ST. JOHN'S NATIONAL ACADEMY OF HEALTH SCIENCES

ST. JOHN'S MEDICAL COLLEGE

BANGALORE - 560 034

Telephone : 49466029, 49466030, 49466031 (Admissions Office)
Website : www.stjohns.in

OFFICE HOURS

Week days	:	09.00 hrs to 13.00 hrs
		13.45 hrs to 16.30 hrs
Saturdays	:	09.00 hrs to 13.00 hrs

Address for all admissions correspondence:

REGISTRAR

ADMISSIONS OFFICE

ST. JOHN'S NATIONAL ACADEMY OF HEALTH SCIENCES
BANGALORE - 560 034

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MBBS ADMISSIONS
PROGRAMME - 2014 - 2015

Advertisement		:	16-02-2014
Application & Prospectus available		:	03-03-2014
Last date for Issuing/ Receiving Applications	By Mail	:	18-04-2014
	In Person	:	26-04-2014
Entrance Test		:	25-05-2014
Announcement of Interview List		:	20-06-2014
Orientation for Observers		:	07-07-2014
Observation Test		:	8, 9-07- 2014
Final Interview		:	10, 11, 12, 07-2014
Announcement of Results		:	15-07-2014
Admissions		:	22,23,-07-2014
Classes Begin		:	01-08-2014

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ST. JOHN'S NATIONAL ACADEMY OF HEALTH SCIENCES

ST. JOHN'S MEDICAL COLLEGE

BANGALORE

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As on January 2014

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6.	Dr K. Srinivasan	-	Dean & Secretary
7.	Dr George D'Souza	-	Dean, SJRI
8.	Dr Arvind Kasthuri	-	Professor Community Health Dept., SJMC
9.	Dr R.B. Galgali	-	Professor, Psychiatry Dept. SJMCH

ST. JOHN'S NATIONAL ACADEMY OF HEALTH SCIENCES

ST JOHN'S MEDICAL COLLEGE

Director

Rev. Dr LAWRENCE D'SOUZA, BSc, MA (Philo), LLB,
MA (Re Studies), PhD (USA)

Dean

Dr K. Srinivasan, MD

Vice-Dean

Dr Sandhya T. Avadhany, MD

LIST OF THE TEACHING STAFF AS ON 1ST FEBRUARY 2014

	NAME	QUALIFICATION	DESIGNATION
ANATOMY			
1.	Dr Rema Devi	MBBS, MS, DNB	Professor & Head
2.	Dr Roopa Ravindranath	MBBS, MS	Professor
3.	Dr V. Balasubramanyam	MBBS, MS	Professor
4.	Dr I.M. Thomas	BSc (Hons.) MBBS, MS (Anat.), FAMS	Emeritus Professor
5.	Dr Shankar Nachiket	MBBS, MS	Assoc. Professor
6.	Dr Yogitha Ravindranath	MBBS, MD	Assoc. Professor
7.	Dr Stephen Dayal. S	MBBS, MD	Asst. Professor
8.	Dr Veronica Preetha Tailak	MBBS	Jr. Consultant (At the level of Asst. Professor)

9.	Dr Lakshmi T.A.	MBBS, MD	Asst. Professor
10.	Dr Sujatha Narayanan	MBBS	Tutor
11.	Dr Azra Jabeen	MBBS	Tutor
12.	Mrs. Smitha J.S.M	M.Sc	Tutor
13.	Mr. Amudha S.	M.Sc	Tutor

PHYSIOLOGY

1.	Dr Sandhya T. Avadhany	MBBS, MD	Professor & Head
2.	Dr Anura V. Kurpad	MBBS, MD, DNB, Ph.D	Professor
3.	Dr Mario Vaz	MBBS, MD	Professor
4.	Dr Tony David Sanjiv Raj	MBBS, MD	Professor
5.	Dr Sucharita. S	MBBS, MD	Assoc. Professor
6.	Dr Rebecca Kuriyan	M. Sc, M. Phil, Ph. D	Assoc. Professor
7.	Dr Maria Pauline	MBBS, MD	Asst. Professor
8.	Dr Savitha D	MBBS, MD	Asst. Professor
9.	Dr Sejil T.V	MBBS, MD	Lecturer
10.	Dr Sowmya S.	MBBS, MD	Lecturer
11.	Ms. Farheen	M.Sc	SHO

BIO CHEMISTRY

1.	Dr Anita R. Bijoor	MBBS, MD, Ph. D	Professor & Head
2.	Dr Sultana Furruqh	MBBS, MD	Professor
3.	Dr T. Venkatesh	M. Sc, Ph. D	Emeritus Professor
4.	Dr Sheila Uthappa	M. Sc, Ph. D	Professor
5.	Dr Anita D	MBBS, MD, DNB	Professor
6.	Dr Vinod George Thykadavil	B. Sc, M. Sc, Ph. D	Assoc. Professor
7.	Dr D. Radhika	MBBS, MD, DNB	Assoc. Professor
8.	Dr Geraldine J.M. Saldanha	M. Sc, Ph. D	Assoc. Professor
9.	Dr Jayakumari. S	MBBS, MD	Assoc. Professor
10.	Dr Subha N. Prakash	MBBS, MD	Asst. Professor
11.	Mr. Guru Aribam Bhteskumar Sharma	B.Sc, M. Sc	Lecturer
12.	Dr Ravi Kumar	MBBS, MD	Lecturer

HISTORY OF MEDICINE

Dr Mario Vaz	MBBS, MD	Prof. of Physiology & In-charge

PHARMACOLOGY

1.	Dr Denis Xavier	MBBS, MD	Professor & Head
2.	Dr Thangam Joseph	MBBS, MD	Emeritus Professor
3.	Dr Padmini Devi D	MBBS, MD	Assoc. Professor
4.	Dr Alben Sigamani	MBBS, MD	Assoc. Professor
5.	Dr Anuradha S	MBBS, MD	Asst. Professor
6.	Dr Atiya Rehman Faruqui	MBBS, MD	Asst. Professor
7.	Dr Mangala Rao	MBBS, MD	Lecturer

PATHOLOGY

1.	Dr Marjorie Maria Anne Correa	MBBS, MD	Professor & Head
2.	Dr Usha Kini	MBBS, MD, DCP, DNB	Professor
3.	Dr Isha Garg	MBBS, MD	Professor
4.	Dr John A. Thomas	MBBS, MD DHE, FRC (Path) FICP, FAMS	Emeritus Professor
5.	Dr Pritilata Rout	MBBS, MD	Professor
6.	Dr Julian Alphonse Crasta	MBBS, MD, DNB	Addl. Professor
7.	Dr Anuradha Ananthamurthy	MBBS, MD, M. Sc	Assoc. Professor
8.	Dr Rajalakshmi. T	MBBS, MD, DNB	Assoc. Professor
9.	Dr Inchara Y. K	MBBS, MD, DNB	Assoc. Professor
10.	Dr Divya P	MBBS, MD	Asst. Professor
11.	Dr Suravi Mohanty	MBBS, DCP, DNB	Asst. Professor
12.	Dr Panjwani Poonam K	MBBS, MD	Asst. Professor
13.	Dr Gayatri	MBBS, MD	Lecturer
14.	Dr Ashwini R. Nargund	MBBS, DCP, DNB	Lecturer
15.	Dr Renuka Malipatel	MBBS, MD	Lecturer
16.	Dr Supari Divya	MBBS, MD	Lecturer
17.	Dr Gnanapriya	MBBS, MD	Lecturer
18.	Dr Maria Frances Bukelo	MBBS, MD	Lecturer

TRANSFUSION MEDICINE AND IMMUNO HAEMATOLOGY

1.	Dr S. Sitalakshmi	MBBS, DCP, DNB, Ph.D	Professor & Head
2.	Dr Shanthala Devi A. M	MBBS, MD	Addl. Professor
3.	Dr Vanamala A. A	MBBS, MD	Assoc. Professor
4.	Dr Parimala Puttaiah	MBBS, DCP	Senior Tutor
5.	Dr J. Latha Fathima	MBBS, DNB, DCP	Lecturer
6.	Dr Deepti P. Kambi	MBBS, MD	Lecturer
7.	Dr Punitha	MBBS, DCP	Senior Tutor

MICROBIOLOGY

1.	Dr N.S. Srikanth	MBBS, MD	Professor & Head
2.	Dr S. Muralidharan	MBBS, MD	Professor
3.	Dr H. Srinivasa	MBBS, MD	Professor
4.	Dr Baijayanti Mishra	MBBS, MD	Addl. Professor
5.	Dr Ranjani Shamsundar	MBBS, MD, DMV	Assoc. Professor
6.	Dr Savitha Nagaraj	MBBS, MD, DNB	Assoc. Professor
7.	Dr Jayanthi Savio	MBBS, MD	Assoc. Professor
8.	Dr Mary Dias	MBBS, MD	Assoc. Professor
9.	Dr Smitha Mary Rockey	MBBS, MD	Asst. Professor
10.	Dr Supriya Gachinmath	MBBS, MD	Lecturer
11.	Dr Prathibha. S	MBBS, MD	Lecturer
12.	Dr Jayashree R.	MBBS, MD	Lecturer

COMMUNITY HEALTH

1.	Dr Bobby Joseph	MBBS, MD, DNB	Professor & Head
2.	Dr Arvind Kasthuri	MBBS, MD, DNB	Professor
3.	Dr Dominic Misquith	MBBS, MD, DCH, M. Sc	Professor
4.	Dr B, Ramakrishna Goud	MBBS, MD	Addl. Professor
5.	Dr Sulekha T	MBBS, MD	Assoc. Professor
6.	Dr Prem Kumar Mony	MBBS, MD, M.Sc	Assoc. Professor
7.	Dr Naveen Ramesh	MBBS, MD	Asst. Professor
8.	Dr Rashmi Rodrigues	MBBS, MD	Asst. Professor
9.	Dr Deepthi N. Shanbhag	MBBS, MD	Asst. Professor
10.	Dr Twinkle Agrawal	MBBS, MD	Asst. Professor
11.	Dr Pretesh R. Kiran	MBBS, MD	Asst. Professor

12.	Dr Farah Naaz Fathima	MBBS, MD, DNB, PGDHA	Asst. Professor
13.	Dr Avita Rose Johnson	MBBS, MD, PGDMLE	Asst. Professor
14.	Dr Daisy John	MBBS, DO	Lecturer
15.	Mrs. Seena Thomas. K	B.Sc, B.Ed	Lecturer (Biostatistics)
16.	Dr Karthik Rao	MBBS	Medical Officer

FORENSIC MEDICINE

1.	Dr Varghese P.S.	MBBS, DFM, MD	Professor & Head
2.	Dr Walter Francis Vaz	MBBS, MD	Professor
3.	Dr Asma Kausar	MBBS, MD	Asst. Professor
4.	Dr G. Babu Rao	MBBS,	Tutor
5.	Dr Betty Alben	MBBS	Tutor

MEDICAL EDUCATION DEPARTMENT

1.	Dr Srinivasa	MBBS, MD	Chairperson
2.	Dr S.D. Tarey	MBBS, MD	Member
3.	Dr Sanjiv Lewin	MBBS, MD, DNB	Member
4.	Dr Sitalakshmi	MBBS, DCP, DNB, Ph.D	Convener (MET)
5.	Dr Suneetha. N	MBBS, MS	Member
6.	Dr Arpana Iyengar	MBBS, MD	Member
7.	Dr John Stephen S.	MBBS, MD, DNB	Member
8.	Dr Ishwara Bhat P.	MBBS, MD	Member
9.	Dr Nachiket Shankar	MBBS, MS	Member

GENERAL MEDICINE

1.	Dr G.D. Ravindran	MBBS, MD, DNB, FCGP	Professor & Head
2.	Dr K.S. Chandra Mouli	MBBS, MD	Professor
3.	Dr Cecil Reuben Ross	MBBS, MD	Professor
4.	Dr Rekha Pradeep	MBBS, MD	Professor
5.	Dr Sara Chandy	MBBS, MD	Assoc. Professor
6.	Dr Seena Sankar	MBBS, MD	Assoc. Professor
7.	Dr Jyothi M. Idiculla	MBBS, MD, MRCP	Assoc. Professor
8.	Dr Ratnamala C	MBBS, MD	Assoc. Professor

9.	Dr Kamal Bhalla	MBBS, MD	Asst. Professor
10.	Dr Soumya Umesh	MBBS, DNB	Asst. Professor
11.	Dr Geetha Ann Francis	MBBS, MD	Asst. Professor
12.	Dr Anasuya	MBBS, MD	Asst. Professor
13.	Dr Abdul Mateen A	MBBS, MD	Asst. professor
14.	Dr Saba Fathima M	MBBS, MD	Asst. Professor
15.	Dr Shruti Kulkarni. M	MBBS, DNB	Senior Resident
16.	Dr Delon Snehal D'Souza	MBBS, MD	Senior Resident
17.	Dr M.J. Vinod Kumar	MBBS, MD	Senior Resident
18.	Dr Mary George	MBBS, MD	Senior Resident
19.	Dr Pavithra Lokesh	MBBS, DNB	Senior Resident
20.	Dr Savitha Anne Sebastian	MBBS, MD	Senior Resident

DIVISION OF RHEUMATOLOUY

1.	Dr Vineeta Shobha	MBBS, MD, DM	Addl. Professor & In-charge
2.	Dr Sanjuktha Rao	MBBS, MD	Senior Resident

DIVISION OF GERIATRIC MEDICINE

1.	Dr Betsy Mathew	MBBS, MD,	Addl. Professor & In-charge
2.	Dr Steve Paul Manjaly	MBBS, DNB	Senior Resident

DEPARTMENT OF PULMONARY MIDICINE

1.	Dr George A. D'Souza	MBBS, MD, DNB	Professor & Head
2.	Dr Priya Ramachandran	MBBS, MD, DNB	Assoc. Professor
3.	Dr Uma Devaraj	MBBS, DNB	Asst. Professor
4.	Dr A.S. Deepa	MBBS, DNB	Senior Resident
5.	Dr Karthika Jayalal	MBBS, DNB	Senior Resident

CRITICAL CARE MEDICINE

1.	Dr Sriram Sampath	MBBS, MD	Professor & Head
2.	Dr Bhuvana Krishna	MBBS, MD	Assoc. Professor
3.	Dr Deshikar L.N.	MBBS, DA	Junior Consultant (at the level of Asst. Professor)
4.	Dr Haji Mohammed Ismail	MBBS, MD	Asst. Professor
5.	Dr M. Srinivasa Rao	MBBS, MD	Senior Resident

6.	Dr Bandana	MBBS, MD	Senior Resident
7.	Dr Sandya Deepak	MBBS, MD	Senior Resident
8.	Dr Rajani Pathange	MBBS, DA	Senior Resident
9.	Dr Anitha Varghese	MBBS, MD	Senior Resident
10.	Dr Shashidhar Patil	MBBS, DNB	Senior Resident

MEDICAL ONCOLOGY

1.	Dr Arun Shet	MBBS, MD	Professor & Head
2.	Dr Girish	MBBS, MD	Senior Resident

ENDOCRINOLOGY

1.	Dr Ganapathy Bantwal	MBBS, MD, DM	Professor & Head
2.	Dr Vageesh Ayyar	MBBS, MD, DM, MNAMS	Addl. Professor
3.	Dr Vivek Mathew	MBBS, MD, DM	Asst. professor
4.	Dr Belinda George	MBBS, MD	Senior Resident
5.	Dr Swaraj Waddenkeri	MBBS, MD	Senior Resident
6.	Dr Vijayakumar Bhavi	MBBS, MD	Senior Resident

EMERGENCY MEDICINE

1.	Dr Shakuntala K. Murty	MBBS, MD, MRCP	Professor & Head
2.	Dr Praveen Kumar	MBBS, MD	Assoc. Professor
3.	Dr Girish Narayan	MBBS, MD	Asst. Professor
4.	Dr Jayapakash K.P.	MBBS, MD	Asst. Professor
5.	Dr Kiran P.V.	MBBS, F. in Emed	Senior Resident
6.	Dr Srinivas Yamsani	MD (Russia)	Tutor
7.	Dr Anil Swaroop	MBBS	Tutor
8.	Dr Yogesh Siddalingaiah	MBBS	Tutor
9.	Dr Raghuveer Rao	MBBS	Tutor
10.	Dr Samarath Pannalker M.	MBBS	Tutor
11.	Dr Nagaraja D.M	MBBS	Tutor
12.	Dr Raaj Karthieek A.S.	MBBS	Tutor

GENERAL SURGERY

1.	Dr L.N. Mohan	MBBS, MS	Professor & Head
2.	Dr Anthony P.P. Rozario	MBBS, DNB, FRCS	Professor
3.	Dr Subramanyam S.G.	MBBS, MS	Professor
4.	Dr Sridhar Govindaraj	MBBS, MS, DNB, FRCS	Assoc. Professor
5.	Dr Sadashiv Patil	MBBS, MS	Assoc. Professor
6.	Dr Viswanath. S	MBBS, MS	Assoc. Professor
7.	Dr H.B. Suresh	MBBS, MS	Asst. Professor
8.	Dr Anirudh	MBBS, MS	Asst. Professor
9.	Dr Raja H	MBBS, MS, DNB, MRCS	Asst. Professor
10.	Dr Amit Kumar C. Jain	MBBS, DNB	Asst. Professor
11.	Dr Anjaneya. T	MBBS, MS	Asst. Professor
12.	Dr Ann Sunny	MBBS, DNB	Senior Resident
13.	Dr Gautham S.L	MBBS, MS	Senior Resident
14.	Dr Gayatri Balachandran	MBBS, MS	Senior Resident
15.	Dr Prahlad S.T.	MBBS, MS	Senior Resident

DEVISION OF VASCULAR SURGERY

1.	Dr Hemanth Kumar P	MBBS, MS	Professor
2.	Dr Sunil Joshi	MBBS, MS, FIVS	Assoc. Professor
3.	Dr Nivedita Devaprasad Mitta	MBBS, MS	Senior Resident

SURGICAL ONCOLOGY

1.	Dr Suraj Manjunath	MBBS, MS, M. Ch	Professor & Head
2.	Dr Shiva Kumar	MBBS, MS	Assoc. Professor
3.	Dr Rakesh S. Ramesh	MBBS, DNB	Asst. Professor
4.	Dr Rajaram B.V	MBBS, MS, DNB, M.Ch	Asst. Professor
5.	Dr Elvis Peteer Joseph	MBBS, MS	Senior President

OBSTETRICS & GYNAECOLOGY

1.	Dr Sheela C.N.	MBBS, MD	Professor & Head
2.	Dr Ananmma Thomas	MBBS, MD	Professor
3.	Dr Shirley George	MBBS, MS	Professor
4.	Dr Vani Ramkumar	MBBS, MS	Professor
5.	Dr Manjula S.K	MBBS, MD	Assoc. Professor

6.	Dr Shashikala Karanth	MBBS, DGO, DNB	Assoc. Professor (ANO)
7.	Dr Jayashree V. Kanavi	MBBS, MD	Asst. Professor (MWO)
8.	Dr K.M.N. Vishnu Priya	MBBS, MD	Asst. Professor
9.	Dr Anuradha G	MBBS, DGO, DNB	Asst. Professor
10.	Dr Shobha. G	MBBS, MS, DNB	Asst. Professor
11.	Dr Rao Preethi Venkatachala	MBBS, DNB	Senior Resident
12.	Dr Mohana Veera Prakishini	MBBS, DNB, OBG	Senior Resident
13.	Dr Harsha V. Reddy	MBBS, DGO, DNB	Senior Resident
14.	Dr Shilpa Ventatesh	MBBS, MS	Senior Resident
15.	Dr Ekta Eiran	MBBS, MD	Senior Resident
16.	Dr Gonsalves Kavita Peter	MBBS, DGO, DNB	Senior Resident
17.	Dr Jyoti Kala	MBBS, MS	Senior Resident

GYNAECOLOGIC ONCOLOGY

1.	Dr Elizabeth Vallikad	MBBS, MD, Ph.D (Gynae.Onco)	Professor & Head
2.	Dr Premalatha. T.S	MBBS, DGO, DNB	Assoc. Professor
3.	Dr Kiran Kulkarni	MBBS, MS	Asst. Professor
4.	Dr Geeta Acharya	MBBS, MS, DNB	Senior Resident
5.	Dr Sumangala	MBBS, MS	Senior Resident
6.	Dr Sapana Gajanam Gudigar	MBBS, DGO, DNB	Senior Resident

ANAESTHESIOLOGY

1.	Dr K.S. Vasudev Upadhyaya	MBBS, DA, DNB	Professor & Head
2.	Dr Radhika D. Dhanpal	MBBS, MD, DA	Professor
3.	Dr Kshma Kilpadi	MBBS, MD, DA	Professor
4.	Dr Latha P. John	MBBS, MD, DA, FFARCS	Professor
5.	Dr A.M Kutappa	MBBS, MD, FRCA	Sr. Consultant (at the level of Professor)
6.	Dr Sathyanarayana P.S	MBBS, MD, DNB	Sr. Consultant (at the level of Professor)

7.	Dr Savitha K.S	MBBS, MD	Assoc. Professor
8.	Dr Bindu George	MBBS, MD, DA	Assoc. Professor
9.	Dr Reena Nayar	MBBS, MD	Assoc. Professor
10.	Dr Moses Charles D'Souza	MBBS, MD	Assoc. Professor
11.	Dr Lagoo Jui Yeshavant	MBBS, MD	Asst. Professor
12.	Dr Lohita P.I	MBBS, DA, MD	Asst. Professor
13.	Dr Vikram Shivappagoudar	MBBS, MD	Asst. Professor
14.	Dr Surbhi Gupta	MBBS, MD	Asst. Professor
15.	Dr Karthik Jain M	MBBS, MD	Asst. Professor
16.	Dr Manjula Devi	MBBS, DNB, DA	Asst. Professor
17.	Dr Apoorva N. Kothari	MBBS, MD	Asst. Professor
18.	Dr Deepa Baskaran	MBBS, DA, DNB	Asst. Professor
19.	Dr Nischala Dixit	MBBS, MD, DNB	Asst. Professor
20.	Dr Shilpa Bhimasen Joshi	MBBS, DNB	Senior Resident
21.	Dr Rashmi Rani	MBBS, DA, DNB	Senior Resident
22.	Dr Sayeda Noor Huzefa	MBBS, MD	Senior Resident
23.	Dr P. Vatsala	MBBS, DNB	Senior Resident
24.	Dr J. Shilpa	MBBS, DNB	Senior Resident
25.	Dr Shwetha Pai	MBBS, DA	Senior Resident
26.	Dr Surekha G.	MBBS, MD	Senior Resident
27.	Dr Arpana	MBBS, DNB	Senior Resident
28.	Dr Sunil N.	MBBS, MD	Senior Resident
29.	Dr Keerthi S. Rao	MBBS, MD, DNB	Senior Resident

DEPARTMENT OF PALLIATIVE MEDICINE

1.	Dr S.D. Tarey	MBBS, MD	Professor & Head
2.	Dr Shoba N. Nair	MBBS, MD, MRCP, M.Sc in Palliative Medicine	Assoc. Professor
3.	Dr B. Barathi	MBBS, Dip in Pain & Palliative	Junior Consultant (at the level of Asst. Professor)
4.	Dr Regina Mary Thiophin	MBBS	Tutor

CARDIOLOGY

1.	Dr Kiron Varghese	MBBS, MD, DM	Professor & Head
2.	Dr Gurappa Shetty G.	MBBS, MD, DM	Professor
3.	Dr Santosh M.J.	MBBS, MD, DNB	Assoc. Professor
4.	Dr Srilakshmi M.A	MBBS, DNB	Asst. Professor
5.	Dr Michelle Vligas	MBBS, MD, DM	Asst. Professor
6.	Dr Sreekanth Raghavan		Adjunct Assoc. Professor
7.	Dr Yogesh Kumar Kothari		Visiting Cardiac Electrophysiologist

GASTROENTEROLOGY

1.	Dr Harshad C. Devarbhavi	MBBS, DCH, MD, DNB (Med.) DNB (gastro) DM	Professor & Head
2.	Dr Mallikarjun	MBBS, MD, DM	Assoc. Professor & Incherge
3.	Dr Adarsh C.K	MBBS, MD, DNB	Asst. Professor

NEUROLOGY

1.	Dr Gosala R.K. Sarma	MBBS, MD, DM	Professor & Head
2.	Dr Thomas Mathew	MBBS, MD, DM	Addl. Professor
3.	Dr Raghunandan Nadig	MBBS, MD	Asst. Professor

PAEDIATRICS

1.	Dr Sylvan John Rego	MBBS, DCH, MD	Professor & Head
2.	Dr Sanjiv Lewin	MBBS, MD, DNB	Professor
3.	Dr Fulton Sebastian D'Souza	MBBS, MD	Addl. Professor
4.	Dr Anita Shet	MBBS, MD	Assoc. Professor
5.	Dr Chitra Dinakar	MBBS, DCH, DNB	Assoc. Professor
6.	Dr Indumathi C.K.	MBBS, DCH, DNB	Assoc. Professor
7.	Dr Maria Lorette L.	MBBS, DCH, DNB	Assoc. Professor
8.	Dr A.V. Lalitha	MBBS, MD, DNB	Assoc. Professor
9.	Dr Anand Prakash	MBBS, MD	Assoc. Professor
10.	Dr Ranjini Srinivasan	MBBS, DNB	Senior Resident
11.	Dr Sushma. K	MBBS, DNB	Senior Resident
12.	Dr Akshay Ballal	MBBS, MD	Senior Resident

13.	Dr Sarita Ann Bosco	MBBS, DNB, DCH	Senior Resident
14.	Dr Poornima R.N	MBBS, DNB	Senior Resident
15.	Dr Kayur Mehta	MBBS, MD	Senior Resident
16.	Dr Aby Dany Varghese	MBBS, MD	Senior Resident
17.	Dr Madhura K.L.	MBBS, MD	Senior Resident
18.	Dr Naina Bhat	MBBS, DNB	Senior Resident

NEONATOLOGY

1.	Dr Suman Rao P.N.	MBBS,MD, DM	Assoc. Professor & I/C
2.	Dr Chandrakala B.S.	MBBS, MD, DNB	Asst. Professor
3.	Dr Saudamini Nesargi	MBBS, DNB	Asst. Professor

PAEDIATRIC NEPHROLOGY

1.	Dr Kishore D. Phadke	MBBS, MD American Board (Paed. Nephro)	Professor & Head
2.	Dr Arpana A. Iyengar	MBBS, MD	Addl. Professor
3.	Dr Anil Vasudevan	MBBS, MD, DNB	Assoc. Professor
4.	Dr Priya Pais	MBBS, MD, DM	Assoc. Professor
5.	Dr Nivedita Kamath	MBBS, MD	Asst. Professor
6.	Dr Saumil Guar	MBBS, MD	Senior Professor
7.	Dr Kanika Kapoor	MBBS, MD	Senior Professor

PAEDIATRIC SURGERY

1.	Dr Mainak Deb	MBBS, MS, M. Ch	Professor & Head
2.	Dr Kanishka Das	MBBS, MS, M.Ch	Professor
3.	Dr Shubha A.M	MBBS, MS, M.Ch	Assoc. Professor
4.	Dr Prasanna Kumar	MBBS, M.Ch	Asst. Professor
5.	Dr Kiran M.	MBBS, MS, M.Ch	Asst. Professor

RADIODIAGNOSIS

1.	Dr Ravi Hoisala	MBBS, DMRD, MD, DNB	Professor & Head

2.	Dr Babu Philip	MBBS, MD	Professor
3.	Dr Binu Joy	MBBS, MD	Addl. Professor
4.	Dr Arun George	MBBS, MD	Assoc. Professor
5.	Dr Namita Sinha	MBBS, MD	Assoc. Professor
6.	Dr Pavan K.V.	MBBS, MD	Assoc. Professor
7.	Dr Jeypradha Deenadayalu	MBBS, DMRD, DNB	Asst. Professor
8.	Dr Deepali Saxena	MBBS, DNB	Asst. Professor
9.	Dr Sandeep S.	MBBS, MD	Senior Resident
10.	Dr Soumya. C	MBBS, MD	Senior Resident
11.	Dr Richard Thomas	MBBS, MD	Senior Resident
12.	Dr Shankar Sehit B. Patil	MBBS, MD	Senior Resident

OPHTHALMOLOGY

1.	Dr Reji Koshy Thomas	MBBS, MS	Professor & Head
2.	Dr C.S. Manjoo	MBBS, MS	Professor
3.	Dr Andrew Kenneth Vasnaik	MBBS, MS	Professor
4.	Dr Usha Vasu	MBBS, DO, MS, DNB	Professor
5.	Dr Suneetha N.	MBBS, MS	Professor
6.	Dr Mary Joseph	MBBS, MS	Addl. Professor
7.	Dr Mary Varghese	MS, DOMS	Assoc. Professor
8.	Dr Yamini Priya V.R	MBBS, MS	Asst. Professor
9.	Dr Nibedita Acharya	MBBS, MS	Asst. Professor
10.	Dr Bhargavi G. Pawar	MBBS, MS	Senior Resident
11.	Dr Sangeetha Sriram	MBBS, DNB	Senior Resident
12.	Dr Ankita Chetan Kothari	MBBS, DNB	Senior Resident

CARDIO THORACIC SURGERY

1.	Dr Navin Prakash Lal	MBBS, MS, M. Ch	Professor & Head

2.	Dr Arun Kumar Haridas	MBBS, MS, M. Ch	Senior Consultant (At the level of Professor)

NEURO SURGERY

1.	Dr Ashis K. Chand	MBBS, MS, M. Ch, DNB	Professor & Head
2.	Dr Manmeet Singh Santosh Singh Chhabra	MBBS, MS, M. Ch	Assoc. Professor
3.	Dr Vineesh K. Varghese	MBBS, M. Ch	Asst. Professor

PLASTIC SURGERY

1.	Dr Vijay T.M. Joseph	MBBS, MS, M. Ch	Professor & Head
2.	Dr Norman L. Guido	MBBS, MS	Professor
3.	Dr Abha Rani Kujur	MBBS, MS, M. Ch	Assoc. Professor
4.	Dr Sunder Raj Ellur	MBBS, MS, M. Ch	Assoc. Professor
5.	Dr Rajeshwari D	MBBS, FRCS	Jr. Consultant (At the level of Asst. Professor)
6.	Dr Narendra S.M	MBBS, MS, M. Ch	Asst. Professor
7.	Dr Naren	MBBS, MS, M. Ch	Asst. Professor

PSYCHIATRY

1.	Dr Sunita Simon	MBBS, MRCPsych DNB	Professor & Head
2.	Dr R.B. Galgali	MBBS, DPM, MD, (Psych.),DNB	Professor
3.	Dr K. Srinivasan	MBBS, MD, DPM	Professor
4.	Dr Tanya. Machado (Cli. Psy)	BA, MA, DM & SP, Ph.D	Professor
5.	Dr Ashok M.V.	MBBS, MD	Professor
6.	Dr S.M. Manohari	MBBS, MD	Addl. Professor
7.	Dr Vijay Raman	B.A (PSY), m. Phil, Ph.D	Assoc. Professor
8.	Dr Vidya S.	M. Phil, Ph.D	Assoc. Professor
9.	Dr Johnson Pradeep	MBBS, MD	Asst. Professor
10.	Dr Priya Sreedaran	MBBS, DNB	Asst. Professor
11.	Dr Kimneihat Vaiphei	MSW, M. Phil	Lecturer
12.	Dr Divya G. Rao	MBBS, MD	Senior Resident

13.	Dr Nutan Ranjan	MBBS, DPM	Senior Resident
14.	Dr Jasmine G.	MBBS, MD	Senior Resident
15.	Dr Preeti Pansari	MBBS, MD	Senior Resident
16.	Dr S. Bala Shanthi Nikketha	MSW, M.Phil, Ph.D	Lecturer (Psychiatric Social Work)
17.	Dr Aditya Hegde	MBBS, MD	Senior Resident

DERMATOLOGY, VENEREOLOGY & LEPROLOGY

1.	Dr Sujata Raj	MBBS, DVD, MD	Professor & Head
2.	Dr Anil Abraham	MBBS, MD, DNBE	Professor
3.	Dr Mary Augustine	MBBS, MD	Professor
4.	Dr John Stephen S.	MBBS, MD, DNB	Professor
5.	Dr Ishwara Bhat P	MBBS, MD	Assoc. Professor
6.	Dr Vijay V Aithal	MBBS, DVD, DNB	Assoc. Professor
7.	Dr Meryl Antony	MBBS, MD	Asst. Professor
8.	Dr Madhukara J	MBBS, DVD, DNB	Asst. Professor
9.	Dr Shubha	MBBS, MD	Senior Resident
10.	Dr Soumya Kaimal	MBBS, MD	Senior Resident
11.	Dr Prathibha	MBBS, Diploma	Senior Resident
12.	Dr G. Madhu Sudhan Reddy	MBBS, MD	Senior Resident

GENITO URINARY SURGERY (UROLOGY)

1.	Dr Nagaraja A. Rao	MBBS, MS, M. Ch	Professor & Head
2.	Dr A. Mohan	MBBS, MS, M.Ch(Uro), DNB	Professor
3.	Dr Surya Kant Choubey	MBBS, MS, M.Ch	Assoc. Professor
4.	Dr Sreedar D.	MBBS, MS, M.Ch	Asst. Professor

NEPHROLOGY

1.	Dr S. Renuka	MBBS, MD,(Med.), DNB	Professor & Head
2.	GP. Capt. (Dr) Gokulnath	MBBS, MNAMS, MD, DM, DNB	Professor
3.	Dr Ravi P.D.	MBBS, MD, DM, DNB, PGDMLS	Addl. Professor
4.	Dr Prashant G. Kedlaya	MBBS, MD, DM, DNB	Assoc. Professor
5.	Dr Mallikarjuna H.M.	MBBS, MD, DM	Asst. Professor

OTORHINOLARYNGOLOGY (E.N.T)

1.	Dr Balasubramanya A.M.	MBBS, MS	Professor & Head
2.	Dr Ophelia D' Souza. B	MBBS, DLO, DNB	Professor
3.	Dr Anita Ross	MBBS, MS	Professor
4.	Dr V. Srinivas	MBBS, MS	Assoc. Professor
5.	Dr Ramesh A	MBBS, MS	Assoc. Professor
6.	Dr Nanda Kumar	MBBS, MS	Asst. Professor
7.	Dr Soumya M.S	MBBS, MS	Asst. Professor
8.	Mrs. M. Nagapoornima	B.Sc, M. Sc, Sp & Hg	Lecturer
9.	Dr Pratibha C.B.	MBBS, DLO	Senior Resident
10.	Dr Pentapati Chaitanya	MBBS, MS	Senior Resident
11.	Dr Poonam K. Saidha	MBBS, MS	Senior Resident
12.	Ms. Sowmya M. Nayak	B.Sc., M.Sc.,	Lecturer

ORTHOPAEDICS

1.	Dr Thomas Issac	MBBS, MS, D'Ortho	Professor & Head
2.	Dr Phaneesha MS	MBBS, D'Ortho, DNB	Professor
3.	Dr M.J. Saji	MBBS, MS	Professor
4.	Dr Davy Jacob Olakkengil	MBBS, D'Ortho, MS MRCS (EDN)	Professor
5.	Dr Gaurav Sharma	MBBS, MS	Professor
6.	Dr Ramesh L.J.	MBBS, D'Ortho, MS	Professor
7.	Dr Mallikarjuna Swamy B	MBBS, D'Ortho, DNB	Professor
8.	Dr Amaravati S. Rajkumar	MBBS, DNB Ortho	Addl. Professor
9.	Dr Sudhir Nagesh Pai	MBBS, MS	Assoc. Professor
10.	Dr Joe Joseph Cherian	MBBS, MS	Assoc. Professor

11.	Dr Rajagopal H.P.	MBBS, D'Ottho, DNB	Assoc. Professor
12.	Dr Srinivasalu S.	MBBS, D'Ortho, DNB	Asst. Professor
13.	Dr Binu T. Kurian	MBBS, MS	Asst. Professor
14.	Dr Madan Mohan M	MBBS, MS	Asst. Professor
15.	Dr Mahadev Kumar P	MBBS, D'Ortho	Senior Resident
16.	Dr Calvin Rupert Mathias	MBBS, MS	Senior Resident
17.	Dr Maria Joseph Sam Fredrick	MBBS, MS	Senior Resident
18.	Dr Mathew David	MBBS, MS	Senior Resident

PHYSICAL MEDICINE & REHABILITATION

1.	Dr Kurian Zachariah	MBBS, DNB	Professor & Head
2.	Dr Rajalakshmi H	MBBS, DNB	Addl. Professor
3.	Dr Dheeraj A.	MBBS, MD	Asst. Professor
4.	Mr.V.Arun Stephen Soloman	BPT, MPT, BLS	Asst. Professor
5.	Mrs.Smitha Elizabeth Joseph	BPT, MPT	Lecturer
6.	Mrs. Appireddy Gsri Haritha	BPT, MPT	Lecturer
7.	Mr. Antony Paul	BPT, MPT	Lecturer
8.	Mr. Nikhil C.H.	BPT	Tutor
9.	Mr. Biswajyoti Boyajraj Suna	BPT	Tutor
10.	Mr. Joyce V. Chacko	BPT	Tutor
11.	Mr. Litson Lambert	BPT	Tutor
12.	Mr. P. Immanuel Abraham	BPT	Tutor

DENTAL SURGERY

1.	Dr Geeta Amritrao Kale	BDS, MDS	Professor & Head
2.	Dr Afrose Parveen	MDS	Professor
3.	Dr C.S. Nithya	BDS, MDS	Assoc. Professor

4.	Dr Khalid Sheriff	BDS	Jr. Consultant (At the level of Asst. Professor)
5.	Dr Hema Agnihotri	MDS	Asst. Professor

RADIATION ONCOLOGY

1.	Dr Mazhar Hasan Shariff	MBBS, MD, DMRT	Professor & Head
2.	Dr H.C. Suparna	MBBS, MD	Asst. Professor
3.	Mr. Bojarajan	M.Sc	Medical Physicist Cum RSO
4.	Dr Avinash H.U	MBBS, MD	Senior Resident

SURGICAL GASTROENTEROLOGY

1.	Dr Manish Joshi	MBBS, MS, MRCS, DNB	Assoc. Professor & I/C
2.	Dr Roopa Bhushan	MBBS, DNB	Asst. Professor
3.	Dr Madhavi Nair	MBBS, MS	Senior Resident
4.	Dr Sumona Bose	MBBS, MS	Senior Resident

PHYSICAL EDUCATION

Mr. Ramanjinappa M. M.P. Ed.	HOD- In-Charge

MEDICAL ETHICS

Dr G.D. Ravindran	Professor & Head
Dr Sanjiv Lewin	Professor
Dr Sunita Kurpad	Professor
Dr Shakunthala Murthy	Professor
Dr Jyothi M. Idiculla	Assoc. prof.
Dr Vanamala A.A	Asst. prof

RESEARCH SOCIETY

Dr Dr George D'Souza	President
Dr Sandhya Avadhany T., Vice – Dean	Vice President
Fr. Mathew Kattiyangal, Associate Director	Treasurer
Dr Nachiket Shankar, Asso. professor	Secretary
Dr Uma Devaraj, Asst. professor	Joint-Secretary
Dr Savio Pereira, Assoc. Medi Superintendent	Ex-Officio

Dr Johnson Pradeep Asst. professor	Ex-Officio
Dr Premalatha T.S., Assoc. Professor	Member
Dr Suravi Mohanty, Asst. professor	Member

INSTITUTIONAL ETHICAL REVIEW BOARD

Rev. Fr. Shaji George Kochuthara	Chairperson
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PASTORALCARE

Rev. Fr. Vincent Rodrigues	Chaplain
Rev. Fr. Charles Mathew	Associate Chaplain
Sr. Jessy Rodrigues	Member

ADMINISTRATIVE STAFF
C.B.C.I. SOCIETY FOR MEDICAL EDUCATION

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Mr. Steeven D'souza	Dy Superintendent
Mrs. Sophia Heera John	Dept. Secretary

ST. JOHN'S MEDICAL COLLEGE

Rev. Fr. Mathew Kattiyangal *MA,MTh, MBA*	Associate Director
Dr Dominic Misquith	Administrative Officer
Sr. Anthony Josephine	Secretary to the Associate Director
Mr. K.L.Suresh Kumar	Officer, Establishment
Mr. Roshan Noronha	Supdt., Student Council & Teaching Section
Mr. Alby John	Dy. Supdt., Accounts
Mr. P.E. Mathew	Dy. Supdt., Estate Section
Mrs. Jacintha Reynald	Personal Secretary to the Dean
Mr. S. John	Librarian

ST. JOHN'S MEDICAL COLLEGE HOSPITAL

Rev. Fr. H. Immanuel Raj, MSW, MPhil, MS, MHRM	Associate Director
Dr Vijay Joseph T.M.	Chief of Medical Services
Dr Savio Prereira MS, MBA, MPhil (HHSM)	Assoc. Med. Supdt
Mrs. Madona Britto MSc,(Nsg)	Chief of Nursing Services
Prof. Reena Menon	Nursing Supdt

ST. JOHN'S COLLEGE OF NURSING

Sr. Celcy Mary, M.Sc (N)	Principal
Mrs. Mercy P.J.	Vice – Principal
Sr. Vida Oliviera	Officer in charge of Administration

MEDICAL STUDENTS' HOSTELS

Rev. Fr. Mathew Kattiyangal	Warden
Sr. Anthony Josephine Mary	Asst. Warden

Dr Varghese P.S.	Asst. Warden
Dr Mathew David.	Asst. Warden

ASSOCIATE DIRECTOR FINANACE

Rev. Fr. Glen Mascarenhas	Treasurer, CBCI Society for Medical Education
Mr. Anu Abraham	Finance Officer
Mr. S.S Patil	Project Manager
Mrs. Martha Jayashree	Legal Officer
Dr Dominic Misquith	Co-ordinator (Purchase Department)
Dr Tony D.S. Raj	Head (IT Officer)

ST. JOHN'S RESERCH INSTITUTE (SJRI)

Dr George A. D'Souza MD, DNB	Dean
Dr Tony D.S. Raj, MD	Vice Dean

ST. JOHN'S MEDICAL COLLEGE
BANGALORE - 560 034

I. AIMS AND OBJECTIVES

***Note**: Considerable care has been taken to make the provisions of this Prospectus precise and comprehensive. The College regrets it is not desirable to enter into any correspondence or personal discussions with candidates for admission, or with their parents or guardians, regarding these provisions, or any action, based on them, taken by the College at any stage.*

INTRODUCTION: The Catholic Church in India has always played an important role in the fields of education, health care, social welfare and development of the community. The Catholic Bishops' Conference of India (CBCI) in response to a felt need decided to establish a Medical College and Teaching Hospital "to provide for the relief of suffering, to promote and preserve the health of the community and to give an example of enlightened training in dedicated service, which is characteristic of Christian educational and social welfare institutions". St. John's Medical College and Hospital and School of Nursing were started in 1963, 1975 and 1980 respectively at Bangalore by the C.B.C.I. Society for Medical Education. The School of Nursing was upgraded to the College of Nursing in 1989. In 1994 all the Institutions were brought under the common name: St. John's National Academy of Health Sciences.

AIMS: While the Institution is intended primarily for training Catholics and especially dedicated personnel like Religious Sisters who are conducting a large number of hospitals and dispensaries mainly in medically underserved and rural areas of our country, it is open, like all other educational institutions under Catholic auspices, to all persons irrespective of religion, caste or community.

The Institution seeks to make a qualitative contribution to health care, medical education and research through the training of medical, paramedical, nursing, health management, community health workers, and other personnel who are dedicated to healing in the spirit of Christ.

The College Hospital is intended to assist in the training and to render service in health care to all people irrespective of religion, caste or community, particularly the underprivileged and disadvantaged.

OBJECTIVES: Under the overall policy of the CBCI Society for Medical Education, the objectives of the Institution are grouped as follows:

1. Excellence in all fields of health care education.
2. Adequate Christian formation of the students.
3. Upholding respect for life, from the moment of conception to its natural end.
4. A genuine feeling of compassion for the patients and their families as persons.
5. A special thrust to Community Health fostering the dimensions of participatory team work.
6. Serving the health needs of medically underserved areas of our country and our medically underprivileged brethren.
7. Acquiring the ability to research, and application of the advances in scientific knowledge to the relevant fields of work.
8. Striving towards promoting holistic health.
9. Acquiring an exemplary steadfastness to principles and moral values so as to witness to a life of honesty and integrity.

Right from its inception St. John's set before it an ideal of excellence in academic courses as well as service to society, as a result of which it has truly become holistic both in its outlook and in its approach to the problems of community health.

This Institution of Health and Healing envisages also the training and participation of the community - including the rural people and the slum dwellers - in health care in its preventive, promotive and rehabilitative aspects.

The Institution expects its students to uphold the ethical values and principles of morality as interpreted by the Catholic Church. The prospective student has the freedom to choose or reject these, but the choice is made before enrollment.

The Institution prepares students for the role of future leaders, loyal to the highest ideals of the health profession. Today's Doctors, Nurses and other Health Care Professionals are part of a team who deliver comprehensive health care.

Often they are called upon to be leaders in society helping in all developmental activities. Health is both a means and an end of development improving the quality of life. The students in medical and health care sciences, therefore, should be conscious of social, economic and other factors, the improvement of which will bring about the necessary transformation to make it possible for all in this country and in the world to lead a healthy human existence.

II. HISTORY

The Catholic Church in India had long felt the need of adding a Medical College to the many educational and social welfare institutions through which, over the years, it has served the country. However, the complexities such a venture involved, delayed its active consideration until the proposal was pursued by the Catholic Bishops' Conference of India. At the request of the C.B.C.I., the late Archbishop of Madras, the Most Rev. Louis Mathias, SDB, prepared and presented a report in 1954, in which he reviewed the total requirement of the project. In 1956, Archbishop Mathias, with the aid of medical and financial experts, submitted a comprehensive scheme to the Conference and in September 1960, the C.B.C.I. took the decision to establish a Medical College, with an attached hospital at Bangalore.

His Holiness Pope John XXIII agreed to the College being called after his Patron, St. John the Baptist, as a mark of his personal interest in the project, and of his approval of its aims and ideals. The College was, accordingly, named "St. John's Medical College" and opened in temporary premises at Bangalore in July 1963.

In the course of their Joint Pastoral issued in connection with the XXXVIII International Eucharistic Congress, held in Bombay in 1964, the Catholic Bishops of India announced their choice of the College Project as the Chief Memorial of the Congress. This choice received the warm

approval of His Holiness, Pope Paul VI, which was conveyed by him in a special message addressed to His Eminence, Valerian Cardinal Gracias, the then President of the Catholic Bishops' Conference of India and President of the CBCI Society for Medical Education. His Holiness has also established a scholarship in the College in his own name, to be awarded, each year, to the best all-round student completing the MBBS course.

The Corner Stone of the Project was blessed by His Holiness Pope Paul VI, at Bombay during the principal function of the Eucharistic Congress, held on December 3, 1964, at which he officiated. It was laid at the Project site on July 27, 1965 by His Excellency Shri V.V. Giri, the then Governor of Karnataka, and later, President of India. On the completion of the buildings, the College was dedicated to the cause of Medical Education, Research and Care, on September 29, 1968, at a ceremony presided over by the late President of India, His Excellency, Dr Zakir Hussain.

Prior to the completion of these buildings, the College was located in the premises of St. Mary's Industrial School and Orphanage, which were made available by His Grace Archbishop Thomas Pothacamury of Bangalore for the teaching of pre-clinical and para-clinical subjects.

St. Martha's Hospital conducted by the Sisters of the Good Shepherd Congregation was affiliated to the College for Clinical Teaching. The Hospital was extended and suitably equipped for the purpose. This hospital provided a practical example of the spirit of service and sacrifice, which the College strives to make its own and carry beyond itself, to the homes of the patients and the community, both in the urban and in the rural areas. The affiliation of this Hospital to the College has been discontinued from 1983.

Campus: In June 1968, five years after its establishment, the College moved to its permanent campus on a 140 acres site situated in the periphery of the city of Bangalore. During the first phase of construction, the following were completed: the teaching centre (housing the pre-clinical and para-clinical departments and lecture theatres); four blocks of students' hostel; and some residences for the teaching staff.

St. John's Medical College Hospital: The construction work of the second phase consisting of a 800-bed hospital, Nurses' hostel and residences of

Staff was started in April 1971. The out-patient departments were opened on December 8, 1975. Thereafter, the the in-patient departments were opened gradually. With the third phase of cinstruction completed in 1987, the campus has all the required facilities including a beautiful auditorium, with 1100 seats, from 1996, as a memorial of the Silver Jubilee of this Institution. At present S. John's Medical College Hospital has 1200 in – patient beads, distributed among the Departments of General Medicine, Medical Oncology, Endocrinology, General Surgery, Surgical Oncology, Obstetric and Gynaecology, Gynaecologic Oncology, Paediatrics, Paediatric Surgery, Radiology, Psychiatry, Thoracic Surgery, Dental Surgery, Plastic Surgery, Opthhalmology, Dermatology, Venerology and Leprology, Genito-Urinary Surgery, ENT Diseases, Nephrology, Orthopaedics, Intensive Care, Cardiac Care, Cardiology, Neurology, Neuro Surgery, Gastroenterology, Emergency Medicine, Anaesthesiology, Physicial Medicine & Rehabilitation, Pain and Palliative Car, Radio Immuno-Assay and Hemo-Dialysis. This is the teaching Hospital of our College.

The *College of Nursing* is situated in the College & Hospital Sector. Started as a School of Nursing on July 1, 1980, it was raised to the status of a College of Nursing on September 25, 1989 and conducts courses in General Nursing & Midwifery, Basic B.Sc., Post Certificate B.Sc. and M.Sc. in Nursing Courses in Medical Surgery, Community Health, Paediatrics and Obst. and Gynae.

In December 1994, the Institution was re-named as ST. JOHN'S NATIONAL ACADEMY OF HEALTH SCIENCES and five Institutes placed under it:

1) St. John's Medical College;
2) St. John's College of Nursing;
3) St. John's Institute of Health Management and Para-Medical Studies;
4) St. John's Medical College Hospital;
5) St. John's Institute of Population Health and Clinical Research.

III. PROCEDURE OF APPLICATION, SELECTION, ADMISSION AND FEES

1. ALL THE SELECTION, ADMISSION RULES AND PROCEDURES ARE SUBJECT TO THE DECISIONS, IF ANY OF THE COURTS.

2. THE COLLEGE DOES NOT CHARGE THE SO CALLED "CAPITATION FEE" NOR DOES IT ACCEPT ANY DONATIONS AS A CONSIDERATION FOR ADMISSION.

3. CANVASSING IN ANY FORM INCLUDING RECOMMENDATION LETTERS AND OFFERING DONATIONS WILL DISQUALIFY A CANDIDATE FROM ADMISSION.

1. The College is affiliated to the Rajiv Gandhi University of Health Sciences, Bangalore and is recognised by the Medical Council of India.

2. The College conducts the Course leading to the M.B.B.S. Degree of the Rajiv Gandhi University.

3. **Other Courses of Study**: Apart from the M.B.B.S. Course, this National Academy of Health Sciences runs

    1) Post-Graduate Courses in Medicine
    2) Super Speciality
        i) DM Cardiology
        ii) DM Neurology
        iii) DM Neonatology
        iv) DM Pulononery Medicine
        v) DM Nephrology
        vi) DM Gasteroentrology
        vii) DM Criticalcare
        viii) DM Paediatric Nephrology
        ix) DM Endocrinology
        x) M.Ch Urology
        xi) M.Ch Plastic Surgery

xii) M.Ch Paediatric Surgery
xiii) M.Ch. Neuro Surgery
xiv) M.Ch Surgical encology

3) M.Sc ParaMedical Courses (MLT)

4) B.Sc Degree Course in
   i) Medical Laboratory Technology
   ii) Cardiac Perfusion Technology
   iii) Medical Imaging Technology
   iv) Renal Dialysis

   Fellowship : Paediatric Nephrology, Gastroenterology

5) Certificate Courses
   i) Spinal Surgery (Neuro Surgery)
   ii) Gastroenterology
   iii) Medical Records Management
   iv) Community Health Workers
   v) Hospital Aids
   vi) Clinical Pastoral Education
   vii) Operation Theatre Assistants
   viii) Cytological Techniques and Interpretation
   ix) Dialysis Technology
   x) Critical Care Nursing
   xi) Health Care Management
   xii) Secretarial Course
   xiii) Basic Health Care for Sisters of Missionaries of Charity
   xiv) Pulmonary Function Testing and Polysomnography
   xv) Ophthalmology Technician
   xvi) Plaster Technician (Orthopaedics)
   xvii) Radiography

6) Nursing Courses
   i) M.Sc Nursing
   ii) P.C. B.Sc Nursing
   iii) B.Sc Nursing
   iv) General Nursing
   v) Post Basic Diploma in Nursing

4. Admission to the M.B.B.S. Course is made ONLY to the 1st M.B.B.S. class, and NOT to any higher class. Applications for admission to higher classes, or for migration from other colleges can not entertained.

5. 1. **SIXTY** students will be admitted in August 2014 to the 1st M.B.B.S. course.
   2. Ordinarily, fifty percent of the admissions will be given to women, including Religious Sisters, who will receive special consideration.
   3. Eighteen percent of the seats are reserved for candidates of Scheduled Caste/Scheduled Tribe and Backward Class origin (provided they qualify otherwise). They should furnish evidence of their entitlement to be classified in this category. The relaxation of marks as 40% is applicable only for students in Karnataka.
   4. No seats are reserved for students of foreign nationality. Their applications will be considered only after they have obtained necessary permission from the Government of India (The Secretary, Government of India, Ministry of Health and Family Welfare, Nirman Bhavan, New Delhi - 110011). They will have to obtain Certificate of academic eligibility from the Rajiv Gandhi University. They must have a student visa.

      Note : *See APPENDIX I for information regarding one seat reserved for a nominee of the Government of India.*

6. **Eligibility**

   1. ***Qualifying Examinations***

   A candidate seeking admission to first MBBS course:

   i) shall have passed two year Pre University examination conducted by Department of Pre-University Education, Karnataka State, with English as one of the subjects and Physics, Chemistry and Biology as optional subjects. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually also.

OR

ii) shall have passed any other examination conducted by Boards/Councils/Intermediate examination established by State Governments / Central Government and recognised as equivalent to two year Pre University examination by the Rajiv Gandhi University of Health Sciences / Association of Indian Universities (AIU), with English as one of the subjects and Physics, Chemistry and Biology as optional subjects and the candidate shall have passed subjects of English, Physics, Chemistry and Biology individually.

OR

iii) shall have passed Intermediate examination in Science of an Indian University / Board / Council or other recognised examining bodies with Physics, Chemistry and Biology, which shall include a practical test in these subjects and also English as compulsory subject. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually.

OR

iv) shall have passed first year of the three year degree course of a recognised University with Physics, Chemistry and Biology including a practical test in these subjects provided the examination is an 'University Examination' and the candidate shall have passed subjects of English, Physics, Chemistry and Biology individually in the Pre University or other examinations mentioned in the clauses above.

OR

v) shall have passed B.Sc. Examination of an Indian University, provided that he/she has passed the B.Sc. examination with not less than two of the following subjects: Physics, Chemistry, Biology (Botany, Zoology) provided the candidate has passed subjects of English, Physics, Chemistry and Biology individually in the qualifying examinations mentioned in clauses (i), (ii) and (iii).

Note: As per the Rajiv Gandhi University of Health Sciences Circular No. RGUHS/AC2-ADM/Misc-2/2005-06 dated 20-10-2005, the 10+2 Examination conducted by the CBSE Delhi, AHSEC Guwahati, Assam etc., the candidates who have opted Physics, Chemistry, Biology, Maths subjects at the said Examination and failed in any one subject is declared as PASS by the respective Boards. But the University decides to admit candidates to various Health Science courses who have passed individually in optional/core subjects of the qualifying (10+2) examination and the results are declared pass.

Candidates who have passed "Physical Science" instead of Physics and Chemistry as two separate subjects are not eligible for admission to MBBS course as per Medical Council of India Regulations vide letter MCI-37(2)/2001/Med.922 dated 14.02.2001 and RGUHS letter UA/ELY-115/1998-2000 dated 22-05-2001.

2. ***Marks***

The selection of students to medical colleges shall be based on merit provided that:

(a) In case of admission on the basis of qualifying examination, a candidate for admission to MBBS course must have passed individually in the subjects of Physics, Chemistry, Biology and English and must have obtained not less than 50% marks taken together in Physics, Chemistry and Biology in the qualifying examination. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or Category I, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination be not less than 40% instead of 50% as above. The SC/ST candidates of outside Karnataka are not entitled for the relaxation in the minimum percentage required for admission as per the Notification No. RGUHS/ACA2-ADM/MISC/2002-03 dated 24/01/2003.

(b) In case of admission on the basis of competitive entrance examination, a candidate must have passed individually

in the subjects of Physics, Chemistry, Biology and English and must have obtained not less than 50% marks in Physics, Chemistry and Biology taken together at the qualifying examination and in addition must have come in the merit list prepared as a result of such competitive entrance examination by securing not less than 50% marks in Physics, Chemistry and Biology taken together in the competitive examination. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or Category I, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination and competitive entrance examination be not less than 40% instead of 50% as stated above (vide amendment to MCI Regulations, 1997, notified in Gazette of Government of India dated 29.05.1999).

3. ***Age:*** The candidate should have completed 17 years of age on or before 31st day of December of the year of admission.

4. ***Non eligible Candidates:*** Application will be rejected in the following cases:

   (1) Who have made more than two attempts to pass the Two year PUC or Equivalent Examination

   (2) Who have not passed in English and obtained 50% marks in Physics, Chemistry & Biology in aggregate in the 2 year PUC or Equivalent Examination (For SC & ST of Karnataka State only 40%).

   (3) Religious sisters who have not completed one year of community life after their first Profession, i.e., as on the day of commencement of class.

4. APPLICATION FORM

A candidate seeking admission to the College must submit an application to the REGISTRAR in the prescribed form. Application Forms and Prospectus are available ONLY to candidates who wish to apply for the M.B.B.S. Course and will be supplied to such candidates directly. These requirements will be strictly enforced; no request for their relaxation will be entertained.

5. The submission of an application for admission does not imply acceptance by the College of the eligibility of the Candidates to the medical course of the Rajiv Gandhi University.

6. The application forms and Prospectus are available:-

(1) Prospectus & Application forms can be downloaded from the website: www.stjohns.in

(2) For students in India:

In Person

At the Admissions Office, St. John's National Academy of Health Sciences, Bangalore - 560 034 on payment of Rs. 1000/- by crossed **Bank Demand Draft (non refundable) in favour of "St. John's Medical College" payable at Bangalore.** No other mode of payment is acceptable.

(3) For Indians who passed the qualifiying examination Abroad and NRI students:

At the Admissions Office, St. John's National Academy of Health Sciences, Bangalore - 560 034 on payment of Indian Rupees 3000/- by crossed **bank demand draft (non refundable) in favour of "St. John's Medical College" payable at Bangalore.** No other mode of payment is acceptable.

Application forms will be issued in the name of the Applicant and is not transferable. The amount is not refundable once the application forms are issued or mailed by registered post.

The last date for mailing application forms, if available, will be as follows:

Abroad : 05-04-2014

India : 18-04-2014

Please note that the forms will be sent by Registered Acknowledgement Post.

7. FILLING OF APPLICATION

(1) Candidates should study the instructions and requirements set out in the Application Form and Prospectus carefully, before completing the form.

(2) Any concealed / wrong information will lead to disqualified at any time.

(3) For facility of reference, all communications, following the application should quote the Application Number given on the top of the Application Form, which must, therefore, be carefully noted. **No notice will be taken of a communication where the Application number is not quoted.**

(4) All communications from the College will be sent to the address given in the application; no change in this address can be accepted.

8. ENCLOSURES:

It is the responsibility of the candidate to complete the application and the enclosures correctly. **Incomplete applications will be rejected.**

Completed application forms along with relevant enclosures as detailed below should reach the Office of the REGISTRAR not later than 26-04-2014 , **even if qualifying examination results are not available by that date.**

Application Forms not accompanied by the following enclosures will be rejected.

I Those who are downloading the application from the website, the following documents have to be sent to the office of the Registrar, Admission office, St. John's Medical College, Bangalore – 560 034, Karnataka, India.

1. Duly filled application from
2. Hall Ticket
3. A DD of ₹ 1000/- (to be paid by those who studied in India or a DD of ₹ 3000/- to be paid by those who studied XI & XII abroad and NRI Students)

4. Two long envelopes of size (23 x 10 cms) with ₹ 5/- stamp affixed
5. Cast Certificate if SC/ST/BC
6. Domicile Certificate if from Karnataka

II Those who are collecting application form in person;

(1) The Application Form (white card) should affixed with recent passport size photograph (name embossed without disfiguring the photograph)

(2) Hall Ticket (yellow card) should be affixed with recent passport size photograph (name embossed without disfiguring the photograph). The address should be written clearly in the space provided.

(3) Four white envelopes provided filled with candidate's mailing address affixed with ₹ 5/- postal stamp.

(4) Enclosing Recommendation Letters will amount to canvassing, leading to disqualification. Admissions will be done purely on the basis of merit and not on the basis of recommendation, donation or through the agents.

(5) NO certificates except Cast certificate by SC/ST and domicile by Karnataka student are to be enclosed with the application or sent later. Copies and originals of Certificates are to be produced only if called for the interview in July, 2014 and in person.

9. ELIGIBILITY CERTIFICATE:

All candidates from India or Abroad having qualifications other than the 2 year P.U.C examination of the Pre-University Education Board of the Karnataka State, should obtain an eligibility certificate from the Rajiv Gandhi University of Health Sciences, Bangalore in order to register for the course if selected, before paying the fees.

Foreign students should also obtain the certificate of clearance from the Ministry of Health and Family Welfare, Government of India, Nirman Bhavan, New Delhi - 110 011. The duplicate application should be forwarded through the Government of India (the original copy of the application should be sent to the College) The students should be in possession of student visa and residential permit.

10. PROCEDURE FOR OBTAINING THE ELIGIBILITY CERTIFICATE

(1) Candidates should apply to the REGISTRAR, Rajiv Gandhi University of Health Sciences, 4th "T" Block, Jayanagar, Bangalore - 560 041.

(2) For Indian Nationals who have passed qualifying Examination in India - Non-Karnataka ₹ 2,000/-

(3) For Indians who have passed qualifying Exam abroad ₹ 10,000/-

(4) For Foreign Nationals $ 600 (Dollars)

11. SUBMISSION

The application form and other cards duly completed, keeping in mind the instructions contained in paragraphs 8 and 9, must be submitted **on or before 18-04-2014 by Registered post A.D./ Speed Post/ Courier.**

The College will not entertain any plea of delay or loss of applications in postal transit.

In Person.

At the Admissions Office, St. John's National Academy of Health Sciences, Bangalore - 560 034 on or before 26/04/2014.

12. SCRUTINY OF APPLICATIONS

The REGISTRAR will scrutinize the applications and decide, which candidates fulfill the prescribed requirements to appear for the entrance test and the decision of the Registrar will be final.

13. ENTRANCE EXAMINATION

1. The Entrance Test will be held on 25-05-2014 at the Centres listed below, provided that a sufficient number of candidates opt for a Centre.

Centre Code	Name of the Centre		Name of the Centre	Centre Code
01	Bangalore		Mumbai	08
02	Chennai		Ranchi	09
03	Delhi		Thiruvananthapuram	10
04	Ernakulam		Vijayawada	11
05	Guwahati			
06	Hyderabad			
07	Kolkata			

2. No request for taking the Examination at other Centres can be entertained.

14. HALL TICKETS

1. All candidates whose applications are in order and complete will be registered and Hall Tickets will be sent using the self addressed stamped envelope by post. The Hall Tickets must be preserved for identification at subsequent stages of selection, namely Observation Test, Interviews. **In case of non-receipt of Hall Tickets by the eligible candidates, duplicate Hall Tickets can be had in person from the Offices of respective Centres between 8.00 a.m. and 8.45 a.m. on 25-05-2014, provided they affix the photograph with their address.** (Name embossed without disfiguring the photograph in the space provided). **These candidates are to get permission from Admissions Office, St. John's Medical College, Bangalore three days prior to the Entrance Test.**

2. The Entrance Examination will commence at 9.00 a.m. and the duration of paper is 3 hrs. No candidates will be allowed to enter the Hall after 9.30 a.m.

3. This Examination will consist of multiple choice questions in Physics, Chemistry, Biology, English and Values: Catholic Students will have a few questions on Christian Doctrine from the Catechism of Catholic Church and the Bible, particularly the New Testament.

4. A few model questions are given in APPENDIX-II. (For Syllabus of Karnataka PUE Board, please see APPENDIX-III). Question Papers of previous year will not be supplied. Answers must be marked with a pencil in the Answer Booklet provided.

5. The Entrance Examination Results, will be the basis for further Interviews and final selection.

15. CRITERIA FOR SELCTION

The application of the candidates who have been declared successful in the entrance test, will be placed in separate and individual categories specified by the management and approved by the Supreme Court. Inter se merit of the candidates within each category will be the sole criteria for selecion in each category.

16. TESTS AND INTERVIEWS

1. A limited number of candidates (approximately twice the number to be finally admitted), chosen on the basis of their performance at the Entrance Test and other records, will be intimated by about first week of July, 2014 to appear at St. John's, Bangalore around the Second week of July, 2014 for Psychological and Other Tests, and also for Interviews; the exact dates will be intimated.
2. Candidates are expected to attend these Tests and Interviews at their own expense and to make their own arrangements for stay. No candidate is permitted to stay with any Staff member or student of the College, on Campus, during Tests and Interviews. It may please be noted (See 1 above) that approximately one-half of the number attending the interviews will not be admitted and must return home.

A COMMITMENT TO SERVING IN: "MEDICALLY UNDERSERVED" AREAS

3. In pursuance of a decision of the Governing Board of the C.B.C.I. Society for Medical Education, training and an intensive orientation towards the requirement of Community Health, particularly Rural is given in the College. As a condition for admission, candidates called for the final Interview and psychological tests and are

selected to join the course, are required to execute a bond to serve in a rural area, or in any medically underserved urban and rural community health centre, anywhere in India, designated by the Governing Board, for a specified period as soon as the selection list is announced. Those who fail to fulfill the Rural Bond requirement will have to pay the penalty as decided by the Governing Board from time to time.

Candidates are required to bring with them:

(a) A proof to indicate that the Bond (see para (3) above) will be executed within a day of announcement of the Selection List.

(b) THE FOLLOWING CERTIFICATES HAVE TO BE IN ORIGINAL & one set of copies.

1. Birth/Baptism Certificate
2. Qualifying exam marks sheet
3. Domicile (if from Karnataka)
4. Conduct & Character certificate from the Head of the Institution where the candidate underwent training for the qualifying examination.
5. Caste (if SC/ST/BC) of Karnataka/other States
6. Physical Fitness

(c) If Foreign Student:

(i) Visa

(ii) Permission from Government of India

Candidates invited for the Interview and final test in Bangalore should inform the REGISTRAR whether or not they plan to appear for the Test and Interview.

17. ANNOUNCEMENT OF RESULTS

The Observation, Psychological & Other Tests, and Interviews, will be completed within 5 days, and the results of the final selection will be put up on Notice Boards in the College, Admission Office & Hospital

as per the schedule listed in the M.B.B.S. calendar. The admission will be subject to test for physical fitness which will be conducted by a Medical Board of the College. These tests will be decisive and final, regardless of any discrepancy between them and other certificates produced by the candidate.

18. REGISTRATION FOR ADMISSION OF SELECTED CANDIDATES

1. Candidates who are thus finally selected for admission, will be required to first submit the Rural Service Bond duly executed (see (3) above) and deposit within the time announced on the notification of selection, a letter of acceptance at the College Office, along with the College deposits and fees for the first term, in cash, or by draft drawn in favour of "St. John's Medical College, Bangalore" to be deposited in the Bank of Baroda Branch in the Campus. Failure to comply with this requirement will result in cancellation of the admission.
2. Classes will commence as per the schedule of Rajiv Gandhi University. Admitted candidates must attend the classes from the opening day.

19. IMPORTANT NOTE

Registration to the course is provisional until the University declares the candidate is eligible.

(1) **Transfer Certificate**

This must be furnished within one month of the notification of admission. The students must arrange to have it sent directly to the Dean by the Principal of the Institution last attended.

The Transfer Certificate, in addition to giving the usual particulars, should include the following from their respective Colleges:

(i) **Non-Debarred Certificate:**

Whether or not the student has been debarred, rusticated or otherwise disqualified from continuing his/her studies by the P.U.E Board or other body for any malpractice at any

Public Examination, or for any other kind of behaviour.

(ii) **No Dues Certificate**

Whether or not student owes any amount to the Institution.

(2) **Migration Certificate**

Students other than those from Karnataka must produce a migration certificate.

20. UNSUCCESSFUL CANDIDATES

Candidates who do not receive the intimation as provided either in paragraph 14(1) or in paragraph 15(1) or who are excluded from the list of admissions notified under paragraph 15(1), must, *ipso facto*, conclude that they have not been selected. The College cannot entertain any correspondence in this regard and no marks sheet can be provided. Any dispute in this matter is subject to the jurisdiction of courts in Bangalore only.

ST. JOHN'S MEDICAL COLLEGE

21. FEES CHART - MBBS 2014

	FEE AT ADMISSION	**Amount (₹)**
1	Admission fee	10,000
2	Identity Card	200
3	Health Check up	200
4	Hepatitis – B Immunization	500
5	Conference & Seminar Fund	100
6	Graduation Fee	2,000
7	Rural Orientation Programme	2,000
8	Alumni Association Membership	2,000
9	Staff Benefit Fund	2,000
	REFUNDABLE DEPOSITS	
10	Caution Deposit – Indian Caution Deposit – Foreigner ₹ 20,000/-	10,000
11	Laboratory Deposit	2,000
12	Library Deposit	2,000
	TERM FEE	
13	Tuition fee	1,37,500
14	Library fee	2,500
15	E. Learning	2,500
16	Pract. Records, Lab fee, Stationery (1st &2nd term)	1,000
17	Pract. Records, Lab fee, Stationery (3rd &5th term)	500
18	Microscope Fee (1st to 5th term)	500
19	University Exam Expenditure	1500

20	College Day	150
21	Sports / Extra Curricular Activities	1,000
22	Medical Education Cell	500
23	Students Health Scheme	1,500
24	Students Aid Fund	250
25	Recreation Room	200
26	Language Classes (1st & 2nd Terms - Kannada)	200
27	Value Education Activities 1st & 2nd term	1,000
28	Value Education Activities (Catholic Only) 3rd term onwards	500
29	Examination / Paper Expenditure (2nd term Onwards)	500
30	Medico Autopsy Charges (3rd,4th& 5th term)	200
31	CHAP Programme (7th term only)	1500
32	Hospital Charges (3rd term only)	500
33	Community Medicine Programme (4th & 6th term)	500
34	Registration, Recgn Charges to Public Bodies	3,500
35	MCI Inspection Charge	3,500
36	Students Welfare fee (A,B,C&D Hostelite)	1,000
37	WIFI Connection	1,000
38	Personality Development Programme	500

39	**STUDENTS ASSOCIATION**		
	a	Students Association Subscription	175
	b	Cultural Fee	100
	c	Fellowship Dinner (Except 9th term)	250
	d	Magazine Fee	100
	e	Inter – Medical Sports (2nd term onwards)	150

40 UNIVERSITY FEE AT ADMISSION

R.G.U. Admission fee

a	Indian	500
b	NRI/SAARC Student (Other than India) ₹ 3,000/-	
c	Foreign National (Other than SAARC)$150	

R.G.U. Registration Fee

a	Indian	3,000
b	NRI/SAARC Student (Other than India) ₹ 5,000/-	
c	Foreign National (Other than SAARC)$150	

R.G.U. Eligibility Fee (Non Karnataka Student)

a	Indian ₹ 2,000/-	
b	NRI/SAARC Student (Other than India) ₹ 10,000/-	
c	Foreign National (Other than SAARC)$600	

R.G.U. Sports Fee (In Lumpsum) 200*5	1,000
R.G.U. Students Welfare Fund (In Lumpsum)100*5	500
R.G.U. Helinet Fee (In Lumpsum) 1000*5	5,000
R.G.U. Helinet Registration fee	100
Youth Red Cross	50
Teachers Day Flag (Per Annum)	45

22. Fees other than those set out in paragraph 21 above e.g., for special training services, etc. which will be notified from time to time will also have to be paid.

23. A Student who discontinues the course after admission but before the commencement will not be entitled for refund of the fees already paid and deposits made to the Institution unless the seat that has fallen vacant due to the discontinuation, is filled up by another candidate. In such case, an amount equal to 10% of the total fees payable will be deducted as service charges

If a student discontinues the course during the course period for any other reason, he/she will have to pay the fees for the remaining period of the course to the Institution, and shall also forfeit all the deposits and other fees paid to the Institution.

24. The students are required to pay the prescribed fees once in every six months i.e. in months of July and January of each academic year. There will be a total of NINE instalments during the course of the MBBS studies. In case of failures where attendance of classes and/ or clinics is required by the University, additional instalments of fee will have to be paid over and above the normal nine instalments:. In such cases the instalments will be worked out as one instalment for a period of 6 months or less.

All the students are instructed to make the payments of the entire term fees in one installment in St. John's Medical College, Accounts section and no part payment will be accepted. The prescribed fee should be paid within one month of the commencement of each team. Late payments will attract a penalty of ₹ 10/- per day which will have to be paid along with the fee.

25. Examination fees as prescribed by Rajiv Gandhi University of Health Science and other fees if any will be notified at the time of admission or at the appropriate time.

26. All students should claim the refundable deposits within three months of completing their rural bond failing which the deposits would be forfeited by the students.

27. Fees should be paid either in cash, or by draft drawn in favour of 'St. John's Medical College, Bangalore' on a bank at Bangalore, preferably the "Bank of Baroda, St. John's Medical College Campus Branch, Bangalore". No Cheque or Draft on a Bank outside Bangalore will be accepted.

28. The fees structure is liable to be changed at any time, bearing in mind the inflation prevalent in the country. Other fees, if any, will be brought to the notice of candidates on selection.

V. HOSTELS

29. (a) The College provides Hostel accommodation for men and women students. Basic furniture is provided but students are expected to bring their own mattresses, pillows, bed linen and other items of personal use.

(b) The cost of any damage to Hostel Property will have to be paid by the Hostelites.

30. Administration/Discipline at the Hostels is governed by the Hostel Rules. These are binding on all students and their infringement may result in disciplinary action.

31. The Hostel fees & other details are available in the Hostel Rules Book.

VI. GENERAL

Note: *The regulations included in this section are not exhaustive.*

32. Students must be regular and punctual at lectures, demonstrations, seminars, practicals, field work and such other academic exercises. They are required to attend all the allotted working periods in each of the prescribed subjects. If so recommended by the respective Heads of Departments, the Dean may under the Regulations of Rajiv Gandhi University, condone shortage of attendance up to 25 percent caused by illness and such other valid reasons.

33. Students whose conduct, or attendance, or progress is not satisfactory, will not be allowed to appear for the University Examinations, and are also liable to be asked to leave the College.

34. Students must possess the prescribed text-books, laboratory journals, dissecting instruments, medical equipments, etc.

35. A language course is conducted in Kannada; the course is compulsory for all new entrants who do not know the language.

36. Attendance at courses in Human Formation, including Medical Ethics, Rural Orientation Programmes and Behavioural Sciences arranged by the College is compulsory.

37. In case of non-attendance at classes, an application must be presented to the Dean for leave of absence giving the reason.

38. Students, who are required by the Rules of the University to do so, must join the NCC or NSC or the Physical Training Classes.

39. Membership of the recognized Students' Association of the College is compulsory. No other Association of students in the College, will be permitted unless they have prior approval of the Dean.

40. Catholic students are encouraged to join the All India Catholic Medical Guild of St. Luke (CMG), Bangalore, and All India Catholic University Federation (AICUF).

41. Students must be neat and tidy in their dress, avoiding expensive clothes and exaggerated fashions.

42. Students are advised to provide themselves with light warm clothing, mosquito nets and mattresses.

43. Students must maintain a sense of decorum and discipline inside the College, in its associated Institutions and in public places. "Ragging" is strictly prohibited. Students should refrain from disfiguring walls and furniture and from other objectionable practices.

44. The college vehicles are not available for excursions, examinations and external postings.

45. Students are required to carry their Identity Cards certified up-to- date, on their person at all times.

46. A contributory Students' Health Service is provided at the College and the Hospital affiliated to it.

47. The College Office must be kept posted with change of address, if any, whether local or permanent.

48. (a) All the students should attend lectures in Medical Ethics regularly and appear for the examinations conducted. Their attendance and performance at the examination will be recorded in the certificates issued by the College.

(b) *Christian Formation:* Catholic Students have to attend Christian Doctrine Classes and the Retreats organised annually. They are urged and encouraged to attend the Eucharistic Celebration as often as possible and to make use of facilities made available to help their all round formation as committed Christian doctors.

49. The Rajiv Gandhi University of Health Sciences, Bangalore, to which our College is affiliated has sent a Circular dated 1st February 1997 on **Ragging**. We would like to bring the important part of the contents of this Circular to the notice of our students:

"Ragging is a Cognisable Offence and that any person caught indulging in Ragging shall be liable to imprisonment for a term which may extend to one year, or with fine as stipulated therein."

"Principals are instructed to inform the Police and take necessary steps to dismiss the Student."

Ragging in any form is prohibited in the campus. In addition any student indulging in any form of Ragging in the Hostel will be debarred from Hostels of this Institution. He/She will have to make alternate arrangements for accommodation. Names of the students found ragging will be sent to the Rajiv Gandhi University of Health Sciences, Bangalore, for further action.

All day scholars are also reminded that they are not allowed in any of the blocks in the Hostel and all Residents in the Hostel are hereby warned that any act of ragging either in the blocks or in the common rooms or in the dining halls, recreation room, sports grounds, etc., is strictly prohibited.

Any Students/Interns/P.G. Residents/S.H.Os who indulge in any form of Ragging will undergo severe punishment including immediate expulsion from the Hostel etc.

VII. DEGREE OF BACHELOR OF MEDICINE AND SURGERY

(Extract from Regulations)
Effective from the academic year 1996

50.1 TRAINING PERIOD AND TIME DISTRIBUTION

(1) Every student shall undergo a period of certified study extending over 4½ academic years divided into 9 semesters, (i.e. of 6 months each) from the date of commencement of his study for the subjects comprising the medical curriculum to the date of completion of examination and followed by one year compulsory rotating internship. Each semester will consist of approximately 120 teaching days of 8 hours each college working time, including one hour of lunch.

(2) The period of 4½ years is divided into three phases as follows:

(a) **Phase-I** (two semesters) - consisting of Pre-clinical subjects (Human Anatomy, Physiology including Bio-Physics, Bio-Chemistry and introduction to Community Medicine including Humanities). Besides 60 hours for introduction to Community Medicine including Humanities, rest of the time shall be somewhat equally divided between Anatomy and Physiology plus Biochemistry combined (Physiology 2/3 and Biochemistry 1/3)

(b) **Phase-II** (3 semesters) - consisting of para-clinical/clinical subjects.

During this phase teaching of para-clinical and clinical subjects shall be done concurrently.

The para-clinical subjects shall consist of Pathology, Pharmacology, Microbiology, Forensic Medicine including Toxicology and part of Community Medicine.

The clinical subjects shall consist of all those detailed below in Phase III.

Out of the time for Para-clinical teaching approximately equal time be allotted to Pathology, Pharmacology, Microbiology and Forensic Medicine and Community Medicine combined (1/3 Forensic Medicine and 2/3 Community Medicine).

(c) **Phase-III** (Continuation of study of clinical subjects for seven semesters after passing Phase-I)

The clinical subjects to be taught during Phase II and III are Medicine and its allied specialities, Surgery and its allied specialities, Obstetrics and Gynaecology and Community Medicine.

Besides clinical posting as per schedule mentioned herewith, rest of teaching hours be divided for didactic lectures, demonstrations, seminars, group discussions, etc. in various subjects.

The Medicine and its allied specialities training will include General Medicine, Paediatrics, Tuberculosis and Chest, Skin and Sexually Transmitted Diseases, Psychiatry, Radio-diagnosis, Infectious diseases etc. The Surgery and its allied specialities training will include General Surgery, Orthopaedic Surgery including Physiotherapy and Rehabilitation, Ophthalmology, Otorhinolaryngology, Anaesthesia, Dentistry, Radiotherapy etc. The Obstetrics and Gynaecology training will include family medicine, family welfare planning etc.

(3) The first two semesters (approximately 240 teaching days) shall be occupied in the Phase I (Pre-clinical) subjects and introduction to a broader understanding of the perspectives of medical education leading to delivery of health care. No student shall be permitted to join the Phase II (Para-clinical/clinical) group of subjects until he has passed in all the Phase I (Pre-clinical) subjects for which he will be permitted not more than four chances (actual examination), provided four chances are completed in three years from the date of enrollment.

(4) After passing pre-clinical subjects, 1½ years (3 semesters) shall be devoted to para-clinical subjects.

Phase II will be devoted to para-clinical and clinical subjects, along with clinical postings. During clinical phase (Phase III) pre-clinical and

para-clinical teaching will be integrated into the teaching of clinical subjects where relevant.

(5) Didactic lectures should not exceed one third of the time schedule; two third schedule should include practicals, clinicals or/and group discussions. Learning process should include living experiences, problem oriented approach, case studies and community health care activities.

(6) Universities shall organize admission timings and admission process in such a way that teaching in first semester starts by 1st of August.

(7) Supplementary examination may be conducted within 6 months so that the students who pass can join the main batch and the failed students will have to appear in the subsequent year.

(8) **Phase distribution and Timing of Examinations:-**

6 Months	6 Months	6 Months	
1	2		Ist professional examination (during second semester)
3	4	5	IInd professional examination (during fifth semester)
6	7		IIIrd professional Part I (during 7th semester)
8	9		IIIrd professional Part II (Final Professional) during 9th Semester...

Note :

(a) Passing in Ist Professional is compulsory before proceeding to Phase II training.

(b) A student who fails in the IInd professional examination, shall not be allowed to appear in IIIrd Professional Part I examination unless he passes all subjects of IInd Professional examination.

(c) Passing in IIIrd Professional (Part I) examination is not compulsory before entering for 8th and 9th semester training, however passing

of IIIrd Professional (Part I) is compulsory for being eligible for IIIrd Professional (Part II) examination.

During third to ninth semesters, clinical postings of three hours duration daily as specified in the Table below is suggested for various departments, after Introductory Course in Clinical Methods in Medicine and Surgery of two weeks each for the whole class.

50.2 EXAMINATION REGULATIONS

Essentials for qualifying to appear in professional examinations.

The performance in essential components of training is to be assessed, based on:

50.3 ATTENDANCE

Every candidate should have attendance not less than 75% of the total classes conducted in theory, practical and clinical jointly in each calendar year calculated from the date of commencement of the terms to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination (vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2003, published in the Gazette of India Part III, Section 4, Extraordinary issued on 15th October 2003).

A candidate lacking in the prescribed attendance and progress in any subject(s) in theory or practical/clinical in the first appearance will not be permitted to appear for the examination in that subject(s).

50.4 INTERNAL ASSESSMENT

(i) It shall be based on day-to-day assessment (see Note), evaluation of student assignment, preparation for seminar, clinical case presentation etc;

(ii) Regular periodical examinations shall be conducted throughout the course. The question of number of examinations is left to the institution;

(iii) Day-to-day records should be given importance during internal assessment;

(iv) Weightage for the internal assessment shall be 20% of the total marks in each subject;

(v) Student must secure at least 50% marks of the total marks fixed for internal assessment in a particular subject in order to be eligible to appear in final university examination of that subject.

Note:

Internal assessment shall relate to different ways in which students' participation in learning process during semesters is evaluated. Some examples are as follows:

(i) Preparation of subject for students seminar.

(ii) Preparation of a clinical case for discussion.

(iii) Clinical case study/problem solving exercise.

(iv) Participation in project for health care in the community (planning stage to evaluation).

(v) Proficiency in carrying out a practical or a skill in small research project.

(vi) Multiple choice questions (MCQ) test after completion of a system/teaching.

Each item tested shall be objectively assessed and recorded. Some of the items can be assigned as Home work/Vacation work.

50.5 UNIVERSITY EXAMINATIONS

Theory papers will be prepared by the examiners as prescribed. Nature of questions will be short answer type/objective type and marks for each part indicated separately.

Practicals/clinicals will be conducted in the laboratories or hospital wards. Objective will be to assess proficiency in skills, conduct of experiment, interpretation of data and logical conclusion. Clinical cases should preferably include common diseases not esoteric syndromes or rare disorders. Emphasis should be on candidate's capability in eliciting physical signs and their interpretation.

Viva/oral includes evaluation of management approach and handling of emergencies. Candidate's skill in interpretation of common investigative data, x-rays, identification of specimens, ECG, etc. also is to be evaluated.

The examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimum skills alongwith clear concepts of the fundamentals which are necessary for him to carry out his professional day-to-day work competently. Evaluation will be carried out on an objective basis.

Question papers should preferably be of short structure/objective type.

Clinical cases/practicals shall take into account common diseases which the student is likely to come in contact in practice. Rare cases/ obscure syndromes, long cases of neurology shall not be put for final examination.

There shall be one main examination in a year and a supplementary to be held not later than 6 months after the publication of its results. University Examinations shall be held as under:-

First Professional - In the second semester of Phase I training, in the subjects of Anatomy, Physiology and Bio-Chemistry.

Second Professional - In the Fifth Semester of Phase II training, in the subjects of Pathology, Microbiology, Pharmacology and Forensic Medicine.

Third Professional - Part I - In the Seventh Semester of Phase III, in the subjects of Ophthalmology, Otorhinolaryngology and Community Medicine.

Third Professional - Part II - (Final Professional) - At the end of Phase III training in the subjects of Medicine, Surgery, Obstetrics & Gynaecology and Paediatrics.

VIII. AWARDS, PRIZES AND SCHOLARSHIPS

51. The College awards the following prizes and scholarships each year; these are regulated by the rules prescribed in each individual case.

A-1 *"Pope Paul VI Prize and Medal"*

(Founded in 1965 by His Holiness Pope Paul VI, on the occasion of the Laying of the Corner Stone of the College Project, which His Holiness personally blessed, on December 3, 1964 at Bombay, during the 38th International Eucharistic Congress, of which the project is the Chief Memorial). Awarded for the best outgoing student.

A-2 *"Dr and Mrs. Menino D'Souza Award"*

Awarded to one male and one female graduate on completion of their internship for their all round performance during the last two years of M.B.B.S. studies and internship done in this Institution.

A-3 *"Archbishop Thomas Pothacamury Memorial Prize"*

(Founded by the Governing Body on the recommendation of the first Dean, Dr L. Monteiro).

Awarded to the best outgoing student of St. John's Medical College, from among the priests, Religious Sisters and Religious Brothers.

A-4 *"Cardinal Gracias Ethics Prize"*

(Founded in 1970, by the Catholic Schools of Bombay in honour of His Eminence Valerian Cardinal Gracias).

Two prizes, one each for V and VII Term Students will be awarded for Ethics.

A-5 *"The Dean Louis and May Monteiro Prize"*

(Founded by the Governing Body in recognition of his service).

Awarded to a member of the staff of St. John's Medical College, Bangalore, and its affiliated hospitals of the rank of Assistant Professors and below (Tutors, Registrars, etc.) for the best research work in any field of Medicine, and allied subjects which have been accepted for publication in a recognised journal.

A-6 *"Pio and Arinda Monteiro Memorial Prize in Pathology"*

(Founded by the Governing Body on the recommendation of Dr L. Monteiro in memory of his parents).

Awarded to the students obtaining the highest marks in Pathology at a Competitive Examination held by the College.

A-7 *"Joseph Saldanha Memorial Prize in Microbiology"*

(Founded by the Governing Body on the recommendation of Dr L. Monteiro in memory of his Brother-in-law).

Awarded to the student obtaining the highest marks in Microbiology at a Competitive Examination held by the College.

A-8 *"Catholic Medical Guild of St. Luke, Bombay Prize"*

(Founded in 1968, by the Catholic Medical Guild of St. Luke, Bombay).

Awarded to the student passing the regular 3rd M.B.B.S. Examination at the first attempt, and standing first among the students of the College in the Examination.

A-9 *"Smt. Aleyamma Thanangatt Memorial Prize"*

(Founded in 1977, by Mr. J.J. Thomas, M/s. Gina Engineering Company, Bangalore, in memory of his mother).

Awarded to the student who obtains the highest marks, and stands first in the College in Ophthalmology, at the first attempt, at the regular University Examination.

A-10 *"Dr Fred and Domitilla Saldanha Memorial Prize"*

(Founded in 1965, by the late Mrs. Domitilla Saldanha of Pune, in memory of her husband).

Awarded to the student passing the regular 1st M.B.B.S. Examination at the first attempt and standing first among the students of the College in the Examination.

A-11 *"Bishop Alphonsus Mathias Prize"*

(Founded in 1981, by Rt. Rev. Alphonsus Mathias)

Awarded to the student passing the regular 2nd M.B.B.S.

Examination at the first attempt, and standing first among the Students of the College in Microbiology.

A-12 *"The Paul Abrao Memorial Prize"*

(Founded in 1969, by the Paul Abrao Memorial Charitable Trust, Cochin, in memory of the late Dr Paul Abrao).

Awarded to the student passing the regular 2nd M.B.B.S. Examination at the first attempt, and standing first among the students at the College in Forensic Medicine.

A-13 *"Dr Hasmukh J. Mehta Memorial Prize"*

(Founded in 1973, by the students of the first M.B.B.S. Class 1973-74 batch, and by Dr Prashant H. Mehta, in memory of his father).

Awarded to an undergraduate student/intern whose work is adjudged to be the best for the year, either as an individual or as a joint project.

A-14 *"The Major-General S.L. Bhatia Prize"*

Awarded to the student passing the regular 1st M.B.B.S. Examination at the first attempt, and standing first among the students of the College in Physiology.

A-15 *"Dr N.K. Apte Prize of the A.O.I."*

(Founded by the A.O.I. and the Dept. of E.N.T. SJMC & H).

Awarded to the student obtaining the highest marks in a competitive examination in E.N.T., held by this Institution.

A-16 *"Astra Idl Prize"*

(Founded in 1980, by M.I.T. Laboratories, Bangalore)

Awarded to the student obtaining highest marks in Pharmacology at a competitive examination held by the College.

A-17 *"Dr I.M. Thomas Prize for Excellence in Anatomy"*

(Founded by Dr G. Thomas in 1990)

Awarded to the student obtaining the highest marks in Anatomy in both Internal Assessment and at the University Examination.

A-18 *"Ram Narain Dhawan Urology Award"*

(Founded by Mr. Kushal Dhawan in 1990)

Awarded to the student of the Final Year batch on the basis of performance at a special examination conducted by the Urology department.

A-19 *"The Dr F.H. Noronha Award"*

(Founded by the late Mrs. Cecilia Franco in her Last Testament)

Awarded to the BEST MBBS Student each year.

A-20 *"The Martha Mary Pinto Prize"*

(Founded by Drs. Celine and Lawrence Lobo in 1991)

Awarded to the Final MBBS student securing the highest marks in Obstetrics and Gynaecology at the University Examination each year.

A-21 *"Bactroban Prize"*

(Founded by Smith Kline Beecham Pharmaceuticals in 1995)

Awarded each year to an MBBS student who secures the highest marks at a competitive examination conducted by the Department of Dermatology.

A-22 *"P. Manjunath Nayak Memorial Award"*

(Founded by Eros Pharma Pvt. Ltd. in 1995)

Awarded each year to an MBBS student passing Bio-Chemistry at the first attempt and securing the highest marks among the students of the College.

A-23 *"Dr Carlton Travels Award"*

(Founded by Dr Carlton Travels, Alumini St. John's in 2012)

Awarded each year to the final MBBS student securing the highest marks in a special examination conducted by the General Surgery Department

A-24 *"Cadila Health Care Prize"*

(Founded by Cadila Health Care in 1998)

Awarded each year to the Final MBBS student securing the highest marks in a special examination conducted by the General Surgery Department.

A-25 *"Rev. Dr Percival Fernandez Award"*

(Founded in the year 2000 by Dr Percival Fernandez)

Awarded to Best Sports Person of the Year among the Medical College Students.

A-26 *"St. John's Medical College Hospital Silver Jubilee - Bank of Baroda Prize"*

(Founded by the Bank of Baroda, SJMC Campus Branch in 2001).

Awarded to the final year MBBS student who scores highest marks in Community Health.

A-27 *"Smt. & Sri. Joji Reddy Thumma Memorial Prize in Pharmacology"*

(Founded by Dr Kasapareddy Thumma and Family members in 2001).

Awarded to a student obtaining highest marks in Pharmacology in the University Exam.

A-28 *"Annual Awards for Outstanding Rural Service"*

(Instituted by the Governing Board of the C.B.C.I. Society for Medical Education in 1998).

Awarded to two Alumnae/ni of this Institution (one lay doctor and one Religious Sister Doctor) for outstanding rural service.

A-29 "*The J. Vaz Memorial Prize in the History of Medicine*" (Instituted by Dr Mario Vaz, Department of Physiology, SJMC, in 2002 in memory of his father)

Awarded each year to II MBBS students, in the History of Medicine for an open Essay.

A-30 *"Mrs. Lititia Misquith Awards" - 3 Awards*

(Founded by Dr Felix Misquith in 2003)

One prize each to the student who passes the University Exam of 1st, 2nd and 3rd MBBS at first attempt and gets the highest number of total marks and should be a Catholic student.

A-31 *"Dr Chitra Stephen Solomon Memorial Award"*

(Founded by Mr. Solomon Ravikumar in 2004)

Awarded to the best outgoing MBBS student in Community Health.

A-32 *"Mrs. Annamma Antony Athiparampil Prize"*

(Founded by Dr Serene Annie Francis of 1998 batch in 2004 in memory of her grandmother)

Awarded to an MBBS student passing General Medicine at first attempt and securing highest marks among students of St. John's Medical College.

A-33 *"Dr R.C. Nadig Memorial Prize"*

(Founded in 2006, by the SJMC Faculty and Alumni who were associated with Dr R.C. Nadig.)

Awarded to the Phase III Part I MBBS student for securing highest marks in Ophthalmology in the prize examination conducted by the Department of Ophthalmology.

A-34 *"Dr Kalpana Rao Prize"*

(Founded in 2008, in memory of Dr Kalpana, by Dr K.B. Gururaj Prasad, brother of Dr Kalpana Rao, and mother Mrs. B.S. Vedavati and members of her family)

Awarded to an MBBS student for securing highest marks in the University exam in Biochemistry.

A-35 *"Rev. Dr Thomas Kalam Prize"*

(Founded in 2009 by Rev. Dr Thomas Kalam)

Awarded for the best research projectcarried out by an MBBS student during the year.

A-36 *"Mrs. & Mr. G.G. Kini Prize for Excellence in Pathology"*

(Founded by Dr Usha Kini, Professor & Head, Department of Pathology, St. John's Medical College, in May 2010 in honour of her parents)

Awarded each year to an MBBS students obtaining highest marks in Pathology in both internal assessment and at the University examination.

S-1 *"The Cardinal Gracias Scholarship"*

(Founded in 1966 by the Catholic Schools of Bombay, on the occasion of the conferment of the national title of 'Padma Vibhushan' on His Eminence Valerian Cardinal Gracias, who was the first President of the C.B.C.I. Society for Medical Education).

Awarded, each year, on application, to two students whose parents'/ guardians' income does not exceed Rs. 24,000/- per year and who possess sufficient merit as judged by satisfactory conduct and progress.

S-2 *"The Dean Louis Monteiro Scholarship"*

(Instituted in the Silver Jubilee Year, by Dr Marguerite Pinto, Alumna of Batch 1964, in honour of her Father).

Awarded each year, on application, to one student whose parents'/ guardians' income does not exceed Rs. 24,000/- per year and who possesses sufficient merit as judged by satisfactory conduct and progress.

S-3 *"Rev. Fr. F.N. Loesch, S.J., Memorial Scholarship"*

Awarded to a newly admitted student whose parents'/guardians' income does not exceed Rs. 6,000/- per year, on merit-cum-means basis. This scholarship is tenable subject to satisfactory conduct and progress throughout the 1st M.B.B.S. Course.

S-4 *"Karnataka Region Catholic Bishops' Scholarship"*

(Instituted by Fr. Ignatius Pinto, former Secretary of the Karnataka Region Catholic Bishops' Council.)

Awarded on merit-cum-means basis, to a Catholic student of Karnataka whose parents'/guardians' income does not exceed Rs. 12,000/- per year.

This Scholarship is tenable subject to the marks secured at the qualifying examination, if any conducted by the University, as well as the conduct and behaviour of the applicant.

S-5 *''Spirit of St. John's Paediatric UG Prize'' (Founded by the batch of 1981)* Awarded to the UG Student standing first in the theory and clinical examination held in the paediatric department.

S-6 *Fr. John P.M. van der Ploeg's Golden Jubilee 1982 Scholarship"*

Awarded to a Religious Sister Medical Student.

S-7 *"The S.J.M.C. Alumni Association Scholarships"*

(Founded by the Executive Committee of the SJMC Alumni Association in 1991)

Awarded to two MBBS students on a merit-cum-means basis each year.

S-8 *"The S.J.M.C. Parents' Association Scholarship"*

(Founded by the S.J.M.C. Parents' Association in 1991).

Awarded to an MBBS Student on merit-cum-means basis each year.

S-9 *"Mr. Thomas Putti Memorial Scholarship"*

(Founded by Dr Joseph Putti in 1991)

Awarded to an Undergraduate or Postgraduate student of St. John's Medical College on merit-cum-means basis each year, with additional weightage to those who show keen interest in Cancer Research.

S-10 *"The Smt. Kamalamma Narayana Iyer Scholarship"*

(Founded by Dr A.N. Balasundaram in 1992)

Awarded to one female MBBS Student on a merit-cum-means basis each year.

S-11 *"The A.G. Narayan Iyer Scholarship"*

(Founded by Dr A.N. Balasundaram in 1992)

Awarded to one male MBBS Student on a merit-cum-means basis each year.

S-12 *"Dr F.H. Noronha Scholarship"*

(Founded by the Will of Mrs. Cecilia Franco in 1993)

Awarded to an MBBS Student on a merit-cum-means basis each year.

S-13 *"Dr A. Yesupriya Scholarship"*

(Founded by Alumni of Batch 1968 and Dr Yesupriya's family in 1993)

Awarded to an MBBS Student on a merit-cum-means basis each year.

S-14 *"Peter Menezes Scholarship"*

(Founded by Mrs. Brice Menezes in 1994 in memory of her husband)

Awarded to two MBBS students on a merit-cum-means basis each year.

S-15 *"Dr Sr. Mary Glowrey JMJ-CHAI Scholarship"*

(Founded by The Catholic Health Association of India in 1995)

Awarded to two MBBS students on a merit-cum-means basis each year.

S-16 *"Ms Louise Rebello Scholarship"*

(Founded by Ms. Louise Rebello in 1995)

Awarded to one MBBS student on a merit-cum-means basis each year.

S-17 *"Dr Charles D'Souza Scholarship"*

(Founded by Dr Santhosh Prabhu, alumnus of batch 1973 in honour of his father)

Awarded to one MBBS student on a merit-cum-means basis.

S-18 *"Bishop Sebastian Mankuzhikary Memorial Scholarship"*

(Founded in 1997 by the Bishop Sebastian Mankuzhikary Memorial Trust set up by the immediate family of the late Bishop Sebastian Mankuzhikary)

Awarded to one M.B.B.S. student each year on a merit-cum-means basis.

S-19 *"Mohan Peter Family Scholarships"*

(Founded in 1998 by Dr Mohan Peter, alumnus of batch 1963)

Awarded to 4 MBBS students each year on a merit-cum-means basis.

S-20 *"Dr Mr. Michael Menezes & Mrs. Lily Menezes Scholarship"*

(Founded by Dr Marian Menezes in memory of his parents)

Awarded to an deserving undergraduate Medical Student.

S-21 *"Richard Alphonsus Miranda Scholarship"*

(Founded in the year 2007 by Mrs. Brice Menezes)

Awarded to an MBBS lay student on merit-cum-means basis.

52. The College will extend assistance to its students to secure scholarships offered by Government (e.g. National Loan Scholarship or by private agencies, for which the students are eligible.)

53. **Grants:** The Bank of Baroda has given a grant to this institution in the year 1996. The interest of this grant Corpus is earmarked for the maintenance of our Mugalur Rural Health Training Centre.

54. **Foundation:** Dr Manuel Joseph Vempilly Foundation has been established by Dr Manuel Joseph of Batch 1974 with an initial capital of ₹ 1,00,000/- to assist his Alma Mater and the poor patients in the Hospital.

APPENDIX I

Reservation of seat for a nominee of the Government of India

One seat is reserved in the College for a nominee of the Government of India falling under one or another of the following categories; the authority to whom the application for nomination is to be addressed, is shown against each category:

Sl. No.	**Category**	**Authority to whom the applications are to be sent.**
1.	Students belonging to States/ Union Territories with no Medical/Dental College	*Health Secretary, State/Union Territory Government.*
2.	Wards of Defence personnel	*Liaison Officer, Kendriya Sainik Board, Ministry of Defence, West Block-IV, Wing No. 5, R. K. Puram, New Delhi - 110 066.*
3.	Children of para-military personnel:	
	i) for CRPF/BSF/SSB etc. personnel	*Ministry of Home Affairs, FR-I Section, North Block, New Delhi - 110 001.*
	ii) for R & AW/SFF/ARC personnel:	*Cabinet Secretariat, EA-II Section, Bikaner House (Annexe), Shahjahan Road, New Delhi - 110 011*
4.	Children of Indian staff serving in Indian Missions abroad	*Ministry of External Affairs, Welfare Cell, Akbar Bhawan, Chanakyapuri, New Delhi-110021*
5.	For meeting diplomatic/bilateral commitments	*Ministry of External Affairs, Students Cell, Akbar Bhawan, Chanakyapuri, New Delhi-110021*

6. Tibetan Refugees	*Central Tibetan Schools Administration, Ministry of Human Resource Development, Department of Secondary & Higher Education, Ess Ess Plaza, Community Centre, Sector 3, Rohini, Delhi - 110 085*
7. National Bravery Award Winning Children	*Indian Council for Child Welfare, 4-Deen Dayal Upadhyay Marg, New Delhi - 110 002.*
8. Civilians affected by Terrorism	*Ministry of Home Affairs, IS Division, North Block, New Delhi.*

APPENDIX II

ENTRANCE TEST 2009

I. Physics, Chemistry, Biology, Values and English

Questions will be of objective type, designed to test knowledge, understanding and application. Answer has to be written on OMR paper with HB pencil. Candidates are supposed to bring pencils, pencil sharpner and eraser.

Model Questions

Beats are produced when two sources are sounded together. These sources should have

(a) nearly equal frequencies

(b) exactly equal frequencies

(c) different frequencies

(d) very different frequencies.

A mixture of acetone and methanol can be separated by

(a) steam distillation

(b) vacuum distillation

(c) simple distillation

(d) fractional distillation

Brainless nervous system is present in

(a) Cockroach (b) Amoeba

(c) Hydra (d) Earthworm.

Values

No preparation is required to appear for this paper, as this is purely an aptitude test to gauge a candidate's *Motivation, Aptitude, Social Awareness, Compassion, Comprehension* and *Moral Attitudes* in relation to the aims and objectives of medical studies and health care.

Express your own convictions, attitudes, knowledge, feeling and opinions, when answering the questions in this paper, rather than answer what you imagine the College wants you to say.

Catholic Students, however, should prepare themselves for questions on Christian Doctrine and the Bible. Portion for the May, 2014 Test is as follows:

A. Catechism of the Catholic Church

Part II, Section II

Chapter II - Sacraments of Healing

B. Bible

Old Testament	**:**	**Book of Genesis**
New Testament	**:**	**Gospel of St. John**

APPENDIX III

Syllabus of Karnataka PUC Board for 1st and 2nd year PUC

PHYSICS

Syllabus - First Year P.U.C

Unit 1

1.1 Introduction to Physics : Physics as study of nature - systematic observation, logical reasoning, model making, theoretical prediction with suitable examples like discovery of Neptune, Comet Halley etc. - Physics for society and technology (List of important discoveries)

1.2 Scalars and Vectors : Definitions of scalars and vectors with examples, representation of a vector, unit vector, addition and subtraction of vectors, scalar and vector products with examples.

1.3 Units and Dimensions : Fundamental and derived units - SI units - dimensions - dimensional formulae - principle of homogeneity of dimensions - dimensional analysis - application to (i) Check the correctness of an equation (ii) Conversion of units (iii) Derivation of an equation - limitations

Unit 2 Dynamics

2.1 Motion in one dimension : Concept of a particle - position-time graph - velocity-time and acceleration - time graph - Derivation of equations of motions from graphs - mention of equations of motion under gravity - relative motion along one dimension - problems.

2.2 Newton's laws of motion : First law of motion - force and inertia with examples-momentum - second law of motion, derivation of $F = ma$, mention of spring F = constant kx, mention of basic forces in nature - impulse and impulsive forces with examples - second law as applied to variable mass situation - third law of motion - Identifying action and reaction forces with examples - derivation of law of conservation of momentum with examples in daily life - principle of rocket propulsion - inertial and non-inertial frames - apparent weight in a lift and rocket/ satellite - problems.

2.3 Friction : A self adjusting force - origin of frictional forces - static friction, kinetic friction - limiting friction - laws of friction - coefficient of friction - angle of friction - rolling friction - advantages and disadvantages of friction - methods of reducing friction - problems.

2.4 Motion in two and three dimensions : Projectile motion - derivation of equation for the trajectory of a projectile - derivations of expressions for time of flight, range, maximum height. Uniform circular motion - derivation of expression for centripetal acceleration - cyclist on a curve - banking of roads, mention of expression for angle of banking - qualitative explanation of motion in three dimensions with examples - problems.

2.5 Work - Power - Energy : Work done by a force - F.S - unit of work - graphical representation of work done by a constant and variable force - power - units of power - energy - derivation of expression for gravitational potential energy and kinetic energy of a moving body - statements of work - energy theorem - mention of expression for potential energy of a spring - statement and explanation of law of conservation of energy - illustration in the case of a body sliding down on an inclined plane - discussion of special case, when $\theta = 90^{o}$ for a freely falling body - explanation of conservative and non conservative forces with examples - explanation of elastic and inelastic collisions with examples - coefficient of restitution - problems.

2.6 Rotational motion and rigid body dynamics : Angular displacement, angular velocity and angular acceleration - mention of equations for angular motion - moment of inertia and radius of gyration - statement of parallel and perpendicular axes theorem - mention of expression of moment of inertia of a thin rod, ring, cylinder, sphere - statement of law of conservation of angular momentum with examples - ballet dancer and diver-problems.

2.7 Gravitation : Statement and explanation of law of gravitation - definition of g - derivation of relation between g and G - mention of expression for variation of g with altitude, depth and latitude - statement and explanation of Kepler's laws of planetary motion - definition of orbital velocity and escape velocity and mention of their expressions - satellites - basic concepts of geo-stationary satellites, launching of satellites - IRS and communication satellites - brief explanation of Inertial mass and gravitational mass - weightlessness - remote sensing and essentials of space communication - problems.

2.8 Elasticity : Stress - strain - Hooke's law - moduli of elasticity - mention of expression of Young's Modulus of elasticity in the case of a stretched string.

Unit 3 Statics

3.1 Concurrent Co-planar forces : Definition of resultant and equilibrant - statement of law of parallelogram of forces - derivation of expression for magnitude and direction of two concurrent coplanar forces - law of triangle of forces and its converse - Lami's theorem - problems.

3.2 Moment of a force : Definition of moment of a force - statement of law of moments and its applications to find the resultant of two like parallel forces - couple - statements of general conditions of equilibrium of forces - problems.

Unit 4 Fluid Mechanics

4.1 Fluid Thrust : Explanation of fluid thrust and pressure and units of pressure - derivation of $P = \rho gh$ - Pascal's law - mention of its applications - statement and explanation of Archimedes principle - concept of buoyancy - statement and explanation of laws of floatation.

4.2 Fluid Dynamics : Explanation of streamline and turbulent motion - mention of equation of continuity - mention of expressions for PE, KE and pressure energy of an element of a liquid flowing through a pipe - statement and explanation of Bernoulli's theorem and its application to uplift of an aircraft, sprayer.

4.3 Surface tension : Concept of adhesive and cohesive forces - definition of surface energy and surface tension and angle of contact - explanation of capillary rise and mention of its expression - mention of application of surface tension to (i) formation of drops and bubbles (ii) capillary action in wick of a lamp (iii) action of detergents.

4.4 Viscosity : Explanation of velocity gradient - definition of coefficient of viscosity-qualitative explanation of temperature dependence of viscosity with examples-mention of Poiseuille's formula - statement and explanation of Stoke's law (qualitative)

Unit 5 Heat and Thermodynamics

5.1 Gas laws : Statement and explanation of Boyle's law and Charle's law - definition of pressure and volume coefficient of a gas - absolute zero - kelvin scale of temperature - mention of perfect gas equation - explanation of isothermal and adiabatic changes - mention of Vander Waal's equation of state for real gases.

5.2 Specific of heat capacities of gases : Definition of specific heat capacity at constant pressure and at constant volume - Derivation of Mayer's relation - explanation of ratio of specific heat capacity and its importance - explanation of degree of freedom - law equipartition of energy.

5.3 Mode of heat transfer : Conduction of heat - steady state - temperature gradient-definition of coefficient of thermal conductivity - basic concepts of convention of heat - radiation - properties of thermal radiation - radiant energy - definition of emissivity and absorptivity - perfect black body - statement and explanation of Kirchoff's law, Newton's law of cooling - Stefan's law - Wien's displacement and Planck's law - qualitative explanation of solar constant and surface temperature of sun - principle and working of total radiation pyrometer - problems.

5.4 Thermodynamics : Statement of Zeroth law and its significance - first law of thermodynamics - explanation of phase diagram - application to isothermal, adiabatic, isobaric, isochoric processes - explanation of reversible and irreversible processes - Carnot's cycle - Carnot's heat engine and mention of expression for efficiency - different statements of second law of thermodynamics - application to refrigerators - qualitative explanation of entropy - mention of Clausius Clapeyron equation and its application in the change of boilling and freezing point - problems.

Unit 6 Oscillations - Waves and Sound

6.1 Oscillations : Explanation of periodic motion with examples - Definition period, frequency and their relation. Definition of linear displacement and angular displacement. Definition and explanations of S.H.M. - mention of characteristics of S.H.M. - mention of equation of S.H.M. - $y = a \sin \omega t$ - mention of expression of velocity and acceleration of a particle executing S.H.M. - definition of phase - mention of expression of K.E. and P.E. in S.H.M. - graphical representation of SHM - problems.

6.2 Waves : Waves around us - brief note on light waves, sound waves, radio waves, micro waves, seismic waves - wave as a carrier of energy - classification of waves. (i) based on medium - mechanical and electromagnetic waves (ii) based on vibration of particles in the medium - Longitudinal & transverse waves - one, two & three-dimensional waves with examples - definition of wave amplitude, wave frequency, wave period, wavelength and wave velocity - concept of phase of a wave - derivation $v = f\lambda$ to establish the relation between path difference and phase difference - definition of a progressive wave and its characteristics - derivation of equation of a progressive wave - different forms of a progressive wave equation - definition of wave intensity and its unit - statement and explanation of principle of superposition of waves with examples - problems.

6.3 Sound - Properties of Sound - speed of sound in a gas - explanation of Newton's formula for speed of sound - correction by Laplace - Newton - Laplace formula - discussion of factors affecting speed i.e. pressure, temperature, humidity and wind - definition of sound intensity - explanation of loudness and its unit definition of intensity level and its unit - mention of relation between intensity and loudness - medium - mechanical and electromagnetic waves (ii) based on vibration of particles in the medium - Longitudinal & transverse waves - one, two & three-dimensional waves with examples - definition of wave amplitude, wave frequency, wave period, wavelength and wave velocity - concept of phase of wave - derivation $v = f\lambda$ to establish the relation between path difference and phase difference - definition of a progressive wave and its characteristics - derivation of equation of a progressive wave - different forms of a progressive wave equation - definition of wave intensity and its unit - statement and explanation of principle of superposition of waves with examples - problems.

6.4 Sound - Properties of sound - speed of sound in a gas - explanation of Newton's formula for speed of sound - correction by Laplace - Newton - Laplace formula - discussion of factors affecting speed i.e. pressure, temperature, humidity and wind - definition of sound intensity - explanation of loudness and its unit definition of intensity level and its unit - mention of relation between intensity and loudness - distinction between noise and musical note - characteristics of a musical note - phenomenon of beats and its theory - application of beats (i) to find the frequency of a note (ii) to tune the musical instruments - Doppler effect - derivation of expression for apparent frequency in general case and discussion to special cases - qualitative comparison of Doppler effect in sound and light - problems.

6.5 Stationary Waves - Formation of stationary waves - its theory - characteristics - theory of different modes of vibration of air in a closed pipe and in an open pipe - end correction - Vibration in a stretched string - derivation of equation for fundamental frequency & harmonics - laws of transverse vibrations in a stretched string - explanation of forced oscillations, resonance and damped oscillations - problems.

6.6 Acoustics of Buildings : Explanation of reverberation and reverberation time - factors affecting reverberation time - mention of Sabine's formula - mention of optimum reverberation time for speech & music - requisites for good acoustics.

Unit 7 Earth's atmosphere and Astrophysics

7.1 Earth's Atmosphere : Mention of variation of earth's atmospheric pressure with height - mention of zones of the atmosphere and insolations - ozone layer and its significance - explanation of ionosphere - magnetosphere and Van-Allen Belts - explanation of Aurora and its significance.

7.2 Astrophysics : Mention of physical properties of stars - sun and other main sequence stars - explantation of HR diagram - qualitative explanation of internal temperature and pressure of a star - basic concept of photon diffusion time - mention of mass - luminosity relation of a star - stellar evolution in brief.

II YEAR

Unit 1 Geometrical Optics

1.1 Refraction at a plane surface : Refraction through a parallel sided glass slab - derivation of expressions for lateral shift, and normal shift (object in a denser medium) - total internal reflection and its applications - optical fibers and its application in communication - problems.

1.2 Refraction through a prism : Derivation of expression for the refractive index in terms of A and D - dispersion through a prism - experimental arrangement for pure spectrum - deviation produced by a thin prism - dispersive power - mention of condition for dispersion without deviation - problems.

1.3 Refraction at a spherical surface - derivation of the relation connecting n, u, v and r for refraction at a spherical surface (concave towards a point object in a denser medium) - derivation of lens maker's formula - power of a lens - magnification - derivation of expression for the equivalent focal length of combination of two thin lenses in contact - mention of expression for equivalent focal length of two thin lenses separated by a distance - problems.

Unit 2 Physical Optics

2.1 Introduction to Theories of Light - A brief explanation of Newton's corpuscular theory, Huygens' wave theory and Maxwell's electromagnetic theory - mention of expresssion for speed of light $C = \frac{1}{\sqrt{\mu_o \varepsilon_o}}$, qualitative explanation of Hertz's experiment - brief explanation of Planck's quantum theory of radiation - dual nature of light.

2.2 Interference - Explanation of the phenomenon theory of interference - derivation of conditions for constructive and destructive interference - Young's double slit experiment, derivation of expression for fringe width - qualitative explanation of interference at thin films and Newton's rings - problems.

2.3 Diffraction - Explanation of the phenomenon - distinction between Fresnel and Fraunhoffer diffraction - qualitative explanation of diffraction at single slit and analysis of diffraction pattern (Fraunhoffer type) - qualitative explanation of plane diffraction grating at normal incidence - limit of resolution - resolving power - Rayleigh's criterion - definition and mention of expression for resolving powers of microscope and telescope - problems.

2.4 Polarisation - Explanation of the phenomenon - representation of polarised and unpolarised light - explanation of plane of polarisation and plane of vibration - methods of producing plane polarised light : by reflection, - Brewster's law, refraction, double refraction, selective absorption - construction and application of polaroids - optical activity - specific rotatory power - construction and working of Laurent's half shade polarimeter - mention of circularly and elliptically polarised light - problems.

2.5 Speed of light - Michelson's rotating mirror experiment to determine speed of light - importance of speed of light.

Unit 3 Electrostatics

3.1 Electric charges - Concept of charge - Coulomb's law, absolute and relative permitivity - SI unit of charge.

3.2 Electrostatic Field - Concept of electro field - definition of field strength - derivation of expression for the field due to an isolated charge, concept of dipole - mention of expression for the field due to a dipole - definition of dipole moment - mention of expression for torque on a dipole - explanation of polarisation of a dielectric medium - dielectric strength - concept of lines of force and their characteristics - explanation of electric flux - statement and explanation of Gauss theorem and its applications to derive expressions for electric intensity (a) near the surface of a charged conductor (b) near a spherical conductor - concept of electric potential - derivation of the relation between electric field and potential - derivation of expression for potential due to an isolated charge - explanation of potential energy of a system of charges - problems.

3.3 Capacitors - Explanation of capacity of a conductor and factors on which it depends - definition of capacitance and its unit - derivation of expression for capacity of a spherical conductor - principle of a capacitor - derivation of expression for capacitance of parallel plate capacitor - mention of expression for capacitance of spherical and cylindrical capacitors - derivation of expression for energy stored in a capacitor - derivation of expression for equivalent capacitance of capacitors in series and parallel - mention of uses of capacitors - problems.

Unit 4 Current electricity

4.1 Electric current : Microscopic view of current through conductors (random motion or electrons) - explanation of drift velocity and mobility - derivation of expression for current $I = neAv_d$ - deduction of Ohm's law - origin of resistance - definition of resistivity - temperature coefficient of resistance - concept of super conductivity - explanation of critical temperature, critical field and high temperature superconductors - mention of uses of superconductors - thermistors and mention of their uses - colour code for resistors - derivation of expression for effective resistance of resistances in series and parallel - derivation of expression for branch currents - definition of emf and internal resistance of a cell - Ohm's law applied to a circuit - problems.

4.2 Kirchoff's laws - Statement and explanation of Kirchoff's laws for electrical network - explanation of Wheastone's network - derivation of the condition for its balance by applying Kirchoff's laws - principle of metre bridge - problems.

4.3 Magnetic effect of electric current - Magnetic field produced by electric current - statement and explanation of Biot - Savart's (Laplace's) law - derivation

of expression for magnetic field at any point on the axis of a circular coil carrying current and hence expression for magnetic field at the centre - current in a circular coil as a magnetic dipole - explanation of magnetic moment of the current loop - mention of expression for the magnetic field due to (i) a straight current carrying conductor (ii) at a point on the axis of a solenoid - basic concepts of terrestrial magnetism - statement and explanation of Tangent law - construction and theory of tangent galvanometer - problems.

4.4 Mechanical effect of electric current - Mention of expression for force on a charge moving in magnetic field - mention of expression for force on a conductor carrying current kept in a magnetic field - statement of Fleming's left hand rule - explanation of magnetic field strength in terms of flux density - derivation of expression for the force between two parallel conductors carrying currents and hence definition of ampere - mention of expression for torque on a current loop kept in an uniform magnetic field - construction and theory of moving coil galvanometer - conversion of a pointer galvanometer into an ammeter and voltmeter - problems.

4.5 Electromagnetic induction - Statement and explanation of Faraday's laws of electromagnetic induction and Lenz's law - derivation of expression for emf induced in a rod moving in a uniform magnetic field - explanation of self induction and mutul induction - mention of expression for energy stored in a coil - explanation of eddy currents - alternating currents - derivation of expression for sinusoidal emf - definition of phase and frequency of ac - mention of the expression for instantaneous, peak, rms, and average values - derivation of expression for current in case of ac applied to a circuit containing (i) pure resistor (ii) inductor (iii) capacitor - derivaion of expression for impedance and current in LCR series circuit by phasor diagram method - explanation of resonance - derivation of expression for resonant frequency - brief account of sharpness of resonance and Q - factor - mention of expression for power in ac circuits - power factor and wattless current - qualitative description of choke - basic ideas of magnetic hysteresis - construction and working of transformers - mention of sources of power loss in transformers - ac meters - principle and working of moving iron meter - qualitative explanation of transmission of electrical power - advantages of ac and dc - problems.

Unit 5 Atomic Physics

5.1 Introduction to atomic physics - Mention of the types of electron emission - description and theory of Dunnington's method of finding e/m of an electron - explanation of types of spectra; emission and absorption spectra - brief account of Fraunhoffer lines - qualitative explanation of electromagnetic spectrum with emphasis on frequency.

5.2 Photo electric Effect : Explanation of photo electric effect - experiment to study photo electric effect - experimental observations - Einstein's photo electric equation

and its explanation - principle and uses of photo cells: (i) photo emissive (ii) photo voltaic (iii) photo conductive cells - problems.

5.3 Dual nature of matter - Concept of matter waves - arriving at the expression for de Brogile Wave length - principle and working of G.P. Thomson's experiment - principle of Electron Microscope, Scanning Electron Microscope, Transmission Electron Microscope and Atomic Force Microscope.

5.4 Bohr's Atom model : Bohr's atomic model for Hydrogen like atoms - Bohr's postulates - arriving at the expressions for radius, velocity, energy and wave number - explanation of spectral series of Hydrogen - energy level diagram - explanation of ionization and excitation energy - limitations of Bohr's theory - qualitative explanation of Sommerfeld & Vector atom models - problems.

5.5 Scattering of light : Explanation of coherent and incoherent scattering - blue of the sky and sea - red at sunrise and sunset - basic concepts and applications of Raman effect.

5.6 Lasers : Interaction between energy levels and electromagnetic radiation - laser acton - population inversion - optical pumping - properties of lasers - construction and working of Ruby laser - mention of applications of lasers - brief account of photonics

5.7 Nuclear Physics : Characteristics of nucleus - qualitative explanation of liquid drop model - qualitative explanation of nuclear magnetic resonance (NMR) and its applications in medical diagnostics as MRI - nuclear forces and their characteristics - explanation of Einstein's mass - energy relation - definition of amu and eV - arriving at 1 amu=931 Mev - examples to show the conversion of mass into energy and vice-versa - mass defect - binding energy - specific binding energy - BE curve - packing fraction.

Nuclear fission with equations - nuclear chain reaction - critical mass - controlled and un-controlled chain reactions - types of nuclear reactors and mention of their principles - disposal of nuclear waste. Nuclear fusion - stellar energy (carbon & proton cycles) - problems.

5.8 Radioactivity : Laws of radioactivity - (i) Soddy's group displacement laws - (ii) decay law - derivation of $N=N_o.e^{-\lambda t}$ - explanation of decay constant - derivation of expression for half life - mention of expression for mean life - relation between half and mean life - units of activity; Bequerrel and Curie - Artificial transmutation : Artificial radioactivity - radio isotopes and mention of their uses - brief account of biological effects of radiations and safety measures - problems.

5.9 Elementary particles - Basic concepts of leptons and hadrons - qualitative explanation of β-decay - neutrino hypothesis and Quarks.

5.10 Solid state electronics - Qualitative explanation of Band theory of solids - classification of conductors, insulators and semiconductors - intrinsic and extrinsic semiconductors - p-type and n-type semiconductors - construction and action of pn - junction - forward and reverse biasing - half wave and full wave rectification - function and application of light emitting diodes - photo diode - laser diode - transistors - npn and pnp transistors - action of transistor - npn transistor as an amplifier in CE mode.

5.11 Digital Electronics - Logic gates - AND, OR, NOR & NAND symbols and truth table - applications of logic gates (Boolean equations) - half adder and full adder.

5.12 Soft condensed matter physics - Liquid crystals - classification, thermotropic (nematic, cholesteric and smectic) and lyotropic liquid crystals - mention of applications of liquid crystals - basic concept of emulsions, gels & foams.

I YEAR PREUNIVERSITY SYLLABUS

BIOLOGY: PART I (BOTANY)

THEORY

I. General Biology Topics

B.1 Biosystematics

1.1 Introduction - Natural — a) Need, history and types of classification (Artificial, and Phylogenetic)

b) Species concept, Binomial nomenclature with examples, Rules and advantages of binomial nomenclature.

1.2 Linnaean hierarchy - Kingdom to species with examples (*Cocos nucifera* and *Homo sapiens*).

1.3 The five-kingdom system of classification in detail - General characters of kingdoms Monera, Protista, Mycota, Metaphyta and Metazoa.

B.2 Cell Biology

2.1 CELL STRUCTURE

2.1.1 Structure and functions of cell components - cell wall, plasma membrane (fluid mosaic model), endoplasmic reticulum, plastids (brief), mitochondria (brief), Golgi complex, Ribosomes, Lysosomes, Centrosome, vacuole and nucleus - nuclear envelope (nuclear pores and nuclear lamina) nucleoplasm, nucleolus and chromatin. A brief account of ergastic substances (mention about reserve food, secretory and excretory substances wtih examples).

2.1.2 Differences between plant cell and animal cell.

2.2 CHROMOSOMES

2.2.1 Discovery, shape, size and number of chromosomes, Autosomes and allosomes; Karyotype and idiogram.

2.2.2 Chemical composition and function.

2.2.3 General structure - Concept of centromere (primary constriction), secondary constriction, satelite, kinetochore, telomere.

2.2.4 Types of chromosomes based on the position of centromere.

2.2.5 Ultrastructural organization of the eukaryotic chromosome - nucleosome model.

2.2.6 Numerical aspects of chromosomes: A brief note on aneuploidy (monosomy and trisomy) and euploidy (haploidy, diploidy and polyploidy).

2.3 CELL REPRODUCTION

2.3.1 Cell division and types.

2.3.2 Concept of cell cycle.

2.3.3 Mitotic division and significance.

2.3.4 Meiotic division and its significance.

2.3.5 Cancer - meaning of cancer, benign and malignant tumours, characters of cancer cells, types of cancer (Carcinoma, Sarcoma, Lymphoma and Leukemia), causes of cancer (physical, chemical and biological carcinogens with examples).

2.3.6 Concept of cell senescence and apoptosis (programmed cell death).

II Botany Topics

B.3 Diversity of life on Earth

3.1 Kingdom Monera and other Simple Living Forms

3.1.1 PRIONS AND VIROIDS

Concept of Prions and Viroids - definition, discovery, chemical nature with one example of disease each - Creutzfeldt-Jacob disease (CJD) and Potato spindle tuber disease (PSTV)

3.1.2 VIRUSES

3.1.2.1 Introduction - living and non-living properties of viruses.

3.1.2.2 Types of Viruses - Plant viruses, Animal viruses, Bacterial viruses, DNA viruses and RNA viruses (Only definitions with examples to include the following: Viral diseases in plants - Tobacco Mosaic, Cauliflower Mosaic, Potato Mottle, Leaf mosaic of tomato and Banana Bunchy Top; viral diseases in animals - Rabies, Dog distemper; Viral diseases in man- Japanese Encephalitis, Poliomyelitis, Hepatitis-B, Herpes, AIDS and Conjunctivitis).

3.1.2.3 Structure of T_4 Bacteriophage, multiplication of T_4 phage (Lytic cycle only).

3.1.3 BACTERIA

3.1.3.1 Introduction

3.1.3.2 Classification of bacteria based on mode of nutrition (Heterotrophic bacteria - parasitic, saprophytic and symbiotic - and Autotrophic bacteria - photosynthetic and chemosynthetic; definition and one example for each group).

3.1.3.3 Ultrastructure of the bacterial cell

3.1.3.4 Reproduction in bacteria - asexual reproduction by binary fission, endospore formation and sexual mechanism (genetic recombination in bacteria - transduction, transformation and conjugation with detail of HFR conjugation only).

3.1.3.5 Importance of bacteria.

a) Beneficial aspects - Scavenging, Fermentation, Retting, Antibiotics, Ecological importance, Importance in Genetic engineering and Importance in mineral extraction.

b) Harmful aspects Food spoilage and food poisoning. Bacterial diseases - Brief and introductory information on the following diseases: Citrus canker, Anthrax, Cholera, Gastric ulcer, Tuberculosis and Syphilis (details of treatment are not required).

c) A brief introduction on Archaea and their importance.

3.1.4 CYANOBACTERIA

3.1.4.1 Introduction.

3.1.4.2 Structure and reproduction of *Nostoc.*

3.1.4.3 Differences between bacteria and Cyanobacteria.

3.1.4.4 Importance of Cyanobacteria.

3.2 Kingdom Protista

3.2.1 General characters.

3.2.2 Mentioning the following divisions wtih suitable examples. Chrysophyta (Diatoms), Euglenophyta *(Euglena)* and Protozoa (to be studied in Zoology.)

3.2.3 Taxonomic position of Algae with reference to the five-kingdom classification choosing the following examples: Desmids (typical members of Protista) and *Spirogyra* (A member of Metaphyta) are both included in division Chlorophyta (Green Algae).

3.2.4 Importance of Algae (in brief).

3.3 Kingdom Mycota - The Fungi

3.3.1 General characters of Fungi.

3.3.2 Mentioning divisions with suitable examples. Zygomycota - *Rhizopus;* Ascomycota - *Saccharomyces;* Basidiomycota - *Agaricus;* Duteromycota - *Cercospora.*

3.3.3 Importance of Fungi; A brief account of mushroom culturing (paddy straw mushroom culturing).

3.4 Kingdom Metaphyta

3.4.1 BRYOPHYTA

3.4.1.1 General characters of Bryophytes.

3.4.1.2 Mentioning classes with suitable examples - Hepaticopsida - *Riccia;* Anthocerotopsida - *Anthoceros;* Bryopsida - *Funaria.*

3.4.2 PTERIDOPHYTA

3.4.2.1 General characters of Pteridophytes.

3.4.2.2 Mentioning classes with suitable examples: Psilotopsida - *Psilotum;* Lycopsida - *Selaginella;* Sphenopsida - *Equisetum;* Pteropsida - *Nephrolepis.*

3.4.3 GYMNOSPERMS

3.4.3.1 General characters of Gymnosperms.

3.4.3.2 Mentioning classes wtith suitable examples - Cycadopsida - *Cycas;* Coniferopsida - *Pinus;* Gnetopsida - *Gnetum.*

3.4.4 ANGIOSPERMS

3.4.4.1 General characters of Angiosperms - Typical dicotyledonous and monocotyledonous plants (*Brassica* and grass) and differences between dicotyledons and monocotyledons.

3.4.4.2 Study of the Angiosperm flower.

Technical terms used in description of flower - Actinomorphic, Zygomorphic, Unisexual, Bisexual, Pedicellate, Sessile, Bracteate, Ebracteate, Bracteolate, Ebracteolate, Homochlamydeous, Heterochlamydeous. Complete flower, Incomplete flower, Epigynous, Hypogynous and Perigynous flowers.

The parts of the flower:

a) Accessory whorls:

i. Concept of perianth.

ii. Calyx - polysepalous and gamosepalous conditions with one example each.

iii. Corolla - Polypetalous and Gamopetalous conditions.

iv. Aestivation-definition and types- Valvate, Imbricate and Twisted types with one example each.

b) Essential whorl:

i. Androecium - parts of a stamen, adelphy, syngeny, synandry and epipetaly. Anther lobes - monothecous and dithecous conditions with one example each.

ii. Gynoecium - parts of gynoecium, concept of carpel, Types of gynoecium - apocarpous and syncarpous gynoecium. Types of gynoecium based on number of carpels monocarpellary, bicarpellary, tricarpellary andmulticar pellary conditions. Nature of ovary of gynoecium with reference to locule - unilocular, bilocular, trilocular and multilocular conditions. Placentation - definition, types - marginal, axile, basal and parietal.

3.4.4.3 Internal strutcture of essential parts

a) T.S of mature anther and structure of the pollen grain (Microsporogenesis not needed)

b) Structure of a mature anatropous ovule (Megasporogenesis not needed)

3.4.4.4 Pollination in Angiosperms

Definition, self and cross pollination, types, (Autogamy, Allogamy, Geitonogamy, Xenogamy, Cleistogamy, Homogamy)

Agents (Anemophily, Zoophily - Entomophily, Ornithophily and Hydrophily) with examples. (Pollination mechanisms not needed)

3.4.4.5 Fertilization in Angiosperms - Definition, a brief account of double fertilization and its significance (Embryogeny not required)

3.4.4.6 The Angiosperm fruit -

Definition, types of fruits - Simple fruits - fleshy fruits (drupe and berry), Dry Fruits (capsule, cypsela and cremocarp) and Pome (apple). Aggregate fruits - etaerio of follicles. Multiple fruits - Sorosis.

3.4.4.7 The Angiosperm seed -

Concept of seed.

A typical dicotyledonous seed (Example: Bean seed)

A typical monocotyledonous seed (Example : Maize grain)

B.4 Taxonomy and Economic Botany

4.1 TAXONOMY

4.1.1 An outline of classification system of Engler and Prantl.

4.1.2 Distinguishing characters and plants of economic interest of the following families of angiosperms:

Malvaceae - (Hibiscus, Cotton, Lady's finger).

Apocynaceae - (*Catheranthus roseus, Rauwolfia serpentiana, Plumeria alba* and *Nerium indicum*)

Musaceae - (*Musa paradisiaca* and *Ravenala madagascariensis*)

4.2 ECONOMIC BOTANY

4.2.1 Intoduction.

4.2.2 Oil yielding plants - Groundnut and Sunflower.

4.2.3 Cereals and millets - Rice and Jowar.

4.2.4 Pulses - Pigeon pea and Bengal gram.

4.2.5 Medicinal plants - *Adathoda vasica, Ephedra gerardiana, Dryopteris, Santalum album, Gymnema sylvestre, Ocimum sanctum, Phyllanthus emblica*

4.2.6 Spices - Pepper, cloves and cardamom.

4.2.7 Beverages - Coffee, cocoa and tea.
(mntioning Scientific names, family, parts used and uses only).

B.5 Elements of Plant Pathology

Symptoms, etiology, type and nature of pathogens, and methods of control with reference to the following diseases:

i. Banana bunchy top
ii. Tikka disease of goundnut
iii. Crown gall (of any common dicot plant).

Biology: Part II (Zoology)

Theory

III General Biology Topics

Z.1 Introduction to Biology

1.1 Definition of Biology and its main branches - Botany and Zoology.

1.2 Scope of Biology.

1.3. Branches of Biology (definitions only)

1.3.1 Classical branches - morphology, cytology, histology, anatomy, physiology, developmental biology, biosystematics, genetics, ecology, organic evolution and palaeontology.

1.3.2 Interdisciplinary branches - biophysics, biochemistry and biostatistics.

1.3.3 Applied branches and career prospects - agriculture, entomology, sylviculture, pathology, apiculture, microbiology and bioinformatics.

1.4 Role of biology in dispelling myths and disbeliefs.

Z.2 Biomolecules

2.1 CARBOHYDRATES

Definition

Classsification - monosaccharides (ribose, deoxyribose, glucose, fructose and galactose), oligosaccharides (maltose, sucrose and lactose) and

polysaccharides (starch, glycogen, cellulose, pectin, chitin and agar agar). Biological significance.

2.2. PROTEINS

Definition

Classification - simple proteins (albumins, globulins, histones, actin, myosin and keratin), conjugate proteins - Chromoproteins (haemoglobin), glycoproteins (mucin of saliva), phosphoproteins (casein of milk) and lipoproteins (lipovitelline of egg yolk).
Biological significance of amino acids and proteins.

2.3 LIPIDS

Definition

Classification: Simple lipids - oils (vegetable oils and oils of animal origin), fats (butter) and waxes (beeswax), Compound lipids - phospholipids (lecithin and cephalin) and sphingolipids (cerebrosides), Related compounds - steroids (estrogen, progesterone and testosterone), sterols (cholesterol) and prostaglandins.
Biological significance.

2.4 ENZYMES

Definition, properties, classification based on functions.
Mode of action - induced fit theory of Koshland.

2.5 NUCLEIC ACIDS - Occurrence, basic chemical composition (nucleoside and nucleotide), mention of types (DNA and RNA) and functions (structural details are not required).
[**Note: Details of chemical structure of biomolecules are not required*]

Z.3 Origin of life and Organic Evolution

3.1 ORIGIN OF LIFE

3.1.1 Introduction.

3.1.2 Concept of abiogenesis and biogenesis (experimental evidences not required).

3.1.3 A.I. Oparin's Theory of chemical evolution of life (Views of Haldane and Sidney Fox to be mentioned).

3.1.4 Stanley Miller's experiment in support of chemical evolution.

3.2 ORGANIC EVOLUTION

3.2.1 Introduction

3.2.2 Darwin's theory (DDT resistance in mosquitoes and industrial melanism in Peppered moth, to illustrate natural selection to be quoted as examples).

3.2.3 Brief account of Mutation theory.

3.2.4 NeoDarwinism -

Introduction, Darwinian concept vs NeoDarwinian concept (gene pool and gene frequency), Hardy-Weinberg law and sources of variations as evolutionary force - sexual reproduction, genetic drift, gene flow, mutation and isolation (reproductive and geographic).

IV Zoology Topics

Z.4 Diversity of Animal Life

4.1 Introduction.

4.2 Outline classification of kingdom Animalia (only the major phyla to be considered).

4.3 Major animal phyla [@]:

4.3.1 Non-chordata (animals without backbone) - General characters and calssification up to calsses* with suitable examples of the following phyla: Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca and Echinodermata.

4.3.2 a) Chordata (Animals with backbone) - Fundamental characters and classification of chordata up to subphyla - Hemichordata, Urochordata, Cephalochordata and Vertebrata with suitable examples.

b) Subphylum Vertebrata - Salient features with examples of

i) Superclass Pisces: Class Chondreichthyes and Class Osteichthyes);

ii) Superclass Tetrapoda: Amphibia, Reptilia, Aves and Mammalia.

c) Differences between non-chordates and chordates.

[*Note:* *1) @ Outline classification as treated in 'A Manual of Zoology' Vol. I and Vol. II (1971) by Ekambarantha Ayyar.*

*2) * Salient features of classes of Invertebrate phyla not to be given*]

Z.5 Type Study : Cockroach - *Periplaneta* sp.

5.1 Morphology (Structure of head capsule and compound eye not required) Digestive and nervous systems.

Z.6 Animal Resources

6.1 SERICULTURE

6.1.1 Definition

6.1.2 Main aspects - moriculture : rearing of silkworms and reeling.

6.1.3 Brief account of moriculture: definition, methods (row and pit systems) and its importance

6.1.4 Types of silk - mulberry and non-mulberry (Tasar, Eri and Muga)

6.1.5 Diseases of mulberry silkworm - Pebrine, Muscardine of Calcino, Flacherie and Grasserie [Listing of diseases and causative organisms only].

6.2 AQUACULTURE

6.2.1 Definition.

6.2.2 Areas - fin fisheries and shell fisheries.

6.2.3 Pisciculture: definition, capture fisheries and culture fisheries.

6.2.4 Inland fisheries - procedure.

6.2.5 Monoculture, monosex culture and polyculture (composite fish farming) - meaning with examples.

6.3 DAIRY

6.3.1 Definition

6.3.2 Types of indigenous cattle with examples based on utility - draught, milching and dual purpose (Cow breed - Sindhi, Sahiwal, Amrithmahal, Hallikar, Ongole and Haryana; Buffalo breeds - Murrah, Surti, Mehsana and Nagpuri).

6.3.3 Examples of high yielding exotic breeds (Holstein, Red Dane, Jersey and Brown Swiss).

6.3.4 Nutritive value of milk.

6.3.5 Utility of cattle - biogas, leather, gelatin and organic manure.

6.4 POULTRY

6.4.1 Definition

6.4.2 Types of indigenous fowls with examples based on utility - layers, broilers and dual purpose (Aseel, Chittagong, Ghagus, Basra and Kadaknath).

6.4.3 Examples of exotic breeds (White Leghorn, Cornish, Rhode Island Red Plymouth Rock and Newhampshire).

6.4.4 Giriraj - Origin and salient features.

6.4.5 Nutritive value of egg.

6.4.6 Diseases (Respiratory mycoplasmosis, Fowl pox candidiasis, Raniketh and Fowl cholera) - Mentioning of diseases and causative organisms only.

6.5 VERMICULTURE

Definition and procedure.

Vermicompost - degradation of organic wastes and role of Earthworm in soil fertility.

I PREUNIVERSITY BIOLOGY PRACTICALS

BIOLOGY : Part I (BOTANY)

BP - I Introduction and Study of Monera.

a) Study of microscopes - simple and compound and their use.

b) Observation and identification of exampleS belonging to the following groups:

i. Viruses - Eg: Any virus-infected plant such as mosaic infected bean plant.

ii. Bacteria - Gram stained Lactobacilli; an example of bacterial disease of plants such as Citrus canker

iii. Cyanobacteria - Permanent slide of Nostoc.

BP - II Study of General Characters and Important Examples of the Following Groups:

a) Algae - Chlorophyta - Eg: *Spirogyra.*

b) Fungi - Basidiomycetes - Eg: *Agaricus.*

c) Bryophyta - Eg: *Riccia* - thallus.

d) Pteridophyta - Eg: *Nephrolepis* - plant body.

e) Gymnosperms - Eg: *Cycas* - plant body, sporophylls and seed (external study only).

BP - III Angiosperms

a) A typical plant body of a dicot (*Brassica* or any other commonly available plant) and a monocot (grass plant). - General description of the vegetative plant body.

b) Leaf and its modifications in the following examples:

i. Simple leaf (*Hibiscus*)

ii. Pinnately compound leaf (*Cassia*)

iii. Palmately compound leaf (*Oxalis*)

iv. Phyllotaxy - Alternate leaves (*Hibiscus*), Opposite leaves (*Vinca*) and Whorled leaves (*Nerium*)

v. Insectivorous leaf (*Drosera* or *Nepenthes*) - either specimen of photograph..

vi. Propagation through leaves (*Bryophyllum*)

BP - IV Angiosperms - The flower (Eg: *Hibiscus*)

Study of an angiosperm flower to learn the following skills:

a) To make a technical description of a flower.

b) To prepare and mount a T.S. of the ovary and to mount a single stamen.

c) To derive the floral diagram and floral formula of a flower.

BP - V Angiosperms - The Inflorescence

Study of the following types of inflorescence:

a) Racemose types - Simple raceme (Crotalaria), Spike (Achyranthes), Compound spadix (Cocos nucifera) and Capitulum (Tridax).

b) Cymose types - Solitary cyme (Hibiscus), Helicoid cyme (Hamelia), Dichasial cyme (Jasminum or Clerodendrum) and Polychasial cyme (Calotropis).

c) Special types - Cyathium (Euphorbia) and Hypanthodium (Ficus).

BP - VI Angiosperms - The Fruit and the Seed

a) Types of fruit: Cypsela (sunflower), Legume (Bean), Capsule (lady's finger), Berry (Tomato, Drupe (mango or coconut), Aggregate of follicles (Michelia), Sorosis (Jack), Syconus (Ficus) and Pome (Apple).

b) Types of seed: Dicotyledonous and exalbuminous seed (Bean) and monocotyledonous and albuminous seed (Maize).

BP - VII Angiosperms - Taxonomy

Study of any one member of each of the following families with reference to distinguishing features, floral diagram and floral formula.

a. Malvaceae (Example suggested: Hibiscus rosa-sinensis.)

b. Apocynaceae (Example suggested: Vinca rosea.)

c. Musaceae (Example suggested: Musa sp.)

BP - VIII Cytology

a) Study of plant cells in a peeling of onion or tomato pulp.

b) Observation of slides of onion root tip squash (either fresh preparation or permanent slide) to study the following stages of mitosis:

i. Prophae; ii. Metaphase; iii. Anaphase; iv. Telophase.

Suggested Activity:

A comparative study of appearance of bacteria through light microsope, transmission electron microscope and scanning electron microscope using photographs of some common microbe such as *Escherichia coli.*

Biology : Part II (Zoology)

ZP - I Microscopic Observation

Observation of culture paricularly for *Paramecium* (permanent slide also to be observed) and identification of other microorganisms with the aid of books and making their drawings.

ZP - II Animal Taxonomy

a) Protozoa - *Amoeba* and *Euglena*.

b) Porifera - *Sycon*.

c) Coelenterata - Hydra, *Aurelia* and *Astraea* (stony coral)

ZP - III Animal Taxonomy

a) Platyhelminthes - *Planaria* and *Tapeworm.*

b) Nematoda - *Ascaris* (male and female)

c) Annelida - Earthworm and Leech.

ZP - IV Animal Taxonomy

a) Arthropoda - Prawn (*Palaemopn* or *Penaeus*), Scorpion and Millipede

b) Mollusca - *Unio* and Octopus.

c) Echinodermata - Starfish.

ZP - V Animal Taxonomy

1) Chordata - Pisces - Shark and Carp.

2) Chordata - Amphibia - *Bufo* (Toad)

ZP - VI Animal Taxonomy

a) Chordata - Reptilia - Chamaeleon.

b) Chordata - Aves - Pigeon.

c) Chordata - Mammalia - Bat.

ZP - VII Life Cycle of Silkmoth (*Bombyx mori*).

Adult moth (male and female), silkworm, cocoon and pupa.

ZP - VII Dissection of Cockroach

a) Digestive system. b) Nerve cord.

II YEAR PREUNIVERSITY SYLLABUS
BIOLOGY: PART I (BOTANY)

THEORY

I GENERAL BIOLOGY TOPICS

B.1 MOLECULAR BIOLOGY

1.1 NUCLEIC ACIDS

1.1.1 DNA – Occurrence, DNA as the genetic material (with the experiment of

Avery as evidence), chemical composition, structure (Watson-Crick model), Semiconservative method of replication.

1.1.2 RNA – Occurrence, chemical composition, brief account of structure and functions of genetic RNA, rRNA, mRNA and tRNA (clover-leaf model).

1.2 THE GENE, THE GENETIC CODE AND GENETIC CONTROL OF PROTEIN SYNTHESIS – Concept of gene (prokaryotic and eukaryotic), genetic code and its characteristics, genetic control of protein synthesis (transcription and translation) and Lac operon concept.

B.2 BIOTECHNOLOGY

2.1 INTRODUCTION Scope of biotechnology.

2.2 GENETIC ENGINEERING

Introduction; Tools used in genetic engineering – Vectors (plasmid – pUC18), Enzymes (REN and Ligase), Host cell (*E.coli*) and Bioreactors.

2.3 RECOMBINANT DNA TECHNOLOGY AND ITS APPLICATIONS

Insulin synthesis to be used as an example.

2.4 A BRIEF ACCOUNT OF:

a) DNA fingerprinting b) Gene therapy

c) Human genome project c) Monoclonal antibodies

2.5. IMPROVEMENT OF CROP PLANTS

Breeding techniques; Tissue culture technique – organ culture e.g.: stem; transgenic plants e.g.: Golden rice.

2.6 IMPROVEMENT OF ANIMALS

Breeding techniques and stem cell culture, transgenic animals e.g.: Cattle.

2.7 HAZARDS AND SAFEGUARDS OF GENETIC ENGINEERING

II BOTANY TOPICS

B.3 PLANT HISTOLOGY & ANATOMY

3.1 INTRODUCTION: Definition and general classification of plant tissues.

3.2 MERISTEMS

Definition, structure and classification based on position, origin and function (theories on apical organization not required)

3.3 PERMANENT TISSUES – Distribution, structure and functions of:

3.3.1 Simple tissues: Parenchyma (Chlorenchyma and Aerenchyma), Collenchyma (angular, lacunar & lamellar) and Sclerenchyma – Fibres (Intraxylary and Extraxylary), Sclereids (Macrosclereids, Branchysclereids, Astrosclereids and Osteosclereids)

3.3.2 Complex tissues: Xylem and Phloem

3.4 Definition of the terms: Primary and secondary vascular tissues, exarch xylem, endarch xylem, collateral conjoint open and collateral conjoint closed vascular bundles, radial arrangement of vascular tissues.

3.5 SECONDARY GROWTH IN DICOT STEM

(This part shall be taught only after studying primary structure) intrastelar and extrastelar secondary growth.

PLANT PHYSIOLOGY

B.4 WATER RELATIONS OF PLANTS

4.1 FUNDAMENTAL CONCEPTS

4.1.1 Importance of water to plants

4.1.2 Significance and definitions of the following: Imbibition, Diffusion, Osmosis, Endosmosis, Exosmosis, Plasmolysis, Deplasmolysis, Turgor pressure, Wall pressure, Osmotc pressure (Concept of DPD not to be introduced)

4.1.3 Water potential and its components.

4.2 ABSORPTION OF WATER

4.2.1 Structure of root hair.

4.2.2 Sources of water for plants (available water and nonavailable water)

4.2.3 Region of absorption of water in plants

4.2.4 Entry of water from soil into xylem of root.

4.2.5 Active and passive absorption of water (active absorption to show osmotic and non osmotic processes)

4.3 ASCENT OF SAP

4.3.1 Definition and evidences to show the involvement of xylem (the Balsam plant experiment)

4.3.2 Composition of xylem sap

4.3.3 Transpiration pull theory – merits and demerits

4.4 LOSS OF WATER IN PLANTS

4.4.1 TRANSPIRATION

4.4.1.1 Definition and types

4.4.1.2 Structure of a typical stomatal apparatus (dicot example only)

4.4.1.3 Mechanism of stomatal movement – Steward's Starch hydrolysis theory and K^+ pump theory

4.4.1.4 Factors influencing the rate of transpiration (external)

4.4.1.5 Significance of transpiration.

4.4.1.6 A brief note on antitranspirants.

4.4.2 GUTTATION

A brief account of guttation – occurrence, causes and structure of hydathode.

4.5 TRANSLOCATION OF SOLUTES

4.5.1 Definition and evidences in support of involvement of phloem in the process (Girdling experiment and Tracer method)

4.5.2 Composition of phloem sap

4.5.3 MÜnch's mass flow hypothesis with merits and demerits.

4.5.4 Vein loading

B.5 BIOENERGETICS

5.1 INTRODUCTION

Light as the sources of energy and ATP as energy currency.

5.2 PHOTOSYNTHESIS

5.2.1 Definition

5.2.2 Ultrastructure of the chloroplast.

5.2.3 Photosynthetic pigments and their role; composition of photsystems I & II. (Molecular structures and formulae not required)

5.2.4 Mechanism – light reaction – cyclic and noncyclic photophosporylations; Dark reaction (C_3 pathway – Calvin cycle) – (details of regeneration steps not required); C_4 pathway and CAM (definition and examples only)

5.2.5 Influence of external factors on photosynthesis: Blackman's law of limiting factors.

5.2.6 Significance of photosynthesis

5.3 RESPIRATION

5.3.1 Definition and types (acrobic and anaerobic)

5.3.2 Ultra structure of mitochondrion.

5.3.3 Mechanism of aerobic respiration – Glycolysis, Krebs cycle & Terminal oxidation

5.3.4 Anaerobic respiration – Mechanism of fermentation in the presence of yeast and lactic acid bacteria

5.3.5 Role of external factors, respiratory quotient (RQ) and its significance and Pasteur effect

B.6 GROWTH AND GROWTH REGULATORS IN PLANTS

6.1 GROWTH

Definition, regions of growth, phases of growth and growth curve.

6.2 GROWTH REGULATORS

6.2.1 Definition

6.2.2 Role of the following plant hormones (Details of experiments on discovery of hormones not required):

i. Auxins

ii. Gibberellins

iii. Cytokinins

iv. Abscissic acid

v. Ethylene

6.2.3 Synthetic growth regulators and their applications (with reference to IAA, IBA, NAA, 2,4-D, BAP and Ethephon).

BIOLOGY : PART II (ZOOLOGY)

THEORY

III GENERAL BIOLOGY TOPICS

Z.1 GENETICS

1.1 MENDELIAN GENETICS

1.1.1 Mendel and his work

1.1.2 Definitions of the following terms: Allele, Phenotype, Genotype, Homozygous and Heterozygous

1.1.3 Principles of inheritance: unit characters, dominance, law of segregation (purity of gametes) and law of independent assortment.

1.1.4 Monohybrid cross, Dihybrid cross and Test cross.

1.2 DEVIATIONS FROM MENDELIAN LAWS

1.2.1 Incomplete dominance: E.g.: Flower colour in *Mirabilis jalapa.*

1.2.2 Multiple allelism: E.g.: ABO blood groups and their inheritance in main: Blood typing; Rh factor with a note on erythroblastosis foetalis.

1.2.3 Sex linked inheritance in man: E.g.: Inheritance of colourblindness and hypertrichosis in man.

1.3 GENETIC DISORDERS IN MAN

1.3.1 Chromosomal disorders – Down's syndrome, Klinefelter's syndrome, Turner's syndrome and Cri-du-Chat syndrome.

1.3.2 Gene disorders – Sickle cell anemia; haemophilia.

Z.2 BIODIVERSITY

2.1 DEFINITION AND TYPES

Ecosystem or habitat diversity, Species diversity and Genetic diversity.

2.2 BIODIVERSITY PROFILES OF INDIA AND KARNATAKA

Species diversity, Endemic species, Threatened species and Endangered species.

2.3 BENEFITS OF BIODIVERSITY

2.3.1 Economic: Traditional crop varieties and lesser known plants and animals of food value, medicinal plants …… harvested from wild habitat.

2.3.2 Ecological / Social – For controlling soil – water regimes and hydrology, for efficient organic residue management and soil fertility management.

2.3.3‘ Ethical – Cultural, Spiritual and Religious belief systems centred around the concept of sacred species, sacred groves and sacred landscapes.

2.4 BIODIVERSITY DEPLETION

Anthropocentric causes- urbanization, expansion of agriculture, deforestation, pollution, acidification of soil and water, mining activities, desertification and loss of soil fertility.

2.5 INTELLECTUAL PROPERTY RIGHTS

Patenting life forms

2.6 CONCEPT OF ECOSYSTEM SUSTAINABILITY

Conservation of natural resources based on traditional ecological knowledge (TEK):

2.6.1 Conservation of water – rainwater harvesting and watershed management.

2.6.2 Conservation of soil – Prevention of soil erosion and maintenance of soil fertility: methods of soil conservation.

2.6.3 Conservation of forests – Afforestation and maintenance of biosphere reserves.

2.6.4 Conservation of wild life – i. Setting up of national parks, sanctuaries, bioreserves and zoos ii. Habitat improvement.

2.7 GLOBAL ISSUES

Concepts, causes, effects and control measures of the following:

2.7.1 Global warming and greenhouse effect.

2.7.2 Ozone layer depletion.

2.7.3 Acid rain

2.7.4 Nuclear winter.

IV ZOOLOGY TOPICS

Z.3 MAN IN HEALTH AND DISEASES

3.1 CONCEPT OF HOMEOSTASIS – THE CETRAL DOGMA IN PHYSIOLOGY

3.1.1 Definition

3.1.2 Meaning of internal environment

3.1.3 Factors to be kept constant to achieve homeostasis

3.1.4 An example to illustrate homeostasis – regulation of blood glucose level by liver and pancreas through negative feedback

3.1.5 A note on diabetes mellitus.

3.2 BODY DEFENCE AND IMMUNITY

3.2.1 Introduction

3.2.2 Nonspecific body defences: a) Surface barriers b) Cellular and biochemical defences: phagocytosis, natural killer cells, interferons and inflammatory response.

3.2.3 Specific body defences (immunity): Antigen and antibody, role of B and T lymphocytes.

3.2.4 Types of immunity: Active (infection and vaccination) and Passive (from mother and immune serum Y-globulins).

3.3 DIGESTION

3.3.1 Gross anatomy of human digestive system (structure of tooth not required).

3.3.2 Components of food (concept of balanced diet)

3.3.3 Physiology of digestion of carbohydrates, proteins and fats.

3.3.4 Disorders: Causes, symptoms and prevention of hyperacidity and ulcer, jaundice and its types and hepatitis.

3.4 CIRCULATION

3.4.1 Introduction.

3.4.2 Gross anatomy of the human heart.

3.4.3 Mechanism of working of heart – cardiac cycle, stroke volume, cardiac out-put, complete double circulation.

3.4.4 Origin and conduction of heart beat.

3.4.5 Mechanism of blood clotting (Best and Taylor theory)

3.4.6 Blood pressure – hypotension and hypertension.

3.4.7 Disorders – causes and symptoms of myocardial infarction and cyanosis.

3.5 RESPIRATION

3.5.1 Gross anatomy of human respiratory system.

3.5.2 Mechanism of respiration:

i. Breathing (inspiration and expiration)

ii. External respiration (exchange of oxygen carbon dioxide between alveoli and blood)

iii. Internal respiration (exchange of oxygen and carbon dioxide between blood and body cells)

iv. Cellular respiration (to be taught under the topic B.5 'bioenergetics')

3.5.3 Disorders: Rhinitis, Asthma and bronchogenic carcinoma.

3.5.4 Artificial breathing.

3.6 EXCRETION

3.6.1 Introduction

3.6.2 Gross structure of nephron

3.6.3 Physiology of urine formation

3.6.4 Chemical composition of urine.

3.6.5 Disorders: a. Renal failure – acute and chronic.
b. Renal calculi

3.6.6 Kidney replacement therapy: a brief note on dialysis (haemodialysis and continuous ambulatory peritoneal dialysis) and kidney transplantation.

3.7 NERVOUS SYSTEM

3.7.1 Components – CNS, PNS & ANS.

3.7.2 Human brain – structure (sagittal section only) and functions (functional areas of cerebrum not required.)

3.7.3 Human spinal cord – structure and functions.

3.7.4 Meaning of reflex arc and reflex action

3.7.5 A brief study of the endocrine functions of the pituitary.

3.7.6 Disorders: Meaning, causes and symptoms of epilepsy, Parkinson's disease, Alzheimer's disease and Huntington's chorea.

3.7.7 Alcoholism and its effects.

3.7.8 Narcotic drugs – meaning, listing of types (stimulants, depressants, analgesics and hallucinogens) and their effects. Drug abuse and addiction, Efforts to counter alcoholism and drug menace.

Z.4 CONTINUITY OF LIFE

Part A Developmental Biology (Basics of sexual reproduction)

4.1 GAMETOGENESIS

4.1.1 Spermatogenesis – formation of spermatids and spermiogenesis (details of spermiogenesis are not required).

4.1.2 Ultrastructure of human sperm.

4.1.3 Oogenesis

4.1.4 Generalized structure of ovum.

4.2 FERITILIZATION

4.2.1 Definition

4.2.2 Types – external and internal

4.2.3 Mechanism

4.2.4 Significance.

4.3 EARLY DEVELOPMENT OF FROG

4.3.1 Structure of egg.

4.3.2 Cleavage

4.3.3 Blastulation

4.3.4 Gastrulation.

4.3.5 Derivatives of primary germ layers.

Part B Human Reproduction

4.4 A BRIEF ACCOUNT OF:

4.4.1 Fertilization.

4.4.2 Implantation

4.4.3 Placenta.

4.4.4 Role of gonadotropins and sex hormones in males and females (meaning of menstrual cycle to be highlited)

4.5 FERTILITY CONTROL

4.5.1 Need for fertility control

4.5.2 Survey of family planning methods: Spacing methods (Barriers, IUDs, Hormonal and Physiological) and Terminal methods (Tubectomy and Vasectomy)

4.6 INFERTILITY CONTROL

4.6.1 Meaning and causes of infertility in males and females.

4.6.2 Remedial methods (Assisted conception methods) – IVF, ET, GIFT and ZIFT. (details of GIFT and ZIFT not required).

4.7 SEXUALLY TRANSMITTED DISEASES

Meaning, causative organisms, mode of infection, symptoms and preventive measures of gonorrhoea, syphilis and AIDS.

CHEMISTRY

I P.U.C.

1. Metallurgy - 1

Occurrence of metals - minerals and ores.

General principles of metallurgy.

a. Concentration of ore by gravity process, magnetic separation and froth flotation.

b. Calcination and roasting.

c. Smelting. Concept of flux and slag to be introduced.

d. Refining - liquation, poling, electrolytic and zone refining.

Pyrometallurgy: extraction of Zinc from Zinc blende.

Hydrometallurgy: extraction of Gold by the cyanide process. Electrometallurgy: extraction of Magnesium from seawater.

II. Atomic Structure

Introduction - constituents of atoms, their charge and mass.

Atomic number and atomic mass.

Wave nature of light, Electromagnetic spectrum - emission spectrum of hydrogen - Lyman series, Balmer series, Paschen series, Brackett seris and Pfund series. Rydberg's equation. Numerical problems involving calculation of wavelength and wave numbers of lines in the Hydrogen spectrum. Atomic model - Bohr's theory, (derivation of equation for energy and radius not required). Explanation of origin of lines in hydrogen spectrum. Limitations of Bohr's theory. Dual nature of electron - distinction between a particle and a wave. de Broglie's theory. Matter-wave equation (to be derived). Heisenberg's uncertainty principle (Qualitative). Quantum numbers - *n, l, m* and *s* and their significance and inter relationship. Concept of orbital - shapes of s, p and d orbitals. Pauli's exclusion principle and aufbau principle. Energy level diagram and (n+1) rule. Electronic configuration of elements with atomic numbers from 1 to 54. Hund's rule of maximum multiplicity.

General electronic configurations of s, p, and d block elements.

III. Periodic Properties of Elements in Modern Periodic Table:

Periodic table with 18 groups to be used.

Atomic radii (Van der Waal and covalent) and ionic radii: Comparison of size of cation and anion with the parent atom, size of isoelectronic icons. Ionization energy, electron affinity, electronegativity - Definition with illustrations. Variation patterns in atomic radius, ionization energy, electron affinity, electronegativity down the group and along the period and their interpretation.

IV. Oxidation Number

Oxidation and reduction - Electronic interpretation.

Oxidation number: definition, rules for computing oxidation number. Calculation of the oxidation number of an atom in a compound/ion.

Balancing redox equations using oxidation number method, calculation of equivalent masses of oxidising and reducing agents.

V. s-Block Elements

Group I - Alkali metals

General properties: size, electronic configuration, density, ionization potential, electropositive character, oxidation state, metallic properties, flame test, reducing property, reactions with air and water. Diagonal relationship between Lithium and Magnesium.

VI. p-Block Elements

Group 14 - General properties: size, electronic configuration, ionization potential, nonmetallic properties, oxidation state, melting point and boiling point, catenation and allotropy.

Correlation of the physical properties (hardness, thermal and electrical conductance, brilliance and melting point) of diamond and graphite with their structures. Structure of Fullerence and its applications. Silicon and Germanium as semi conductors - intrinsic and extrinsic.

VII. Chemical Bonding - 1

Ionic bond: definition, factors favouring ionic bond. Lattice energy, Born-Haber cycle for the formation of NaCl. (Calculation of lattice energy not required)

Covalent bond. Definition. Factors favouring covalent bond. Valence Bond Theory. (Orbital concept of covalency). Types of overlapping of orbitals - s-s, s-p and p-p. σ and π bonds, differences between σ and π bonds. Hybridisation: Definition. Types of hybridisation - sp^3, sp^2 and sp taking CH_4, C_2H_4, BF_3 and C_2H_2 as examples. VSEPR theory taking the structures of H_2O and NH_3 molecules as examples.

Polar and non-polar bonds taking HCl, H_2O, Cl_2, CH_4, and CO_2 as examples. Hydration of ions in aqueous solution.

Dipole moment: Definition. Units. Dipole moment and shapes of molecules - CO_2, H_2O, BF_3, and NH_3.

Coordinate bond: Definition. Explanation using NH_4^+ and $H_3N \rightarrow BF_3$ adduct as examples.

Hydrogen bond: Definition inter and intra molecular hydrogen bonds taking H_2O, HF and nitrophenols as examples. Anamalous properties of water.

Van der Waal's force: Examples, dependence on molecular mass and physical state.

VIII. Stoichiometry

Equivalent mass of elements - definition, principles involved in the determination of equivalent masses of elements by hydrogen displacement method, oxide method, chloride method and inter-conversion method (experimental determination not needed). Numerical problems.

Equivalent masses of acids, bases and salts.

Atomic mass, Molecular mass, vapour density - definitions. Relationship between molecular mass and vapour density. Concept of STP conditions. Gram molar volume. Experimental determination of molecular mass of volatile substance by Victor Meyer's method. Numerical problems.

Mole concept and Avogadro number; numerical problems involving calculation of -

i) number of moles when the mass of substance is given.

ii) the mass of a substance when number of moles are given.

iii) number of particles from the mass of the substance.

Numerical problems involving mass-mass, mass-volume relationship in chemical reactions.

Expression of concentration of solutions - ppm, normality, molarity and mole fraction. Principles of volumetric analysis - standard solution, titrations and indicators - acid - base (phenolphthalein and methyl orange) and redox (Diphenylamine). Numerical problems.

IX. States of Matter - The Gaseous State

GAS LAWS: Boyle's Law, Charle's Law, Avogadro's hypothesis, Dalton's law of partial pressures, Graham's law of diffusion and Gay Lussac's law of combining volumes. Combined gas equation. Kinetic molecular theory of gases - postulates, root mean square velocity, derivation of an equation for the pressure exerted by a gas. Expressions for r.m.s. velocity and kinetic energy from the kinetic gas equation. Numerical problems. Ideal and real gases, Ideal gas equation, value of R (SI units). Deviation of real gases from

the ideal behaviour. PV-P curves. Causes for the deviation of real gases from ideal behaviour. Derivation of Van der Waal's equation and interpretation of PV-P curves.

X. Chemical Thermodynamics - 1

Introduction. System and surroundings. Types of systems and processes. Intensive and extensive properties and Internal energy. First law of thermodynamics - mathematical form of first law $\Delta U = q + w$ (SI convention to be used). Expressions for mechanical work done in isothermal and adiabatic changes (equations to be assumed). Numerical problems.

Thermo chemistry - Thermo chemical equations. Concept of enthalpy. Exothermic and endothermic reactions. Enthalpy of reaction - factors affecting enthalpy of a reaction - physical state, allotropic forms, temperature and pressure (qualitative treatment). Enthalpy of formation and stability. Relation between enthalpy and internal energy, ΔH and ΔE (derivation not needed). Enthalpy of combustion, solution, transition and neutralisation. Constancy of enthalpy of neutralisation of a strong acid by a strong base. Lavoisier and Laplace law, Hess's law of constant heat summation. Numerical problems involving calculation of enthalpy of formation, enthalpy of combustion and enthalpy of neutralisation.

XI. Chemical Equilibrium

Rate of a chemical reaction - definition and unit. Factors affecting the rate of a reaction. Reversible and irreversible reactions - illustrations.

Chemical equilibrium - dynamic equilibrium, equilibrium constants (Kp and Kc) of a Reversible reaction. Characteristics of equilibrium constant.

Law of mass action, application of the law of mass action to derive an expression for Kp of the following equilibria:

1. $2HI_{(g)}$ ☐ $H_{2(g)} + I_{2(g)}$
2. $N_{2(g)} + 3H_{2(g)}$ ☐ $2NH_{3(g)}$
3. $PCl_{5(g)}$ ☐ $PCl_{3(g)} + Cl_{2(g)}$

Relationship between Kp and Kc. (Derivation not needed). Numerical problems involving Kp and Kc to be worked out for the above reactions.

a) $N_{2(g)} + O_{2(g)}$ ☐ $2NO_{(g)}$; $\Delta H = + QKJ$

b) $2SO_{2(g)} + O_{2(g)}$ ☐ $2SO_{3(g)}$; $\Delta H = - QKJ$

XII. Surface Chemistry

Adsorption : Definition, differences between adsorption and absorption. Types of adsorption - differences. Factors which influence adsorption of gases on solids. Freundlich and Langmuir's adsorption isotherm. (equations to be assumed - numerical problems not included)

Catalysis: Homogeneous and heterogeneous catalysis. Positive and negative catalysis - characteristics of catalysis. Mechanism of catalysis - adsorption theory, active centres, catalytic poisons and promoters. Autocatalysis and enzyme catalysis (brief account only) with examples. Industrial applications of catalysis.

XIII. Aim and Scope of Organic Chemistry

Practical applications of Organic Compounds - in food, fuel (power and transportation), propellants, explosives, dyes adn detergents. (Introductory approach only). Chemotherapy.

XIV. Composition of organic compounds

Detection of elements: Carbon and Hydrogen by the copper oxide test.

Nitrogen, Sulphur and Halogens by Lassaigne's test.

Estimation of:

1. Carbon and Hydrogen - by Leibig's method.
2. Nitrogen by the Kjeldahl's method (Numerical problems not included). Empirical and molecular formulae - definition and determination. Numerical problems.

XV. Classification and nomenclature of Organic Compounds.

Classification into aliphatic, aromatic, alicyclic and heterocyclic compounds.

Functional groups and Homologous Series.

IUPAC nomenclature of bi functional aliphatic compounds.

Isomerism: Structural - chain, position, functional.

XVI. Hydrocarbons - 1

Saturated and unsaturated hydrocarbons.

Uses of methane, ethene and ethyne.

Alkanes, alkenes and alkynes:

General methods of preparation of

(a) Alkanes -by Kolbe's reaction;

(b) Alkenes - from haloalkanes and

(c) Alkynes - from dihalo alkanes.

Homolysis and Heterolysis.

Substitution reactions of Alkanes - halogenation. Free radical mechanism of chlorination of methane.

Addition reactions of alkenes and alkynes with -

a) Hydrogen b) Halogen and c) Hydrogen halide.

Markownikoff's rule - mechanism of the addition of hydrogen halide to propene.

Cycloalkanes: Nomanclature and representation of cycloalkanes.

General methods of preparation from

1. dihalogen derivatives of alkanes.
2. calcium salts of dicarboxylic acids.

Gereral properties.

1. substitution reaction (Halogenation)
2. ring opening reaction by hydrogen.

Aromatic hydrocarbons-

Uses of Benzene and Toluene

Benzene and Toluene - Isolation from coal tar.

Properties - a) addition of Hydrogen, b) Nitration, Chlorination, sulphonation and Friedel - Craft's reaction.

Unique features - addition reactions of cycloalkanes and substitution reactions of aromatic hydrocarbons.

Polymers

Synthetic polymer as a better substitute for natural polymer.

Addition polymers. Preparation and uses of polythene (HDPE and LDPE) and polystyrene. Natural rubber - monomer units. Synthetic rubber (Buna - S) - monomer units, structural similarity of monomers.

XVII. Organic Compounds Containing Oxygen - 1

Alcohols and ethers

Alcohols:

Uses of methanol and ethanol.

Nomenclature of alcohols. Classifications into mono, di and trihydric alcohols.

Monohydric Alcohols: Classification into primary, secondary and tertiary.

General methods of preparation from mono haloalkanes and alkenes.

Manufacture of absolute alcohol from Molasses.

General properties of monohydric alcohols:

Reaction with -

i) Sodium.

ii) halides of Phosphorus (PCl_3, PCl_5).

iii) Conc. H_2SO_4 (formation of alkenes and ethers).

iv) P_2O_5

v) carboxylic acids.

vi) acidified permanganate.

Tests to distinguish between primary, secondary and tertiary alcohols -

1) Lucas Test and 2) Dichromate Test.

Ethers:

Uses of ethoxy ethane.

Nomenclature.

General methods of preparation -

a) Williamson's ether synthesis.

b) From mono haloalkanes with silver oxide.

Chemical properties -

i) Halogenation.

ii) Reactions involving C-O bond cleavage
- with dil. H_2SO_4, PCl_5 and HI

CHEMISTRY

II P.U.C.

I. Metallurgy - 2

Physico-chemical concepts involved in the following metallurgical operations.

a) Desilverisation of lead by Parke's process - Distribution law.

b) Reduction of metal oxides - Ellingham diagrams - Relative tendency to undergo oxidation in case of elements Fe, Ag, Hg, Al, C, Cr, and Mg.

c) Blast furnace - metallurgy of iron.

i. Reactions involved and their role.

ii. Maintenance of the temperature gradient.

iii. Role of each ingredient.

iv. Energetics.

II. Industrially important compounds:

Manufacture of

a) Caustic soda by Nelson's Cell Method,

b) Ammonia by Haber's process,

c) Sulphuric acid by Contact process and

d) Potassium dichromate from chromite.

Uses of the above compounds.

Chemical properties of Sulphuric acid:

1. Action with metals.
2. Dehydrating nature.
3. Oxidation reactions.
4. Reaction with PCl_5

Chemical properties of Potassium dichromate:

1. With KOH.
2. Oxidation reactions.
3. Formation of chromyl chloride.

III. Group 18, Noble Gases

Applications of noble gases.

Isolation of rare gases from Ramsay and Raleigh's method and separation of individual gases from noble gas mixture (Dewar's charcoal adsorption method).

Preparation of $PtXeF_6$, by Neil Bartlett.

IV. d-Block Elements (Transition Elements)

Definition. 3d series: electronic configurations, size, variable oxidation states, colour, magnetic properties, catalytic behaviour, complex formation and their interpretations.

V. Co-ordination Compounds.

Co-ordination compound: Definition, complex ion, ligands, types of ligands - mono, bi, tri and polydentate ligands. Co-ordination number, isomerism (ionisation, linkage, hydrate), Werner's theory, Sigdwick's theory and EAN rule, Nomenclature of coordination compounds.

Valance Bond Theory: sp^3, dsp^2 and d^2sp^3 hybridisation taking $[Ni(CO)_4]$, $[Cu(NH_3)_4]\ SO_4$, $K_4\ [Fe(CN)_6]$ respectively as examples.

VI. Chemical Bonding - 2

Covalent bonding - Molecular orbital theory: linear combination of atomic orbitals (Qualitative approach), energy level diagram, rules for filling molecular orbitals, bonding and anti bonding orbitals, bond order, electronic configuration of H_2, Li_2 and O_2. Non-existence of He_2 and paramagnetism of O_2.

Metallic bond: Electron gas theory (Electron Sea model), definition of metallic bond, correlation of metallic properties with nature of metallic bond using electron gas theory.

VII. Chemical Kinetics

Introduction. Commercial importance of rate studies. Order of a reaction. Factors deciding the order of a reaction - relative concentrations of the reactants and mechanism of the reaction. Derivation of equation for the rate constant of a first order reaction. Unit for the rate constant of a first order reaction. Half-life period. Relation between half-life period and order of a reaction. Numerical problems.

Determination of the order of a reaction by the graphical and the Ostwald's isolation method. Zero order, fractional order and pseudo first order reactions with illustrations. Effect of temperature on the rate of reaction - temperature confficient

of a reaction. Arrhenius' interpretation of energy of activation and temperature dependence of the rate of reaction. Arrhenius' equation. Influence of catalyst on energy profile. Numerical problems on energy of activation.

VIII. Electro Chemistry

Electrolytes and non-electrolytes. Electrolysis - Faraday's laws of electrolysis. Numerical problems. Arrhenius theory of electrolytic dissociation, merits and limitations. Specific conductivity and molar conductivity - definitions and units. Strong and weak electrolytes - examples. Factors affecting conductivity.

Acids and Bases: Arrhenius' concept, limitations. Bronsted and Lowry's concept, merits and limitations. Lewis' concept. Strengths of acids and bases - dissociation constants of weak acids and weak bases. Ostwald's dilution law for a weak electrolytes - (equation to be derived) - expression for hydrogen ion concentration of weak acid and hydroxyl ion concentration of a weak base - numerical problems.

Ionic product of water. pH concept and pH scale. pK_a and pK_b values - numerical problems. Buffers. Buffer action, mechanism of buffer action in case of acetate buffer and ammonia buffer. Henderson's equation for pH of a buffer (to be derived). Principle involved in the preparation of buffer of required pH - numerical problems. Ionic equilibrium: common ion effect, solubility product, expression for K_{sp} of sparingly soluble salts of types AB, A_2B and AB_2. Relationship between solubility and solubility product of salts of types AB, A_2B and AB_2. Applications of common ion effect and solubility product in inorganic qualitative analysis. Numerical problems.

Electrode potential: Definition, factors affecting single electrode potential. Standard electrode potential. Nernst's equation for calculating single electrode potential (to be assumed). Construction of electrochemical cells - illustration using Daniel cell. Cell representation, cell reaction, e.m.f. of a cell and its relation to standard free energy change [• $G^0 = -nFE^0$ (to be assumed)]. Reference electrode: Standard Hydrogen Electrode - construction, use of SHE for determination of SRP of other single electrodes. Limitations of SHE.

Electrochemical series and its applications. Corrosion as an electrochemical phenomenon, methods of prevention of corrosion.

IX. Theory of Dilute Solutions

Vant Hoff's theory of dilute solutions. Colligative property. Examples of colligative properties - lowering of vapour pressure, elevation in boiling points, depression in freezing point and osmotic pressure.

Lowering of vapour pressure - Raoult's law (mathematical form to be assumed). Ideal and non-ideal solutions (elementary idea)- measurement of relative lowering

of vapour pressure - Ostwald and Walker's dynamic method. Determination of molecular mass by lowering of vapour pressure). Numerical problems.

X. Chemical Thermodynamics - 2

Spontaneous and non-spontaneous processes. Criteria for spontaneity - tendency to attain a state of minimum energy and maximum randomness. Entropy. Entropy as a measure of randomness, change in entropy, unit of entropy. Entropy and spontaneity. Second law of thermodynamics. Gibbs' free energy as a driving force of a reaction. Gibbs' equation. Prediction of feasibility of a process in terms of • G using Gibbs' equation. Standard free energy change and its relation to K_p (equation to be assumed). Numerical problems.

XI. Colloids

Introduction. Colloidal system and particle size. Types of colloidal systems. Lyophilic and lyophobic sols. examples and differences. Preparation of sols by Bredig's arc method and peptisation. Purification of sols - dialysis and electro dialysis. Properties of sols - Tyndall effect, Brownian movement, electrophoresis, origin of charge, coagulation, Hardy and Schulze rule. Protective action of sols. Gold number. Gold number of gelatin and starch. Applications of colloids: Electrical precipitation of smoke, clarification of drinking water and formation of delta.

XII. Solid State

Crystalline and amorphous solids, differences. Types of crystalline solids - covalent, ionic, molecular and metallic solids with suitable examples. Space lattice, lattice points, unit cell and Co-ordination number.

Types of cubic lattice - simple cubic, body centred cubic, face centred cubic and their coordination numbers. Calculation of number of particles in cubic unit cells. Ionic crystals - ionic radius, radius ratio and its relation to co-ordination number and shape. Structures of NaCl and CsCl crystals.

XIII. Concepts in Organic Chemistry.

Inductive effect, Mesomeric effect and Electromeric effect with illustrations.

XIV. Synthetic Organic Chemistry

Conversion of -

1. Methane to ethane and vice versa.
2. Methanol to ethanol and vice versa.

XV. Isomerism - 2

Stereo isomerism-geometrical and optical isomerism.

Geometrical Isomerism: Illustration using

a) 2-butene b) maleic acid and fumaric acid as examples.

Optical Isomerism : Chirality, optical activity - Dextro and Laevo rotation (D and L notations).

XVI. Hydrocarbons - 2

Stability of Cycloalkanes - Baeyer's Strain theory - interpretation of the properties of Cycloalkanes, strain less rings. Elucidation of the structure of Benzene - Valence Bond Theory and Molecular Orbital Theory. Mechanism of electrophilic substitution reactions of Benzene - halogenation, nitration, sulphonation and Friedel - Craft's reaction.

XVII. Haloalkanes

Monohalogen derivatives:

Nomenclature and General methods of Preparation from -

a) alcohols and b) alkenes.

General properties of monohalogen derivatives:

a) Reduction
b) With alcoholic KOH
c) Nucleophilic substitution reactions with alcoholic NH3, KCN, AgCN and aqueous KOH.
d) With Magnesium
e) Wurtz reaction
f) Wurtz - Fittig's reaction
g) Friedel - Craft's reaction

Mechanism of Nucleophilic Substitution reactions -

i) SN1 mechanism of Hydrolysis of tertiary butyl bromide.
ii) SN2 mechanism of Hydrolysis of methyl bromide.

XVIII. Organic Compounds Containing Oxygen - 2

PHENOLS.

Uses of Phenol.

Classification: Mono, di and tri-hydric Phenols.

Isolation from coal tar and manufacture by Cumene process.

Methods of preparation of Phenol from -

a) Sodium benzene sulphonate.
b) Diazonium salts

Chemical Properties-

a) Acidity of Phenols: explanation using resonance - Effect of substituents on Acidity (methyl group and nitro group as substituents)
b) Ring substitution reactions:
i) Bromination
ii) Nitration
iii) Friedel - Craft's methylation
c) Kolbe's reaction.
d) Reimer - Tiemann reaction.

ALDEHYDES AND KETONES:

Uses of methanal, benzaldehyde and acetophenone.

Nomenclature.

General methods of preparation of aliphatic and aromatic aldehydes and ketones from-

a) Alcohols b) Calcium salts of carboxylic acids.

Common Properties of aldehydes and ketones.

a) Addition reactions with-
   i) Hydrogen cyanide and ii) sodium bisulphite.
b) Condensation reactions with-
   i) Hydroxylamine
   ii) Hydrazine

iii) Phenyl hydrazine

iv) Semicarbazide

c) Oxidation.

Special reactions of aldehydes:

1. Cannizzaro's reaction - mechanism to be discussed
2. Aldol condensation.
3. Perkin's reaction.
4. Reducing properties - with Tollen's and Fehling's reagents.

Special reaction of ketones - Clemmensen's reduction.

MONOCARBOXYLIC ACIDS

Uses of methonoic acid and ethanoic acid.

Nomenclature and general methods of preparation of aliphatic acids from :

a) Alcohols b) Cyanoalkanes and c) Grignard reagent.

General properties of aliphatic acids:

Reactions with-

a) Sodium bicarbonate b) Alcohols

c) Ammonia d) Phosphorus pentachloride

and e) soda lime.

Strength of acids - explanation using resonance.

Effect of substituents (alkyl group and halogen as substituents).

XIX. Amines

Uses of Aniline.

Nomenclature. Classification - Primary, Secondary, Tertiary - aliphatic and aromatic.

General methods of preparation of primary amines from -

a. Nitro hydrocarbons.
b. Nitriles (cyano hydrocarbons)
c. Amides (Hoffmann's degradation)

General Properties:

a. Alkylation

b. Nitrous acid

c. Carbyl amine reaction

d. Acylation

Tests to distinguish between - Primary, Secondary, Tertiary amines - Methylation method.

Interpretation of Relative Basicity of - Methylamine, Ammonia and Aniline using inductive effect.

XX. Carbohydrates

Biological importance of carbohydrates.

Classification into mono, oligo and poly saccharides. Elucidation of the open chain structure of Glucose. Haworth's structures of Glucose, Fructose, Maltose and Sucrose. (elucidation not required)

XXI. Oils and Fats

Biological importance of oils and fats.

Fatty acids - Saturated, unsaturated, formation of triglycerides. Generic formula of triglycerides.

Chemical nature of oils and fats - saponification, acid hydrolysis, rancidity, refining of oils, hydrogenation of oils, drying oils, iodine value.

XXII. Amino Acids and Proteins

Biological importance of proteins.

α – Aminoacids - Geeral formula.

Formulae and unique features of glycine, alanine, serine, cysteine, aspartic acid, lysine, tyrosine and proline. Zwitter ion, amphiprotic nature, isoelectric point, peptide bond, polypeptides and proteins. Denaturation of proteins.

Structural features of Insulin - a natural polypeptide.