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IMPORTANT INFORMATION

SRM Joint Entrance Examination - Engineering (SRMJEEE-UG) for B.Tech is common for the SRM Group of Universities viz., SRM Institute of Science & Technology, SRM University AP - Amaravati and SRM University Haryana - Sonapat.

SRMJEEE (UG) is mandatory for admission to B.Tech Programmes.

SRM Joint Counselling Committee for Admissions (SRMJCCA) is empowered to undertake joint counselling for SRMIST (all four campuses), SRM-AP Amaravati and SRM-Haryana Sonapat for admission to B.Tech, M.Tech and Ph.D programmes.

Application

Applying to SRM is simple with the following options:

Option 1: Apply online with e-payment.

Option 2: Fill the OMR form and send it to us by safe means.

Cost of Application: Rs. 1100/-

Important dates to remember

- | | |
|---|---|
| 1. Last Date for Receipt of OMR Application | - 15 th May 2021 |
| 2. Last Date for online Application | - 31 st May 2021 |
| 3. Slot Booking for Online Entrance Examination* (Tentative)* | - 1 st week of June 2021 |
| 4. Online Entrance Examination (Tentative)* | - 11 th to 16 th of June 2021 |
| 5. Publication of Result (Tentative)* | - 19 th June 2021 |
| 6. SRM Joint Counselling (Tentative)* | - First or second week of July 2021 |
| 7. Class commencement (Tentative)* | - Third week of July 2021 |
8. ***Note: Conduct of Entrance Exam and Joint Counseling will be as per UGC, AICTE & Government Notification**

Mode of entrance examination

Computer Based Test (Online)*

9. ***Note: If Computer Based Exam is not conducted, admission will be based on +2/JEEE/SAT Score**

Communication

- A Candidate's mobile number and e-mail address are mandatory as they will be used for all communications, till final enrollment is completed.
- The e-mail ID submitted in OMR must be the candidate's personal e-mail ID and will not be permitted to be changed under any circumstances.

For further details:

Contact Admissions Helpline: 044 - 2745 5510, 4743 7500.

Register at www.srmist.edu.in and verify your email ID to access SRM's Query Management System.

- Click on [Any Queries? Ask US] in your dashboard
- Select query category and submit your query

Applicants are strongly advised to use SRM Query Management System (SRM-QMS), rather than email, to get quick response.

PART I - GENERAL INFORMATION

I. Eligibility

Nationality and Age

a) Resident Indians, Non-Resident Indians (NRIs) and holders of PIO or OCI card issued by the Government of India are eligible to apply for SRMJEEE.

NRIs and holders of PIO or OCI card issued by the Government of India who are taking admission through SRMJEEE merit rank and counselling will get a prescribed scholarship on international tuition fees.

b) Age: Candidates should have attained the age of 16 on the 31st July of the calendar year in which the 12th Board examination is to be held. Maximum age limit is 21 years.

Qualifying Examination

a) A Pass in Higher Secondary examination (10+2 pattern) or appearing for Higher Secondary examination in the current academic year with **Physics and Mathematics as compulsory subjects** along with one of the Chemistry/ Biotechnology/ Biology/ Technical Vocational subject/ Computer Science/ Information Technology/ Informatics Practices/ Agriculture/ Engineering Graphics/ Business Studies as major subjects in the full-time stream from any State Board, CBSE, ICSE, Matriculation, or NIOS.

b) International Baccalaureate (IB) with Diploma, or an A-level with **Physics and Mathematics as compulsory subjects** along with one of the Chemistry/ Biotechnology/ Biology/ Technical Vocational subject/ Computer Science/ Information Technology/ Informatics Practices/ Agriculture/ Engineering Graphics/ Business Studies as major subjects from any recognized international school.

c) Candidates who have completed both 10th Standard as well as 12th Standard in NIOS, are not considered for admission to any programme of SRM.

d) Minimum eligibility criteria for each campus and programme posted in the official website of the respective universities.

Note: Only those candidates who have passed the above qualifying examination in not more than 2 attempts, including an appearance for improvement will be considered for admission.

Direct Admission

To encourage and support students of exemplary talent, SRM offers direct admission and scholarships to first rank students of all the Central and State Boards in India, top 10,000 rankers in IIT JEE, top rankers in each district of Tamil Nadu and exemplary sportspersons at National and International level.

2. SRMJEEE (UG) - Test Details

a) SRMJEEE (UG) will be conducted in Computer Based Test (Online) mode only.

b) Test Cities: Candidates have to carefully go through the relevant list of test cities and choose their preference. (The complete list is given on pages 9 under the header Item 11a, and 11b: Test City Centres)

c) Test Sessions / Slots: Candidates have to book the test slots of their convenience, subject to the availability of slots in a particular centre / on a particular date.

d) The Centre of Examination and the Session, once allotted to the candidate shall not be changed under any circumstance.

Note: While every effort will be made to allot a centre in the Test City opted by the candidate, the Institute reserves its right to allot a centre other than that of the candidate's choice.

3. SRMJEEE (UG) Pattern

General	The question paper will be only in English				
Mode of Examination	Computer Based Test (Online)				
Duration of the Examination	2 hours and 30 minutes				
Types of questions	Multiple Choice Questions				
Coverage of Subjects	Physics	Chemistry	Mathematics / Biology	English	Aptitude
Number of Questions	35	35	40	5	10
Scoring Method	Each right answer carries 1 mark; No negative marking				
Total Marks	125				

4. Entrance Examination Rules

- a) Candidates will be taking a computer based online test at a workstation.
- b) Candidates are requested to be present at the Test Centre 30 minutes before the starting time of the test as specified in the admit card.
- c) Candidates are prohibited from carrying any personal belongings inside the exam centres including mobile and cellular phones, pagers, palm-tops, Bluetooth devices, or any electronic device which has the potential of being used for cheating or unauthorised communication during the examination.
- d) All are required to produce the Hall Ticket and the original Aadhaar Card (which bears the photograph and date of birth of the candidate) at the registration desk without which entry will not be allowed.
- e) At the registration desk, the candidates identity will be verified, Hall Ticket scanned, photograph captured and only then he / she will be assigned to a computer.
- f) For working purpose, a rough sheet will be provided at the workstation. All rough work should be done on this sheet and no additional material will be given for rough work.
- g) The administrator is authorised to dismiss any candidate for the rest of the session for any of the following reasons:
 - Creating disturbance
 - Attempting to take the test on behalf of someone else
 - Talking to other examinees
 - Attempting to tamper with the computer system - either hardware or software
 - Having calculators, slide rules, pagers, cell phones, concealed microphones, wireless devices or any other material that may aid in answering questions.
- h) In addition, specific instructions given by invigilators are to be followed during the entrance examination.

5. Hall Ticket

- a) The hall ticket will be issued only to those eligible candidates who have submitted their application form complete in all

respects, on or before the last date as specified.

- b) The hall ticket will contain the name, photograph and address of the candidate, address of the Test Centre allotted and test schedule.
- c) The hall ticket should be downloaded from the candidate's login / dashboard.
- d) Once received, it should be carefully examined by the candidate. If any discrepancy is noticed it should immediately be brought to the notice of the Director, Admissions.
- e) No candidate will be permitted to attend the test without a valid hall ticket. The hall ticket should be presented to the invigilators for verification.
- f) Candidate must not tamper with the hall ticket or alter any entry made therein, after it has been authenticated.
- g) The hall ticket is not transferable to any other person. Impersonation is a legally punishable offence.
- h) The hall ticket is an important document. It should be preserved and produced at the time of counselling and admission. The candidate must bring his / her Aadhaar Card along with the hall ticket.
- i) Hall Ticket not received due to application being incomplete: SRMJCCA is not responsible for informing students about their incomplete applications. Candidates are advised to double check that the application form is complete in all respects before posting it.

6. Results

- a) A merit list will be prepared based on the total marks secured in the SRMJEEE (UG).
- b) The examination result and counselling details will be published on the Institute website: www.srmist.edu.in and also intimated to the candidates through e-mail.

7. Admission Procedure

- a) B.Tech programmes listed on the website is indicative only. The Institute reserves the right to add and delete programmes and amend the list depending on the viability to offer the same.
- b) The admission will be purely on the basis of the performance in the entrance examination SRMJEEE (UG) conducted by SRMIST except under conditions specified under Note 1 & 2 of Page no. 1. Having been called for the entrance test and counselling does not necessarily mean acceptance of eligibility. It is the responsibility of the candidates to ascertain whether they possess the requisite eligibility for admission.
- c) Eligibility criteria such as the minimum percentage of marks in PCM/PCB or CGPA obtained by the candidate in the qualifying examination shall be as prescribed by the SRMJCCA from time to time.

Note: The aggregate percentage of marks obtained in PCM/PCB in 12th Standard or equivalent should be calculated up to 3 decimal points and should not be rounded off to the nearest integer.

- d) Academic tuition fees, hostel fees, mode of payment and refund policies will be available on the respective Institute website.
- e) The admission offered to a candidate who has been provisionally admitted to a programme will stand cancelled if he / she does not submit the relevant documents in their original pertaining to admission (such as Marks Statements, Transfer Certificate, Conduct Certificate, etc.) during enrollment before the date stipulated by the authorities.
- f) Even after admission, the management reserves all rights to cancel the candidate's admission, in case, any discrepancy is noticed on verification of facts from the original certificates / documents. The decision shall be final and binding on the candidate. SRMJCCA cannot be held responsible for any loss or damage arising out of such cancellations of admissions.
- g) Accommodation in Institute hostels will be subject to availability. The allocation will be done only after the complete payment of the tuition fees and enrollment procedure.
- h) All disputes are subject to the jurisdiction of the courts only at Chennai.
- i) Refund Policy: Candidates are requested to visit the Institute website for the detailed refund policy, timeline and eligibility percentage of tuition fee.

8. Discontinuance / Withdrawal from the Programme after Enrollment

- a) A candidate who desires to leave the institution after joining the programme will have to submit a 'No Dues' certificate issued by competent authorities. This should be accompanied by the application for withdrawal and the original fee receipt.
- b) The original certificates will be returned only on production of 'No Dues' certificate in the prescribed form, obtained from the Administrative Office.
- c) Authority: Head of the Institution.
- d) Refund policy applies as per Institute norms irrespective of whether the student attended class(es) or not.

9. General Discipline

- a) All candidates admitted to the Institute shall maintain good conduct, pay the requisite tuition fees and other charges by the due dates, attend their classes regularly and abide by the rules and regulations of the Institute. If, at any point of time, the conduct and character of a candidate is not satisfactory or is of suspicious nature, the management reserves the right, without assigning any reason, to make him / her vacate the hostel or expel him / her from the Institute.
- b) Ragging in any form is forbidden. If anyone is found ragging his / her juniors, he / she can be rusticated from the Institute, vide UGC Regulations on curbing the menace of Ragging in Higher Educational Institutions, 2009.

PART II - INSTRUCTIONS TO FILL UP THE COMPUTERIZED OMR APPLICATION FORM

Read the following instructions carefully before filling the application form. Requests for corrections will not be entertained.

1. General Instructions:

- The application form should be filled by the candidate in his / her own handwriting.
- Only the Original application should be sent.
- Application form will be machine- processed. Hence take utmost care while writing with a black ink ball-point pen in the boxes wherever provided. Corresponding to the above, darken the alphabet / numeral / oval using only an HB pencil only.
- To change a marking, erase the darkened spot completely and make a fresh mark.
- Do not scribble, cut, tear or erase the application form. Do not put any stray pencil marks anywhere on the application form.
- Do not write, make any mark on / deface the Barcode.
- Candidate's photograph, signature, and e-mail ID are to be machine-scanned. So, paste a recent, good-quality colour photograph of you against a light coloured background. Write your e-mail ID using only a black ink ball-point pen.
- Application must be complete in all respects. An incomplete application or application filled in a language other than English will be rejected.
- Options, once filled in the application form, cannot be changed at a later stage.
- Candidates are advised to retain with them a

photocopy of the filled-in application for future reference.

2. Item-wise Instructions

Item 1: Name of the Candidate

Write your name in CAPITAL LETTERS as given in your 10th Standard school certificate. Write only one letter in a box. Do not leave any blank box between the letters in a word. One box should be left blank between consecutive words of your name. If your name has several initials, leave one blank after each of them. Darken the corresponding letter of the alphabet underneath each written letter of the name. Do not prefix your name with Mr., Ms., etc.

Item 2: Gender

Shade as appropriate.

Item 3: Religion (For statistical purpose only)

Item 4: Community

Write the appropriate code in the box provided and then shade the appropriate circle to correspond with the code, for all the above items. Candidates belonging to MBC category should use the same code as OBC / BC (for statistical purpose only).

Item 5: Date of Birth

Write the date, month and year of your birth as per the English calendar and as recorded in your High School / Higher Secondary Examination certificate. Use numerals 01 to 31 for DATE, numerals 01 to 12 for MONTH, and all the four digits for the YEAR of birth. Darken the corresponding numerals for date, month and year in each column.

Item 6: State & Union Territories

Refer to list given below and enter the appropriate code in the box provided. Darken the numerals corresponding to the code.

Andhra Pradesh	11	Madhya Pradesh	24	Uttar Pradesh	37
Arunachal Pradesh	12	Maharashtra	25	Uttaranchal	38
Assam	13	Manipur	26	West Bengal	39
Bihar	14	Meghalaya	27	Andaman & Nicobar Islands (UT)	40
Chhattisgarh	15	Mizoram	28	Chandigarh (UT)	41
Delhi (NCR)	16	Nagaland	29	Dadra and Nagar Haveli (UT)	42
Goa	17	Orissa	30	Daman and Diu (UT)	43
Gujarat	18	Punjab	31	Jammu and Kashmir (UT)	44
Haryana	19	Rajasthan	32	Ladakh (UT)	45
Himachal Pradesh	20	Sikkim	33	Lakshadweep (UT)	46
Jharkhand	21	Tamil Nadu	34	Puducherry (UT)	47
Karnataka	22	Telangana	35		
Kerala	23	Tripura	36		

Item - 7: Mother Tongue

Use the language codes as given below. Enter the correct code in the space provided and shade the numerals below to correspond with the code entered.

Assamese	01	Kashmiri	07	Sindhi	13
Bengali	02	Malayalam	08	Tamil	14
English	03	Marathi	09	Telugu	15
Gujarati	04	Marwari	10	Urdu	16
Hindi	05	Odiya	11	Others	17
Kannada	06	Punjabi	12		

Item - 8: Nationality

Item - 9: Hostel Accommodation

Write the appropriate code in the box provided and then shade the appropriate circle to correspond with the code.

Item - 10: University Preference

Choose one or more campus as per your choice.

1. SRM Institute of Science and Technology - Chennai
2. SRM University AP - Amaravati
3. SRM University Haryana - Sonapat

The final seat allocation as per the availability of the seat and campus during counseling.

Item - 11a, 11b: Test City Centres

Refer to the following list to choose two test cities (mandatory) as option1 and option 2 and write the appropriate code in the space provided. Darken the corresponding numeral under each digit. Request for change of test city will not be entertained.

State	Centre Name	Centre Code	State	Centre Name	Centre Code	
Andaman & Nicobar	Port Blair	101	New Delhi	New Delhi	167	
Andhra Pradesh	Amaravati	102	Odisha	Berhampur	168	
	Anantapur	103		Bhubaneswar	169	
	Eluru	104		Rourkela	170	
	Guntur	105		Sambalpur	171	
	Kadapa	106	Puducherry	Puducherry	172	
	Kakinada	107	Punjab	Amritsar	173	
	Kurnool	108		Bhatinda	174	
	Nellore	109		Jalandhar	175	
	Ongole	110		Ludhiana	176	
	Rajahmundry	Rajahmundry	111	Rajasthan	Ajmer	177
		Tanuku	112		Alwar	178
		Tirupati	113		Bikaner	179
		Vijayawada	114		Jaipur	180
		Visakhapatnam	115		Jodhpur	181
					Kota	182
Assam	Dibrugarh	116		Udaipur	183	
	Guwahati	117	Sikkim	Gangtok	184	
	Silchar	118				
Bihar	Bhagalpur	119	Tamil Nadu	Chennai - Kattankulathur	185	
	Gaya	120		Chennai - Ramapuram	186	
	Muzaffarpur	121		Chennai - Vadapalani	187	
	Patna	122		Chidambaram	188	
Chandigarh	Chandigarh	123		Coimbatore	189	
Chattisgarh	Bhilai	124		Erode	190	
				Krishnagiri	191	
	Bilaspur	125		Madurai	192	
	Raipur	126		Nagercoil	193	
Goa	Panaji	127		Namakkal	194	
Gujarat	Ahmedabad	128		Salem	195	
	Rajkot	129				

	Surat	130		Thanjavur	196
	Vadodara	131		Tiruchirappalli	197
Haryana	Faridabad	132		Tirunelveli	198
	Gurgaon	133		Tiruppur	199
	Hisar	134		Vellore	200
	Sonepat	135	Telangana	Hyderabad/ Secunderabad	201
				Karimnagar	202
		Khammam		203	
		Nizamabad		204	
		Warangal		205	
Himachal Pradesh	Dharamsala	136			
	Shimla	137			
Jammu & Kashmir	Jammu	138			
	Srinagar	139			
Jharkhand	Bokaro Steel City	140	Tripura	Agartala	206
	Dhanbad	141	Uttar Pradesh	Agra	207
	Jamshedpur	142		Aligarh	208
	Ranchi	143		Allahabad	209
		Bareilly		210	
		Modi Nagar, Ghaziabad		211	
		Gorakhpur		212	
		Jhansi		213	
		Kanpur		214	
		Lucknow		215	
		Mathura		216	
Karnataka	Bengaluru	144		Meerut	217
	Mangaluru	145		Noida	218
Kerala	Ernakulam	146		Rae Bareli	219
				Varanasi	220
	Kannur	147	Uttaranchal	Dehradun	221
	Kollam	148		Pantnagar	222
	Kottayam	149		Roorkee	223
Madhya Pradesh	Thiruvananthapuram	151	West Bengal	Asansol	224
	Thrissur	152		Durgapur	225
	Bhopal	153		Kolkata	226
	Gwalior	154		Siliguri	227
	Indore	155			
		Overseas Centres	Dubai	228	
Jabalpur	156		Doha	229	
Ujjain	157		Muscat	230	
			Bahrain	231	
			Kuwait	232	
Maharashtra	Aurangabad	158			
	Latur	159			
	Mumbai	160			
	Nagpur	161			
	Nasik	162			
	Pune	163			
	Thane	164			
Manipur	Imphal	165			
Meghalaya	Shillong	166			

Item - 12: Valid e-mail ID

Give your correct e-mail ID. It is mandatory to produce your correct email id (in capital letters), as all the future correspondences will be carried out through e-mail. Only one candidate can be registered with one email address.

Item 13: Photograph

Affix one recent (taken not later than a month) good quality colour photograph with a light colour background in the space provided for this purpose. Spectacles if being used regularly are allowed. The photograph should be firmly affixed to the application form. It should not be pinned or stapled. The photograph should not be larger than the space provided in the box for pasting it.

It is expected that the candidate will have the same appearance at the time of the examination and counselling as in the photograph affixed in the application form. In case his / her appearance changes, he / she would be required to bring two new photographs at the time of the examination.

Item 14: Signature

Your signature establishes your identity. Hence sign using a black ink ball-point pen, within the box provided.

Item - 15: Complete Postal Address

Write the complete postal address to which any communication is to be sent. The address must include your name, C/O name and all other details including the correct PINCODE, Phone No. with the correct STD code and Mobile number. Please note that this block will be machine scanned and therefore, it should be written very clearly and in **CAPITAL LETTERS with only a black ball-point pen**. In case you make any mistake, cover the entire box with an exact sized white paper slip and write your address on it. **Your address must not overflow this box**. The use of address of any coaching centre / Institution is strictly prohibited. If anybody uses the address of any coaching centre/Institution in his / her application form, it will be rejected.

Item - 16: Name of the Parent / Guardian

Write the name of one parent or guardian in capital letters. Write only a single letter in a box. Do not leave any blank box between the letters in a name. **One box should be left blank between consecutive words of the name.** If the name has several initials, leave one box blank after each one of them.

Item - 17: Parent's / Guardian's Occupation Write the appropriate code in the box provided and then shade the appropriate circle to correspond with the code.

Item - 18: Contact Mobile Number**Codes of Secondary School Education (Class 12) Boards**

Name of Board	Code
Aligarh Muslim University, Aligarh	11
Andhra Pradesh Board of Intermediate Education	12
Assam Higher Secondary Education Council	13
Bihar Intermediate Education Council	14
Cambridge University	15
Central Board of Secondary Education	16
Chhattisgarh Madhyamik Shiksha Mandal	17
Council for the Indian School Certificate Examinations	18
Name of Board	Code
Goa Board of Secondary and Higher Secondary Education	19
Gujarat Secondary and Higher Secondary Education	20
Haryana Board of Education	21
HP Board of School Education	22
International Baccalaureate	23
Jharkhand Academy Council	24
J&K State Board of School Education	25
Karnataka Board of Pre-University Education	26
Kerala Board of Public Examinations	27
Madhya Pradesh Board of Secondary Education	28
Maharashtra State Board of Secondary and Higher Secondary Education	29
Manipur Council of Higher Secondary Education	30
Meghalaya Board of Secondary Education	31
Mizoram Board of School Education	32
Nagaland Board of School Education	33
National Institute of Open Schooling (NIOS)	34
Odisha Council of Higher Secondary Education	35
Punjab School Education Board	36
Rajasthan Board of Secondary Education	37
Tamil Nadu Board of Higher Secondary Education	38
Telangana State Board of Intermediate Education	39
Tripura Board of Secondary Education	40
UP Board of High School and Intermediate Education	41
Uttaranchal Shiksha Evam Pariksha Parishad	42
West Bengal Council of Higher Secondary Education	43

Write your mobile number in the space provided and shade the corresponding numeral under each digit.

Item - 19: Alternate Mobile Number

Write your alternate mobile number in the space provided and shade the corresponding numeral under each digit.

Item -20: 12th Board / Equivalent

Refer to the list given below and write the appropriate code in the box provided. Darken the corresponding numeral under each digit of the code.

Item-21: Medium of Instruction

Write the appropriate code in the box provided and then shade the appropriate circle to correspond with the code.

Item -22: Mode of Study

Write the appropriate code in the box provided and then shade the appropriate circle to correspond with the code.

Item - 23: Blood Group

Write the appropriate code in the box provided and then shade the appropriate circle to correspond with the code.

Item -24: Details of the Qualifying Exam passed / appearing for

Write the relevant details such as Registration number / Roll number / Complete school address with pincode in each box clearly using only a black ball-point pen. In case you have not yet been allotted your Registration No./ Roll No., please leave it blank.

Item - 25: Where did you see our Admission Advertisement?

Please specify the Name of the Newspaper / Website (or) any other source where you have seen the Admission Advertisement (write only in CAPITAL LETTERS)

Item - 26: Declaration

The candidate must sign the declaration and fill up the place and date. Applications without signatures or with different signatures in Item 14 and Item 26 will be treated as incomplete and rejected.

The declaration by the candidate must be countersigned by the parent / guardian.

3. Submission of Application

- a) Last date for receipt of filled-in OMR application at the SRMIST office: 15th May, 2021.
- b) Applications received after the due date will not be accepted.
- c) The Institute will not be responsible for any delay or loss in postal transit or any irregularity.

4. Information at Different Stages

- a. Candidates can stay updated at every stage of the admission through SMS / e-mail if their correct mobile number has been provided in the application.
- b. Quote the application number in all correspondence for reference.

Login credentials for applicant dashboard: As sent to your e-mail address

Use login id and password to:

- View your application details
- Book exam slot, download and print your hall ticket
- View your results and counselling details. Download and take a printout of rank card, counselling call letter and related information for your use.
- Refer to SRM's official website to know about the courses offered and eligibility for B.Tech Programmes.

PART III: SYLLABUS FOR ENTRANCE EXAMINATION SRMJEE (UG) B.TECH

PART 1 - PHYSICS (35 Questions)

Unit 1: Units and Measurement, Mechanics

Units for measurement, system of units-S.I., fundamental and derived units, measurements - errors in measurement - significant figures, dimensions - dimensional analysis - applications.

Laws of Motion: Newton's laws of motion - projectile motion-uniform circular motion - friction - laws of friction - applications - centripetal force.

Work, Energy and Power: Work - energy-potential energy and kinetic energy - power - collision-elastic and inelastic collisions.

Unit 2: Gravitation, Mechanics of Solids and Fluids

Gravitation: The universal law of gravitation, acceleration due to gravity - variation of 'g' with altitude, latitude and depth - gravitation potential - escape velocity and orbital velocity - geostationary satellites.

Mechanics of solids and fluids: Hooke's law - Moduli of elasticity - surface tension capillarity - applications - viscosity - Poiseuille's formula - Stokes law applications - streamline and turbulent flow - Reynolds number - Bernoulli's theorem - applications.

Unit 3: Electrostatics

Electric charge - Conservation laws - Coulomb's law-principle of superposition - continuous charge distribution - electric field - electric field lines - electric dipole -electric field due to a dipole - torque on a dipole in uniform electric field - Electric flux - Gauss's theorem - field due to infinitely long straight wire - uniformly charged infinite plane sheet.

Electric potential - potential difference - equipotential surfaces - electrical potential energy - Dielectrics and electric polarization - capacitors and capacitance - combination of capacitors in series and in parallel - capacitance of a parallel plate capacitor with and without dielectric medium - energy stored in a capacitor

Unit 4: Current Electricity

Electric current - drift velocity - mobility - Ohm's law -V-I characteristics - electrical energy and power - electrical resistivity and conductivity - temperature dependence - Internal resistance of a cell - potential difference and emf of a cell - combination of cells in series and in parallel - Kirchhoff's laws - applications - Wheatstone

bridge - Metre bridge - Potentiometer - comparison of EMF of two cells - measurement of internal resistance of a cell.

Unit 5: Magnetism and Magnetic effects of current

Earth's magnetic field and magnetic element - tangent law, tangent galvanometer deflection magnetometer - Magnetic effects of electric current - BiotSavart's law - moving coil galvanometer - conversion of a galvanometer into voltmeter and ammeter.

Unit 6: Electromagnetic Induction, Alternating Currents and Electromagnetic Waves

Electromagnetic induction - Faraday's laws, induced EMF and current - Lenz's Law - Eddy currents - Self and mutual induction - Alternating currents, peak and RMS value of alternating current/voltage - reactance and impedance - LC oscillations - LCR series circuit - resonance - AC generator and transformer - Electromagnetic waves - characteristics - Electromagnetic spectrum .

Unit 7: Optics

Reflection of light - refraction of light -total internal reflection- optical fibers - refraction at spherical surfaces - lenses - thin lens formula - lensmaker's formula - magnification - power of a lens - combination of thin lenses in contact - refraction of light through a prism

Wave front and Huygen's principle - reflection and refraction of plane wave at a plane surface-laws of reflection and refraction using Huygen's principle - Interference - Young's double slit experiment and expression for fringe width - diffraction due to a single slit -width of central maximum.

Unit 8: Dual Nature of Radiation and Matter&Atomic Physics

Dual nature of radiation - Photoelectric effect - Hertz and Lenard's observations - Einstein's photoelectric equation-particle nature of light.Matter waves-wave nature of particles - de-Broglie relation- Alpha-particle scattering experiment - Rutherford's model of atom - Bohr model - hydrogen spectrum.

Unit 9: Nuclear Physics

Nuclear radius, mass, binding energy, density, isotopes, mass defect- Bainbridge mass spectrometer-nuclear forces neutron discovery-artificial radio activity-radio isotopes-radio

carbon dating-radiation hazards. Nuclear fission-nuclear reactor-nuclear fusion-hydrogen bomb - cosmic rays-elementary particles.

Unit 10: Electronic Devices

Semiconductors-doping-types-PN junction diode - biasing-diode as a Rectifier - Special purpose PN junction diodes - LED - photodiode - solar cell-transistors-transistor characteristics -logic gates-basic logic gates-NOT, OR, AND, NOR, NAND-universal gates-De Morgan's theorem

PART 2 - CHEMISTRY (35 Questions)

Unit 1: Solutions

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties - relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties.

Unit 2: Electrochemistry

Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell.

Unit 3: Chemical Kinetics

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions)

Unit 4: Surface Chemistry

Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, colloidal state distinction between true solutions, colloids and suspension; lyophilic, lyophobic multi-molecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation

Unit 5: p -Block Elements

Group 16 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties, dioxygen: Preparation, Properties and uses, classification of Oxides, Ozone, Sulphur - allotropic forms; compounds of Sulphur: Preparation Properties and uses of Sulphur-

dioxide, Sulphuric Acid: industrial process of manufacture, properties and uses; Oxoacids of Sulphur (Structures only). Group 17 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of Hydrochloric acid, interhalogen compounds (structures only). Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

Unit 6: 'd' and 'f' Block Elements

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals - metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation

Unit 7: Coordination Compounds

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT

Unit 8: Haloalkanes and Haloarenes

Haloalkanes: Nomenclature, nature of C-X bond, physical and chemical properties, mechanism of substitution reactions, optical rotation. Haloarenes: Nature of C-X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Unit 9: Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit 10: Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses.

Carboxylic Acids: Nomenclature, acidic nature,

methods of preparation, physical and chemical properties; uses.

Unit 11: Organic compounds containing Nitrogen

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Unit 12: Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins

Nucleic Acids: DNA and RNA.

PART 3 - MATHEMATICS (40 Questions)

Unit 1: Sets, Relations and Functions

Sets and their representations, union, intersection and their algebraic properties, relations, equivalence relations, mappings, one-one, into and onto mappings, composition of mappings.

Unit 2: Complex Numbers and Quadratic Equations

Complex numbers in the form $a+ib$ and their representation in a plane. Quadratic equation in real and complex number system and their solutions. Relation between roots and coefficients, nature of roots, formation of quadratic equations with given roots; symmetric functions of roots, equations reducible to quadratic equations.

Unit 3: Matrices, Determinants and their applications

Determinants and matrices of order two and three, minors, cofactors and applications of determinants in finding the area of a triangle, equality, types zero and identity matrix, transpose, symmetric and skew symmetric. Evaluation of determinants. Addition and multiplication of matrices, simple properties,

adjoint and inverse of matrix, solution of simultaneous linear equations using determinants and matrices using inverses.

Unit 4: Combinatorics

Permutations and Combinations: Fundamental principle of counting: permutation as an arrangement without repetitions and constraint repetitions, no circular permutations. Combination as selection, problems in $P(n,r)$ and $C(n,r)$, factorial, simple applications.

Unit 5: Algebra

Sequences and Series: Arithmetic, geometric and harmonic progressions. Insertion of arithmetic, geometric and harmonic means between two given numbers. Relation between A.M., G.M. and H.M. arithmetic, geometric series, exponential and logarithmic series.

Unit 6: Differential Calculus and its applications

Polynomials, rational, trigonometric, logarithmic and exponential functions. Inverse functions. Graphs of simple functions. Limits, continuity, differentiation of the sum, difference, product and quotient of two functions, differentiation of trigonometric, inverse trigonometric, logarithmic, exponential, composite and implicit functions, upto second order derivatives.

Applications of Differential Calculus : Rate of change of quantities, monotonic-increasing and decreasing functions, maxima and minima of functions of one variable, tangents and normal, Rolle's and Lagrange's mean value theorems. Ordinary differential equations, order and degree. Formation of differential equations, solution of differential equations by the method of separation of variables. Solution of homogeneous and linear differential equations and those of the type $dy/dx + p(x)y=q(x)$.

Unit 7: Integral Calculus and its applications

Fundamental integrals involving algebraic, trigonometric, exponential and logarithmic functions. Integration by substitution, integration using trigonometric identities, properties of definite integrals. Evaluation of definite integrals excluding application of definite integrals.

Unit 8: Analytical Geometry

Straight Lines in Two Dimensions: Straight line - Normal form - Illustrations. Straight line - Symmetric form. Straight line - Reduction into various forms. Intersection of two Straight Lines. slope of a line, parallel and perpendicular lines, intercepts of a line on the coordinate axes. Family of straight lines - Concurrent lines. Condition for Concurrent lines.

Cartesian system of rectangular co-ordinates in plane, distance formula, area of a triangle and condition for the collinearity of three points and section formula, Concurrent lines - properties related to a triangle. centroid and incentre of a triangle, locus and its equation.

Circles in Two Dimensions: Standard form of equation of a circle, general form of the equation of a circle, its radius and centre, equation of a circle in the parametric form, equation of a circle when the endpoints of a diameter are given, points of intersection of a line and a circle with the centre at the origin and condition for a line to be tangent to the circle.

Conic Sections in Two Dimensions:

Sections of cones, equations of conic sections (parabola, ellipse and hyperbola) in standard form. Problems using their geometrical properties.

Unit 9: Vector Algebra

Vectors and scalars, addition of vectors, components of a vector in two dimensions and three dimensional space, scalar and vector products, scalar and vector triple product. Application of vectors to plane geometry.

Unit 10: Statistics and Probability distribution
Measures of Central Tendency and Dispersion: Calculation of mean, median and mode of grouped and ungrouped data. Calculation of standard deviation, variance and mean deviation for grouped and ungrouped data. Probability: Probability of an event, addition and multiplication theorems of probability and their applications; Conditional probability; Baye's theorem, probability distribution of a random variable; Binomial, Poisson and Normal distributions and their properties.

Unit 11: Trigonometry

Trigonometry ratios, compound angles, solution of triangles, Trigonometric identities and equations-Inverse trigonometric functions definition range and domain Properties of triangles, including, incentre, circumcenter and orthocenter, solution of triangles Problems related to Heights and distances.

PART 4: BIOLOGY (40 QUESTIONS)

Unit 1: Diversity in Living World

Biodiversity, Importance of classifications.

Five kingdom classification: Monera, Protista and Fungi into major groups; Lichens; Viruses and Viroids. Salient features of them.

Classification of plants into major groups - Algae, Bryophytes, Pteridophytes, Gymnosperm and Angiosperm - salient and distinguishing features.

Classification of animals- non chordate up to phyla level and chordate up to class's level - salient and distinguishing features.

Unit 2: Structural Organization in Animals and Plants (A brief account only)

Animal tissues: Morphology, anatomy and functions of different systems (digestive, circulatory, Respiratory, nervous and reproductive) of an insect (cockroach)

Unit 3: Cell Structure and Function

Cell theory, Structure of prokaryotic and eukaryotic cell, Plant cell and animal cell. Cell envelope, cell membrane, cell wall. Cell organelles - structure and function: Endomembrane system- endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies: Cytoskeleton, cilia, flagella, centrioles. Nucleus - nuclear membrane, chromatin, nucleolus.

Chemical constituents of living cells: Biomolecules - structure and function of proteins including Enzymes-types, properties, enzyme action, carbohydrates, lipid and nucleic acids.

Cell division: Cell cycle, mitosis, meiosis and their significance.

Unit 4: Plant Physiology

Photosynthesis: Significance - site of photosynthesis - Photochemical and biosynthetic phases of photosynthesis, Cyclic and non cyclic photophosphorylation; Chemiosmotic hypothesis; Photorespiration; C₃ and C₄ pathways; Factors affecting photosynthesis.

Respiration: Cellular respiration - glycolysis, fermentation (anaerobic), Krebs's cycle and electron transport system (aerobic); Energy relations - Number of ATP molecules generated;

Amphibolic pathways; Respiratory quotient.

Plant growth and development:

Growth regulators: auxin, gibberellin, cytokinin, ethylene, ABA.

Unit 5: Human Physiology

Breathing and Respiration: Respiratory organs in animals, Respiratory system in humans, Mechanism of breathing and its regulation in humans- Exchange of gases, transport of gases and regulation of respiration, Respiratory volumes, Disorders related to respiration-Asthma, Emphysema, Occupational respiratory disorders.

Body fluids and circulation: Composition of blood, blood groups, coagulation of blood, Composition of lymph and its function, Human circulatory system - Structure of human heart and blood vessels, Cardiac cycle, cardiac output, ECG, Double circulation, Regulation of cardiac activity, Disorders of circulatory system - Hypertension, Coronary artery disease, Angina pectoris, Heart failure.

Excretory products and their elimination: Modes of excretion - Ammonotelism, ureotelism, uricotelism, Human excretory system-structure and function, Urine formation, Osmoregulation, Regulation of kidney function- Renin - angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus, Role of other organs in excretion, Disorders - Uraemia, Renal failure, Renal calculi, Nephritis, Dialysis and artificial kidney.

Neural control and coordination: Neuron and nerves, Nervous system in humans- central nervous system, peripheral nervous system and visceral nervous system, Generation and conduction of nerve impulse,

Chemical coordination and regulation: Endocrine glands and hormones, Human endocrine system -Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads. Mechanism of hormone action, Role of hormones as messengers and regulators, Hypo- and hyperactivity and related disorders: Common disorders e.g. Dwarfism, Acromegaly, Cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.

Unit 6: Reproduction

Sexual Reproduction in Flowering Plants: Flower structure, development of male and female gametophytes, pollination - types, agencies and examples, out breeding devices, pollen-pistil interaction, double fertilization, post fertilization events - development of endosperm and embryo, development of seed and formation of fruit, special modes apomixis, parthenocarpy,

polyembryony, Significance of seed dispersal and fruit formation.

Human Reproduction: Male and female reproductive systems, microscopic anatomy of testis and ovary, gametogenesis - spermatogenesis and oogenesis, menstrual cycle, fertilization, embryo development up to blastocyst formation, implantation, pregnancy and placenta formation, parturition, lactation.

Reproductive Health: Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs), birth control - need and methods, contraception and medical termination of pregnancy (MTP), amniocentesis, infertility and assisted reproductive technologies - IVF, ZIFT, GIFT.

Unit 7: Genetics and Evolution

Principles of Inheritance and Variation: Heredity and variation, Mendelian inheritance, deviations from Mendelism - incomplete dominance, co - dominance, multiple alleles and inheritance of blood groups, pleiotropy, polygenic inheritance, chromosome theory of inheritance, chromosomes and genes, Sex determination in humans, birds and honey bee, linkage and crossing over, sex linked inheritance - haemophilia, colour blindness, Mendelian disorders in humans - thalassemia, chromosomal disorders in humans, Down's syndrome, Turner's and Klinefelter's syndromes.

Molecular Basis of Inheritance: DNA as genetic material, Structure of DNA and RNA, DNA packaging and replication, Central dogma, transcription, genetic code, translation, gene expression and regulation - lac operon, genome and human and rice genome projects, DNA fingerprinting.

Unit 8: Biology and Human Welfare

Human Health and Diseases: Pathogens, parasites causing human diseases (malaria, dengue, chickengunia, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control, Basic concepts of immunology - vaccines, cancer, HIV and AIDS, Adolescence - drug and alcohol abuse.

Strategies for Enhancement in Food Production: Improvement in food production, Plant breeding, tissue culture, single cell protein, Biofortification, Apiculture and Animal husbandry.

Microbes in Human Welfare: In household food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics - production and judicious use.

Unit 9: Biotechnology and Its Applications

Biotechnology - Principles and processes: Genetic Engineering (Recombinant DNA Technology).

Biotechnology and its Application: Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy, genetically modified organisms - Bt crops; transgenic animals, biosafety issues, bio piracy and patents.

Unit 10: Ecology and Environment

Organisms and Populations: Organisms and environment: Habitat and niche, population and ecological adaptations, population interactions -

mutualism, competition, predation, parasitism, population attributes - growth, birth rate and death rate, age distribution.

Ecosystem: Ecosystems: Patterns, components, productivity and decomposition, energy flow, pyramids of number, biomass, energy, nutrient cycles (carbon and phosphorous), ecological succession, ecological services - carbon fixation, pollination, seed dispersal, oxygen release.

Biodiversity and its Conservation: Biodiversity - Concept, patterns, importance, loss of biodiversity, biodiversity conservation, hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, national parks, sanctuaries and Ramsar sites.

PART 5 - ENGLISH (5 Questions)

Questions in this part contain Comprehension type questions in the form of short passages or lines of poems or a dialogue. The candidate should read the given text and answer the set of Questions. Each question has 4 choices, out of which choose the best answer.

PART 6 - APTITUDE (10 Questions)

1. Number System

Properties of numbers, Divisibility rules, Unit digit, Euclid's algorithm, LCM and GCD

2. Statistics

Arithmetic mean, weighted mean, Geometric mean

3. Percentage

Percentage change-increase or decrease

4. Profit and Loss

Computing percentage of profit or loss and profit/loss value

5. Quadratic Equation

Nature of roots, Relationship between roots and coefficients, Solutions of quadratic

equations

6. Geometry

Similar triangles, Lines and angles, Circles and Quadrilaterals

7. Arrangement

Ordering, Grading and Ranking, coding and decoding

8. Direction Sense test

Finding direction, distance or both

9. Linear Equation

Solving simultaneous equations, Test of consistency, problems on ages

10. Trigonometry

Values of trigonometric ratios, Identities, Heights and distances

MODEL QUESTIONS - SRMJEEE (UG) - B.TECH

Part I -Physics

- 1) One watt hour contains how many Joules?
a. 3.6×10^8 b. 3.6×10^2 c. 3.6×10^3 d. 1×10^3
- 2) The dimension of kinetic energy is same as that of _____
a. Force b. pressure c. work d. momentum
- 3) A food packet is dropped from a helicopter rising upwards at a constant speed of 2m/s. How far below the helicopter the packet will be after 2 seconds? Take $g = 10\text{m/s}^2$
a. 16m b. 20m c. 24m d. 40m
- 4) The range of projectile when launched at an angle of 15° with the horizontal is 1.5km. What is the range of the projectile when launched at an angle of 45° to the horizontal?
a. 1.5km b. 3.0km c. 6.0km d. 0.75km
- 5) An unpolarized beam of intensity $2a^2$ passes through a Polaroid. The intensity of emergent plane polarized light is _____
a. $a^2/2$ b. $4a^2$ c. $2a^2$ d. a^2

Part II - Chemistry

- 1) The elevation in the boiling point of a liquid is
a. dependent of both the nature and molality of the solute
b. independent of both the nature and molality of the solute
c. dependent of the nature of the solute and independent of molality of the solute
d. independent of the nature of the solute and dependent of molality of the solute
- 2) What is the term for the electrode where reduction reaction occurs?
a. anode
b. cathode
c. oxidizing agent
d. reducing agent
- 3) In an electrochemical cell, electrons travel in which direction?
a. From the anode to the cathode through the external circuit
b. From the anode to the cathode through the porous cup
c. From the cathode to the anode through the external circuit
d. From the cathode to the anode through the porous cup
- 4) The compound $\text{CH}_3\text{-CH}_2\text{-NH-CH}_3$ is an example of a
a. Primary amine
b. Secondary amine
c. Tertiary amine
d. Primary amide
- 5) The diazonium salts have which of the general formula?
a. $\text{RN}_2^+ \text{X}^-$
b. $\text{RN}_2^+ \text{X}_2^-$
c. $\text{RN}^+ \text{X}_2^-$
d. $\text{RN}^+ \text{X}^-$

Part II - Mathematics

- Let $X = \{a_1, a_2, \dots, a_6\}$ and $Y = \{b_1, b_2, b_3\}$. The number of functions f from X to Y such that it is onto and there are exactly three elements x in X such that $f(x) = b_1$ is
a. 75 b. 90 c. 100 d. 120
- If the graph of $y = f(x)$ is symmetrical about lines $x = 1$ and $x = 2$, then which of the following is true?
a. $f(x + 1) = f(x)$ b. $f(x + 3) = f(x)$ c. $f(x + 2) = f(x)$ d. $f(x + 4) = f(x)$
- For all complex numbers z of the form $z = 1 + 2i\alpha$ where $\alpha \in \mathbb{R}$, if $z^2 = x + iy$, then
a. $y^2 + 4x + 2 = 0$ b. $y^2 + 2x - 4 = 0$ c. $y^2 + 4x - 4 = 0$ d. $y^2 + 6x - 4 = 0$
- If $|z - 4 + 3i| + |z + 11 - 5i| = 17$, the locus of the point 'z' on the Argand plane is
a. an ellipse with foci $4 - 3i, 5i - 11$ b. a line
c. a segment of the line through $4 - 3i$ and $5i - 11$ d. a line, except for a segment of the line
- Let $f(x+2) = x^3 + 2x^2 - 3x + 1$. then, $f'(3)$ equals
a. 5 b. 4 c. -6 d. 2

Part III -Biology

- Which plant hormone is basic in nature?
a. Auxin b. Gibberellins c. Cytokinin d. Abscisic acid
- Delay of senescence or Richmond Lang effect is a physiological effect of
a. IAA b. CK c. GA d. C_2H_4
- Shelf life of vegetables and cut flowers can be increased by commercial application of
a. Cytokinin b. AMO1618 c. Cyclocel d. Phosphon-D
- In maize, hybrid vigour is exploited by
a. inducing mutations b. bombarding the protoplast with DNA
c. crossing of two inbred parental lines d. harvesting seeds from the most productive plants
- 90% of blood from auricles enter into ventricles during
a. Auricular Systole b. Auricular Diastole
c. harvesting seeds from the most productive plants d. Ventricular Diastole

Part IV - English

- "Your parents were not anxious enough to have you learn. They preferred to put you to work on a farm or at the mills, so as to have a little more money. And I? I've been to blame also. Have I not often sent you to water my flowers instead of learning your lessons?"
This passage best expresses the writer's:
a. feeling of anger b. sense of guilt c. state of confusion d. feeling of fright
- MR LAMB: I should say....to look at it.... I should say, you got burned in a fire.
DERRY: Not in a fire. I got acid all down that side of my face and it burned it all away. It ate my face up. It ate me up. And now it's like this and it won't ever be any different.
Derry's statement portrays a feeling of:
a. Exhaustion and helplessness b. Anger and revenge c. Self-pity and acceptance d. Rejection and regret
- "You must have patience, my little girl," said the father.
The indirect speech of this sentence is:
a. The father advised his daughter that she should have patience
b. The father told his daughter that she must have patience
c. The father ordered his daughter to have patience
d. The father says that she should have patience

4) "Besides, the whole school seemed so strange and solemn. But the thing that surprised me most was to see, on the back benches that were always empty, the village people sitting quietly like ourselves."

The underlined word means:

- a. By the side of
- b. In addition to that
- c. On account of that
- d. In spite of that

5) "It seemed a long way down. Those nine feet were more like ninety, and before I touched bottom my lungs were ready to burst. But when my feet hit bottom I summoned all my strength and made what I thought was a great spring upwards."

The passage above describes the author's experiment with:

- a. Flying
- b. Skating
- c. Swimming
- d. Sailing

Part V -Aptitude

- 1) The number M39048458N is divisible by 11 and 8, where M, N are single digit numbers. Then what is the value of M, N?
a. 7, 8 b. 8, 6 c. 6, 4 d. 5, 4
- 2) What is the average of first 18 multiples of 6?
a. 18 b. 6 c. 72 d. 57
- 3) If the radius of a sphere is doubled, what is the percentage change in its volume?
a. 800% increase b. 800% decrease c. 700% increase d. No change
- 4) The cost price of a pen is Rs.200 and its selling price is Rs.250. Find its profit %.
a. 20
b. 25
c. 50
d. 100
- 5) If a and b are the roots of the quadratic equation $x^2-2x+7=0$, what will be the value of a^2+b^2 ?
a. 7
b. 4
c. 2
d. Cannot be determined