acid

**Distribution of marks**

- |    |            |          |
|----|------------|----------|
| 1. | Section-A  | 15 marks |
| 2. | Section-B  | 15 marks |
| 3. | Section-C  | 15 marks |
| 4. | Viva-voce  | 05 marks |
| 5. | Lab Record | 10 marks |

**B.Sc. II Year**  
**Paper XIV (CH-207) Practicals**

**M.Marks:60**

**Time: 7 Hrs.**

**(One day in two sessions i.e. 9:00AM-12:30PM and 1:30PM-5:00PM)**

**Section–A (Inorganic)**

**1.Gravimetric Analysis:**

Quantitative estimations of,  $\text{Cu}^{2+}$  as copper thiocyanate,  $\text{Ni}^{2+}$  as Ni – dimethylglyoxime and  $\text{Al}^{3+}$  as oxinate.

**2. Colorimetry:**

To verify Beer - Lambert law for  $\text{KMnO}_4/\text{K}_2\text{Cr}_2\text{O}_7$  and determine the concentration of the given  $\text{KMnO}_4/\text{K}_2\text{Cr}_2\text{O}_7$  solution.

**3.Preparations:** Preparation of Cuprous chloride, tetra ammine cupric sulphate, chrome alum, potassium trioxalatochromate(III) and Nickel Hexammine chloride.

**Section-B (Physical)**

1. To determine the CST of phenol – water system.
2. To determine the solubility of benzoic acid at various temperatures and to determine the  $\Delta H$  of the dissolution process.
3. To determine the enthalpy of neutralisation of a weak acid/weak base vs. strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weak base.
4. To determine the enthalpy of solution of solid calcium chloride.
5. To study the distribution of iodine between  $\text{CCl}_4$  and water.
6. Determine rate constant of hydrolysis of  $\text{CH}_3\text{COOC}_2\text{H}_5$ .

**Section-C (Organic)**

Systematic identification (detection of extra elements, functional groups, determination of melting point or boiling point and preparation of at least one pure solid derivative) of the following simple mono and bifunctional organic compounds: Naphthalene, anthracene, acenaphthene, benzyl chloride, *p*-dichlorobenzene, *m*-dinitrobenzene, *p*-nitrotoluene, resorcinol, hydroquinone,  $\alpha$ -naphthol,  $\beta$ -naphthol, benzophenone, ethyl methyl ketone, benzaldehyde, vanillin, oxalic acid, succinic acid, benzoic acid, salicylic acid, aspirin, phthalic acid, cinnamic acid, benzamide, urea, acetanilide, benzanilide, aniline hydrochloride, *p*-toluidine, phenyl salicylate (salol), glucose, fructose, sucrose, *o*-, *m*-, *p*-nitroanilines, thiourea.

**Distribution of marks**

1.	Section A	15 marks
2.	Section B	15 marks
3.	Section C	15 marks
4.	Viva-voce	05marks
5.	Lab Record	10 marks

**B.Sc. III Year**  
**Paper-XXI (CH-307) Practicals**

**Max.Marks:60**

**Time: 7 Hrs.**

**(One day in two sessions i.e. 9:00AM-12:30PM and 1:30PM-5:00PM)**

**Section-A (Inorganic)**

Semimicro qualitative analysis of mixture containing not more than four radicals (excluding interfering, Combinations and insolubles):

$Pb^{2+}$ ,  $Hg^{2+}$ ,  $Hg_2^{2+}$ ,  $Ag^+$ ,  $Bi^{3+}$ ,  $Cu^{2+}$ ,  $Cd^{2+}$ ,  $As^{3+}$ ,  $Sb^{3+}$ ,  $Sn^{2+}$ ,  $Fe^{3+}$ ,  $Cr^{3+}$ ,  $Al^{3+}$ ,  $Co^{2+}$ ,  $Ni^{2+}$ ,  $Mn^{2+}$ ,  $Zn^{2+}$ ,  $Ba^{2+}$ ,  $Sr^{2+}$ ,  $Ca^{2+}$ ,  $Mg^{2+}$ ,  $NH_4^+$ ,  $CO_3^{2-}$ ,  $S^{2-}$ ,  $SO_3^{2-}$ ,  $S_2O_3^{2-}$ ,  $NO_2^-$ ,  $CH_3COO^-$ ,  $Cl^-$ ,  $Br^-$ ,  $I^-$ ,  $NO_3^-$ ,  $SO_4^{2-}$ ,  $C_2O_4^{2-}$ ,  $PO_4^{3-}$ ,  $BO_3^{3-}$

**Section-B (Physical)**

1. To determine the strength of the given acid solution (mono acid only) conductometrically.
2. To determine the solubility and solubility product of a sparingly soluble electrolyte conductometrically.
3. To determine the strength of given Ferrous ammonium sulphate solution potentiometrically.
4. To determine the molecular weight of a non-volatile solute by Rast method.
5. Preparation of acidic and basic buffers and comparison of their pH with theoretical values.
6. To determine the specific rotation of optically active substance (any two).

**Section-C (Organic)**

**1. Thin Layer Chromatography**

(Determination of  $R_f$  values and identification of organic Compounds)

Separation of a mixture of coloured organic compounds using common organic solvents.

**2. To separate the binary liquid mixtures using distillation.**

**3. Synthesis of the following organic compounds:**

- (a) To prepare salicylic acid from Aspirin.
- (b) To prepare p-bromoaniline from p-bromoacetanilide.
- (c) To prepare m-nitroaniline from m-dinitrobenzene.
- (d) To prepare S-Benzyl-iso-thiouonium chloride from Thiourea.

**Distribution of marks**

1.	Section- A	15 marks
2.	Section-B	15 marks
3.	Section-C	15 marks
4.	Viva-voce	05 marks
5.	Lab Record	10 marks

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**Chemistry Practical Online Viva Voce (First Year 2020-21)**

<b>Timestamp</b>	<b>Score</b>	<b>Name of Student</b>	<b>Class</b>	<b>University Roll Number</b>	<b>College Roll Number</b>
7-3-2021 16:30:34	10 / 10	Kajal	BSC 1st year	201037712	120207015012
7-3-2021 16:31:05	9 / 10	Diksha Sharma	1.20207E+11	201037711	120207030003
7-3-2021 16:32:06	10 / 10	Annu Devi	Bsc 1st year	201037717	120207015004
7-3-2021 16:32:37	8 / 10	Vijay singh	Bsc 1st year	201037714	120207030011
7-3-2021 16:32:41	10 / 10	Aditya Ranga	B.Sc.1st year	201037706	120207030010
7-3-2021 16:33:12	10 / 10	Mahesh Kumar	Bsc 1st year	201037715	120207030001
7-3-2021 16:33:49	10 / 10	SheetaL	B.sc 1 sem 2	201037710	120207015015
7-3-2021 16:33:56	10 / 10	Harshit	Non-med 1st Year(2nd s	201037723	120207015031
7-3-2021 16:34:32	10 / 10	Manjeet Kaur	Bsc first year non medica	201037716	120207015026
7-3-2021 16:34:39	10 / 10	Aditi Verma	Bsc med 1st yr	201037725	120207030008
7-3-2021 16:35:16	9 / 10	Nasihath Rani	Bsc 1 ( non - medical)	201037735	120207015003
7-3-2021 16:35:40	10 / 10	Narveen kaur	B. Sc 1st year	201037701	120207030014
7-3-2021 16:35:46	9 / 10	Lakshita	B. Sc 1st year	201037730	120207015025
7-3-2021 16:37:03	10 / 10	Samriti	B.sc 1st Nm	201037718	120207015016
7-3-2021 16:37:12	8 / 10	Parteek	B. SC 2nd semester	201037708	120207015018
7-3-2021 16:38:01	10 / 10	Ajay Kumar	sc 1st Year (2nd semeste	201037726	120207015023
7-3-2021 16:38:04	10 / 10	Dheeraj	Bsc	201037731	120207015027
7-3-2021 16:40:11	10 / 10	Saraswati	B. Sc.	201037707	120207030005
7-3-2021 16:41:35	7 / 10	Shweta	Bsc 1st year	201037729	120207030004
7-3-2021 16:41:56	10 / 10	Arvind	B. SC	201037733	120207015033
7-3-2021 16:44:36	8 / 10	Muskan rani	Bsc 1st year	201037738	120207030007
7-3-2021 16:45:15	10 / 10	Deepanshi	B.sc 1st year medical	201037737	120207030002
7-3-2021 16:48:03	10 / 10	Jyoti	B.sc 1st year medical	201037703	120207030013

### Chemistry Practical Online Viva Voce (Second Year 2020-21)

Timestamp	Email Address	Score	Name of Student	Class	University Roll Number
7-2-2021 16:15:01	ashu00010002@gmail	18 / 20	Aashish kumar	Bsc 2nd year	191038314
7-2-2021 16:18:21	sahilsainikks35@gmail	14 / 20	Sahil	B.sc 2nd year	191038315
7-2-2021 16:18:31	poojasainikks35@gma	15 / 20	Pooja devi	B.sc 2nd year	191038320
7-2-2021 16:18:35	kashyap01kajal@gmai	13 / 20	Kajal	B.sc 2nd year	191038313
7-2-2021 16:18:57	salinderkaur70150@gr	17 / 20	Manpreet Kaur	Bsc 2nd year 4th sem	191038318
7-2-2021 16:19:04	divyarokne@gmail.com	14 / 20	Divya	Bsc 2nd	191038322
7-2-2021 16:19:41	gurvindersingh4319@ç	14 / 20	Gurvinder Singh	B. SC 2nd	191038329
7-2-2021 16:19:54	khairavivek0001@gma	13 / 20	Vivek	Bsc 2nd year 4th sem	191038334
7-2-2021 16:20:00	ektakabir357@gmail.co	19 / 20	Ekta devi	Bsc 2nd year	191038312
7-2-2021 16:20:01	ramrampal705@gmail.	17 / 20	Vijeta Rani	B Sc2nd year 4(sem.)	191038310
7-2-2021 16:20:05	mehak5mandhan@gm	17 / 20	Mehak	BSc 2nd year	191038305
7-2-2021 16:20:12	komalverma52001@gr	19 / 20	Komal	Bsc 2nd year	191038333
7-2-2021 16:20:21	sainvanshika3@gmail.	10 / 20	Vanshika	Bsc non medical 4th semester	191038337
7-2-2021 16:20:25	aartivaid94@gmail.com	13 / 20	Aarti	bsc2nd year	191038308
7-2-2021 16:20:31	kirtivats611@gmail.com	9 / 20	Kirti	Bsc 2nd year	191038311
7-2-2021 16:21:09	vyotirani8571900203@!	17 / 20	Jyoti rani	B.sc.2nd year medical	191038338
7-2-2021 16:21:17	Salinderkashyap35@g	9 / 20	Jyoti Rani	Bsc(2nd year)	191038339
7-2-2021 16:21:20	dikshapatlan@gmail.co	16 / 20	Diksha patlan	B.sc.4th sem.	191038301
7-2-2021 16:21:31	sahilarora111212@gm	17 / 20	Sahil Kumar raheja	Bsc 2nd(Medical)	180037737
7-2-2021 16:22:26	dilawrgill420@gmail.co	17 / 20	Manjeet kaur	B.sc 4 sem( medical)	191038316
7-2-2021 16:23:56	kartiksheoran@79gma	13 / 20	Kajal	B.sc 2nd year4th sem	191038323
7-2-2021 16:24:18	poojarajput8724@gma	8 / 20	Pooja	Bsc 4th sem	191038306
7-2-2021 16:24:31	mandhanpallavi77@gn	11 / 20	Pallavi	Bsc 2nd year	191038332
7-2-2021 16:27:38	ankitkhanmehra@gma	15 / 20	Aasim khan	Bsc 2nd	191038336
7-2-2021 16:29:53	arunasaini2526@gmai	12 / 20	Aruna saini	Bsc 2nd year	191038302
7-2-2021 16:30:49	harshith381@gmail.co	14 / 20	Harshit	Bsc	191038335
7-2-2021 16:31:17	sainitripti316@gmail.co	11 / 20	Tripti saini	sc 2nd year N.M semester -4t	191038304
7-2-2021 16:31:36	stanu9965@gmail.com	18 / 20	Tanu	B.sc 2nd year	191038303
7-2-2021 16:36:36	komal454546@gmail.c	13 / 20	Komal	Bsc - 2 year	191038326
7-2-2021 16:36:36	ishikamandhan@gmail	13 / 20	Ishika	BSc 2nd year	191038345
7-2-2021 16:37:08	pujarajput9728@gmail	14 / 20	Pooja	Bsc 4th sem	191038306



7-2-2021 18:06:56 pk1290284@gmail.com

9 / 20

Jyoti,3162920023 Bsc 2nd year (4rth semester)

191038324

**College Roll Number**

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<b>Chemistry Practical Online Viva Voce (Third Year 2020-21)</b>					
<b>Timestamp</b>	<b>Email Address</b>	<b>Score</b>	<b>Name of Student</b>	<b>Class</b>	<b>University Roll Number</b>
7-1-2021 16:18:58	harsh62727383@gmail	16 / 20	Samriti devi	Bsc(6th semester)	180037720
7-1-2021 16:19:43	sonamkabir07@gmail.c	15 / 20	Sonam	Bsc 3rd year	180037714
7-1-2021 16:20:01	anjusisodia80@gmail.c	20 / 20	Anju	Bsc-3rd year	180037713
7-1-2021 16:20:07	muskankharkali2@gma	14 / 20	Muskan	Bsc 3 rd year	180037733
7-1-2021 16:20:16	prachikansal76@gmail	13 / 20	Prachi kansal	Bsc 3rd non medica	180037735
7-1-2021 16:20:21	chaudharymehak99@ç	12 / 20	Mehak Chaudhary	B.sc 3rd year	180037719
7-1-2021 16:20:51	aanchal01saini@gmail	12 / 20	Aanchal	B.sc.3rd year	180037722
7-1-2021 16:21:12	raviyadavladwa@gmai	16 / 20	Ravi yadav	Bsc 6th sem	180037709
7-1-2021 16:21:50	satnam521singh@gma	20 / 20	satnam saini	B.sc 3rd medical	180037736
7-1-2021 16:21:58	sahilarora55682@gma	18 / 20	Sahil Arora	B.sc final year	180037704
7-1-2021 16:22:06	guljeet2909@gmail.cor	16 / 20	Guljeet	B.sc3rd	180037716
7-1-2021 16:22:16	sweetysaini543@gmail	11 / 20	Sweety	Bsc6th semester	180037743
7-1-2021 16:22:25	rrahulk258@gmail.corr	18 / 20	Rahul	B. Sc 6th sem	170340503
7-1-2021 16:23:03	snehakashyap22729@ç	14 / 20	Sneha Devi	B.Sc.-final year	180037731
7-1-2021 16:23:56	ritikbapda36@gmail.co	12 / 20	Pinki	B. SC. 3rd year	180037725
7-1-2021 16:25:13	apal25843@gmail.com	11 / 20	Aarti	B.sc 3rd year	180037707
7-1-2021 16:25:24	chauhanharun62@gma	16 / 20	Harun	Bsc final year	180037740
7-1-2021 16:26:09	sakshamlaller99@gma	19 / 20	Saksham	Bsc final	180037748
7-1-2021 16:26:24	vishalmandhan04@gmr	15 / 20	Vishal	Bsc 3rd year	180037711
7-1-2021 16:27:51	parul828304@gmail.cc	18 / 20	Parul Bharti	B.sc 3rd year	180037710
7-1-2021 16:27:54	chopraswati668@gmai	18 / 20	Swati devi	B. Sc. -final	180037715

**College Roll Number**

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