

DAYALBAGH EDUCATIONAL INSTITUTE (Deemed University)

1. PREAMBLE

1.1 Introduction

The Government of India declared the DAYALBAGH EDUCATIONAL INSTITUTE, as an institution deemed to be a University from the session 1981-82, under Section 3 of the University Grants Commission Act. The Institute has since been accorded the membership of the Association of Indian Universities. The Institute comprises of the faculties of Arts, Commerce, Education, Engineering, Science and Social Sciences. From the session 1986-87, the DEI Technical College, Dayalbagh, a diploma level Engineering Institution, and from the session 1995-96, the DEI Prem Vidyalaya Girls' Intermediate College, have also been brought under the academic and administrative control of the Institute.

1.2 Philosophy

The Institute has introduced a scheme of innovative and comprehensive education at university and non-university technical education levels which aims at excellence but not at the cost of the relevance, which inculcates dignity of labour, encourages initiative and creative work, which is multi-disciplinary, which prepares men for the increasingly techno-oriented society of tomorrow without uprooting them from their agricultural moorings, which will generate in the *alumni* the basic values of humanism, secularism and democracy by exposing them to the principles of all the major religions of the world and to their own cultural heritage, thus developing in them an integrated personality of well-adjusted men whose world has not been broken into fragments by narrow domestic walls.

1.3 Brief History

Soon after Dayalbagh was founded in 1915, the Radhasoami Satsang Sabha, in pursuance of the lofty ideals to evolve the superman of tomorrow, started the Radhasoami Educational Institute, as a co-educational Middle School, open to all, on January 1, 1917. Administered by a Managing Committee registered under the Societies Registration Act XXI of 1860, the Institute, since the very beginning, combined the pursuit of academic studies with sensibilities, moral and spiritual values. From the modest beginning, the nucleus not only grew and got divided but also spawned new institutions, as the needs of the society and the times demanded. Within six months, it was raised to the level of a High School; Intermediate classes were started in 1922; it became a Degree College in 1947, with the introduction of B.Com. classes affiliated to Agra University; B.Ed. (B.T.) classes

were added in 1951 and the first batch of B.Sc. students was sent up for the final examination in 1955.

A Technical School, which later developed into a College, was started in 1927 for imparting training in automobile, electrical and mechanical engineering, leading to the award of diploma in the concerned branch of the Board of Technical Education, U.P. The Leather Working School, started in 1930, gives instructions in both theory and practice for manufacture of leather goods.

To further the cause of women's education, Prem Vidyalaya was started in 1930. It is now an Intermediate College. The Women's Training College was established in 1947 for B.A. and B.Ed. classes. M.Ed. classes were added in 1958. M.A. in Psychology, English and Hindi in 1969 and M.A. (Music) in 1976. It made phenomenal progress to become one of the premier women's colleges in the country.

Engineering College, affiliated to Agra University, for the degree of B.Sc. (Engineering), was the latest (1950) addition to the chain of educational institutions in Dayalbagh.

A new and significant development of far-reaching consequence, in the history of education at Dayalbagh, was the establishment of DAYALBAGH EDUCATIONAL INSTITUTE as a registered body in 1973, which integrated and brought under one umbrella all the educational institutions of Dayalbagh, including the School of Comparative Study of Religion, the School of Languages and the School of Art and Culture.

In 1975, it formulated an innovative and comprehensive programme of undergraduate studies which received approbation from the Government of Uttar Pradesh and the University Grants Commission, as a result of which in 1981 the Ministry of Education, Government of India, conferred the status of an institution deemed to be a University on the Dayalbagh Educational Institute, to implement the new scheme.

1.4 Open to All

The Institute is open to all irrespective of caste, creed, race, religion, economic position or social status.

1.5 Location

The Institute is situated at DAYALBAGH, a self-contained colony well-known for its serene environment, secular establishments like the industries, the educational institutions, the agriculture farm etc. and the activities of its inmates who lead an active, disciplined and co-operative community life, conforming to the high spiritual ideals of their faith. It is situated at a distance of about two Km. from the city of Agra on its northern periphery. It is conveniently connected to the railway stations and bus-stands by the city bus, rickshaws, auto-rickshaws and taxis.

2. ADMINISTRATIVE STRUCTURE

The Institute is administered by the following authorities and officers:

2.1 Head of the Institute:

President : Shri Prem Kumar (IAS Retired)

2.2 Authorities : The Primary Body
The Governing Body
The Holding Trustees
The Academic Council
The Faculties
The Finance Committee
The Managing Council for Non-University
Technical Educational Institutions
The Managing Council for Non-University
General Educational Institutions

2.3 Officers :

Director : Prof. V.G. Das, MTech, PhD
Treasurer : Smt. Sneh Bijlani, MA
Registrar : Prof. Anand Mohan, MSc, PhD, FASc, FNAsc

2.4 Administration

Administrative Officer (Computers) : Dr. S.D. Bhatnagar,
MA, LLB, MBA, AIB (London), PhD
Assistant Registrar (Academic) : Dr. P.K. Sinha,
MSc, PhD
Assistant Registrar (Accounts) : Dr. Amar Prakash
MCom, LLB, PhD

3. STAFF MEMBERS OF DEI TECHNICAL COLLEGE

Principal: Shri P.P. Dua, MTech, MIE (India), MISTE

Department of Automobile Engineering

Dr. H.M. Sethi, BSc (Engg), PhD, Senior Lecturer & Head
Shri V.P. Malhotra, MTech, Lecturer

Department of Electrical Engineering

Shri B. Bhupinder Rao, MTech, Senior Lecturer & Head
Dr. Sandeep Paul, MTech, PhD, Lecturer
Dr. Ankur Das, MTech, PhD, Lecturer

Department of Mechanical Engineering

Shri V. Prem Prasad, MTech, MISTE, Senior Lecturer & Head
Shri G. P. Mishra, MTech, Lecturer
Shri Anami Saran, MTech, Lecturer
Shri Purushottam Kumar, MTech, Lecturer
Shri Pritam Singh, BTech, MISTE, Workshop Supdt.

Others :

Dr. Ranjit Kumar, MSc(Chemistry), PhD, Lecturer
 Shri M.Radhakrishna, MTech, Lecturer
 Dr J.K. Arora, MSc (Maths), PhD, Lecturer
 Dr A.K. Sharma, MSc (Physics), PhD, Lecturer
NCC Capt. Pritam Singh

Women's Polytechnic

Additional Staff provided by the Society- DEI WTC

(Staff for the Leather Technology Footwear is provided by the Society- DEI EC.)

4. OTHER STAFF**THE CORE COURSES TEACHING GROUP**

Prof. Giriraj Kumar, MA, PhD, Cultural Education
 Prof. Guru Prasad, MSc (Ag.), PhD, Agricultural Operations
 Dr. (Smt.) Prabha Sharma, MA, PhD, Reader, Comparative Study of Religion
 Dr. Guru Deo Upadhyaya, MSc, PhD, Lecturer, Rural Development

Sports Organisation

Prof. Ranjeet Singh, Sports Officer

University Science Instrumentation Centre

Dr. Soami Piara Satsangee, MSc, PhD, Reader and Incharge
 Dr. Rahul Swarup Sharma, MTech, PhD, Lecturer
 Shri Ashish Mani, BE, Lecturer

Works Department

Shri S.K. Nayyar, BSc Engg. ME, Superintendent of Works
 Shri Kumar Vipen Loyal, BE(Civil), Asst. Superintendent of Works

5. COURSES OFFERED

Three year Diploma In Engineering and Polytechnics
 are offered in the following branches:

Branch	No. of Seats (including reserved seats)
Group (A) (6 Semesters)	
Automobile Engineering	30 Boys
Electrical Engineering	60 Boys
Mechanical Engineering	60 Boys
Electronics Engineering	30 Girls/30 Boys
Group (B) (6 Semesters)	
Leather Technology Footwear (CASD)	30 Boys
Textile Designing	30 Girls
Interior Designing & Decoration	30 Girls

Two year Diploma in Polytechnics are also offered in the following branches:

Group (C) (4 Semesters)

Garment Technology	30 Girls
Home Science	30 Girls

Group (D) (4 Semesters)

Modern Office Management & Secretarial Practice	30 Girls/30 Boys
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Note: Provision for lateral entry of top meritorious students from Diploma in Engineering course of this Institute to B.Sc. (Engineering) Degree course of the Institute also exists.

6. DISTINCTIVE FEATURES OF THE INNOVATIVE AND COMPREHENSIVE PROGRAMME OF DIPLOMA IN ENGINEERING AND POLYTECHNICS

Components	Semester(s)
A. Main Courses	
1. Compulsory Engineering Subjects	Four/Six
2. Electives	One/Two
3. Work-based Training and Half Courses	Two
4. Practical Training in Industry	After fourth semester
5. Major Project	One
B. Science Courses	
1. Applied Physics	Two
2. Applied Chemistry	One
3. Applied Mathematics	Three
C. Humanities and Management Sciences	
1. English Communication	Two
2. Industrial Psychology	One
3. Cultural Education	One
4. Comparative Study of Religion	One
5. Elective Half Course	Two
D. Rural Engineering	
1. Social Service	One
2. Agricultural Operations	One
3. Rural Development Technology	One
E. Co-curricular Activities	
1. Cultural and Literary activities	Six
2. Games & Sports etc.	Six

7. FEE COLLECTION AND REGISTRATION FOR THE COURSES

(1) All the students selected for admission will have to pay semester fee on the scheduled fee collection day which will be notified by the Principal of the College.

(2) Selected students failing to deposit their semester fee on the scheduled fee collection day or by a bank draft by next working day, will forfeit their claim for admission.

(3) Fee collection will take place during 10.30 A.M. to 1.00 P.M. Fee can be paid, using pay-in-slips provided by the College either by cash or bank draft payable to "D.E.I. Technical College" at Agra.

(4) Students on the waiting list for admissions are advised to enquire from the office of the Principal, following the fee collection day, if any vacancy exists on account of non-payment of fees by the initially selected students. In case of vacancies, the students in waiting list in order of merit will be permitted, to the extent of existing vacancies, to deposit semester fee at the notified place and time.

(5) **Registration of the students followed by collection of semester fee will be done on the first day or the next working day of the scheduled opening of classes** and the regular class teaching will commence from the next working day. The schedule of opening of classes will be notified through a notification issued by the Institute before the end of the preceding semester.

(6) Beyond First Semester, students failing to register by the scheduled date or by the next working day may be allowed to register within two more weeks by paying a late fee of Rs.100/- only, payable by bank draft. Provided also that the Director, may, for special reason(s) to be recorded, allow further time for late registration till 31st August of the session, with a late fee of Rs.200/- only, payable by bank draft.

(7) Beyond First Semester, students failing to deposit prescribed fees by the scheduled date or by bank draft by the next working day may be allowed to deposit the prescribed fees within two more weeks by paying a late fee of Rs.100/- only, payable by bank draft. Provided also that the Director may, for special reason(s) to be recorded, allow further time till 31st August of the session, with a late fee of Rs.200/- only, payable by bank draft.

(8) All registrations shall close two weeks after the prescribed registration day. Thereafter, no student shall be registered and his admission shall stand cancelled.

(9) For changes in the registered courses, students may apply on fresh registration forms up to two weeks from the prescribed registration day.

(10) The students who get themselves registered late shall be deemed to have secured zero mark in all the components of continuous evaluation that might have been conducted up to the date of registration.

(11) Permission for the registration in the next academic session would depend upon the satisfactory performance throughout the previous academic session of two semesters (an odd and the next even semester taken together).

(12) An elective course shall be offered only if the number of students offering it is not less than five.

8. ORIENTATION PROGRAMME

Immediately after admission, the students will undergo an Orientation Programme in order to acquaint themselves with the various aspects of the course content and the educational system of the Institute as under:

- (i) The environment, traditions and Education Policy Objectives of the Institute.
- (ii) The distinctive features of the innovative and comprehensive scheme of education.
- (iii) The subject combinations available and suitable to the students' aptitude.
- (iv) The semester system and the continuous system for evaluation with particular reference to the class tests, quiz tests, assignments, seminars and group discussions.
- (v) The facilities available in the Institute.

9. SEMESTER-CUM-CONTINUOUS EVALUATION SYSTEM

9.1 This is the soul of our innovative programme and radically alters the learning process to the benefit of the students. The result of a single examination does not determine the fate of the students. Examination and evaluation is a continuous and an unburdensome exercise. Seventy five percent weightage is assigned to continuous evaluation while 25% weightage is assigned to external end semester examination in each course.

9.2 Course: Each course is identified by a course number which contains three letters and three integers. The syllabus of each subject is divided into a convenient number of courses spread over the various semesters.

9.3 Continuous Evaluation

(i) The syllabus is distributed over a number of semesters. Grasp and knowledge of the subject is evaluated in bits continuously and periodically thereby putting lesser burden on the student as compared to evaluation by one examination at the end of the session.

(ii) The courses allotted for a particular semester are completed by the end of the semester and also examined and evaluated simultaneously, thereby reducing the amount of material to be studied at one time.

(iii) The mode of evaluation is also varied, depending upon the nature of the subjects and topics. In general, the following components of evaluation are adopted:

Theory Course

(i) Class Tests

(ii) Quiz Tests

(iii) Assignments

(iv) Seminars & Group Discussions

(v) Attendance

(vi) End-semester Examination

Practical Course

(i) Records

(ii) Experiments

(iii) Viva-voce

(iv) Attendance

(v) End-semester Examination

(iv) The student's performance is assessed throughout the semester by continuous evaluation followed by an end-semester examination which covers the entire syllabus.

(v) The number of credits allotted to each course depends on the relative time a student is expected to devote for the respective course.

(vi) Each component of evaluation is assigned a certain weightage towards the computation of over-all performance in each course.

(vii) A progress report is issued after each odd semester (first semester of an academic session) and the declaration of the result of each academic session is based on student's performance over both the semesters of the session. An academic session means both the semesters of the session taken together.

(viii) The student's performance for a session is indicated through a result card issued to the student after each even end-semester examination of a session which shows his achievements in each of the courses registered for.

(ix) The Institute follows the credit-system of education and letter grading on a 9 point scale. The system of grades, corresponding Grade point values and their achievement level are given in the table below.

Grade	Grade Point	Achievement Level
A	10	Outstanding
A-	9	Excellent
B	8	Very Good
B-	7	Good
C	6	Above Average
C-	5	Average
D	4	Below Average
D-	3	Marginal
F	0	Very Poor

The grade will be given separately for internal and external evaluation in each subject. The weightage of internal and external evaluation is taken as 75% and 25% of the credits assigned to that subject. Students will be awarded Semester Grade Point Average (SGPA), each Semester by averaging the Grade Points (GP) in the ratio of the credit weightage (C) of each subject.

The Procedure for calculation of SGPA is as follows:

$$\text{SGPA} = \frac{\text{GP}_1 \times \text{C}_1 + \text{GP}_2 \times \text{C}_2 + \dots + \text{GP}_n \times \text{C}_n}{\text{C}_1 + \text{C}_2 + \dots + \text{C}_n}$$

The overall performance of all Semesters for a given course is given as cumulative Grade Point Average (CGPA) which is calculated in a similar way for the subjects credited during the entire course.

Multiplication of CGPA by 10 yields the equivalent percentage marks gained by the student.

(x) Award of Division: The minimum CGPA for different divisions is given in the following table and is common for both PG and UG courses.

S.No.	Division	CGPA
1	First with Distinction	8.5
2	First	6.0
3	Second	3.0

(xi) Minimum Grade for a pass in all the courses of studies is D- in each individual course. Securing less than this Grade in any course will be treated as having failed in that course.

(xii) If a candidate fails in three or less than three courses in one academic session for courses of studies other than Honours and Master's programmes, the candidate may opt for Summer Remedial Course(s). There is no Remedial Course in the Honours and Master's programmes.

(xiii) Failure in a course due to non-appearance in studies and/or examination(s) on medical or any other ground, whatsoever, will be treated as failure in that course.

(xiv) If a candidate fails in more than three courses in one academic session or if he fails to pass all the courses after the summer remedial courses or if he misses one/both the semesters of an academic session in part or whole, he will get only one more chance to repeat all the courses of the said session in the next succeeding session but in that case he can do so only when he re-registers for all the courses afresh.

(xv) During the repeat session also, if a candidate: (i) Fails in three or less than three courses, he may opt for summer remedial course(s); and/or (ii) Fails in more than three courses or

(2) Library: The College has a well-equipped library containing technical books and important magazines, on Engineering, Industry and Science. Students are advised to take the fullest advantage of these facilities for acquiring general information and adding to their stock of knowledge.

(3) Laboratories and Workshops: The College has well-equipped and neatly maintained laboratories and workshops which meet all the requirements of the syllabi, the consultancy programmes and demands of taking technology to the villages.

(4) Computer Facilities: The College has a fully equipped Computer Cell.

(5) Facilities for Games and Sports: Play-grounds for athletics and all outdoor games like football, hockey, cricket, basketball and volleyball and indoor facilities for badminton etc. are available.

(6) Medical and Health Care: The students and staff of the College are attended to by the Medical Officer of the Saran Ashram Hospital, Dayalbagh, and are administered treatment for ordinary ailments without charges. The Hospital has provision for pathological testing, diathermy and ECG etc., on payment of charges.

(7) Non-Resident Student Centre: There is a Non-Resident Students Centre for Girls which serves as a composite Reading Room-cum-Common Room-cum-Canteen for the spare time needs of the female day scholars. For male students, there is canteen facility in the Campus.

(8) Hostels: Limited accommodation in the hostels of the Institute and those run by Educational Societies in Dayalbagh is available to students who are prepared to live a simple, disciplined and studious life in harmony with other inmates. Students who are desirous of having such accommodation should apply on a prescribed form with a passport size photograph to the Chief Wardens of the Hostels, through the Principal, DEI Technical College, after their admission. Students shall be recommended for hostel admission on the basis of merit and availability of seats but admission to College does not guarantee a seat in hostel. Only vegetarian food is served in the hostel. Alcohol, drugs and other intoxicants are strictly prohibited.

(9) National Service Scheme: This Institute has been pioneer in implementing the scheme since its inception in U.P. Its students have earned a name for the Institute for its consistently good record of social service. Its activities include grow-more-food campaign, *shramdaan*, adoption of a village for rural reconstruction, campus improvement, sanitation drive, establishing and running of youth clubs and community centres, teaching child-care to mothers, giving non-formal education and training in self-employment skills. With the co-ordinated effort of

all the faculties, multi-pronged efforts have been made to make a more effective contribution towards rural reconstruction.

(10) Co-Curricular Activities: The students are encouraged and provided ample opportunities for participation in a wide range of literary and cultural activities and games. Inter-faculty programmes are held by the Institute from time to time.

(11) NCC: The students of first year have to undergo NCC/NSS training and/or compulsory games and sports as an essential part of the requirements for co-curricular activities.

(12) Guidance & Counselling: Apart from receiving sympathy and sound advice in moments of personal stresses and problems, career guidance and counselling are available to the students both for choosing the right subjects and electives when joining the innovative programme and also for knowing their aptitude while deciding about their professional career.

(13) Students Diary: A Student Diary is supplied to each student in which a record of his curricular and co-curricular activities is maintained. Guardians are expected to see it from time to time for information regarding the performance of their wards.

(14) Identity Card: Every student is supplied with an Identity Card containing his photograph bearing the signatures of the student duly countersigned by the Principal. The student will produce it when demanded by any competent authority.

12. UNIFORM

Students are required to wear the prescribed uniform. Failure to do so may result in fine and/or loss of marks in discipline, or disciplinary action.

For Summer:

Girls - White Kurta, white salwar, white dupatta or white saree.

Boys - White shirt and grey trousers.

For Winter: (Over and above summer dress)

Girls - Navy-blue Blazer or Grey cardigan/shawl

Boys - Navy-blue Blazer or Grey Sweater

13. SCHOLARSHIPS

Government (State and Central), the Institute and charitable institutions award various types of scholarships, loans and loan scholarships to poor, meritorious and certain other categories of students. Application for such scholarships and loans can be recommended provided the applicant's conduct and progress in studies are good. In case of unsatisfactory progress or if the conduct is undesirable, the scholarships, stipends or loans are liable to be stopped.

14. PROCTORIAL SYSTEM

With a view to effect closer contact between students and teachers, to oversee the regular progress of the students and to help the students in general, all the students of the College will be divided into groups of 15 to 20 students each and placed under a member of teaching staff, called the Proctor. Each proctorial group will meet periodically to sort out the various issues and problems of the students in the free, frank and yet cordial manner.

The College will have a Proctorial Board consisting of Class Proctors, Class Captains and the Chief Proctor, a senior teacher, who will be chiefly responsible for the maintenance of discipline in the College and the Institute.

15. DISCIPLINE

(1) The Institute places highest importance on the maintenance of discipline, cultivation of good manners and inculcation of the habits of regularity and punctuality.

(2) Students are expected to be regular in attending morning assembly, classes and studies. The names of such students, who remain absent continuously for more than 15 days without any application are liable to be removed from the rolls unless there were sufficient grounds for such absence acceptable to the Institute.

(3) Neglect and inattention to studies, undesirable conduct and activities inside and outside the class-room, bullying others, disobedience of orders, strikes, causing damage to the properties of the Institute and indiscipline and use of unfair means during examinations etc., will constitute acts of indiscipline and students found indulging in such acts of indiscipline are liable to punishment by fine in cash, marks, suspension or even expulsion from the Institute.

(4) RAGGING IS PROHIBITED AND PUNISHABLE AND MAY RESULT IN EXPULSION/RUSTICATION/SUSPENSION/FINE ETC.

(5) Students should not bring any non-vegetarian food, alcohol, drugs and other intoxicants inside the campus.

(6) Students wishing to represent any matter to the authorities should do so through their Proctor to the Chief Proctor of the College. They should not take law into their own hands but may report grievance(s), if any, to the proper authority for enquiry and action.

(7) Students are required to observe the rules, bye-laws and regulations of the Institute that may be framed from time to time.

16. RESERVATION OF SEATS

Provision has been made to reserve seats for admission of candidates belonging to various categories as under as per orders of the Government provided they fulfill prescribed minimum standards:

1. Scheduled Castes	15%
2. Scheduled Tribes	7.5%
3. Backward Classes	15%

Note: The unfilled seats reserved for the Scheduled Caste candidates will be filled by admitting Scheduled Tribe candidates and vice-versa.

17. REQUIREMENTS FOR ADMISSION

17.1 Procedure for admission to the Diploma in Engineering and Polytechnics can be changed at any time without prior notice.

17.2 Eligibility:

Group (A) Diploma in Engineering – (Automobile/Electrical/Electronics/Mechanical): High School with at least good second division OR Intermediate with 50% marks from U.P. Board or equivalent examination with Science and Mathematics as main subjects.

Group (B) Diploma in Polytechnics – (leather Technology Footwear/Textile Designing/Interior Designing & Decoration): . High School Science with at least good second division

Group (C) Diploma in Polytechnics – (Garment Technology/Home Science) : High School.

Group (D) Diploma in Polytechnics – (Modern Office Management & Secretarial Practice) : Intermediate with Hindi and English subjects.

17.3 Age Limit: There is no minimum age limit but the maximum age should not exceed 22 years (25 years in case of SC/ST) on the first July of the year of admission.

17.4 How to apply:

(1) Candidates seeking admission to the Diploma in Engineering and Polytechnics shall apply on the Application Form which is to be purchased from the Institute, separately. **The Application Form Fee is Rs.170/-** (Non-refundable) at counter. The Application Form can also be obtained by Express Parcel/Registered Parcel Post by sending an 'Account Payee' Bank Draft for **Rs.200/-** in favour of "**DAYALBAGH EDUCATIONAL INSTITUTE**" payable at **AGRA** along with a 4x8 cms. address slip.

(2) **Completed application along with all required certificates and payment of non-refundable fee of Rs.110/- (Rs.5/- as Registration fee and Rs.105/- as Application Processing Fee) should be sent to the "Principal, D.E.I.**

Technical College, Dayalbagh, Agra-282005". The fee of Rs.110/- is to be paid by an Account Payee Bank Draft in favour of "D.E.I. TECHNICAL COLLEGE" payable at AGRA.

(3) If any blank space in the application form is left unfilled or any question is left unanswered, the application may not be considered.

17.5 Enclosures required with the application:

(1) Attested copy of the mark-sheet of the High School and Intermediate or equivalent examinations and of any higher examination, if passed.

(2) A certificate from the head of the institution last attended, certifying the applicant's conduct, behaviour and character.

(3) Attested copy of the High School or equivalent certificate as proof of the date of birth.

(4) Attested copies of certificates indicating participation and/or proficiency in games, sports, debates, N.C.C., N.S.S. etc. at college/district/state/national level competitions from the organisers of such competitions.

(5) In the case of candidates belonging to the scheduled caste/scheduled tribe or backward class, an attested copy of the certificate duly signed by the Tehsildar/District Magistrate of the tehsil/district in which the candidate's father/guardian resides, to the effect that the candidate belongs to the caste falling under these categories.

(6) Annual Income certificate of the Parents.

(7) 'Verification Card', 'Admit Card' and 'Acknowledgement Card' duly filled in. **The Verification Card and the Acknowledgement Card must have the same photograph as used in the Application Form. The applicants must neatly write their address on the back of the Acknowledgement Card.**

(8) Envelope with full postal address for conveying call for written admission test/interview or result of application in due course.

(9) Account Payee Bank Draft for Rs. 110/- drawn in favour of **D.E.I. TECHNICAL COLLEGE** payable at any bank at **AGRA**.

17.6 General:

(1) Applicants should fill on first page of the application form in the appropriate place, the category to which they belong to such as **General/Scheduled Caste/Scheduled Tribe/Backward Class**.

(2) Candidates who are admitted will be required to submit all their original certificates and mark-sheets of all examinations immediately after their admission failing which their admission is liable to be cancelled. These certificates will be retained with the Institute during their entire course of study.

(3) **Applications received late and/or those without all the required enclosures will not be considered.**

(4) It will not be possible for the Institute to enter into correspondence with the candidates for any missing details.

17.7 Last Date: The last date for receipt of completed application form in the **office of the Principal, D.E.I. Technical College** is 10th day after declaration of result of High School and Intermediate examination of the UP Board for regular candidate or 30th June of the year, whichever is later.

18. ADMISSION PROCEDURE

18.1 Criteria for selection:

(1) Admissions will be made on the basis of academic merit, written objective test and personal interview.

(2) Final selection will be made from the merit list prepared on the basis of academic merit, performance in the written objective test and personal interview. Further details are given in the subsequent paras.

18.2 Admission to Written Objective Test:

The written objective test is not an entrance examination open to all candidates who apply. But, it is a part of selection procedure. Only a limited number of candidates will be called for written test from the list prepared on the basis of their marks* in the High School/Intermediate examination, as indicated below, strictly in order of merit.

Call letters for written test/interview are sent Under Postal Certificate.

*(Normalised marks obtained in High School/Intermediate Examination).

18.3 Written Objective Test: Candidates will be required to appear, at their own expense, for a written objective type test in the subjects mentioned on page 21 (as per their choice of Group). All questions will be compulsory. The written test will carry 60% weightage while computing merit list for final selection of candidates for admission. To qualify in the test, a candidate must obtain a minimum of 25% marks in the written test.

The Syllabus for the written objective test is appended to this prospectus (Pages 21 to 42).

18.4 Personal Interview: Candidates called for interview will be required to appear for a personal interview. The following factors will be considered in the interview:

- (1) Additional academic qualifications.
- (2) Proficiency in Games, N.C.C., N.S.S. and other Co-curricular Activities, such as Community Service.

- (3) Physical fitness and personality.
- (4) Ability to express freely in Hindi/English.
- (5) General awareness.
- (6) Aptitude for the type of innovative courses being offered.

18.5 Final Selection:

(1) Final selection for admission will be made on the basis of the merit list prepared as under out of maximum marks shown against each:

- | | |
|--|----------|
| (a) Marks obtained in High School/Intermediate examination | 20 marks |
| (b) Marks obtained in the objective type written test | 60 marks |
| (c) Performance in the personal interview | 20 marks |

18.6 Additional Weightage: Additional weightage of 10% marks will be given to those candidates who have passed the High School/Intermediate Examination from Dayalbagh Institutions or to sons/daughter and spouses of confirmed employees of this Institute with at least 5 years service irrespective of the institutions from where they have passed the High School/Intermediate Examination. Such weightage will be available while computing the marks of the High School/ Intermediate examination for preparing the merit list for calling the candidates for written objective test and for interview.

18.7 Communication: All communications regarding written test and interview will be despatched to the selected candidates by post under certificate of posting at the address given by them in the application and on the envelope supplied to them along with the application form. In any case the Institute does not accept any responsibility for non-delivery or late delivery of the communications. Candidates who fail to appear at the written test/interview on the date and time fixed for the purpose, shall not be given another opportunity and shall stand rejected. No further correspondence will be entertained in this connection.

18.8 Medical Examination: Male candidates selected for admission will be examined by the Medical Officer of the Institute (Saran Ashram Hospital, Dayalbagh) for physical fitness. Candidates will themselves bear the expenditure in this connection. Candidates who fail to appear before the Medical Officer on the date fixed for the purpose or found medically unfit shall be rejected and their selection cancelled.

Applicants are advised in their own interest, to get themselves examined by a competent Doctor (at least with an MBBS degree) who has the necessary equipment for the purpose

before submitting the application, to ensure that they fulfill the required medical standard to enable them to pursue their studies and subsequently take up a profession. The medical fitness requirements are as under:

(a) General requirements: Good general physique. There should be no abnormality in heart and lungs and no history of mental disease or epileptic fits. The applicant should be free from physical or mental defects, deformity, weakness or loss of function, swelling of joints, thyroid, lymph nodes.

(b) Vision: Normal. In case of defective vision, it should be corrected to 6/6 in each eye and the vision should be free from colour blindness.

(c) Hearing: Normal.

(d) Chest: Not less than 70 cms. with satisfactory limits of expansion and contraction.

18.9 Payment of Fees: Selected candidates will be considered admitted to the Institute only when they have paid the first instalment of the required fee as indicated in the appended Fee Schedule, by the prescribed date. Failure to pay the fees in time will result in automatic cancellation of their selection.

Candidates are required to bring their fees at the time of interview in cash or by Bank Draft. During the entire course of study, the fees, as indicated in the fee schedule, must be paid on the dates notified from time to time.

Fee once paid shall not be refunded under any circumstances.

Students should make claim for refund of caution money within 2 years from completion of their course of study at the Institute. Thereafter no claim for refund shall be entertained and the caution money shall stand forfeited.

19. CANCELLATION OF ADMISSION

19.1 A candidate who has been admitted after selection and payment of all dues remains absent continuously for more than seven days without permission, during the first two weeks, will forfeit all monies already paid and his admission will be cancelled.

19.2 Admission granted to a student in the Institute shall be cancelled if it is discovered at a later date even after the completion of the course of study, that the student had obtained admission by fraudulent means by misrepresentation of facts. In such a case, he shall forfeit all the accruing benefits and if the degree/diploma has been awarded, it shall be cancelled.

20. ENROLMENT

20.1 A candidate shall be considered as admitted as a student in the Institute as soon as he is admitted by the Principal, he has registered for admission on the prescribed registration day or the next working day following it and he has paid the prescribed fees in cash on the scheduled fee collection day or by bank draft by the next working day otherwise he shall forfeit his claim for admission.

20.2 After their admission, the candidates are required to enroll themselves in the Institute. Those coming from outside institutions and seeking admission in the Institute shall submit their complete enrolment forms alongwith their transfer/migration certificates to the Principal within two weeks of the prescribed registration day, *i.e.*, the first day of scheduled opening of classes, however, the transfer/migration certificates can be submitted up to two more weeks. A student shall be considered as enrolled if after admission as per clause 20.1 above, he has submitted completed enrolment form and transfer/migration certificate.

20.3 Those students who have passed their High School/ Intermediate Examination as a private candidate should submit their transfer/migration certificate from the Institution last attended by them and also submit photostat copy of the marksheet of their last examination (High School/Intermediate) duly attested by their Principal along with their enrolment forms.

20.4 A student admitted within the first two weeks from the prescribed day of registration after commencement of the session shall be required to pay prescribed fees from the beginning of the session. However, a student can be admitted within the first two weeks from the prescribed day of registration even after forfeiting claim for admission as per clause 20.1, provided vacancy exists, but he shall be required to pay additional late fee of Rs.100/- each for late registration and late deposit of fee.

20.5 Students failing to submit their enrolment forms by the prescribed registration day shall be allowed to submit these within two more weeks by paying a late fee of Rs.100/-.

Students failing to submit their transfer/migration certificates within two weeks from the prescribed registration day shall be allowed to submit these within two more weeks by paying a late fee of Rs.100/-.

Students who have submitted their enrolment forms within two weeks from the prescribed registration day but have failed to

submit their valid transfer/migration certificates within four weeks from the prescribed registration day, may be allowed to submit these with late fee of Rs.100/-, on furnishing a written undertaking seeking further time for submission of their transfer/migration certificates at the latest up to the 31st August of their first semester. Names of students failing to submit their transfer/migration certificates by 31st August of first semester shall be struck-off from the rolls of the Institute.

Provided further that the Director may, for special reason(s) to be recorded, allow further time for submission of enrolment forms and/or transfer/migration certificates upto the 30th September of the first semester on payment of a late fee each of Rs. 200/-.

21. SATELLITE CAMPUSES

The Institute has opened three Satellite Campuses in various parts of country, where degree and higher level courses are being floated. The centres are :

1. Melathiruvankatanathapuram (M.T.V.Puram)
(7 Km. from Tirunelveli in Tamilnadu – a rural & backward area)
2. Rajaborari – Timarni
(Harda District, M.P. – a tribal area)
3. Soami Nagar – New Delhi
(3 Km form IIT Delhi – where an IT Centre and Edusat teaching end have been established)

22. GENERAL PROVISIONS

- 22.1 Transfer from one branch of Engineering to another branch of Engineering is possible after completing the first year as per rules framed on the subject.**
- 22.2 No admission shall be made after fourteenth day of registration day.**
- 22.3 Any of the provision(s) including the fee schedule contained in this prospectus may be changed or modified at any time without notice.**

FEE SCHEDULE
(DIPLOMA IN ENGINEERING AND POLYTECHNICS)
For students admitted in 2009-2010 session

Items	Odd Semester	Even Semester
Tuition Fee	Rs.1390/-	Rs.1390/-
Admission Fee	Rs. 10/-	-----
Caution Money	Rs. 300/-	-----
Other Fees	Rs.2750/-	Rs.2760/-
Total	Rs.4450/-	Rs.4150/-

Other Fees include fees for the following items:

- | | |
|--|----------------------------|
| 1. Cultural Activities | 2. Development |
| 3. Diploma Fees | 4. Electricity |
| 5. End Semester Examination | 6. Enrolment |
| 7. Games | 8. Hobby Centre |
| 9. Identity card | 10. Institute Publications |
| 11. Instructional Material & Teaching Aids | 12. Library |
| 13. Reading Room | 14. Magazine |
| 15. Medical | 16. Periodic Examination |
| 17. Social Service/NCC | 18. Student Aid |
| 19. Student Diary | 20. Student Welfare |
| 21. Work Experience Course | 22. Workshop Tools |

Note: This Fee Schedule can be modified or revised at any time without notice.

SYLLABUS FOR WRITTEN OBJECTIVE TEST
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STRUCTURE OF WRITTEN OBJECTIVE TEST

- ✓ Each question will require about 60 seconds to answer.
- ✓ Duration of test for the Diploma in Engineering (Group 'A') will be of two hours and shall have 120 questions and for all other courses, it will be of 1½ hours and shall have 90 questions.
- ✓ Level of questions for all courses shall be High School examination, except the Diploma in Polytechnics- Modern Office Management & Secretarial Practice, for which level of questions shall be of Intermediate examination.

SUBJECT COMBINATION FOR DIFFERENT COURSES**Group 'A': Diploma in Engineering - Automobile, Electrical, Electronics, Mechanical.**

The test paper shall have four sections, all compulsory, on Mathematics, Physics, Chemistry and General Knowledge & Current Affairs. Each section will consist of 30 questions (total 120 questions).

Group 'B': Diploma in Polytechnics - Leather Technology Footwear (CASD), Textile Designing, Interior Designing & Decoration.

The test paper shall have in all 90 questions, all compulsory, on General Science (60 questions) and General Knowledge & Current Affairs (30 questions).

Group 'C': Diploma in Polytechnics - Garment Technology, Home Science.

The test paper shall have in all 90 questions - 60 questions on Home Science and 30 questions on General Knowledge & Current Affairs.

Group 'D': Diploma in Polytechnics - Modern Office Management & Secretarial Practice.

The test paper shall have three sections, each of 30 questions, on Hindi, English and General Knowledge & Current Affairs.

COMMON FOR DIPLOMA IN ENGINEERING AND POLYTECHNICS

GENERAL KNOWLEDGE

UNIT 1: GEOGRAPHY

- 1.1 The Earth and its Solar System
- 1.2 Physical Geography (World)
- 1.3 Physical Geography (India)
- 1.4 Countries Capitals, Currencies
- 1.5 India-States, Capitals, Cities, Languages

Unit 2: SCIENCE/TECHNOLOGY

- 2.1 Physics
- 2.2 Chemistry
- 2.3 Life Sciences
- 2.4 Inventions & Discoveries
- 2.5 Diseases

UNIT 3: BOOKS, AUTHORS, ABBREVIATIONS, ETC.

- 3.1 Famous Books and Authors-Indian and Foreign
- 3.2 Abbreviations, Acronyms, Foreign words & Phrases
- 3.3 Sports and Games-Famous Trophies and Tournaments, Leading Sportsmen, Terms associated with different sports and games, Olympic and Asian Games.
- 3.4 Important International Awards-Noble prizes, Magsaysay awards etc. Important Indian Awards-Civil and Military awards.
- 3.5 Art and Culture-Variou Art forms, Places and Artists associated with them; Sobriquets, Major Festivals.

UNIT 4: SOCIAL SCIENCES

History-Indian Major Historical Periods and their Features

- 4.1 From the Indus Valley Civilization to the First Battle of Panipat in 1526 A.D.
- 4.2 From 1526 A.D. to the Modern Period.
- 4.3 **Political Awareness:** Indian Constitution-Its main features-Fundamental Rights, Important personalities and major events in India since Independence.
- 4.4 **Economics**-Indian Economy.
- 4.5 **Statistics**-Elementary Statistics-Meaning and Importance of Statistics, Statistical Average.

UNIT 5: CURRENT AFFAIRS

FOR GROUP 'A':**Diploma in Engineering - Automobile, Electrical, Electronics, Mechanical.****रासायन विज्ञान****यूनिट 1: द्रव्य**

- 1.1 प्रकृति और व्यवहार-पदार्थ के प्रकार, तत्व एवं उसका वर्गीकरण (धातु, अधातु), यौगिक और उनके मिश्रण, पदार्थ की संरचना, परमाणवीय सिद्धान्त।
- 1.2 अणु और परमाणु, परमाणु संरचना, इलेक्ट्रॉन, प्रोटॉन, न्यूट्रॉन नाभिक की संरचना।
- 1.3 परमाणु संख्या और द्रव्यमान संख्या, संयोजकता, रेडियो धर्मिता।
- 1.4 परमाणु तथा अणु का द्रव्यमान-मो की संकल्पना, यौगिक संरचना की प्रतिशतता।
- 1.5 रासायनिक अभिक्रियायें-भौतिक तथा रासायनिक परिवर्तन, उनमें भेद, योगात्मक, विस्थापन, वियोजन, अपघटन अभिक्रियायें।

यूनिट 2

- 2.1 मन्द तथा तीव्र अभिक्रियायें, उत्प्रेरित, ऊष्माक्षेपी और ऊष्माशोषी।
- 2.2 रासायनिक अभिक्रिया का निरूपण, रासायनिक समीकरण।
- 2.3 रासायनिक आबद्ध-आयनिक और कोवैलेन्ट आबद्ध की उत्पत्ति।
- 2.4 इलेक्ट्रोवैलेन्ट, कोवैलेन्ट यौगिकों के प्रगुण।
- 2.5 विद्युत रासायनिक सेल-वोल्टा का सेल एवं उसकी क्रियाविधि, शुष्कसेल और संचयी सेल।

यूनिट 3

- 3.1 नाभिकीय ऊर्जा-सौर उर्जा के स्रोत, परमाणु नाभिक की मूल संकल्पना, नाभिकीय विखण्डन, संश्लेषण, श्रृंखला अभिक्रिया एवं उनके उदाहरण, विखण्डन और संकलन का सीमित और असीमित रूप।
- 3.2 नाभिकीय रियेक्टर, परमाणु शक्ति प्लांट, विकिरण से खतरे, ऊर्जा संकट, कारण, उससे छुटकारा पाने के उपाय।
- 3.3 औद्योगिक रसायन-साबुन, डिटरजेंट पाउडर, स्याही, क्रीम, वैसलीन, जैम, जैली तथा बूट पॉलिश।
- 3.4 प्लास्टिक, कृत्रिम रेशे, औषधियों, विस्फोटकों के सन्दर्भ में सामान्य ज्ञान।
- 3.5 रसायन की भाषा-प्रतीक, संयोजकता सूत्र एवं समीकरण, परमाणु तथा अणुभार, परमाणुविक तथा आणुविक द्रव्यमान की अवधारणा, तत्व की संयोजकता एवं तत्व का तुल्याकी भार।

यूनिट 4

- 4.1 आयन और परमाणु में अन्तर, आयन की संयोजकता, रासायनिक सूत्र एवं उसकी उपादेयता। रासायनिक समीकरणों का सन्तुलन करना।
- 4.2 कार्बनिक रसायन-कार्बनिक रसायन का परिचय, परिभाषा और कार्बनिक रसायन का क्षेत्र, कार्बनिक तथा अकार्बनिक यौगिकों में अन्तर, कार्बन परमाणु की समचतुष्फलकीय प्रकृति का प्रारम्भिक ज्ञान।
- 4.3 कार्बनिक यौगिकों का वर्गीकरण, एलोफैटिक तथा एरोमेटिक, संतृप्त हाईड्रोकार्बन (मीथेन और ईथेन)।
- 4.4 असंतृप्त हाईड्रोकार्बन (एथिलीन और एसीटीलीन) बनाने की विधियाँ, गुण तथा उपयोग।
- 4.5 ईंधन-उत्पत्ति, अवयव, उपयोग-जीव द्रव्यमान ईंधन के रूप में, कोयला एवं उसके प्रकार, पेट्रोलियम, कोयले से संश्लिष्ट तेल तथा गैस, एलपीजी, प्राकृतिक गैस, ईंधन का वर्गीकरण, ईंधनों के अभिलक्षण, राकेट नोदक, आग गर्म कर्या होती है, आदर्श ईंधन। कार्बन में यौगिक बनाने की विशिष्ट क्षमता।

यूनिट 5

- 5.1 जल-पेय जल, जल का आयतनीय संगठन, कठोर व मृदु जल, अस्थायी व स्थायी कठोरता, भौतिक व रासायनिक विधियों द्वारा कठोरता का निवारण।
- 5.2 कुछ प्रमुख रासायनिक यौगिकों का परिचय-नाम-रासायनिक नाम, अणुसूत्र, प्रमुख गुण तथा उपयोग, धावन सोडा, खाने वाला सोडा, साधारण नमक, नौसादर, चूना, नीला थोथा, फिटकरी, सोहागा, खड़िया, ब्लीचिंग पाउडर, सिंदूर, रेड लेड, शीरा तथा लाल दवा।
- 5.3 धातु कर्म का परिचय-एल्युमिनीयम का धातु कर्म।
- 5.4 तत्वों का वर्गीकरण-मेण्डलीफ की आवर्त सारणी के सामान्य लक्षण।
- 5.5 निम्नलिखित तत्वों का इलेक्ट्रॉन विन्यास तथा आवर्त सारणी में उनकी स्थिति H, C, O, N, P, S और Cl.

भौतिक विज्ञान

यूनिट 1

- 1.1 मापन-मूल मात्रक, मूल राशियाँ, मूल मात्रकों की एस0आई0 प्रणाली, मानक मीटर, मानक किग्रा, मानक सेकण्ड, माइक्रोन आंगस्ट्राम तथा प्रकाश वर्ष, व्युत्पन्न मात्रक।
- 1.2 गति एवं बल-गति की सापेक्षता, विस्थापन, समान तथा असमान गति, चाल और वेग, त्वरण, गति के समीकरण एवं सरल आंकिक प्रश्न, बल का अर्थ, पिण्ड का जड़त्व, सन्तुलित एवं असन्तुलित बल और त्वरण।
- 1.3 न्यूटन के गति के नियम, संवेग और बल के साथ सम्बन्ध और वस्तु का द्रव्यमान, उपर्युक्त के आधार पर सरल आंकिक प्रश्न, क्रिया और प्रतिक्रिया, बल सदैव युग्म के रूप में विद्यमान रहते हैं।
- 1.4 न्यूटन के गुरुत्वाकर्षण नियम, गुरुत्वाकर्षण जनित त्वरण।
- 1.5 सरल लोलक और प्रस्थानयन बल उसके आवर्तकाल एवं लम्बाई में सम्बन्ध, लेखाचित्रोप निर्माण।

यूनिट 2

- 2.1 द्रव्य स्थैतिकी-द्रव्यमान के नियम, आर्कमिडीज के सिद्धान्त (नियमन नहीं), उत्प्लवन का नियम, जलयान, पनडुब्बी तथा गुब्बारे में उत्प्लावन के नियम का उपयोग।
- 2.2 कार्य, सामर्थ्य एवं ऊर्जा-कार्य एवं सामर्थ्य का सम्बन्ध, जूल, वाट, किलोवाट-घंटा, कार्य एवं सामर्थ्य सम्बन्धी सरल गणनाएँ।
- 2.3 गतिज ऊर्जा एवं स्थितिज ऊर्जा, ऊर्जा के स्रोत, ऊर्जा मूल स्रोत के रूप में, सूर्य ऊर्जा के अन्य स्वरूप (द्रव्यमान ऊर्जा सहित), ऊर्जा रूपान्तरण के व्यवहारिक उपयोग, ऊर्जा संरक्षण।
- 2.4 तरंग गति-तरंग की प्रकृति, तरंग के माध्यम से संचरण, तरंग के प्रकार-अनुप्रस्थ, अनुदैर्घ्य, आवर्त गति, सरल आवर्त गति की संकल्पना, विस्थापन, आयाम, आवृत्ति, आवर्तकाल, तरंगदैर्घ्य और उनके मात्रक।
- 2.5 किसी तरंग के तरंगदैर्घ्य, आवृत्ति तथा आवर्तकाल में सम्बन्ध, उपरोक्त पर आधारित सरल आंकिक प्रश्न, तरंग के संवर्ण में ऊर्जा का स्थानान्तरण।

यूनिट 3: उष्मा

- 3.1 ऊष्मा-ऊष्मीय प्रसार, ठोसों का ऊष्मीय प्रसार, महत्व, ताप की अभिधारणा, ताप मापन, पारे का तापमापी, ताप के पैमाने, ऊष्मा का संचरण, ऊष्मा के सुचालक तथा कुचालक एवं उनका तुलनात्मक अध्ययन, उष्मा चालन के व्यवहारिक उदाहरण, उष्मा संवहन, ऊष्मीय विकिरण और प्रकाश।

- 3.2 ऊष्मीय विकिरण के गुण, उत्सर्जन, अवशोषण, विकिरण ऊर्जा का दैनिक जीवन में महत्त्व, ऊष्मा के मात्रक, विशिष्ट ऊष्मा तथा ऊष्माधारिता एवं इस पर सरल आंकिक प्रश्न।
- 3.3 ऊष्मा का मापन, अवस्था परिवर्तन, आर्द्रता एवं उससे सम्बन्धित घटनायें।
- यूनिट 4: प्रकाश**
- 4.1 मानव आँख द्वारा प्रकाश का परसेप्शन, गोलीय दर्पण एवं लेन्स द्वारा प्रतिबिम्ब का बनना, सरल आंकिक प्रश्न।
- 4.2 मानव नेत्र की संरचना—नेत्र लेन्स की फोकस दूरी और रेटिना पर प्रतिबिम्ब का बनना, नेत्र दण्ड और शंकु के स्वरूप का संक्षिप्त विवरण, वर्णाधार।
- 4.3 दृष्टि दोष, निकट दृष्टि और दूर दृष्टि, दृष्टि दोष निवारण, रंगभेद।
- 4.4 दूरदर्शी एवं सूक्ष्मदर्शी—सिद्धान्त, संरचना, खगोलीय दूरदर्शी की क्रियाविधि और संयुक्त सूक्ष्मदर्शी।
- 4.5 श्वेत प्रकाश, विभिन्न रंग के तरंग दैर्घ्य, वस्तु के रंग।

यूनिट 5: विद्युत

- 5.1 उर्जा के स्रोत, चालक, प्रतिरोधक, धारा का मापन, विभवान्तर, प्रतिरोध तथा इनमें सम्बन्ध पर आधारित सरल आंकिक प्रश्न।
- 5.2 धारा का ऊष्मीय प्रभाव, उष्मा, विद्युत धारा, प्रतिरोध और समय में सम्बन्ध, ऊष्मीय प्रभाव पर आधारित विद्युत उपकरण, मात्रक, विद्युत शक्ति एवं इस पर आधारित आंकिक प्रश्न।
- 5.3 विद्युत धारा का चुम्बकीय प्रभाव। धारावाहिक चालक द्वारा चुम्बकीय क्षेत्र, कुण्डलीय और परिनलिका। विद्युत मोटर के अनुप्रयोग, विद्युत चुम्बकीय प्रेरण का प्रारम्भिक ज्ञान, फ्लैमिंग का बायें हाथ का नियम, विद्युत जनित्र—डी.सी. एवं ए.सी., घरों में इस्तेमाल होने वाली विद्युत, घरेलू वायरिंग, फ्यूज, सुरक्षा की युक्ति, विद्युत से खतरे।
- 5.4 सूर्य उर्जा के स्रोत के रूप में—सौर ऊर्जा का पृथ्वी द्वारा अवशोषण, प्रकाश सश्लेषण, सोलरकुकर, सोलर सेल/वायु उर्जा, विण्डमिल, सामुद्रिक तरंग से विद्युत उत्पादन।

गणित

यूनिट 1: बीजगणित

- 1.1 संख्या पद्धति—धनपूर्ण संख्यायें—पूर्णांक, परिमेय संख्यायें, परिमेय संख्याओं के गुण धर्म (योग का क्रम विनिमेय नियम, साहचर्य नियम, योज्य तत्समक, योज्य प्रतिलोम नियम, गुणन का क्रम विनिमेय नियम, साहचर्य नियम, गुणनात्मक तत्समक, गुणनात्मक प्रतिलोम एवं बण्टन नियम), परिमेय संख्याओं का दशमलव निरूपण, अपरिमेय संख्यायें, अनवसानी एवं अनावर्ती दशमलव के रूप में अपरिमेय संख्याओं का निरूपण, वास्तविक संख्यायें तथा इनकी विशेषतायें, करणी, करणियों के नियम, करणियों की तुलना, करणियों का योग और व्यवकलन, दो करणियों के गुणन एवं विभाजन, करणी का परिमेयीकरण।
- 1.2 समुच्चय सिद्धान्त—समुच्चय का संकेतन, अवयव, विभिन्न प्रकार के समुच्चय, परिमित तथा अपरिमित समुच्चय, रिक्त समुच्चय, समष्टी समुच्चय, पूरक समुच्चय, उप समुच्चय, समुच्चय सम्मिलन, समुच्चय प्रतिच्छेद, संख्या पद्धति से समुच्चयों के उदाहरण, वेन आरेख तथा इनका अनुप्रयोग।

- 1.3 फलन (प्रति चित्रण)–प्रति चित्रण (मैपिंग) के रूप में फलन का संबोध, अचर रेखिक फलन और कार्तीय तल (समकोणिक निर्देशांक पद्धति) में उनका लेखा चित्र (ग्राफ)।
- 1.4 बहुपद तथा इनके गुणनखण्ड–शेषफल प्रमेय (उपपत्ति नहीं) तथा बहुपदों (चार घात से अधिक के नहीं) के गुणनखण्ड में इनका उपयोग, बीजगणितीय व्यंजकों के गुणनखण्ड, द्विघात बहुपद के गुणनखण्ड करना, द्विघातीय त्रिपद व्यंजक। $ax^2+bx+c=0$, के गुणनखण्ड मध्य पद को दो भागों में बाँटकर)। एक चर राशि में रैखिक समीकरण, रैखिक समीकरणों का हल तथा पूर्व कक्षाओं में अध्ययनकृत वाणिज्यिक (कॉमर्शियल) गणित, मेन्सुरेशन आदि में इनका अनुप्रयोग।
- 1.5 लघुगणक–दिये हुए आधार पर किसी संख्या के लघुगणक का अर्थ, आधार 0 पर सामान्य लघुगणक, पूर्णांश एवं अपूर्णांश, प्रति लघुगणक का अर्थ, लघुगणकों के नियम, लघुगणकीय सारणियों का प्रयोग कर अभिकलन पर्याप्त अभ्यास के द्वारा निष्णात होगा। चक्रवृद्धि ब्याज, जनसंख्या वृद्धि, वस्तुओं का मूल्य हास और गणना करने में लघुगणकीय सारणियों का प्रयोग कर प्रश्नों को हल करना। आयत, वर्ग, त्रिभुज, समचतुर्भुज, समलम्ब चतुर्भुज, समान्तर चतुर्भुज आदि के क्षेत्रफल ज्ञात करने में लघुगणक का प्रयोग।

यूनिट 2: त्रिकोणमिति

- 2.1 किसी समकोण त्रिभुज में न्यूनकोण A (या दूसरे कोण) का त्रिकोणमितीय अनुपात:

$$\sin A = \frac{\text{वक्रक}}{\text{कस}} \quad \cos A = \frac{\text{समीपक}}{\text{कस}}$$

$$\tan A = \frac{\sin A}{\cos A}, \quad \operatorname{cosec} A = \frac{1}{\sin A}, \quad \sec A = \frac{1}{\cos A}, \quad \cot A = \frac{1}{\tan A}$$

$0^\circ, 30^\circ, 45^\circ, 60^\circ, 90^\circ$ के कोणों के त्रिकोणमितीय अनुपात।

$30^\circ, 45^\circ, 60^\circ$ के कोणों के त्रिकोणमितीय अनुपात के परिणाम ज्यामितीय उपपत्ति विधि द्वारा निकालना, 0° तथा 90° के कोणों के त्रिकोणमितीय अनुपात का अभिगृहीत के रूप में मान लेना, इन त्रिकोणमितीय अनुपातों का ऊँचाई एवं दूरी जैसे प्रश्नों के हल में सरल अनुप्रयोग।

- 2.2 रेखा एवं कोण:

- (1) दो भिन्न रेखाओं का एक से अधिक उभयनिष्ठ बिन्दु नहीं हो सकता।
- (2) दो रेखाएँ जो एक ही रेखा के समान्तर हों, परस्पर समांतर होती हैं।
- (3) यदि दो रेखाएँ परस्पर प्रतिच्छेद करें तो शीर्षाभिमुख कोण समान होते हैं।
- (4) यदि एक तिर्यक रेखा, दो समान्तर रेखाओं को काटे तो एकान्तर अन्तःकोण समान होते हैं।
- (5) यदि एक तिर्यक रेखा, दो समान्तर रेखाओं को काटती है, तो तिर्यक रेखा के एक ओर के अन्तःकोण सम्पूरक होते हैं।
- (6) यदि एक तिर्यक रेखा दो रेखाओं को इस प्रकार काटे कि एकान्तर अन्तःकोण युग्म के कोण बराबर हों तो वे दो रेखाएँ समांतर होती हैं।
- (7) यदि एक तिर्यक रेखा दो रेखाओं का इस प्रकार प्रतिच्छेद करे कि तिर्यक रेखा के एक ही ओर के अन्तःकोणों का एक युग्म सम्पूरक हो, तो वे रेखाएँ समांतर होती हैं।
- (8) त्रिभुज के तीनों कोणों का योगफल दो समकोण के बराबर होता है।
- (9) यदि एक त्रिभुज की एक भुजा बढ़ाई जाय तो इस प्रकार बना बहिष्कोण दो सुदूर अन्तःकोणों के योगफल के बराबर होता है।

- 2.3 त्रिभुजों का सर्वांगसमता :

- (1) त्रिभुज की बराबर भुजाओं के सम्मुख कोण बराबर होते हैं।
- (2) यदि एक त्रिभुज के दो कोण और उनकी अन्तरित भुजा क्रमशः दूसरे त्रिभुज के दो संगत कोणों और उनकी अन्तरित भुजा के बराबर हों तो वे त्रिभुज सर्वांगसम होते हैं।
- (3) यदि एक त्रिभुज के दो कोण बराबर हों, तो उनकी सम्मुख भुजाएँ भी बराबर होती हैं।
- (4) यदि एक त्रिभुज की तीनों भुजाएँ दूसरे त्रिभुज की क्रमशः तीन भुजाओं के बराबर हों, तो वे त्रिभुज सर्वांगसम होते हैं।
- (5) यदि एक त्रिभुज की दो भुजाएँ और उनका अन्तरित कोण क्रमशः दूसरे त्रिभुज की दो भुजा और उनके अन्तरित कोण के बराबर हों, तो वे त्रिभुज सर्वांगसम होते हैं।
- (6) यदि एक समकोण त्रिभुज का कर्ण और एक भुजा, दूसरे समकोण त्रिभुज के क्रमशः कर्ण और भुजा के बराबर हों, तो वे समकोण त्रिभुज सर्वांगसम होते हैं।

2.4 त्रिभुज में असमिका सम्बन्ध:

- (1) यदि किसी त्रिभुज की दो भुजायें बराबर न हों, तो बड़ी भुजा के सामने का कोण बड़ा होगा।
- (2) यदि किसी त्रिभुज के दो कोण असमान हों, तो बड़े कोण के सामने की भुजा बड़ी होगी।
- (3) किसी त्रिभुज की दो भुजाओं का योग तीसरी भुजा से बड़ा होता है।
- (4) एक दी हुई रेखा पर एक बिन्दु से जो इस रेखा पर स्थित नहीं हैं, डाले गये सभी रेखा खण्डों में समलम्बिक रेखा खण्ड सबसे छोटा होता है।
- (5) उस बिन्दु का बिन्दु पथ जो दो दिये हुए बिन्दुओं से समदूरस्थ हो, इन दो बिन्दुओं को मिलाने का खण्ड का लम्ब समद्विभाजक होता है।
- (6) उस बिन्दु का बिन्दुपथ जो दी हुई दो प्रतिच्छेदी रेखाओं से समदूरस्थ हो, इन रेखाओं से बने कोणों को समद्विभाजित करनेवाला रेखायुग्म होता है।
- (7) त्रिभुज के कोण समद्विभाजक एक ही बिन्दु से होकर जाते हैं।
- (8) त्रिभुज की भुजाओं के लम्ब समद्विभाजक एक ही बिन्दु से होकर जाते हैं।
- (9) त्रिभुज के तीनों शीर्ष-लम्ब एक ही बिन्दु से होकर जाते हैं।
- (10) त्रिभुज की मध्यिकायें एक ही बिन्दु से होकर जाती हैं और वह बिन्दु प्रत्येक माध्यिका को अनुपात में विभाजित करता है।

2.5 समान्तर चतुर्भुज:

- (1) समान्तर चतुर्भुज की सम्मुख भुजायें बराबर होती हैं।
- (2) समान्तर चतुर्भुज के सम्मुख कोण बराबर होते हैं।
- (3) समान्तर चतुर्भुज के विकर्ण परस्पर समद्विभाजित करते हैं।
- (4) एक चतुर्भुज समान्तर चतुर्भुज होता है, यदि इसकी सम्मुख भुजायें परस्पर बराबर हों।
- (5) एक चतुर्भुज समान्तर चतुर्भुज होता है, यदि उसके सम्मुख कोण परस्पर बराबर हों।
- (6) यदि एक चतुर्भुज के विकर्ण परस्पर समद्विभाजित करते हों तो चतुर्भुज एक समान्तर चतुर्भुज है।
- (7) एक चतुर्भुज समान्तर चतुर्भुज होता है यदि उसकी सम्मुख भुजाओं का एक युग्म परस्पर समान्तर हों।
- (8) आयत के विकर्ण समान लम्बाई के होते हैं।
- (9) यदि समान्तर चतुर्भुज के विकर्ण बराबर हों, तो वह एक आयत होता है।
- (10) समचतुर्भुज के विकर्ण परस्पर लम्ब होते हैं।
- (11) यदि समान्तर चतुर्भुज के विकर्ण परस्पर लम्ब हों, तो वह एक समचतुर्भुज होता है।
- (12) वर्ग के विकर्ण समान लम्बाई के और परस्पर लम्ब होते हैं।
- (13) यदि एक समान्तर चतुर्भुज के विकर्ण समान लम्बाई के और परस्पर लम्ब हों, तो वह वर्ग होगा।
- (14) त्रिभुज की दो भुजाओं के मध्य बिन्दुओं को मिलाने वाली रेखा खण्ड तीसरी भुजा के समान लम्बाई में उसका आधा होता है।

- (15) त्रिभुज की एक भुजा के मध्य बिन्दु से, एक अन्य भुजा के समान्तर खींची गयी रेखा, तीसरी भुजा को उसके मध्य बिन्दु पर प्रतिच्छेदित करती है।
- (16) यदि तीन या तीन से अधिक समान्तर रेखाएँ हों और उनके द्वारा एक तिर्यक रेखा पर बनाये गये अन्तःखण्ड बराबर हों, तो किसी अन्य तिर्यक रेखा पर उनके द्वारा बनाये गये अन्तःखण्ड भी बराबर होंगे।

यूनिट 3

3.1 क्षेत्रफल:

- (1) समान्तर चतुर्भुज का प्रत्येक विकर्ण इसे दो बराबर क्षेत्रफल वाले त्रिभुजों में बाँटता है।
- (2) एक ही आधार पर और समान समान्तर रेखाओं के बीच के समान्तर चतुर्भुजों के क्षेत्रफल बराबर होते हैं।
- (3) एक ही आधार और समान समान्तर रेखाओं के बीच त्रिभुजों के क्षेत्रफल बराबर होते हैं।
- (4) यदि दो त्रिभुजों के क्षेत्रफल बराबर हों और एक त्रिभुज की एक भुजा, दूसरे त्रिभुज की एक भुजा के बराबर हो, तो उनके संगत शीर्ष-लम्ब बराबर होते हैं।

रचना:

- (1) वृत्त के अन्तर्गत एवं परिगत समपंचभुज, समषट्भुज एवं समअष्टभुज की रचना करना।
- (2) दिये हुए चतुर्भुज के क्षेत्रफल के बराबर क्षेत्रफल वाले त्रिभुज की रचना करना।
- 3.2 सांख्यिकी-सांख्यिकी का महत्व एवं उपयोगिता, आंकड़ों का वर्गीकरण, बारम्बारता, बारम्बारता बंटन, सारणीयन व संचयी, संचयी बारम्बारता सारणी, सांख्यिकीय आंकड़ों का आलेखीय निरूपण-आयत चित्र, बारम्बारता बहुभुज, संचयी बारम्बारता वक्र (तोरण) खींचना।
- 3.3 अभिकलन-कम्प्यूटरों का परिचय-कम्प्यूटर क्या है तथा वे कौन से कार्य सम्पादित कर सकते हैं और कौन से कार्य सम्पादित नहीं कर सकते हैं। आधुनिक समाज में कम्प्यूटरों की भूमिका एवं इनका प्रयोग आदि।
समस्या-कलन विधि (Problem algorithm) का अर्थ, साधारण दैनिक समस्याएँ जैसे एक वस्तु खरीदना, संख्याओं का गुणन आदि। साधारण प्रवाह संचित्र (Flow Chart) बनाना, [निर्णय वाक्य सम्मिलित किन्तु लूप (loop) नहीं] सरल अभ्यास के प्रश्न।
- 3.4 दो चरों वाला रैखिक समीकरण-दो चरों वाले रैखिक समीकरण का हल और आलेख, दो चरों वाले युगपत रैखिक समीकरणों का बीजगणितीय विधि एवं आलेखीय विधि द्वारा हल, युगपत रैखिक समीकरण निकाय का संगत/असंगत होना, युगपत रैखिक समीकरण निकाय पर आधारित इबारती प्रश्न।
ल.स. तथा म.स.-गुणनखण्ड विधि से बहुपदों के लघुत्तम समापवर्त्य एवं महत्तम समापवर्तक, चकीय व्यंजकों का गुणन खण्ड, अनुपात एवं समानुपात के गुण एवं इनका अनुप्रयोग।
परिमेय व्यंजक-परिमेय व्यंजक का अर्थ, परिमेय व्यंजकों का योग, व्यवकलन, गुणन एवं भाजन।
- 3.5 द्विघात समीकरण-द्विघात समीकरण का अर्थ, मानक द्विघात समीकरण $ax^2 + bx + c = 0, a \neq 0$, द्विघात समीकरण $ax^2 + bx + c = 0, a \neq 0$ का गुणनखण्ड विधि एवं सूत्र द्वारा हल, द्विघात समीकरण का विविक्तकर एवं इसके मूलों की प्रकृति, दिये हुए मूलों वाला द्विघात समीकरण बनाना, विभिन्न क्षेत्रों में द्विघात समीकरणों का अनुप्रयोग (द्विघात समीकरणों पर आधारित द्विघात समीकरण), द्विघात

समीकरण में समनिय समीकरण तथा इनका हल, द्विघात सूत्रों के प्रयोग से द्विघात बहुपदों के गुणनखण्ड (जब अन्य विधियाँ सुगम न हों)।

यूनिट 4: वाणिज्यिक गणित

- 4.1 बैंकिंग-बैंकों की कार्य प्रणाली एवं विभिन्न प्रकार के खाते (बचत बैंक खाता, आवर्ती जमा खाता) प्रश्न।
कराधान-इस इकाई का प्रमुख उद्देश्य छात्रों को राष्ट्रीय अर्थ व्यवस्था के संबोध (विशेषतः विभिन्न प्रकार के करों के परिप्रेक्ष्य में) से परिचित कराना है -
- (1) प्रत्यक्ष एवं अप्रत्यक्ष कर
 - (2) आयकर का आंकलन
 - (3) बिक्री कर का आंकलन
- 4.2 सांख्यिकी (केन्द्रीय प्रवृत्ति के माप)-वर्गीकृत आँकड़ों का समान्तर माध्य, अवर्गीकृत आँकड़ों की माध्यिका, जन्म-मरण सांख्यिकी, अशोधित मृत्यु दर (Crude death rate), विशिष्ट मृत्यु दर (Specific death rate) एवं शिशु मृत्यु दर (Infant mortality rate), निर्वाह खर्च सूचकांक (Costs of living index) एवं मूल्य सूचकांक (Price index)।
- 4.3 अभिकलन-पाश (loop) सहित प्रवाह संचित्र, पूर्व पठित प्रकरणों जैसे-अनुपात-समानुपात, लाभ-हानि, प्रतिशत, साधारण एवं चक्रवृद्धि ब्याज, बट्टा आदि से सम्बन्धित सरल प्रश्नों को हल करना।
- 4.4 **समरूप त्रिभुज :**
- (1) एक त्रिभुज की एक भुजा के समान्तर खींची गई रेखा अन्य दो भुजाओं को जिन दो बिन्दुओं पर प्रतिच्छेद करती है, वे बिन्दु भुजाओं को समान अनुपात में विभाजित करते हैं।
 - (2) यदि कोई रेखा किसी त्रिभुज की दो भुजाओं को समान अनुपात में विभाजित करती हो तो यह रेखा तीसरी भुजा के समान्तर होती है।
 - (3) यदि दो त्रिभुजों में संगत कोण बराबर हों (अर्थात् दोनों त्रिभुज समान कोणिक हों) तो उनकी संगत भुजाएँ अनुपातिक होंगी।
 - (4) यदि त्रिभुजों की संगत भुजाएँ अनुपातिक हों तो ये त्रिभुज समरूप होते हैं।
 - (5) यदि दो त्रिभुजों की संगत भुजाएँ अनुपातिक हों तो वे त्रिभुज समानकोणिक होते हैं।
 - (6) यदि दो त्रिभुजों में संगत भुजाओं का एक युग्म अनुपातिक हो और अन्तरित कोण बराबर हों तो ये त्रिभुज समरूप होते हैं।
 - (7) यदि समकोण त्रिभुज के समकोण वाले शीर्ष से कर्ण पर लंब डाला गया हो तो लंब रेखा के दोनों ओर के त्रिभुज परस्पर और मूल त्रिभुज के समरूप होते हैं।
 - (8) समरूप त्रिभुजों के क्षेत्रफलों का अनुपात संगत भुजाओं के वर्गों के अनुपात के बराबर होता है।
 - (9) एक समकोण त्रिभुज में कर्ण का वर्ग अन्य दो भुजाओं के वर्गों के योगफल के बराबर होता है।
 - (10) एक त्रिभुज में यदि एक भुजा का वर्ग अन्य दो भुजाओं के वर्गों के योगफल के बराबर हो तो पहली भुजा के सामने का कोण समकोण होता है।
- 4.5 **वृत्त :**
- (1) यदि किसी वृत्त (अथवा सर्वांगसम वृत्तों) के दो चाप सर्वांगसम हों तो संगत जीवाएँ बराबर होती हैं।
 - (2) यदि किसी वृत्त (अथवा सर्वांगसम वृत्तों) की दो जीवाएँ समान हों तो उनके संगत चाप सर्वांगसम होते हैं।
 - (3) वृत्त के केन्द्र से जीवा पर डाला गया लम्ब जीवा को समविभाजित करता है।
 - (4) वृत्त के केन्द्र और जीवा के मध्य बिन्दु को मिलाने वाली रेखा जीवा पर लंब होती है।
 - (5) तीन असंरेख बिन्दुओं से होकर एक और केवल एक वृत्त जाता है।
 - (6) वृत्त (अथवा सर्वांगसम वृत्तों) की समान जीवाएँ केन्द्र (अथवा संगत केन्द्रों) से समदूरस्थ होती हैं।

- (7) वृत्त (अथवा सर्वांगसम वृत्तों) की जीवाएँ जो केन्द्र (अथवा संगत केन्द्रों) से समदूरस्थ हैं, बराबर होती हैं।
- (8) वृत्त के एक चाप का अंश माप चाप के सापेक्ष वृत्त के एकान्तर खंड के किसी एक बिंदु पर इस चाप द्वारा अन्तरित कोण का दूना होता है।
- (9) अर्द्धवृत्त का कोण समकोण होता है।
- (10) अपने एकान्तर खंड में वृत्त के किसी बिन्दु पर समकोण अन्तरित करने वाला वृत्त का चाप अर्द्धवृत्त होता है।
- (11) वृत्त के एक ही खण्ड के कोण परस्पर बराबर होते हैं।
- (12) यदि दो बिन्दुओं को मिलाने वाला रेखाखंड दो अन्य बिन्दुओं पर, जो इस रेखाखंड को आविष्ट करने वाली रेखा के एक ही ओर स्थित हैं, समान कोण अन्तरित करता हो तो ये चारों बिन्दु एकवृत्तीय होते हैं।
- (13) वृत्त (अथवा सर्वांगसम वृत्तों) की बराबर जीवाएँ केन्द्र (संगत केन्द्रों) पर बराबर कोण अन्तरित करती हैं।
- (14) यदि वृत्त (सर्वांगसम वृत्तों) की दो जीवाओं द्वारा केन्द्र (संगत केन्द्रों) पर अन्तरित कोण बराबर हों तो, जीवाएँ बराबर होती हैं।
- (15) चक्रीय चतुर्भुज के सम्मुख कोणों के किसी भी युग्म का योगफल 180 अंश होता है।
- (16) यदि चतुर्भुज के सम्मुख कोणों के किसी भी युग्म का योगफल 180 अंश हो तो चतुर्भुज चक्रीय होता है।
- (17) वृत्त की स्पर्श रेखा, स्पर्शबिन्दु से होकर जाने वाली त्रिज्या पर लम्ब होती है।
- (18) किसी बाह्य बिन्दु से वृत्त पर खींची गई दो स्पर्श रेखाओं की लम्बाइयाँ बराबर होती हैं।
- (19) यदि किसी वृत्त की दो जीवाएँ वृत्त के अन्दर या बढाने पर बाहर प्रतिच्छेद करती हों तो एक जीवा के दो खंडों से बने आयत का क्षेत्रफल दूसरी जीवा के दो खंडों से बने आयत के क्षेत्रफल के बराबर होता है।
- (20) यदि $P A B$ वृत्त की छेदक रेखा हो, जो वृत्त को A और B पर प्रतिच्छेद करती हो और $P T$ एक स्पर्श रेखा खंड हो, तो $P A P B = P T^2$
- (21) यदि वृत्त की स्पर्श रेखा के स्पर्श बिन्दु से एक जीवा खींची जाये तो इस जीवा द्वारा दी हुई स्पर्श रेखा के साथ बनाये गये कोण, संगत एकान्तर खंडों में बनाये गये कोण के क्रमशः बराबर होती हैं।
- (22) यदि वृत्त की जीवा के एक छोर बिन्दु से होती हुई खींची गई रेखा और जीवा के बीच का कोण एकान्तर खंड में जीवा द्वारा अन्तरित कोण के बराबर हो तो यह वृत्त की स्पर्श रेखा होता है।
- (23) यदि दो वृत्त एक दूसरे को (आन्तरिकतः या बाह्यतः) स्पर्श करते हों तो स्पर्श बिन्दु केन्द्रों से होकर जाने वाली रेखा पर स्थित होता है।

यूनिट 5

5.1 रचना

- (1) वृत्त के किसी दिये हुए बिन्दु पर स्पर्श रेखा की रचना करना, जबकि वृत्त का केन्द्र (अ) ज्ञात है, (ब) अज्ञात है।
- (2) त्रिभुज के अन्तर्गत और परिगत वृत्त खींचना।
- (3) परिधि के बाहर के बिन्दु से वृत्त की स्पर्श रेखाएँ खींचना, दो वृत्तों की उभयनिष्ठ स्पर्श रेखाएँ खींचना।
- (4) एक त्रिभुज की रचना करना जिसके आधार, शीर्ष कोण और शीर्ष से होकर जाने वाली माध्यिका अथवा शीर्ष-लंब दिये हुए हों।
- (5) दी हुई आकृतियों—(त्रिभुज, चतुर्भुज आदि) के समरूप दिए हुए पैमाने पर आकृतियों की रचना करना।
- (6) दिये हुए रेखाखण्ड का दिए हुए अनुपात में आन्तरिक बाह्यतः विभाजन करना।

- 5.2 **मेंसुरेशन**—वृत्त, त्रिज्यखण्ड और वृत्तखण्ड का क्षेत्रफल, घन, घनाभ, शंकु, बेलन और गोला का वक्रपृष्ठ तथा सम्पूर्ण पृष्ठ, आयतन, (गणना कार्य हेतु लघुगणक सारणियों का प्रयोग करना)।
- 5.3 **त्रिकोणमिति:**
 त्रिकोणमितीय सर्वसमिकाएँ $\sin^2 A + \cos^2 A = 1$; $\sec^2 A = 1 + \tan^2 A$; $\operatorname{cosec}^2 A = 1 + \cot^2 A$
 उपर्युक्त पर आधारित साधारण कोटि की सर्वसमिकाएँ, पूरक कोणों के त्रिकोणमितीय अनुपात—
 $\sin(90^\circ - A) = \cos A$, $\operatorname{cosec}(90^\circ - A) = \sec A$
 $\cos(90^\circ - A) = \sin A$, $\sec(90^\circ - A) = \operatorname{cosec} A$
 $\tan(90^\circ - A) = \cot A$, $\cot(90^\circ - A) = \tan A$
 उपर्युक्त पर आधारित साधारण प्रश्न
- 5.4 **ऊँचाई एवं दूरी**—त्रिकोणमितीय सारणियों का पढ़ना, त्रिकोणमितीय सारणियों एवं लघुगणक सारणियों के प्रयोग से ऊँचाई एवं दूरी के साधारण प्रश्नों का हल।
- 5.5 **निर्देशांक ज्यामिति:**
 (1). दो बिन्दुओं के बीच की दूरी उसे दिये हुये अनुपात में विभाजन करने वाले बिन्दु के निर्देशांक (त्रिभुज का क्षेत्रफल)।
 (2) सरल रेखा के समीकरण।
 (3) सरल रेखा पर किसी बिन्दु से डाले गये लम्ब की लम्बाई।
 (4) सरल रेखा के समान्तर तथा लम्बवत् रेखाओं के समीकरण।
 (5) दो सरल रेखाओं का प्रतिच्छेद बिन्दु।
 (6) दो सरल रेखाओं के बीच का कोण।

CHEMISTRY

Unit-1: Matter

- 1.1 Nature and behaviour- types of matter, elements and their classification (metal & non-metal), compounds and mixture, composition of matter, Atomic theory.
- 1.2 Molecules and atom – structure of a tam: electron, proton, neutron, structure of nucleus.
- 1.3 Atomic number and mass number. Valency and radio activity.
- 1.4 Mass of atoms and molecules, percentage composition of compounds.
- 1.5 Chemical reaction- physical and chemical changes, their differences. Addition, displacement, decomposition and reduction reactions.

Unit-2

- 2.1 Slow & fast reaction, catalytic, endothermic & exothermic reaction.
- 2.2 Balancing of chemical reactions, chemical equation.
- 2.3 Chemical Bonds – orgin of ionic and and covalent bond.
- 2.4 Properties of electrovalent and covalent compounds.
- 2.5 electrochemical cell – volta cell and its working dry cell and sturated cell.

Unit-3

- 3.1 Nuclear energy, sources of solar energy, structure of atomic nucleus, nuclear fusion & fission, chain reaction and its examples. Controlled and un-controlled chain reaction of fission and fusion.
- 3.2 Nuclear reactor, atomic power plant, Hazards of radiation, energy crisis, reasons, measures to overcome.

- 3.3 Industrial chemistry – soap, detergent, ink, cream vaseline, jam, jelly and boot polish.
- 3.4 Plastic, synthetic fibre, drugs general idea about explosive.
- 3.5 Language of chemistry, symbols, valency, formula and equation, atomic & molecular weight, valency of element and equivalent weight.

Unit-4

- 4.1 Difference between ion and atom, valency of ion, chemical formula and its uses, balancing of chemical equation.
- 4.2 Organic chemistry- introduction to organic chemistry, definition and field of organic chemistry. Difference between organic and inorganic compounds, regular tetrahedral nature of carbon atom.
- 4.3 Classification of organic compound aliphatic and aromatic compound, saturated hydrocarbons (methane and ethane).
- 4.4 Unsaturated hydrocarbons (ethylene and acetylene) methods of preparation, properties and uses.
- 4.5 Fuel-Origin, constituents and uses. Bio-materials as a fuel coal, and its types, petroleum oil and gas obtained from coal. LPG. Natural gas classification of fuel, characteristics of fuel, Rocket propellants why fire is hot, ideal fuel.

Unit-5

- 5.1 Water- drinking water, volumetric composition of water, hard water and softwater, temporary and permanent hardness, physical and chemical methods for removal of hardness.
- 5.2 Introduction to some important chemical compounds, chemical name, molecular formula important properties and uses- washing soda, baking soda, common salt, sal ammoniac, quick lime, copper sulphate, alum, Borax, chalk, bleaching powder, red lead salt peter and potassium permanganate.
- 5.3 Introduction to Metallurgy- Metallurgy of aluminium.
- 5.4 Classification of element- general characteristics of Mendel leaf's period table.
- 5.5 Electronic configuration and position of H, C,O,N,P,S and Cl in periodic table.

PHYSICS

UNIT 1:

- 1.1 Measurements – Fundamental units and dimensions, S.I. system, standard meter, standard kilogram, standard second, micron, angstrom and light year, Derived units.
- 1.2 Motion and Force- Relativity of motion, displacement, uniform and non-uniform velocity, speed and velocity, equations of motion and simple numerical problem, meaning of force. Inertia of a body, equilibrium and non-equilibrium, force and acceleration.
- 1.3 Newton's laws of motion, relation between momentum and force and mass of a body-simple numerical problems based on these concepts. Action and reaction. Forces as couple of force.
- 1.4 Newton's laws of gravitation, acceleration due to gravity.
- 1.5 Simple pendulum. Relation between restoring force, time period and length of a pendulum. Graphical representation.

UNIT 2:

- 2.1 Hydrostatics – laws of matter, Archimedes principle, law of floatation, use of law of floatation in balloon and submarine.
- 2.2 Work, power and energy- Relation between work and power, joule, watt, kilowatt-hour, simple calculations of work and power.
- 2.3 Kinetic and potential energy, sources of energy, fundamental source of energy. Different forms of solar energy including matter energy.

- Applications of energy transformations, conservation of energy.
- 2.4 Wave Motion- nature of wave, transmission through wave, types of waves-transverse, longitudinal, periodic motion, concept of simple harmonic motion, displacement, amplitude, frequency, time period, wavelength and their units.
 - 2.5 Relation between wavelength, frequency and time period of a wave, simple numerical problems based on them, transference of energy in the form of wave.

UNIT 3: Heat

- 3.1 Heat- thermal expansion, thermal expansion of solids, importance, concept of temperature, thermometry, Mercury thermometers, scales of temperature, transmission of heat, good and bad conductors of heat and their comparative study, practical examples of heat conduction, heat connection, thermal radiation and light.
- 3.2 Properties of thermal radiation, emission, absorption, importance of radiation in daily life, units of heat, specific heat, thermal capacity- simple numerical problems based on this.
- 3.3 Calorimetry, change of state, humidity and related concepts.

UNIT 4: Light

- 4.1 Perception of light by human eye, spherical mirrors and lense-image formation, simple numerical problems.
- 4.2 Structure of human eye, focal length of eye lens and formation of image on retina, brief description of rods and cones, basis of colours.
- 4.3 Defects of vision, myopia, hypermetropia, correction of defects, colour discrimination.
- 4.4 Telescope and Microscope- principle, construction, working of astronomical telescope and compound microscope. White light, wavelengths of colours.

UNIT 5: Electricity

- 5.1 Sources of energy, conductors, resistors, measurement of current, potential difference, resistance and their relationship- numericals.
- 5.2 Heating effects of current, relation between heat, electric current, resistance and time. Electrical appliances based on heating effects, units, electrical energy and numericals based on them.
- 5.3 Magnetic effects of electric current. Magnetic field due to a current carrying conductor- coil and solenoid. Applications of electric motor, elementary knowledge of electromagnetic induction, Flemings left hand rule, electric dynamo dc and ac. Electricity used in houses, domestic wiring, fuses, safety device, dangers from electricity.
- 5.4 Absorption of solar energy by earth as source of energy. Photosynthesis, solar cooker, solar cell/wind energy. Wind Mill, generation of electricity by sea waves.

MATHEMATICS

Unit-1: Algebra

- 1.1 Number System- positive integers- integers, rational numbers, properties of rational numbers (commutative law for addition, associative law, additive identity, additive inverse, commutative law for multiplication, associative law, multiplicative identity, multiplicative inverse and distributive law), decimal representation of rational numbers irrational numbers, non-periodic non-terminating decimal representation of irrational number, real numbers and its properties, Surd, laws of surds, comparison of surds, sum and difference of surds, Multiplication and division of two surds, rationalisation of surds.
- 1.2 Set theory- symbolisation of set, elements, different types of sets, finite and infinite set, Null (empty) set, universal set, complement of a

set, subset, Union of sets, intersection of sets, examples of sets from number system, venn diagram and its applications.

- 1.3 Function (mapping)- Concept of function as a mapping, its graph in constant linear function and cartesian plane (rectangular cartesian system).
- 1.4 Polynomial and its factor- remainder theorem (without proof) and its use in the factorization of polynomials (not greater than four degree), factorization of algebraic expression, factorization of two degree, polynomial, two degree trinomial expression, factorization of $ax^2 + bx + c = 0$ by dividing its middle term into two parts. Linear equation in one variable, solution of linear equations and commercial mathematics studied in the previous classes, its use in mensuration etc.
- 1.5 Logarithm – meaning of logarithm of any number of a given base, common logarithm at base 10, characteristic and mantissa, meaning of anti-logarithm, laws of logarithm, computing through sufficient examples using logarithmic table. Compound interest, population growth, decrease of the value of things and the solution of the problems in which the calculation depends upon the use of logarithmic tables. Obtain the area of rectangle, square, triangle, rhombus, quadrilateral, parallelogram etc. using logarithm.

UNIT-2: Trigonometry

- 2.1 Trigonometrical ratios of acute angle A (or any other angle) in a right angled triangle

$$\sin A = \frac{\text{Perpendicular}}{\text{Hypotenuse}}, \quad \cos A = \frac{\text{Base}}{\text{Hypotenuse}}$$

$$\tan A = \frac{\sin A}{\cos A}, \quad \operatorname{cosec} A = \frac{1}{\sin A}, \quad \sec A = \frac{1}{\cos A}, \quad \cot A = \frac{1}{\tan A}$$

Trigonometrical ratios of the angles of 0° , 30° , 45° , 60° , 90° . Find out the values of trigonometrical ratios of angles 30° , 45° , 60° through geometrical proof; Assume as axioms of the trigonometrical ratios of the angles 0° and 90° , Simple applications of these trigonometrical ratios in the problems of heights and distances.

2.2 Straight line and angle:

- (1) Two different straight lines can not have more than one common points.
- (2) Two straight lines which are parallel to a given straight line, are parallel to each other.
- (3) If the two lines intersect each other then opposite angles are equal.
- (4) If one oblique straight line intersects two parallel straight lines then two internal alternate angles are equal.
- (5) If one straight line intersects the two parallel straight lines then the internal angles of one side of the intersecting line are supplementary.
- (6) If one oblique straight line cuts two straight lines in such a way that the pair of internal alternate angles are equal then that straight lines are parallel.
- (7) If one oblique straight line cuts two straight lines in such a way that one pair of internal angles of one side of the oblique straight line are supplementary then that straight lines are parallel.
- (8) The sum of three angles of a triangle is two right angle.
- (9) If one side of a triangle is increased then such formed internal angle is equal to the sum of the two distant internal angles.

2.3 Congruence of triangle:

- (1) Angles opposite to equal sides of a triangle are equal.
- (2) If the two angles and their included side of a triangle are equal to the corresponding angles and their included side of the other triangle then the triangles are congruent.
- (3) If the two angles of a triangle are equal then their opposite sides are equal.
- (4) If the three sides of a triangle are equal to the corresponding three sides of the other triangle then the triangles are congruent.
- (5) If the two sides and their included angle are equal to two sides and their included angle of the other triangle then the triangles are congruent.
- (6) If the hypotenuse and one side of a right angled triangle is equal to corresponding hypotenuse and one side of the other triangle then the triangles are congruent.

2.4 Inequality relation in triangles.

- (1) If the two sides of a triangle are not equal then the angle opposite to the bigger side is bigger.
- (2) If the two angles of a triangle are unequal, then the side opposite to bigger angle is bigger.
- (3) The sum of the two sides of a triangle is greater than its third side.
- (4) Among all the lines segment through a given point to the given line, the perpendicular line segment is the least.
- (5) The locus of that point, which is equidistant from the given two points is perpendicular bisector of the line joining these two points.
- (6) The locus of that point, which is equidistant from the two given intersecting straight lines, is a pair of straight lines which is the right bisector of the angle between the given intersecting lines.
- (7) The right bisectors of the angles of a triangle are concurrent.
- (8) The perpendicular right bisectors of the sides of a triangle are concurrent.
- (9) The perpendiculars drawn from the vertices upon the opposite sides of a triangle are concurrent.
- (10) Medians of a triangle are concurrent and that point divides each median in the ratio of 2:1.

2.5 Parallelogram:

- (1) Opposite sides of a parallelogram are equal.
- (2) Opposite angles of a parallelogram are equal.
- (3) The diagonals of a parallelogram bisect each other.
- (4) A quadrilateral is a parallelogram if its opposite sides are equal.
- (5) A quadrilateral is a parallelogram if its opposite angles are equal.
- (6) If the diagonals of a quadrilateral bisect each other then the quadrilateral is a parallelogram.
- (7) A quadrilateral is a parallelogram if a pair of opposite sides are parallel to each other.
- (8) The diagonals of a rectangle are equal in length.
- (9) If the diagonals of a parallelogram are equal then that parallelogram is a square.
- (10) The diagonals of a rhombus are perpendicular to each other.
- (11) If the diagonals of a parallelogram are perpendicular to each other then that parallelogram is a rhombus.
- (12) The diagonals of a square are perpendicular to each other and equal in length.
- (13) If the diagonals of a parallelogram are perpendicular to each other and equal in length then that parallelogram is a square.
- (14) The line segment joining the middle points of the two sides of a triangle is parallel and half of the third side of the triangle.
- (15) A line drawn from the middle point of one side of the triangle and

- parallel to another side intersect the third side at its middle point.
- (16) If there are three or more than three parallel straight lines and internal segments made by these parallel lines on a oblique line are equal then the internal segments on another oblique line made by these parallel lines are also equal.

UNIT-3

3.1 Area

- (1) Each diagonal of the parallelogram divides it into triangles of equal area.
- (2) Areas of the parallelograms on same base and same parallel lines are equal.
- (3) Areas of the triangles drawn on the same base and lying between same parallel lines are equal.
- (4) If the areas of two triangles are equal and one side of a triangle is equal to a side of another triangle then their corresponding altitudes are equal.

Construction:

- (1) Construct regular pentagon, regular hexagon and regular octagon circumscribing and inscribing a circle.
- (2) Construct a triangle having area equal to the area of a given quadrilateral.

3.2 Statistics- Importance and uses of statistics, classification of data, frequency, frequency distribution, tabulation cumulative frequency table, graphic representation of statistical data – histogram, frequency polygon, drawing cumulative frequency curve.

3.3 Computing: Introduction to computers –

What is a computer and its functions what are the functions which a computer cannot perform? Role and uses of computers in modern society.

3.4 Linear equation of two variable- solution of linear equation of two variables and its graph, solution of a pair of linear equations of two variables by algebraic and graphical methods, consistent/inconsistent system of linear equation of two variables, Problems based on a system of linear equations.
Least common multiple (LCM) and Highest common factor (HCF) – Finding LCM and HCF of polynomial expressions using factorization, factors of cyclic expressions, properties and uses of ratio and proportion.

3.5 Quadratic equations-

Meaning of quadratic equation, standard quadratic equation $ax^2+bx+c=0$, $a \neq 0$. Solution of the quadratic equation $ax^2+bx+c=0$, $a \neq 0$ by the method of factorization and using formula discriminant of a quadratic equation and nature of roots, forming a quadratic equation from given roots, applications of quadratic equations in various areas.

UNIT-4 Commercial Mathematics

4.1 Banking- functions of a bank and different types of accounts (saving bank account, recurring deposit account) problems.

Taxation: Main object of this unit is to introduce the students about National economic policy (specially regarding different types of taxes)

- (1) Direct tax and Indirect tax
- (2) Calculation of income tax
- (3) Calculation of sale tax.

4.2 Statistics (Measures of central tendency) –

Arithmetic mean of classified data, median of unclassified data, birth-death statistics, crude death rate, specific death rate, and infant mortality rate, costs of living index and price index.

4.3 Computing- flow chart with loop, solution of simple problems related to previously studied topics for example- Ratio-proportion, profit-loss, percentage, simple and compound interest, discount etc.

4.4 Similar triangles-

- (1) A straight line drawn parallel to a side of the triangle, intersects the remaining two sides of the triangle at these points which divide the sides in equal ratio.
- (2) If any straight line divides the two sides of the triangle in the same ratio then that straight line is parallel to the third side of the triangle.
- (3) If the corresponding angles of the two triangles are equal (i.e. the angles of both the triangles are same then the ratio of the corresponding sides are equal.
- (4) If the ratio of the corresponding sides of the triangle are equal then the triangles are similar.
- (5) If the corresponding sides of the two triangles are equal then the angles of the two triangles are also equal.
- (6) If the ratio of one pair of sides of the two triangles are equal and included angles are also equal then the triangles are similar.
- (7) If in a right angle triangle the perpendicular drawn from the vertex of right angle on the hypotenuse then the triangles on both sides of this perpendicular line and the original triangle are similar.
- (8) Ratio of the areas of similar triangles is equal to the ratio of the square of their corresponding sides.
- (9) In a right angled triangle the square of the hypotenuse is equal to the sum of the squares of the remaining two sides.
- (10) In a triangle, if the square of one side is equal to the sum of the square of remaining two sides then the angle opposite to first side is right angled.

4.5 Circle

- (1) If the two arcs of circle are equal then the corresponding chords are also equal.
- (2) If the two chords of the same circle (or the two circles are similar) then their corresponding arcs are equal.
- (3) The perpendicular drawn from the centre of the circle to its chord divides the chord into two equal parts.
- (4) The line joining from the centre to the middle point of the chord of the circle is perpendicular to the chord.
- (5) One and only one circle can be drawn through three non collinear points.
- (6) Equal chords in a circle (or congruent circles) are at equal distances from its centre.
- (7) The chords of the circle(or congruent circles) which are at equal distances from the centre are equal.
- (8) Degree measure of an arc of a circle is double the angle made by the arc to a point on the segment of the relative circle.
- (9) Angle of the semi circle is a right angle.
- (10) The arc of a circle which makes right angle to a point on the segment of the circle, is a semi circle.
- (11) Angles at the same arc are equal.
- (12) If the line segment joining the two points makes equal angles at another two points then the four points are collinear.
- (13) Equal chords of the circle make equal angles at the centre.
- (14) If the angles made by the two chords at the centre of the circle are equal then the chords are also equal.
- (15) The sum of any pair of opposite angles of a concyclic quadrilateral is

- 180 degree.
- (16) If the sum of a pair of opposite angles of a quadrilateral is 180 degree then the quadrilateral is concyclic.
- (17) Tangent of a circle is perpendicular to the radius through the point of contact.
- (18) The length of two tangents drawn from any external point to the circle are equal.
- (19) If the two chords for the circle intersect each other inside or outside the circle then the area of the rectangle made by two segments of one chord is equal to the area of the rectangle made by the two segments of the second chord.
- (20) If the straight line PAB intersect the circle at A and B and PT is a tangent line segment then $PA \cdot PB = PT^2$
- (21) If a chord is drawn from the point of contact of the tangent to the circle then the angle made by that chord with the given tangent is equal to respectively the angle made in respective alternate segment.
- (22) A straight line drawn through one end of the chord of a circle is equal to made by the chord in alternate segment then that straight line is a tangent to the circle.
- (23) If the two circles touches (internally or externally) with each other then the point of contact lies on the line joining their centres.

Unit-5

5.1 Construction

- (1) Constructing a tangent at a given point of a circle when the centre of the circle is (a) known (b) unknown.
- (2) Drawing a circle circumscribing and inscribing a triangle.
- (3) Drawing tangents to a circle from a point outside the circumference of a circle.
- (4) Constructing a triangle whose base, vertical angle and median passing through the vertex or altitude are given.
- (5) Constructing figures of given scale similar to the figures (triangle, quadrilateral etc.)
- (6) Dividing a given line segment externally and internally in a given ratio.

5.2 Mensuration- areas of circle, sector, section of a circle, curved surface areas and surface areas of cube, cuboid, cone, cylinder and sphere, their volumes (using logarithmic tables for calculations).

5.3 Trigonometry

Trigonometrical identities

$$\sin^2 A + \cos^2 A = 1$$

$$\sec^2 A = 1 + \tan^2 A$$

$$\operatorname{cosec}^2 A = 1 + \cot^2 A$$

Simple identities based on above given identities trigonometrical ratios of complementary angles

$$\sin(90^\circ - A) = \cos A$$

$$\operatorname{cosec}(90^\circ - A) = \sin A$$

$$\sec(90^\circ - A) = \operatorname{cosec} A$$

$$\tan(90^\circ - A) = \cot A$$

$$\cot(90^\circ - A) = \tan A$$

Simple problems based on above formulae.

5.4 Height and distance

Reading trigonometrical tables, solving simple problems based on height and distance using trigonometrical tables and logarithmic tables.

5.5 Coordinate geometry

- (1) Distance between two points and co-ordinates of point dividing the

- line segment between two points in a given ratio, area of a triangle.
- (2) Equations of straight lines.
- (3) Length of perpendicular drawn from a given point on a straight line.
- (4) Equations of straight lines parallel and perpendicular to given straight line.
- (5) Point of intersection of two straight lines.
- (6) Angle between two straight lines.

FOR GROUP 'B':

Diploma in Polytechnics - Leather Technology Footwear (CASD), Textile Designing, Interior Designing & Decoration. SYLLABUS (HIGH SCHOOL LEVEL) GENERAL SCIENCE

Unit 1: PHYSICS

- 1.1 Newton's Law of Motion
- 1.2 Work, Power and Energy
- 1.3 Conduction, Convection, and Radiation
- 1.4 Structure of the Human Eye
- 1.5 Sun as a source of Energy, Absorption of solar energy by the earth- photosynthesis, solar cooker.

Unit 2: CHEMISTRY

- 2.1 Air, Water
- 2.2 Chemicals in daily life-Industrial Chemicals
- 2.3 Nature of Gases-Nitrogen Cycle and Fertilizers
- 2.4 Metals and Non-Metals-Acids, Bases and Salts
- 2.5 Introduction to some important organic and inorganic compounds.

Unit 3: BOTANY

- 3.1 Structure of Cell, Cell Division
- 3.2 Classification of Vegetation
- 3.3 Root and Stem
- 3.4 Absorption and Movements of Fluid in Plants
- 3.5 Respiration in Plants.

Unit 4: ZOOLOGY

- 4.1 Blood and Lymph
- 4.2 Respiratory System
- 4.3 Nervous System and Sense Organs
- 4.4 Reproductive System
- 4.5 Excretion.

Unit 5: HEALTH AND HYGIENE

- 5.1 Aids to Health
- 5.2 Environmental Pollution
- 5.3 General Knowledge about communicable diseases and diseases spread through air
- 5.4 Diseases spread through water and food
- 5.5 Non communicable diseases.

FOR GROUP 'C':

Diploma in Polytechnics - Garment

Technology, Home Science.

HOME SCIENCE

UNIT I.

Sub-Unit 1: गृह प्रबन्ध

- 1.1 गृह-विज्ञान के तत्व और क्षेत्र।
- 1.2 व्यवस्था की परिभाषा, गृह और परिवार के सम्बन्ध में।

Sub-Unit 2:

- 2.1 कार्य व्यवस्था, प्रभाव डालने वाले कारक, साधन पारिवारिक आय, परिवार कल्याण, परिवार के सदस्यों की संख्या और उनका व्यवहार एवं अभिरूचि।
- 2.2 अर्थव्यवस्था-परिवार की मूलभूत आवश्यकताएँ।

Sub-Unit 3: स्वास्थ्य रक्षा

- 3.1 स्वास्थ्य की परिभाषा, व्यक्तिगत स्वास्थ्य की देखरेख और रक्षा।
- 3.2 स्थानीय स्वास्थ्य संस्थाओं का प्रशासन और सेवार्य, उनसे सहायता प्राप्त करना।

Sub-Unit 4:

- 4.1 वायु-शुद्ध वायु का महत्व तथा संचालन, पर्यावरण एवं प्रदूषण का जनजीवन पर प्रभाव।

Sub-Unit 5: सूत और वस्त्र विज्ञान

- 5.1 कपड़ों के तन्तु, कपड़ों के प्रकार, जीवन में उनका प्रयोग।
- 5.2 व्यक्तिगत सज्जा-उचित वेशभूषा मौसम के अवसर के अनुकूलन व्यक्तिगत वेशभूषा।

UNIT II.

Sub-Unit 1: भोजन तथा पोषण विज्ञान, भोजन का पाचन और सम्बन्धित क्रिया विज्ञान।

Sub-Unit 2: निम्न खाद्य पदार्थों का संगठन, वर्गीकरण और उसके कार्य, अनाज, दाल और मेवे, सब्जी और वसा और तेल मॉस, मछली अण्डे।

Sub-Unit 3: संतुलित आहार।

Sub-Unit 4: प्रथमिक चिकित्सा- (1) प्राथमिक चिकित्सा के मुख्य सिद्धान्त (2) सामान्य घरेलू दुर्घटनायें और उनसे बचाव (3) सामान्य घरेलू देशज औषधियाँ (4) तिकोनी एवं लम्बी पट्टियाँ और उनका प्रयोग।

Sub-Unit 5: गृह परिचर्या (1) गृह परिचर्या की परिभाषा। परिचारिका के गुण। (2) रोगी का क्रमशः - चुनाव तैयारी, सफाई और प्रकाश का प्रबंध (3) बिस्तर-बिस्तर लगाना, चादर बदलना।

UNIT III.

Sub-Unit 1:

- 1.1 अर्थ व्यवस्था—बजट का अर्थ, प्रतिदर्श बजट का प्रदर्शन।
- 1.2 बचत विनियोजन—डाकखाना, बैंक, अन्य संस्थायों के माध्यम से।

Sub-Unit 2::

- 2.1 कला के मूल तत्व एवं घर की सजावट।
- 2.2 घर की सफाई,
- 2.3 गृह (गृहस्थी) का गणित।

Sub-Unit 3:

- 3.1 जल के स्रोत एवं उपयोग,
- 3.2 घरेलू विधियों से जल शुद्ध करना,
- 3.3 अशुद्ध जल से फैलने वाले रोग,
- 3.4 पर्यावरण एवं प्रदूषण का जन-जीवन पर प्रभाव।

Sub-Unit 4:

- 4.1 रसोईघर की व्यवस्था,
- 4.2 रसोईघर की देखरेख सफाई,
- 4.3 भोजन पकाने व परोसने की विधियां, तत्वों की सुरक्षा।

- Sub-Unit 5:** कुछ सामान्य रोग, कारण, रोकथाम (1) विभिन्न रोगों में रोगियों का भोजन—1 (रूग्णावस्था का भोजन, भोजन के प्रकार, तरल, कम-तरल, हल्का भोजन)
(2) विभिन्न रोगों में रोगियों का भोजन—2 (मलेरिया, अतिसार, तीव्र ज्वर आदि)।

UNIT IV.

Sub-Unit 1:

- 1.1 विभिन्न रोगों के रोगियों का भोजन (विभिन्न रोगियों के भोजन कैलोरी युक्त तथा वसा रहित भोजन)।
- 1.2 विभिन्न रोगों के रोगियों का भोजन।

Sub-Unit 2:

- 2.1 मानव अस्थि संस्थान एवं सन्धियां,
- 2.2 अस्थि भंग, मोच एवं उपचार

Sub-Unit 3:

- 3.1 श्वसन—तन्त्र तथा प्राकृतिक एवं कृत्रिम श्वसन क्रिया
- 3.2 घायल का स्थानान्तरण

Sub-Unit 4:

- 4.1 रोगी की देखभाल (सम्पूर्ण शरीर के लिए ठण्डा, गर्म, स्पंज शुष्क, गर्म सेक व पुल्सिस)
- 4.2 रोगी की देखभाल (मलमूत्र विसर्जन, एनिमा का प्रयोग)।

- Sub-Unit 5:** रोगी की नाड़ी, श्वास—गति का परीक्षण एवं अभिलेखन

FOR GROUP 'D':

Diploma in Polytechnics - Modern Office Management & Secretarial Practice.

ENGLISH

Unit 1: Common Errors in English.

Unit 2: Julius Caesar.

Unit 3: Figures of Speech, Idioms and Phrases.

Unit 4: Transformation of Sentences and Synthesis.

Unit 5: Vocabulary- Antonyms, Synonyms, Homophones, one word substitutions etc.

हिन्दी

यूनिट 1: हिन्दी गद्य का विकास

- | | |
|--|---|
| 1.1 हिन्दी गद्य का विकासात्मक परिचय | 1.2 युग प्रवर्तक लेखक एवं प्रमुख रचनाएँ |
| 1.3 कथा साहित्य | 1.4 नाटक साहित्य |
| 1.5 विभिन्न नवीन विधाएँ—संस्मरण, रेखाचित्र, डायरी, रिपोर्टाज | |

यूनिट 2: हिन्दी काव्य का विकास—भक्तिकाल एवं रीतिकाल (प्रमुख कवि, प्रवृत्तियाँ तथा रचनाएँ)

- | | |
|--------------------------------------|----------------------------------|
| 2.1 भक्तिकाल की सामान्य विशेषताएँ | 2.2 सगुण काव्य धारा |
| 2.3 निर्गुण काव्य धारा | 2.4 रीतिकाल की सामान्य विशेषताएँ |
| 2.5 रीतिकाल के प्रमुख कवि तथा रचनाएँ | |

यूनिट 3: हिन्दी काव्य का विकास—आधुनिक कला (प्रमुख कवि, प्रवृत्तियाँ तथा रचनाएँ)

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|--|--------------------------|
| 3.1 भारतेन्दु युग तथा द्विवेदी युग | 3.2 छायावाद तथा रहस्यवाद |
| 3.3 प्रगतिवाद, प्रयोगवाद तथा नई कविता | |
| 3.4 काव्य की प्रमुख विधाएँ—प्रबन्ध (महाकाव्य तथा खण्ड काव्य) तथा मुक्तक | |
| 3.5 आधुनिक काल के प्रमुख कवि तथा उनकी कृतियाँ—भारतेन्दु हरिश्चन्द्र, जगन्नाथ दास रत्नाकर, अयोध्या सिंह उपाध्याय 'हरिऔध', मैथिली शरण गुप्त, हरिवंश राय बच्चन, माखनलाल चतुर्वेदी, बालकृष्ण शर्मा 'नवीन', श्रीधर पाठक, सुभद्रा कुमारी चौहान, जयशंकर प्रसाद, सूर्यकान्त त्रिपाठी निराला, सुमित्रानंदन पन्त, महादेवी वर्मा, रामधारी सिंह दिनकर, सच्चिदानन्द हीरानंद वात्स्यायन 'अज्ञेय', नरेन्द्र शर्मा, भवानी प्रसाद मिश्र, गजानन माधव मुक्तिबोध, गिरिजा कुमार माथुर, धर्मवीर भारती। | |

यूनिट 4: काव्य शास्त्र

- 4.1 रस—सामग्री—स्थायी भाव, विभाव, अनुभाव, संचारी भाव
- 4.2 रस के भेद— परिभाषा तथा उदाहरण
- 4.3 शब्दालंकार— अनुप्रास, यमक, श्लेष, पुनरुक्ति—भेद तथा उदाहरण
- 4.4 अर्थालंकार—उपमा, रूपक, उत्प्रेक्षा, प्रतीप, व्यतिरेक, सन्देह, भ्रान्तिमान, असंगति, विरोधाभास विभावना
- 4.5 छन्द—दोहा, सोरठा, चौपाई, रोला, कुण्डलिया, छप्पय कवित्त, सवैया।

यूनिट 5: व्याकरण

- 5.1 सन्धि (स्वर, व्यंजन, विसर्ग), समास, उपसर्ग, प्रत्यय
- 5.2 शब्दरूप—राम, फल, लता, कवि, भानु, धातुरूप— पठ, भू, दृश
- 5.3 लोकोक्ति तथा मुहावरे
- 5.4 पद—संज्ञा, सर्वनाम, क्रिया, विशेषण
- 5.5 विपरीतार्थक शब्द, समानार्थक शब्द, वाक्यांश के लिए एक शब्द ।

PROGRAMME OF ADMISSION & FEE-COLLECTION FOR DIP. IN ENGINEERING
AND POLYTECHNICS FIRST SEMESTER (SESSION 2009-2010)

DIPLOMA IN ENGINEERING AND POLYTECHNICS	Date (.....2009) & time (.....) of Written Test	Date of Interview (from 9.00 a.m.)	Declaration of Merit List & Counselling-cum- Registration	Fee- Collection (10.30 am to 1.00 pm)
Automobile/Electrical/Electronics/ Mechanical Engineering	25 July (11 am- 1 pm)	29, 30, 31 July, 1 & 2 Aug.	*07 August	10,11, 12 & 13 August
Modern Office Management & Secretarial Practice	25 July (2.30 pm- 4 pm)	-do-	-do-	-do-
Leather Technology Footwear/ Textile Designing/ Interior Designing & Decoration	28 July (11 am- 12.30 pm)	-do-	*08 August	-do-
Garment Technology/ Home Science	28 July (2.30 pm- 4 pm)	-do-	-*do-	-do-

*Medical Test of selected students of Diploma in Engineering and Polytechnics will be held on 08, 10 and 11 August, 2009.

Note:

1. As also mentioned in para 18.2 of the Prospectus, the written objective test is not an entrance examination open to all candidates who apply. But, it is a part of selection procedure. Only a limited number of candidates will be called for written test and interview from the merit-list prepared on the basis of marks obtained in the High School/Intermediate examination. As such only those applicants who are called need appear for the test and interview as per the schedule mentioned above.
2. First year batch classes will commence on 10.08.2009.