

# **UPCMET - 2016**

**U.P. Combined Medical Entrance Test**

**For Admission to MBBS Course (First Year)  
in the member Colleges for the session 2016-17**



*Conducted by :*

**U.P. Unaided Medical Colleges  
Welfare Association**

**Last Date of Submission of duly completed application Form  
11th May, 2016, Wednesday**

# U.P. Unaided Medical Colleges Welfare Association (UPUMCWA)

- UP Unaided Medical Colleges Welfare Association is a consortium of unaided medical Colleges in Uttar Pradesh formed under the directions of the Supreme Court judgment in Islamic Academy of Education Vs State of Karnataka.
- The Association has been registered under the Societies Registration Act (Act No. 21 of 1860), Registration No. 346/2006-07 dated 20.07.2006.
- UP Unaided Medical Colleges Welfare Association is an authority to conduct Common Entrance Test for admission in the MBBS Course (First Year) of Member Colleges in the Academic Session 2016-2017.
- The name of entrance test is -Uttar Pradesh Combined Medical Entrance Test (UPCMET).
- The Merit List declared by the UP Unaided Medical Colleges Welfare Association on the basis of UPCMET is a pre-requisite for admission in member colleges.
- The Merit List declared by the UP Unaided Medical Colleges Welfare Association is valid for admission to all Member Colleges.

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## Mode of Admission

UPUMCWA is conducting UPCMET-2016 for admission in M.B.B.S. (First Year 2016-17) for and on behalf of member colleges in compliance with order of Hon'ble Apex court and Hon'ble Allahabad High Court Lucknow Bench vide Writ Petition No. 4265(MB) 2006, writ petition No. 276(MB)2007 & writ petition No. 5939(M/S) 2012. Admission will be done as per the merit list prepared in the manner mentioned in this brochure on the basis of marks secured in the above UPCMET-2016.

### Reservation

Reservation shall be applicable as notified by the Govt. and enforced at the time of Counselling. For this purpose **OBC Caste Category** shall be determined on the basis of list published by UP Govt.

## Important Instructions

- **Application Forms of UPCMET – 2016 are available in following modes:**

Mode-I Information Brochure and OMR Application Form can be obtained in person from the cash counters of the participating member colleges on cash payment of Rs. 1000 & through post from **“Coordinator – UPCMET 2016, First Floor, Anand Ashram Complex, Rampur Garden, Bareilly – 243 001”** by sending Demand Draft of Rs. 1050/- in favor of **“UPUMCWA”** payable at **“Bareilly”** along with two self addressed stickers.

Mode-II Downloaded from the website **www.upumcwa.org** and after printing the same on A-4 sheet, such applications are to be completely filled and sent along with the Demand Draft of Rs. 1000/= in favor of **“UPUMCWA”** payable at **“Bareilly (U.P.)”** to the **“Coordinator – UPCMET 2016, First Floor, Anand Ashram Complex, Rampur Garden, Bareilly – 243 001”**.

Mode-III Completely filled Online through the link provided on the website **www.upumcwa.org**. The candidate is required to upload scanned photograph, signature and thumb impression. The candidate should supply all the required details while filling up the online form. On submission of details, a Confirmation Page with Application No. shall be generated. Candidates are required to take printout of Confirmation Page and keep it for reference. The application fee payment can be made online :

- 1) By Credit Card.                      2) By Debit Card.
- 3) By Net Banking.

Thereafter, the Confirmation Page is to be sent through Speed Post to the **“Coordinator –**

**UPCMET 2016, First Floor, Anand Ashram Complex, Rampur Garden, Bareilly – 243 001”**.

### Note:

[i] In case either of the Recent Colored Passport Size Photograph, Left Hand Thumb Impression, or Signatures are not duly uploaded, please put the same on the Confirmation Page before sending the same.

[ii] In case of any problem regarding downloading / filling / submission of the application form, please feel free to share the same over email at **info@upumcwa.org**. If the problems are not solved within 48 hours, one may contact the Coordinator – UPCMET 2016.

Mode -IV Information Brochure & OMR Application form can also be purchased from the authorised vendors\*.

\*List Available on Website : **www.upumcwa.org**

- Candidates are advised to go through all instructions and also check list as printed on the side corner of the envelop containing application form before finally submitting the application form.
- Application Form should be filled with utmost care avoiding all kind of overwriting or cuttings. Do not staple pin, wrinkle, scribble, tear, wet or damage the form in any way.
- Write your Application Form No. on the envelop along with your address and then put the duly filled in application form & send it by registered post/speed post. **Application Forms sent through courier or submitted in person shall in no case be entertained.**
- The application form complete in all respect should

# Information Brochure

- reach to the Co-ordinator UPCMET-2016 latest by **11<sup>th</sup> May, 2016.**
- UPUMCWA will not be responsible for any delay in receiving of completed application form along with all enclosures either on the part of post office or for any other reason.
  - The application form after scrutiny shall be processed and applicant will receive his/her admit card along with roll no. which will allow one to appear in the entrance test.
  - Appropriate information regarding centres shall be mentioned on the admit card.
  - **If any document/declaration submitted by the candidate is found to be false at any stage his/her candidature will be cancelled and he/she may be liable for prosecutions under law. In case of any legal dispute the jurisdiction will be limited to Bareilly Courts only.**
  - The candidates are also instructed to note the Application Form No. and to keep photocopy of submitted application form along with proof of having submitted the application form for any future reference.
  - Incomplete Application Forms will be rejected.

*For further details you may contact:-*

E.mail : [info@upumcwa.org](mailto:info@upumcwa.org) ; Website : [www.upumcwa.org](http://www.upumcwa.org)

Phone No.: 9897600270 Fax : 0581-2582552

## General Information Regarding UPCMET-2016

- UPCMET-2016 will be organised for admission in MBBS Course (First Year) for Academic Session 2016-18 in member colleges.
- Subjects and Question Papers for this Entrance Test along with timing and number of questions shall be as under :

### **Paper - I Physical & Biological Sciences**

**9:00 AM to 11:30 AM**

*It will consist of Two Sections as under :*

#### **Section - A :**

#### **Physical Science**

Physics	:	50 Questions
Chemistry	:	50 Questions
Total	:	100 Questions

#### **Section - B :**

#### **Biological Science**

Zoology	:	50 Questions
Botany	:	50 Questions
Total	:	100 Questions

### **Paper - II General English (Qualifying Paper)**

**11:45 AM to 12:15 PM**

General English	:	50 Questions
Total	:	50 Questions

- Candidates will not be allowed to leave the examination hall during the gap between Paper-I and Paper-II.
- Paper-I will be of 200 marks and Paper-II will be of 50 marks. But combined maximum marks for merit in UPCMET would be 200 i.e. Total marks of Paper-I. Paper-II will be of qualifying nature.
- **Minimum cut-off pass percentage of marks in Paper-I shall be 50% (40% in case of SC/ST/OBC) and 50% in Paper-II (40% for SC/ST/OBC) to be secured in this test. In general, merit shall be determined on the basis of marks secured in Paper-I only.**
- **There will be negative marks of 1/4 for each wrong answer.**
- More than one answer marked in OMR answer sheet will also be considered as wrong answer.
- **Only Black Ball Point Pen shall be used for answering on OMR answer sheet as per direction given in the OMR Sheet.**
- Syllabus of the Examination is enclosed as Appendix.

## Conduct of Examination

- **City Centres for Examination :** Examination Centres shall be in the following cities subject to the availability of viable number of candidates :

City	Code	City	Code	City	Code
a. Agra	01	b. Allahabad	02	c. Bareilly	03
d. Chandigarh	04	e. Dehradun	05	f. Ghaziabad	06
g. Bhopal	07	h. Jaipur	08	i. Kanpur	09
j. Kolkata	10	k. Lucknow	11	l. Meerut	12
m. Jammu	13	n. New Delhi	14	o. Patna	15
p. Ranchi	16	q. Varanasi	17		

- Candidates will be allotted pre-defined examination centres for appearing in UPCMET-2016 as mentioned by them in the application form. However, the UPUMCWA reserves the right to change the examination centre due to unavoidable circumstances.
- No application/request for the change of centre will be entertained.
- The examination schedule will remain unaltered even if the above date is declared as a public holiday.
- Use of calculator, log table, digital diary, cell phone or any mode of communication is strictly prohibited during the examination.
- *Candidates will have to be biometrically verified at the entrance of examination premises. Therefore, all the candidates must report to the allotted examination centre at 8:00 am sharp.*
- No candidate will be allowed to go outside the examination premises till the completion of all sessions of the examination.
- All the candidates must take their seats 15 minutes before the commencement of examination & fill up all the relevant information. For this no extra time will be given.
- Parents/Guardians/accompanying person will not be allowed to enter in the examination premises.
- Seal of question paper should be broken only after the announcement by the invigilators.

## Eligibility Criteria

### Educational Qualification:

- Candidates must have passed 10+2 level examination of UP Board / ISC / CBSE or its equivalent from any recognised Board / University with English as a subject; securing minimum 50% (45% in case of SC/ST) marks on average in Physics, Chemistry & Biology (including practical examination) taken together.
- Candidates appearing in 10+2 examination of 2016 are also eligible to appear in entrance test but at the time of counseling they have to produce the passing marksheet of 10+2 examination, failing which no allotment of seats will be made.

### Age Limit :

- To appear in the Entrance Examination candidate should have completed 17 years as on 31st December, 2016.

### Nationality :

- Admission is open to all citizen of India.

## Instructions for filling the OMR Application Form

While filling the Form use only Black Ball Point Pen. Write in the boxes provided with Capital letters and darken the corresponding circles in full as indicated below.

1. **Name of the Candidate :** Write first name, then middle name, then surname in the rectangular boxes provided on top of circles, leave a box blank between first, second and surname. Darken the corresponding circles with pen. (If necessary abbreviation can be used).

2. **Category :** (Fill the category code to which you belong) :

Category	Code	Category	Code
GE	01	OBC	02
SC	03	ST	04

3. **Sex :** Write Male or Female in the box provided and darken the appropriate circle.
4. **Date of Birth :** In the first column Two boxes are provided, write the date in the boxes (4 should be written as 04) in the second column one box is provided, write the month (March as 03) and darken the corresponding circle. In the third column two boxes are given write the year (if in year 1989 write 8 & 9) in the boxes and darken the corresponding circle.
5. **Choice of Centres :** Pick up the code of one city from the list given earlier and mention in the box provided in column one and darken the corresponding circle.
6. A front view of recent coloured passport size photograph with name of the candidate inscribed therein is to be affixed in the OMR Application Form.
7. Write your Postal Address in Capital Letter complete in all respect.
8. Put your left hand thumb impression at the specified place of the OMR Application Form.
9. Write the Email ID, if any.
10. Signature should be entirely inside the box in English as well as in Hindi.
11. **Name of Father/Guardian as per your 10/10+2 Certificate :** Write first name, then middle name and then surname in the boxes provided; leave a box blank between names, darken the corresponding circles with a pen. (If necessary abbreviation can be used).
12. Darken the circles to indicate the guardian's relationship with you.
13. Darken the circles corresponding to the percentage of marks obtained in the subjects indicated and also the total percentage of marks in the qualifying examination. If results of the qualifying examination are not declared darken the circle marked "Result Awaited".
14. Darken the circles to indicate the Board of your qualifying examination.
15. Write the phone number with STD code of your permanent address in the appropriate columns and also darken the corresponding circles.
16. Write your/father/guardian's mobile number.
17. It is mandatory for the candidate and his/her parent/guardian to sign the declaration.

## Enclosures

**(Please do not staple these enclosures with OMR Application Form)**

The candidates should fill-in the application form neatly and legibly as per instructions given in the information brochure and submit with the following enclosures:-

- a. Xerox Copy of Mark Sheet of Qualifying Examination (10+2) duly attested by gazetted officer/principal of institution.
- b. Xerox Copy of 10<sup>th</sup> Standard certificate duly attested by gazetted officer/principal of institution as a proof of age.
- c. Photocopy of Caste Certificate for SC & ST issued by competent authority.
- d. Photocopy of the latest Caste Certificate for OBC issued by competent authority. OBC Certificate issued after 31st March, 2016 has to be produced at the time of counseling to claim the OBC weightage.
- e. Four Copies of the recent coloured passport size photograph.

## Admit Card

- Admit cards will be available for download from the website [www.upumcwa.org](http://www.upumcwa.org) by 15<sup>th</sup> May -2016.
- In case the candidate is having problem in downloading the admit card, he/she can get duplicate admit card one day before the Scheduled Examination Date from 10.00 am to 3.00 pm at the examination centre opted by the students but not on the date of examination.
- To get the duplicate admit card candidate should contact the observer-UPUMCWA at the Examination Centre (as shown on the website) and they must carry the following :-
  - a. Two passport size photographs, similar to that pasted on application form i.e. from the same negative.
  - b. Rs. 100/- as fee for duplicate admit card.
  - c. Photocopy of Application Form along with Application Form No.
  - d. Proof of submitting the application form.
  - e. Proof of identity such as Passport/Voter ID Card/Pan Card/DL/High School Certificate etc. which must consist the photograph of candidate.

## Evaluation & Declaration of Result/Merit

- The answers to questions given by Panel of Paper Setters of respective papers and the result based on those answers shall be final and unchallengeable.
- Evaluation of Answer sheets (Barcoded OMR Sheets) shall be done through computer only. There will be no reevaluation of answer sheets in any case.
- **There will be negative marks of 1/4 for each wrong answer.**
- In general, the merit will be prepared on the basis of average percentage of total marks obtained by the candidates in Paper-I of the Entrance Examination conducted by UP Unaided Medical Colleges Welfare Association (UPUMCWA) subject to minimum cut-off percentage. However, In case where two or more candidates obtaining equal average percentage of marks, the rank of such candidates shall be determined on the basis of marks in Paper - II & the candidate with higher marks in Paper -II will be placed at higher merit. In case of same marks in Paper - II, higher aged candidate will be given higher rank.
- The percentage will be calculated up to two decimals precision.
- **Minimum cut-off pass percentage of marks in Paper-I shall be 50% (40% in case of SC/ST/OBC).**
- **A minimum 50% pass percentage in Paper-II of General English (Qualifying paper) (40% in case of SC/ST/OBC) is required to qualify for merit purposes.**
- All successful candidates will be informed through website show the candidates are advised to visit the website [www.upumcwa.org](http://www.upumcwa.org) regularly for relevant information.

## Counselling

**There will be counselling on the basis of merit of those candidates who have secured the minimum cut-off percentage as notified in earlier pages of this brochure. The detail procedure will be published in Newspapers and also at Association's Website at [www.upumcwa.org](http://www.upumcwa.org)**

**Note :** Please go through the website of the college of interest for the details regarding fee, hostel, other relevant information.

## List of Member-Colleges\* with Address & Intake

	<b>Intake</b>
<b>Code - 001</b> <b>Career Institute of Medical Sciences &amp; Hospital</b> Sitapur - Hardoi Bypass road, I.I.M., Ghailla, Lucknow -226020 Website: www.careertrust.in, E-mail: careermedical@careertrust.in Phone: +9115403074, +91-9935237590, +91-9305585271, 0522-2960429, 0522-2960439	<b>100**</b>
<b>Code - 002</b> <b>Dr. M. C. Saxena College of Medical Sciences, Lucknow</b> 688, Saita, Mall Road, IIM-Dubagga by Pass, Lucknow 226101 (Uttar Pradesh) Phone : 0522-4095752, 4095763, 4095750, E-mail : mcscms2013@gmail.com, Website : www.mcsgoc.com	<b>150**</b>
<b>Code - 003</b> <b>F. H. Medical College</b> NH-2, Newar Etmadpur, Railway Over Bridge, Tundla, Firozabad-283204, (Uttar Pradesh) Mobile No. : +91 - 9568005051, 9568005053, 8194047777, E-mail : fhmc.agra@gmail.com, Website : www.fhmc.in	<b>150**</b>
<b>Code - 004</b> <b>Heritage Institute of Medical Sciences</b> NH-2, G.T. Road by pass, Varanasi - 224311 (Uttar Pradesh) Phone : 0542-7111071, 6543888, Email : info@heritageims.com; Website : www.heritageims.com	<b>150**</b>
<b>Code - 005</b> <b>Hind Institute of Medical Sciences</b> Mau, Ataria, Sitapur Road, Sitapur- 261303 (U.P.) Phone : 0522-2352352, Mob.: 09415022105, Email : admin@himsup.com; Website : www.himsup.com	<b>150**</b>
<b>Code - 006</b> <b>Hind Institute of Medical Sciences</b> Near Minor Canal, Safedabad, Faizabad-Lucknow Road, Barabanki (U.P.) Phone : 05248-227787, 226685, Fax : 0522-2352356, Email : admin@himsup.com; Website : www.himsup.com	<b>100<sup>#</sup></b>
<b>Code - 007</b> <b>K. D. Medical College Hospital &amp; Research Centre</b> 24 km. Milestone, NH #2, Mathura-Delhi Road, PO Akbarpur, The chhata, Mathura - 281406 (U.P.) Mobile : 9897955556, E-mail : chairman.rkg@gmail.com, Website: www.kdmch.in	<b>150**</b>
<b>Code - 008</b> <b>Major S. D. Singh Medical College &amp; Hospital</b> Bewar Road, Baikunthpuri, Fatehgarh, District - Farrukhabad Mobile : 9415167864, 9415472381, 9839553056, E-mail : support@majorsdsmch.org, Website: www.majorsdsmch.org	<b>100**</b>
<b>Code - 009</b> <b>Mayo Institute of Medical Sciences</b> (A Unit of Bodhisatva Charitable Trust) Faizabad Road, Gadia, Barabanki - 225001, U.P., India Phone : 05248-229595, Mobile : 09235461111, 09235445111 Email : mims_lko@yahoo.com, mims0786@gmail.com, Website : www.mimsup.org	<b>150**</b>
<b>Code - 010</b> <b>Muzaffarnagar Medical College, Muzaffarnagar</b> Opp. Begrajpur Industrial Area, Adjacent to Reliance Petrol Pump, 115 Km. Stone, NH-58, Delhi-Dehradun Road, Muzaffarnagar (U.P.) Phone : 01396-252702, 252704 Fax : 01396-252703, 252708; Mob. 9837066610, 9358922666 Email : mmcollege@sify.com; Website : www.mmcollege.org	<b>100<sup>#</sup></b> <b>50**</b>
<b>Code - 011</b> <b>Netaji Subhash Chandra Bose Subharti Medical College, Meerut</b> Delhi-Haridwar Bypass Road Meerut (U.P.) Phone : 91-121-2439056, 2439027 Fax : 91-121-2439067, Email : subhartiinstitute@rediffmail.com	<b>100<sup>#</sup></b> <b>50**</b>
<b>Code - 012</b> <b>Rajshree Medical Research Institute</b> NH-24 , Near Toll Plaza, Rampur Road, Bareilly (U.P.) Phone 0581-3249600 (O), Mobile No :- 8192000280,83,88 E-mail : rmrribly@gmail.com, Website: www.rajshreemri.in	<b>150**</b>
<b>Code - 013</b> <b>Rama Medical College Hospital &amp; Research Centre</b> Rama delhi, 38 km milestone, NH-24, Moradabad - Delhi highway, Ghaziabad - 245304 (U.P.) India Mobile : 09690018950, 07500530009, Toll Free No.: 1800-180-6666 Website: www.ramamedicalcolleges.com, www.ramagroup.in	<b>150**</b>
<b>Code - 014</b> <b>Rama Medical College Hospital &amp; Research Centre</b> Rama City, G.T. Road (Near Mandhana Rly. Stn.), Kanpur - 209 217 (UP) Phone : 0512-2780886 Fax : 0512-2583875/2780345, Mobile : 09839984223, 09005850311 E-mail: rmchrc@ramamedicalcolleges.com, Website : www.ramagroup.in, www.ramamedicalcolleges.com	<b>100<sup>#</sup></b>
<b>Code - 015</b> <b>Rohilkhand Medical College, Bareilly</b> Opp. Suresh Sharma Nagar, Pilibhit Bye-Pass Road, Bareilly 243 006 (U.P.) Phone : 9359102935, 0581-2526011, 2526012, Fax : 0581-2526054, 2303345, Website : www.rmcbareilly.com	<b>100<sup>#</sup></b>
<b>Code - 016</b> <b>Saraswathi Institute of Medical Sciences</b> NH-24, Anwarpur, Hapur, Ghaziabad Phone : 0122-2325317, 2321151, 2320511, 09219443322, 09219569618 Fax : 0122-2321151 Website : www.sims.edu.in ; Email : sims.hapur@gmail.com	<b>100<sup>#</sup></b>
<b>Code - 017</b> <b>Sharda University School of Medical Sciences and Research</b> Plot No. 32-34, Knowledge Park-III, Greater Noida (U.P.) - 201306 Phone : 120-3121001, 3121002, Email : admission@sgi.edu.in; Website : www.sharda.ac.in	<b>100<sup>#</sup></b>
<b>Code - 018</b> <b>Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly</b> Ram Murti Puram, 13.2 Km. Bareilly-Nainital Road, Bareilly 243 202 (U.P.) Phone : 91-581-2582031-33 Fax : 91-581-2582030 Website : www.srmsims.ac.in Email : info@srmsims.ac.in	<b>100<sup>#</sup></b>

\* Approved unaided medical colleges of U.P. State as on 30th September 2015; \*\*This is subject to approval letter from Government of India.

# Recognized by the Ministry of Health & Family Welfare, Govt. of India.

Note: Any new unaided Medical College of U.P. State which may get approval from Govt. of India can also be considered.

**APPENDIX**

**Paper-I : Physical and Biological Sciences**

**(A) PHYSICAL SCIENCES**

**Physics**

**(a) Measurement and Kinematics**

1. Estimation of percentage error in the result of an experiment
2. Dimensional analysis: Dimension of a physical quantity M,L,T, $\theta$ , (Temperature), Dimensional balance of any equation.
3. Motion along straight line path: Time displacement, time-velocity and time-acceleration graphs. Interrelationship among the graphs.
4. Motion in a plane : Vector addition and subtraction (Laws of Polygon to be used) ( $AB+BC=AC$ ), Graphical deduction has to be emphasized. Multiplication of a vector by a scalar. Uniform motion on a circular path magnitude of centripetal acceleration and force (Centrifugal force does not exist in inertial frame). Motion under a uniform acceleration along a direction other than that of the initial velocity (motion of projectile under gravity is included herein interpretation of the vector form of the equation  $v=u + at$  and  $s = ut + \frac{1}{2}at^2$ )

**(b) Mechanics**

1. Newton's Laws of Motion : the first law (Galileo's Law of Inertia) and the third law ( $F_{12} = -F_{21}$ ) are obtained from the second law ( $a=F/m$ ), variable force, impulse ( $F.\Delta t$ ), conservation of momentum, Principle of jet propulsion.
2. Rotatory motion of a rigid body: Torque, angular acceleration, moment of inertial  $I=\Sigma mr^2 =$  (torque/angular acceleration), angular momentum.
3. Work Energy: Derivation of expression for kinetic energy ( $\frac{1}{2}mV^2$ ) and  $\frac{1}{2}I\omega^2$ ) respectively from work done by a force and by a couple. Potential energy for a general  $Fx$  relation (using the method of area under the curve) for a constant force (e.g.mgh) and for spring  $\frac{1}{2}kx^2$  . Conservation of mechanical energy. Elastic and Inelastic collisions (no description). Law of mechanical energy in inelastic collisions.
4. Universal Gravitation: Motion of planets Kepler's laws. Law of gravitation in terms of central force dependence of force on and inverse of square of distance (no derivation). Planets, orbital motion and time period, concepts of weightlessness. Gravitational field (nt/Kg) and potential (J/Kg). Height attained by the projectile, escape velocity.
5. Simple harmonic motion: Pure kinetic motion in terms of projection of uniform circular motion. Formula  $y=A \sin \omega t$ . Magnitude of acceleration is  $-\omega^2$  times the displacement, kinetic description that motion in which the force is  $k$  times the displacement. Relation  $\omega^2 = k/m$  and  $t = 2\pi\sqrt{m/k}$  and its uses in (i) Simple Pendulum (ii) Oscillation in an ideal spring. Time displacement graph, time period, frequency, phase. Total energy in terms of square of amplitude, conversion of energy in the form of potential and kinetic energies, dissipation and damping.
6. Forced oscillation and resonance: Elementary concept of forced oscillations, cases of resonance examples from mechanics, sound and radio etc.

**(c) Wave Motion and Sound**

1. Speed of mechanical waves : Newton's formula  $v=E\sqrt{d}$  (no derivation) for longitudinal waves. Order of magnitude of  $v$  in various media. Application to gases, Laplace's correction, effect of temperature and pressure for waves on string  $v=(\sqrt{T/m})$  (no derivation).
2. Progressive wave : Equation for a simple harmonic progressive wave, phases and phase difference, Wave front graphical representation of particle velocity against  $x$  and  $t$ . Qualitative picture of pressure variations in longitudinal waves, intensity dependence on square of amplitude (no derivation).
3. Reflection and refraction of waves : Demonstration of characteristics of wave motion with the help of pulse on a string and on water. Mutual independence of various waves in the same medium. Partial reflection and transmission at the interface of two media, Explanation of reflection and refraction on the basis of secondary wavelets and new wave fronts :  $\sin i_1/\sin i_2 = v_1/v_2$
4. Superposition of waves : Interference in space due to two sources, phenomenon of beats, beat frequency equals the difference of parent frequencies.
5. Stationary waves : Bounded medium, stationary waves, nodes and antinodes, Characteristic frequencies of vibration of a bounded medium. Cases of string and air columns (excluding end correction etc. Sonometer, Melde's experiment, Resonance column and Kundt's tube.
6. Doppler's Principle : Doppler effect due to the motion of the source and due to the motion of the observer.

**(d) General Properties of Matter**

1. Kinetic theory and ideal gases: Molecular agitation, deduction of pressure of an ideal gas, Boyle's Law. Kinetic theory concepts of thermal equilibrium and temperature, Perfect gas equation, deviation from the ideal gas equation at high pressure and low temperature, concepts of finite size of molecules and their mutual interactions. Distinction between gas and vapour, critical temperature.
2. Kinetic models for liquids and solids : Intermolecular forces and potential energy curve. Molecular models for the liquids and solids, Elementary explanation for thermal expansion, fusion. Vaporization, boiling and latent heats.
3. Elasticity : Longitudinal strain, stress and modulus of elasticity. Explanation on the atomic models of solids. Estimation of interatomic force constant. Bulk modulus and rigidity (Only elementary ideas).
4. Surface tension : Surface tension, surface energy. Elementary explanation on the basis of inter molecular forces. Rise of liquid in a capillary tube.
5. Flow of liquids : Ideal fluids, Bernoulli's equation and its application. Viscous fluids (elementary concepts only), viscous force on a solid moving in fluid, Stoke's Principle (no derivation), terminal Velocity.

**(e) Heat :**

1. Thermometry : Constant Volume gas thermometer, Principles of Resistance Thermometer  $R_t = R_0 (1 + \alpha t)$  and principle of the thermocouple thermometer, Range of various thermometers, Brief explanation of the various other principles used in thermometry. Total radiation, pyrometer and vapour pressure thermometer.
2. First law of thermodynamics : work done by a system =  $p dv$ . Definition of the internal energy function  $U$  from the relation  $dU = dQ - p dv$ . First law of thermodynamics.  $U$  a unique function of any state. Distinction between  $C_p$  and  $C_v$ . Derivation of  $C_p - C_v = R$  for an ideal gas. General features of the function  $U$ . Transitional kinetic energy, intermolecular potential energy, internal rotation and vibration in polyatomic molecules and lattice vibrations.
3. Isothermal and Adiabatic Processes : Definitions, Isothermal elasticity of ideal gas. Adiabatic relationship  $p v^\gamma = \text{constant}$  (no derivation), adiabatic elasticity of an ideal gas.
4. Thermal Conduction : Elementary concepts of isothermal surface and temperature gradient. Thermal conductivity and one dimensional heat flow in the steady state, kinetic model of thermal conductivity (including metals).

**(f) Light**

1. Refraction at spherical surfaces : Refraction at spherical surfaces. Derivation of the expression for  $u, v$  relationship for refraction at a single spherical surface and a thin lens. (Sign conventions of coordinate geometry to be followed) Newton's formula  $xx' = ff'$ , combination of lens.
2. Chromatic aberration : Dispersive power of a material, Longitudinal chromatic aberration in a lens, Achromatic combination two lenses in contact.
3. Telescope and Microscope : Astronomical telescope (reflecting refracting types), compound microscope, magnifying power (for normal eye only). Mention resolving power for both the instruments, need of large aperture telescope and electron microscope (for normal eye only), Mention resolving power for both the instruments, needs of large aperture telescope and electron microscope (no description).
4. Wave nature of light : Elementary observation of diffraction of light by a narrow single slit, comparison with the corresponding observations in ripple tank. Explanation of reflection of lights and refraction of sound on the basis of the wave theory (refer course item c-3). Expression  $v = c/n$ . Foucault's experiment for the measurement of the velocity of light in liquid and its historical significance. Analysis of Young's experiment, Fringe width, Wavelength of light in various regions of white light. Elementary ideas of plane polarized light, its production and detection (Pile of plates and polaroids).
5. Spectrum : formation of spectrum in a prism spectrometer, Minimum deviation and angular dispersion, Ultraviolet and infrared regions of the spectrum, Characteristic properties, complete range of the electromagnetic spectrum: radio wave to gamma rays.
6. Photometry: Luminous intensity of light source at a point in particular direction. Unit candela (cd). Definition of Lumen (Lm) = 1 cd sr. An isotropic sources of luminous intensity of 1 cd gives a total flux of 4 plm. Rating of a lamp in lumens, candela or watt, Unit lux illumination of a surface (lx) = lumen/meter<sup>2</sup>, measurement of luminous efficiency in lumens watt, illumination in terms of inverse square law and cosine law. Brief introduction of luminous efficiency, illuminance etc. for various practical cases.

**(g) Electricity**

1. Electric field and potential : Coulomb's Law  $F = q_1 q_2 / (4 \pi \epsilon_0 r^2)$ . Electric field and potential due to a point electric dipole (In longitudinal and transverse position at large distances). Couple acting on a dipole placed in an electric field. Electric field due to a sphere with uniform surface charge density (No Derivation), Proof of atomicity of electric charge. (The procedure of PSSC book to be followed).
2. Capacity: Principle of condenser, capacity of an isolated sphere, a spherical condenser and a parallel plate condenser, effect of dielectric on the capacity. Series and parallel combination of condensers, energy of a charged

- condenser  $\frac{1}{2} CV^2$ , its comparison with the energy of a stretched spring  $\frac{1}{2} Kx^2$ .
3. Electric conduction : electric current as a flow of charge carriers. 1 Ampere = 1 coulomb/sec, or  $6.25 \times 10^{18}$  electronic fundamental charge/sec. Conduction in gases and solutions, concepts of ions, Electrolysis, Faraday's Laws and Electrochemical equivalent, Faraday's number, free electrons in metals, carrier density, drift velocity  $v$  and relaxation time  $t$  Simple derivation of Ohm's law. Qualitative explanation of the variation of conductivity of normal conductors with temperature. Ohmic and nonohmic circuit elements, Dynamic resistance  $\Delta v/\Delta i$
  4. Simple Circuits : Electric cell as a device which continuously drives charges round a circuit. Electromotive force a characteristic of cell, EMF defined as  $= W/Q$ , where  $W$  is work done in carrying a charge  $Q$  around a closed circuit. Internal resistance of a source ( $r$ ), Internal potential drop ( $ir$ ) and power ( $i^2 r$ ) Kirchhoff's Laws: series and parallel combination of resistances, Principle of Wheatstone's bridge, example of meter bridge. Potential divider, Potentiometer.

## (h) Electromagnetism

1. Moving charges and magnetic field : Similarities in the behaviour of bar magnet and solenoidal current, measurement of a magnetic field on the basis of force on a linear current  $F = iBL \sin \theta$ , force on a moving charge in a magnetic field  $F = qvB \sin \theta$  (Lorentz force). Relation between these two expressions, force acting between two parallel linear currents  $F \propto i_1 i_2 L/r$ . Its interpretation on the basis of magnetic field  $B = \mu_0 i/r$  Definition of Ampere using the expression  $F = (2 \times 10^{-7}) i_1 i_2 L/r$  and definition of the unit of  $B$  using the expression  $F = iBI \sin \theta$ . Magnetic field at the centre of circular coil and inside a long solenoid (no derivation), Principle of moving coil galvanometer, its conversion into Ammeter and voltmeter. Principle of D.C. Motor.
2. Magnetism : Couple acting on a bar magnet placed in a magnetic field, magnetic dipole. Definition of magnetic moment on the basis of couple acting in a magnetic field. Electromagnet. Atomic model of magnetism, some atoms have non-zero moment and their alignment gives rise to microscopic magnetism, magnetic field due to a Small bar magnet in longitudinal and transverse positions ( $2m/d^3$  and  $m/d$  respectively), component of earth's magnetic field, theories regarding its origin.
3. Electromagnetic Induction : Magnetic flux, its unit weber. 1 weber = 1 Newton meter/Ampere. Faraday's law of electromagnetic induction,  $e = -d\phi/dt$ . Interpretation of induced e.m.f. in terms of Lorentz force. Principle of A.C. and D.C. Dynamos, back e.m.f. in a motor, definition of self inductance ( $e = -L di/dt$ ). Dependence of  $L$  on the core material. Graphical description of rise and decay of current in an inductive circuit (no derivation). Definition of mutual inductance ( $e_2 = -M di/dt$ ) and its dependence on the core material. Theory of transformers (qualitative). Microphone (moving coil and carbon type) moving coil loudspeakers.
4. Alternating current circuits: Graphical representation of voltage and current as a function of time, phases difference between  $V$  and  $I$ . Value of the ratio of  $V_0/I_0$ , depends on frequency and the impedance  $Z$  for a circuit containing only  $R$  and  $L$ ,  $Z^2 = R^2 + \omega^2 L^2$  and  $\tan A = L\omega/R$  (no derivation), root mean square value  $V_0/\sqrt{2}$  and  $I_0/\sqrt{2}$  power  $\frac{1}{2} V_0 I_0 \cos \theta$ , choke coil, wattless current. Oscillation in an LC circuit, (Statement only) Frequency of an LC circuit,  $F = 1/2\pi\sqrt{LC}$  (Analogy with oscillation of a mass attached to a spring).

## (i) Electrons Physics

1. Diode and Triode : Emission of electron from metals on heating, Rectifying action of diode, Triode and its static mutual characteristics, Triode as an amplifier.
2. Cathode rays and Positive rays : Cathode rays as stream of particles determination of  $e/m$  of the particles (using simultaneous electric and magnetic fields) discovery of the electron. Cathode ray oscilloscope (Elementary working principle only),  $e/m$  of positive rays, ions isotopes.
3. Photoelectric effect : Photoelectric phenomenon, threshold frequency,  $E_k$  is independent of the light intensity, empirical relation  $E_k = A\nu - B$ , where  $B$  depends on the cathode surface and  $A$  is a universal constant, Einstein's explanation of photoelectric effect.  $A = \text{Planck's constant } h$  and  $B = \text{work function}$ .

## (j) Radiation and Atomic Physics :

1. Radiation : Similarly between the nature of radiant energy and lights/Absorptivity, emissivity of surface, Kirchhoff's law, concept of a black body, Stefan's law, graphical description of spectral distribution of black body radiation (no formulae), elementary ideas of Plank's hypothesis.
2. Structure of atom : Rutherford's experiments on particle scattering and his conclusions regarding (i) positively charged nucleus and (ii) applicability of Coulomb's law.
3. Origin of spectrum: Experiments of Franck and Hertz, quantized energy states of atoms, energy level diagram, emission and absorptions spectrum, Spectral series of Hydrogen atom, continuous, line and band spectra: their relationship with the state of matter, Fraunhofer lines and their explanation. Fluorescence and phosphorescence.
4. X-ray: Production (Coolidge tube), control on the intensity and penetration, electromagnetic nature of X-rays.

## (k) Nuclear Physics

1. Radioactivity : Nature of  $\alpha$  and  $\gamma$  rays, concept of half life and statistical nature of the phenomenon of

- radioactivity. Scintillation screen and cloud chamber respectively for counting and tracking the charged particles (only general features including path tracking by a magnetic field), Composition of nucleus, fundamental particles, e,n,p, $\Delta$ , p and their antiparticles.
- Nuclear energy: Nuclear fission, mass defect, mass energy relation  $\Delta E = C^2\Delta m$  Unification of the principles of conservation of mass and conservation of energy. Principle of nuclear reactor, Elementary ideas of nuclear fusion, origin of solar energy.

## Chemistry

### Section A General Chemistry

- Discovery & Properties of electron, proton, neutron, Elementary ideas of Binding Energy of Nucleus, Electronic Configuration, electronic shells, subshells, Quantum number, Pauli's exclusion principle
- Detailed Study of Electrovalence, covalence(including Kossels theory) and coordinate valence bonds and Electronics Structure of compounds.
- Radioactivity, Natural & Artificial disintegration, half life, fission and fusion, isotopes and isobars, radioactive isotopes and their uses
- Electrode potential and electrochemical series
- Oxidation & reduction reactions, oxidation number, balancing of equations by oxidation number and electron method
- Law of gases, gas equation, Dalton Law of partial pressure, Simple numericals based on Graham's Law of diffusion
- Volumetric analysis and qualitative analysis

### Section B : Inorganic Chemistry :

- Detailed study of Mendeleef's periodic table (Excluding historical backgrounds). Position of the elements in the periodic table on the basis of atomic structure, modern periodic table, Periodic properties of elements (Atomic radius, ionisation potential, electron affinity) (Only definitions)
- Hydrogen and its Compounds-Position of Hydrogen in Periodic table, isotopes of Hydrogen, Deuterium, Heavy Water, Laboratory methods of the preparation of Hydrogen Peroxide, outline of industrial preparation, properties, uses and structure of  $H_2O_2$
- Studies of First group elements (Alkali metals)-Position of Na, K in the Periodic table on the basis of electronic configuration, Laboratory method for the preparation of  $Na_2CO_3$ , NaOH,  $NaNH_4$ ,  $(HPO_4)$ ,  $H_2O$  microcosmic salt, outline of their industrial preparation, properties and uses.
- Studies of second group elements (Alkaline earth metals)-Position of Mg, Ca, Sr, Ba in the periodic table on the basis of configuration. Preparation of Plaster of Paris  $(CaSO_4)_2H_2O$ , its properties and uses, outline of the industrial preparation of Cement and its uses.
- Studies of third group elements - Properties of Al, its uses and metallurgy, method of preparation of Anhydrous  $AlCl_3$ , Alum-their properties and uses.
- Studies of fourth group of elements- Position of C and Pb in the periodic table on the basis of electronic configuration, Fuel gases, (oil gas, water gas, coal gas, petrol gas) methods of preparation, outline of industrial preparation and uses. Outline of industrial preparation of glass and uses. Preparation of  $SnCl_2$  its properties and uses, preparation of white lead, red lead, basic lead acetate their properties and uses.
- Studies of fifth group elements-Position of N, P, As, Sb, Bi in the Periodic table on the basis of electronic configuration. Preparation, properties and uses of  $NH_3$ ,  $HNO_2$ ,  $N_2O$ ,  $HNO_3$ ,  $P_2O_5$ ,  $PH_3$ , Orthophosphoric Acid, Arsenious oxide, Methods of Industrial Preparation of  $HNO_3$ , Nitrogenous and Phosphate Fertilizer.
- Studies of Sixth group elements-Methods of preparation, industrial preparation, uses and structure of  $O_3$  &  $H_2SO_4$ .
- Studies of Seventh group elements-position of Cl, Br, I in the periodic Table on the basis of electron configuration. Methods of preparation, Industrial preparation, properties and uses of  $Cl_2$ ,  $Br_2$ ,  $I_2$  & Bleaching Powder.
- Inert Gases Position in Periodic Table, history of discovery, general characteristics uses.
- Transition elements - (1) General studies-Position in periodic table, properties (2) Position of IB, IIB & VIII group elements in the periodic Table (3)Position of Cu Ag on the basis of electronic configuration. Properties, preparation and uses of  $Cu_2Cl_2$  and  $AgNO_3$  (4) Position of Zn, Cd on the basis of electronic configuration, Methods of preparation, properties and uses of calomel, corrosive sublimate,  $ZnCl_2$ ,  $ZnO_2$  (5) Position of Fe in the periodic Table on the basis of electronic configuration, metallurgy and uses. Industrial product of Steel and Steel Industry of India. Methods of preparations, properties and uses of Mohr's salt & Ferric Chloride.

### Section C : Physical Chemistry

- Chemical Equilibrium : Law of Mass action, Velocity constant and Equilibrium constant (only in homogeneous gas system. Qualitative derivation of Le Chaterier's Principle.
- Principle of electrolytic dissociation, Ostwald dilution Law, Degree of dissociation, dissociation constant,

- Hydrolysis, neutralisation, Strength of acids and bases, pH, Buffer solution, Qualitative description of acid bases indicators, solubility product and common ion effect (excluding the determination of constants).
3. Different methods to represent concentration of solution properties of solution, lowering of vapour pressure by mixing a solute, Osmosis and determination of Osmotic pressure by Berkeley and Hartley's method, determination of molecular weight of non-volatile substances by the elevation of boiling point and depression of freezing point (excluding the derivation of formulae).
  4. Distribution of a solute in the non mixing liquid (excluding association, dissociation and complexing agents).
  5. Catalyst: Properties, homogenous and heterogeneous catalyst, intermediate theory and modern absorption theory and Enzyme catalyst.
  6. Definition of colloidal solution and its important properties(excluding electronic properties)
  7. Thermo chemistry First law of thermo-dynamics, Definition and concept of internal Energy, heat of reaction, Heat of combustion, heat of formation, Heat of neutralization, Hess's Law and numerical problem based on it.

## Section D : Organic Chemistry

1. Simple methods of purification of organic compounds, Fractional crystallisation, Fractional distillation, Steam distillation and vacuum distillation, Chromatography, Criteria of purity, determination of mixed melting points and boiling points.
2. Quantitative determination of carbon, hydrogen, nitrogen, halogens and sulphur
3. Isomerism: Structural (chain position, functional and metamerism) Stereoisomerism(Optical isomerism of Lactic acid).
4. Simple examples of addition of halogens and hydrogen halides and their mechanism, elimination reaction (dehydrogenation and dehydration), Homolytic and hetrolytic fission of bonds.
5. Classification and detailed nomenclature of organic compounds, IUPAC method.
6. Aliphatic hydrocarbon
  - a. General preparation and properties of alkanes
  - b. General preparation and properties of alkenes
  - c. Alkynes: Industrial preparation of acetylene
  - d. Elementary ideas about the formation of high polymers based upon ethylene, butadiene and styene
  - e. Source of hydrocarbons, petroleum, synthetic, petrol octane number of fuels, cracking
  - (ii) Alkyl Halides: General Methods of preparation of monohalogen derivative of alkanes. Laboratory method of ethyle bromide and its importance in organic synthesis. Trihalogen derivatives-General method of preparation and properties of chloroform
  - (iii) Ethers: Laboratory preparation and properties and uses of diethyl ether.
  - (iv) Alcohol : General methods of preparation and properties of monohydric alcohols, manufacture of methanol and ethanol (Fermentation and enzyme control), simple properties of glycerol.
  - (v) General methods of preparation, comparative study and general properties of aldehydes and ketones, laboratory preparation and uses of formaldehyde, acetaldehyde and acetone. Polymerisation and condensation
  - (vi) Carboxylic acid: Laboratory preparation and properties of formic acid, manufacture and properties of acetic acid, simple properties of oxalic acid
  - (vii) Derivatives of carboxylic acid.
7.
  - (a) Laboratory preparation, properties and uses of acetyl chloride.
  - (b) Methods of preparation, properties and uses of acetic anhydride.
  - (c) Methods of preparation, properties and uses of acetamide
  - (d) Urea: Method of preparation (ammonical or Potassium cyanate method) and properties.
  - (e) Esters : Laboratory, preparation and properties, ethyl acetate, oils, fats, soaps and waxes.
  - (f) Amines : Laboratory preparation and properties of ethylamine
8. Carbohydrates : Distinction tests of mono, di and polysacharides, general reaction of glucose.
9. Our food and its constitution: Carbohydrates, proteins, fats and vitamins.
10. Aromatic Compound
  - a. Hydrocarbons, Coal tar distillation, Comparative study of reaction of Aliphatic and Aromatic hydrocarbons.
  - b. Outline of Benzene structure.
  - c. Laboratory preparation, important properties and uses of the following: Benzene, Toluene, benzene, Sulphonic acid, Chlorobenzene, Phenol, Benzaldehyde, Benzoic acid, Nitrobenzens, Aniline.

**(B) BIOLOGICAL SCIENCES**

**Zoology**

**Section-A : General**

1. Origin of life: Oparin's theory, Miller's experiment, Position of virus in the process of life's origin.
2. Organic evolution: Original idea of evolution, evidences of evolution, Theories of evolution (Lamarckism & Darwinism).
3. Mechanism of Evolution: Definition, causes and types of variation: Mutation (Theory and Hugo de Vries only).
4. (a) A broad outline of the course of evolution through the ages (both plant and animals taken side by side).  
(b) Evolution of Man : Prehistoric man with reference to the characteristics of Java ape man, Peking man, Neanderthal man and Cromagnon man.
5. Eugenics: Sex determination, Sex-linked character Genetic traits in man (with reference to blood group) subsidization of superior student, Intelligence Quotient (I.Q.)
6. Animal Physiology:
  - (a) Metabolism: General idea, repair and regeneration of tissues.
  - (b) Digestion: Food, digestive enzymes with reference to digestion, absorption, assimilation (giving reference to Rabbit and comparing with man).
  - (c) Excretion: Chemical nature of excretory products; Role of Liver and Kidney in excretion with reference to Rabbit.
  - (d) Expiration: Respiratory mechanism, cellular Respiration, mitochondria and role of A.T.P.
  - (e) Nervous System: Reflex action, interneuronic transmission of impulses (Electrochemical phenomenon). Autonomic nervous system (sympathetic and parasympathetic nervous system) and nervous controls of visceral organs with special reference to Rabbit.
  - (f) Endocrine system (with reference to human endocrine glands). Hormones and their function.

**Section-B : Type and Specific Study**

1. A modern classification of animal kingdom (based on the book by Storer and Usinger) : Main characters of Phyla and classes with examples.
2. Animal tissues (Histology)
3. Protozoa :
  - (a) Amoeba: with emphasis on morphology, Physiology, reproduction and behaviour, osmoregulation, entamoeba histolytica structure and prevention of diseases caused by it.
  - (b) Plasmodium: History, life-cycle therapy and control of Malaria.
4. Porifera: Structure and physiology of simple sponge (Leucosolenia, Ascon type) Economic importance of sponges, sponge industry.
5. Coelenterata: Hydra-Morphology, Physiology, habit, regeneration, grafting and development, physiological division of labour and related histological differentiation.
6. Aschelminthes: Ascaris-Morphology (External features and anatomy) Life history, therapy and control.
7. Annelida: Pheretima posthuma (External features and anatomy), bionomics and economic importance of Pheretima posthuma.
8. Arthropods :
  - (a) Cockroach (Periplanata Americana), Morphology (External features and Anatomy) Difference between Periplanata and Blatta.
  - (b) Morphology and life history of housefly and mosquito
  - (c) Economic importance of insects for man.
9. (a) Rana tigrina: Skull, Cranial and Spinal nerves, gametogenesis, fertilization and development. The three primary germ layers and their fate, Metamorphosis.  
(b) Rabbit : Reproductive system (excluding embryonic development), osteology, anatomy and histology.

**Botany**

**Section-A: General**

1. The cell: As a unit of structure and function, fine structure of cell components as seen in electron microscope: In reference to mitochondria, plastids, centrosome, lysosome, Microsome, Endoplasmic reticulum, ribosome, nucleus and nuclear membrane, DNA and RNA plasma membrane and cell wall.
2. (a) Protoplasmic: A highly complex organization, its constituents, physical and chemical properties.  
(b) Non-protoplasmic components: Cell inclusion and their significance.
3. Cell formation: Free cell formation, amitosis, somatic mitosis, duplication of DNA and its transfer to daughter cells, significance of mitosis, process of mitosis and its relation to life-cycle. Difference in cell division between animal cell and plant cell.

4. Ecology:
  - (a) Its meaning, ecological factors (climatic, physiographic, edaphic and biotic).
  - (b) Elementary knowledge of Ecosystem, its meaning and structure, abiotic and biotic components e.g. minerals and gases dissolved in water, producer, consumers, decomposers. Pond and forest ecosystem.
  - (c) Food chain ; Food web and food pyramids. Man in the ecosystem.
  - (d) Elementary knowledge of environmental Pollution: Its causes and control, kinds of pollution, Household detergents Sewage, Chemicals from Industry, Automobile exhausts, Nuclear fission, Radioactive substances, Smole, sound and pesticides.
  - (e) Soil-conservation.
5. Heredity : Its meaning, Mendelism, Mendel's experiments and Laws of inheritance.

### Section-B : Typical and Specific Studies

1. A modern classification of plan kingdom (Ref. Oswald and Tippos book).
2. Sporogenesis : Formation of micro and mega spores.
3. Detailed study of life history of an angiospermic plant up to seed formation.
4. Fruits.
5. Dispersal of fruits and seeds.
6. Cell differentiation: Plant tissues, classification of meristematic and permanent tissues and their works, classification of permanent tissue systems.
7. Histology of typical root, stem and leaf : Differences between Dicot and Monocot stems, general and secondary growth of root and stem, basics knowledge of internal structure of ecological types (hydrophytes, Xerophytes and Mesophytes).
8. Systematic study of representative types from the important phyla, occurrence, structure and life history of the following:
  - (a) Algae : Elementary knowledge (general characters and uses), detailed study of Ulothrix and Spirogyra.
  - (b) Bacteria : Structure, modes of nutrition, reproduction and economic importance.
  - (c) Fungi : a broad outline of fungi and detailed study of Rhizopus and Yeast, their economic importance.
  - (d) Bryophyta : A broad outline of bryophytes and their economic importance, Detailed study of Moss e.g. Funaria.
  - (e) Pteridophyta : A broad outline of pteridophytes, detailed study of Ferns e.g. Pteris and Dryopteris.
  - (f) Gymnosperms : General account and outline of lifecycle of Cycas.
9. Broad classification of Angiosperms. Description, identification and economic importance of the following families : Cruciferae, Malvaceae, Leguminosae. Solanaceae, Compositae, Cucurbitaceae and Liliaceae.
10.
  - (a) Composition of plant ash, inorganic nutrients in soil water, absorption by root hairs, osmosis, conduction, root pressure.
  - (b) Nitrogen cycle
  - (c) Special modes of nutrition in plants: (Autotrophic heterotrophic, parasitic, saprophytic, symbiotic, insectivorous) and their ecological relationship.
11. Photosynthesis : Chloroplast, role of light, chlorophyll and carbpm dopxode, mechanism of photosynthesis. Formation and role of ATP, significance of opening and closing of stomata.
12. Translocation and stomata.
13. Translocation and storage of food.
14. Respiration : Aerobic and Anaerobic Respiration, main steps in the mechanism of respiration (elementary knowledge of glycolysis and Krebs cycle), Process of fermentation and its economic importance.  
Growth and Movements : Definition of growth, measurements chief types of movements in plants. Hormones and their role in growth.

## PAPER-II : GENERAL ENGLISH (Qualifying Paper)

### General English

Grammar, spelling, simple tenses, prepositions, conjunctions, determiners including adjectives, voices, word meanings, correction of sentences, fill in the blanks, uncommon words, sentence completion, synonyms, antonyms, relationship between words and Phrases. Patterns and correct uses (parts of speech), syntax concord, articles, word formation, one word substitute, Vocabulary building, comprehension.



SIDE 2

11. NAME OF FATHER / GUARDIAN (AS PER YOUR 10TH / INTER CERTIFICATE)

ARVIND KUMAR SINHA

12. RELATIONSHIP

FATHER

MOTHER

OTHER

13. BOARD OF QUALIFYING EXAM.

CBSE

ICSE

STATE BOARD

OTHERS

14 INTERMEDIATE OR EQUIVALENT

YEAR OF PASSING	TOTAL % OF MARKS	ENGLISH % OF MARKS	PHYSICS % OF MARKS	CHEMISTRY % OF MARKS	BIOLOGY % OF MARKS	BOTANY* % OF MARKS	ZOOLOGY* % OF MARKS
2009	75	70	72	80	78		
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

RESULT AWAITED

\* IN CASE BIOLOGY WAS NOT A SINGLE SUBJECT AT 10 + 2 LEVEL.

15. MOBILE NUMBER

9935087871

16. PHONE NUMBER

STD CODE: 0532

NUMBER: 2375689

17. DECLARATION

I RAJESH SINHA Son/Daughter of Mr./Mrs. A.K. SINHA do hereby solemnly affirm that :

- I have carefully read the information details of UPCMET-2015 and agree to abide by the terms and conditions laid down therein.
- I understand that if rejected no request for refund of fee will be considered by the Co-ordinator UPCMET-2015.
- I shall abide by the rules and norms of discipline of the Institute I join.
- Decisions of the Co-ordinator, UPCMET-2015 shall be final and binding on me.
- All the information given in this application form are true to the best of my knowledge and belief. If any of the information is found incorrect or distorted at any stage, I shall have no objection to cancellation of my UPCMET-2015 result or removal from the rolls of the college if any admission has been granted to me on the basis of this result.

AK Sinha  
(SIGNATURE OF FATHER / MOTHER)  
NAME :- ARVIND KR. SINHA  
DATE :- 23-12-2015  
PLACE :- ALLAHABAD

Rajesh  
(SIGNATURE OF CANDIDATE)  
NAME :- RAJESH SINHA  
DATE :- 23-12-2015  
PLACE :- ALLAHABAD

# Frequently Asked Questions (FAQ)

## **Q1. What is the last date of submission of duly completed application form?**

Reply: May 11, 2016

## **Q2. What is the age for appearing in UPCMET-2016?**

Reply: To appear in the Entrance Examination candidate should have completed 17 years as on 31st December, 2015.

## **Q3. What is the educational qualification for appearing in UPCMET-2016?**

Reply: Candidates must have passed 10+2 level examination of UP Board / ISC / CBSE or its equivalent from any recognised Board / University with English as a subject; securing minimum 50% (45% in case of SC/ST) marks on average in Physics, Chemistry & Biology (including practical examination) taken together.

Candidates appearing in 10+2 examination of 2016 are also eligible to appear in entrance test but at the time of counseling they have to produce the passing marksheet of 10+2 examination, failing which no allotment of seats will be made.

## **Q4. What is the scheduled date of web hosting the Admit Cards for UPCMET-2016?**

Reply: Admit cards will be available for download from the website [www.upumcwa.org](http://www.upumcwa.org) by 15th May - 2016.

In case the candidate is having problem in downloading the admit card, he/she can get duplicate admit card (Rs. 100/- as fee) one day before the Scheduled Examination Date from 10.00 am to 3.00 pm at the examination centre opted by the students but not on the date of examination.

## **Q.5 How to get admit card ? In case of application form not received at UPCMET office.**

Reply: To get the admit card candidate should contact the observer-UPUMCWA at the Examination Centre (as shown on the website) and they must carry the following :-

- Two passport size photographs, similar to that pasted on application form i.e. from the same negative.
- Application form fee.
- Photocopy of Application Form along with Application Form No.
- Proof of sending/submitting the application form.
- Proof of identity such as Passport/Voter ID Card/Pan Card/DL/High School Certificate etc. which must consist the photograph of candidate.

## **Q5. What is the date and time of entrance examination UPCMET-2016 ?**

Reply: Date of entrance examination - 30th May - 2016 (Saturday)

Time of entrance examination 9:00 AM to 12:15 PM

## **Q6. What is the reporting time at examination centre ?**

Reply: 7:45AM (30th May - 2016)

## **Q7. Which colour of pen to be used for answering on OMR sheet ?**

Reply: Only Black Ball Point Pen shall be used for answering on OMR answer sheet as per direction given in the OMR Sheet.

## **Q8. What is the issue date of caste certificate ?**

Reply: Caste Certificate for OBC issued by competent authority. OBC Certificate issued after 31st March, 2016 has to be produced at the time of counseling to claim the OBC weightage.

Caste Certificate for SC & ST issued by competent authority.

## **Q9. Which kind of category quota will be given to the candidate ?**

Reply: Only caste category benefit will be given to the candidate. No provision for the sub category, Armed forces, Handicapped etc.

## **Q10. Who is eligible for NRI category quota?**

Reply: Those candidate are studying/staying outside the India and payment should be basis on the GOI rules. Candidate must be submit equivalency certificate issued by the competent authority in India  
NRI admission will be entertained only at college level. So candidate contact to the particular college.

## Important Dates

Sale / Online Submission/Download of Application Form Starts from	---	20th October 2015, Tuesday
Last Date of Form Submission	---	11th May 2016, Wednesday
Date of Entrance Examination	---	30th May 2016, Monday
Date of Result Declaration	---	By Second Week of June 2016
Counselling	---	After 15 July 2016

## Please Contact/Visit

Enquiry : 9897600270  
Fax No. : 0581-2582552  
Co-ordinator : +91-9411864286  
Email : [info@upumcwa.org](mailto:info@upumcwa.org)  
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