Sankalchand Patel University, Visnagar

PHYSIOLOGY

Curriculum and Examinations Regulation

1st MBBS

General Information

Name of the course: BACHELOR OF MEDICINE AND BACHELOR OF SURGERY

Short Title: MBBS Course

Duration of Course:

Total Duration: 4½ Years + 1 year internship.

			Subjects	Duration
1	First MBBS		(1) Human Anatomy (2) Human Physiology (3) Biochemistry	1 Year
2	Second MBBS		(1) Pathology (2) Microbiology (3) Pharmacology (4) Forensic Medicine	1½ Years
3	Third MBBS	Part I	(1) Ophthalmology (2) Oto-Rhino-Laryngology (ENT) (3) Community Medicine	1 Year
		Part II	(1) Medicine (2) General Surgery (3) Obstretrics & Gynecology (4) Paediatrics	1 Year
			Total	4½ Years
4	Internship			1 Year

Admission Criteria for MBBS Course:

The Medical Council of India is the apex body for regulations of MBBS studies in India. The Graduate Medical Act 1997, describes details of eligibility, competitive examination and admission rules. It also publishes Amendments thereof from time to time in the Gazette of India. (www.mciindia.org) In accordance with the above MCI act the Government of Gujarat has issued notification NO. GP-11-MCG-1008-931-J & NO. GP-16- MCG-2009-810396-J: for the admission in medical courses in the state of Gujarat.

In exercise of the powers conferred by sub-section (1) of section 20 read with section 4 of the Gujarat Professional Medical Educational Colleges or Institutions (Regulation of Admission and Fixation of Fees) Act, 2007 (Guj.3 of 2008) and in super session of all the rules made in this behalf, the Government of Gujarat hereby makes the following rules to regulate admission to the first year of the Professional Medical Educational Courses and payment of fees through.

The ADMISSION COMMITTEE FOR PROFESSIONAL MEDICAL EDUCATIONAL COURSES,

C/o. DEAN, B.J. MEDICAL COLLEGE

AHMEDABAD – 380 016

Website : www.medadmbjmc.in

ADMISSION, SELECTION, MIGRATION & TRAINING:-

Admission to the Medical Course - Eligibility Criteria : No Candidate shall be allowed to be admitted to the Medical Curriculum proper of first Bachelor of Medicine and Bachelor of Surgery (MBBS) Course until:

(1) He/she shall complete the age of 17 years on or before 31st December of the year of admission to the MBBS Course.

(2) He/she has passed qualifying examination as under:

(a) The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of physics, Chemistry, Biology and Mathematics or any other elective subjects with English at a level not less than the core course for English as prescribed by the National Council for Educational Research and Training after the introduction of the 10+2+3 years educational structure as recommended by the National Committee on education.

Note:- Where the course content is not as prescribed for 10+2 education structure of the National Committee, the candidates will have to undergo a period of one year pre-professional training before admission to the Medical colleges.

or

(b) The Intermediate examination in science of an Indian University/Board or other recognized examining body with Physics, Chemistry and Biology which shall include a practical test in these subjects and also English as a compulsory subject.

or

(c) The pre-professional/pre-medical examination with Physics, Chemistry and Biology, after passing either the higher secondary school examination, or the pre-university or an equivalent examination. The pre- professional/pre-medical examination shall include a practical test in Physics, Chemistry & Biology and also English as a compulsory subject.

or

(d) The first year of the three years degree course of a recognized university, with Physics, Chemistry and Biology including a practical test in these subjects provided the examination is a "University Examination" and candidate has passed 10+2 with English at a level not less than a core course.

or

(e) 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) and further that he/she has passed the earlier qualifying examination with the following subjects - Physics, Chemistry, Biology and English.

or

(f) Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology including practical test in each of these subjects and English.

Note: - The pre-medical course may be conducted either at Medical College or a Science College.

Marks obtained in mathematics are not to be considered for admission to MBBS course. After the 10+2 course is introduced, the integrated courses should be abolished.

3. 3% seats of the annual sanctioned intake capacity shall be filled up by candidates with locomotory disability of lower limbs between 50% to 70%.

Provided that in case any seat in this 3% quota remains unfilled on account of unavailability of candidates with locomotory disability of lower limbs between 50% to 70% then any such unfilled seat in this 3% quota shall be filled up by persons with locomotory disability of lower limbs between 40% to 50% - before they are included in the annual sanctioned seats for General Category candidates.

Provided further that this entire exercise shall be completed by each medical college / institution as per the statutory time schedule for admissions and in no case any admission will be made in the MBBS course after 30th of September.

Selection to Students:- The selection of students to medical college shall be based solely on merit of the candidate and for determination of merit, the following criteria be adopted uniformly throughout the country:

(1) In states, having only one Medical College and one university / board/examining body conducting the qualifying examination, the marks obtained at such qualifying examination may be taken into consideration.

(2) In states, having more than one university/board/examining body conducting the qualifying examination (or where there is more than one medical college under the administrative control of one authority) acompetitive entrance examination should be held so as to achieve a uniform evaluation as there may be variation of standards at qualifying examinations conducted by different agencies.

(3) Where there are more than one college in a state and only one university/board conducting the qualifying examination, then a joint selection board be constituted for all the colleges.

(4) A competitive entrance examination is absolutely necessary in the cases of Institutions of All India character.

(5) Procedure for selection to MBBS course shall be as follows :-

(i) In case of admission on the basis of qualifying examination under Clause(1) based on merit, candidate for admission to MBBS course must have passed in the subjects of Physics, Chemistry, Biology & English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry, and Biology at the qualifying examination as mentioned in Clause(2) of regulation 4. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or Other Backward Classes, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination be 40% instead of 50% as above.

(ii) In case of admission on the basis of competitive entrance examination under Clause (2) to (4) of this regulation, a candidate must have passed in the subjects of Physics, Chemistry, Biology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry & Biology at the qualifying examination as mentioned in Clause (2) of Regulation 4 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 other Backward Classes the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination and competitive entrance examination be 40% instead of 50% as stated above.

Provided that a candidate who has appeared in the qualifying examination the result of which has not been declared, he may be provisionally permitted to take up the competitive entrance examination and in case of selection for admission to the MBBS course, he shall not be admitted to that course until he fulfils the eligibility criteria under Regulation 4.

Migration:-

(1) Migration of students from one medical college to another medical college may be granted on any genuine ground subject to the availability of vacancy in the college where migration is sought and fulfilling the other requirements laid down in the Regulations. Migration would be restricted to 5% of the sanctioned intake of the college during the year. No migration will be permitted on any ground from one medical college to another located within the same city.
(2) Migration of students from one College to another is permissible only if both the colleges are recognised by the Central Government under section 11(2) of the Indian Medical Council Act,1956 and further subject to the condition that it shall not result in increase in the sanctioned intake capacity for the academic year concerned in respect of the receiving medical college.
(3) The applicant candidate shall be eligible to apply for migration only after qualifying in the first professional MBBS examination. Migration during clinical course of study shall not be allowed on any ground.
(4) For the purpose of migration an applicant candidate shall first obtain "No Objection Certificate" from the college where he is studying for the present and the university to which that college is affiliated and also from the college to which the migration is sought and the university to it that college is affiliated. He/She shall submit his application for migration within a period of 1 month of passing (Declaration of result of the 1st Professional MBBS examination) along with the above cited four "No Objection Certificates" to: (a) the Director of Medical Education of the State, if migration is sought from one college to another within the same State or (b) the Medical Council of India, if the migration is sought from one college to another located outside the State.
(5) A student who has joined another college on migration shall be eligible to appear in the IInd professional MBBS examination only after attaining the minimum attendance in that college in the subjects, lectures, seminars etc. required for appearing in the examination prescribed under Regulation 12(1)
Note-1: The State Governments/Universities/Institutions may frame appropriate guidelines for grant of No Objection Certificate or migration, as the case may be, to the students subject to provisions of these regulations.
Note-2: Any request for migration not covered under the provisions of these Regulations shall be referred to the Medical Council of India for consideration on individual merits by the Director (Medical Education) of the State or the Head of Central Government Institution concerned. The decision taken by the Council on such requests shall be final.
Note-3: The College/Institutions shall send intimation to the Medical Council of India about the number of students admitted by them on migration within one month of their joining. It shall be open to the Council to undertake verification of the compliance of the provisions of the regulations governing migration by the Colleges at any point of time."

TRAINING PERIOD AND TIME DISTRIBUTION

(1) Every student shall undergo a period of certified study extending over 4 ½ 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 the 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 4 ½ years is divided into three phases as follows :-

(a) **Phase-1** (two semesters) - consisting of Pre-clinical subjects (Human Anatomy, Human Physiology, 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 & 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 & 2/3 Community Medicine). See Appendix-C.

(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 & III are Medicine and its allied specialties, Surgery and its allied specialties, Obstetrics and Gynaecology and Community Medicine.

Besides clinical posting as per schedule mentioned herewith, rest of the teaching hours be divided for didactic lectures, demonstrations, seminars, group discussions etc. in various subjects. The time distribution shall be as per Appendix-C.

The Medicine and its allied specialties 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 specialties training will include General Surgery, Orthopaedic Surgery including Physio-therapy and Rehabilitation, Ophthalmology, Otorhinolaryngology, Anaesthesia, Dentistry, Radio-therapy etc. The Obstetrics & Gynaecology training will include family medicine, family welfare planning etc.

(3) The first 2 semester (approximatly 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).
(4) After passing pre-clinical subjects, 1 ½ year (3 semesters) shall be devoted to para-clinical subjects. Phase II will be devoted to para-clinical & 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 each year.
(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.

Phase Distribution and Timing of Examinations:

	Semester (Each of 6 months)			Total Duration (Years)	Comment
Ist MBBS	1st	2nd	-	1	Ist professional Examination (during second semester)
IInd MBBS	3rd	4th	5th	1 ½	IInd professional examination (during fifth semester)
IIIrd MBBS Part I	6th	7th	-	2	IIIrd professional Part I (during 7th semester)
IIIrd MBBS Part II	8th	9th	-		IIIrd professional Part II (Final professional)
				4 ½	
Internship				1	-

Note:-

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

b) A student who fails in the IInd professional examination, will not be allowed to appear 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 & 9th semester training, however passing of IIIrd Professional (Part I) is compulsory for being eligible for IIIrd Professional (Part II) examination.

PHYSIOLOGY CURRICULUM (1st MBBS)

Prescribed Teaching Hours and Suggested Model Time Tables:-

Following minimum teaching hours are prescribed in various disciplines:

A. **Pre-Clinical Subjects :** (Phase-1-First and Second Semester)

Anatomy	**650 Hrs.**
Physiology	**480 Hrs.**
Biochemistry	**240 Hrs.**
Community Medicine	**60 Hrs.**

Pre-clinical subjects - Phase I : In the teaching of these subjects stress shall be laid on basic principles of the subjects with more emphasis on their applied aspects.

Subject (2) HUMAN PHYSIOLOGY

(A) PHYSIOLOGY

(i) GOAL

The broad goal of the teaching of undergraduate students in Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health, disease, aging and death.

(ii) OBJECTIVES

(a) KNOWLEDGE

At the end of the course the student will be able to :

(1) Explain the normal functioning of all the organ systems and their interactions for well coordinated total body function.
(2) Assess the relative contribution of each organ system to the maintenance of the milieu interior.
(3) Elucidate the physiological aspects of normal growth and development.
(4) Describe the physiological response and adaptations to environmental stresses.
(5) List the physiological principles underlying pathogenesis and treatment of disease.

(b) SKILLS

At the end of the course the student should be able to:

(1) Conduct experiments designed for study of physiological phenomena.
(2) Interpret experimental/investigative data.
(3) Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

(c) INTEGRATION

At the end of the integrated teaching the student should acquire an integrated knowledge of organ, its structure, function and regulatory mechanisms. Student should be able to understand basic of disease, diagnostic tools and therapy of the disease.

(B) BIOPHYSICS

(a) GOAL & OBJECTIVES: The broad goal of teaching Biophysics to undergraduate students is that they should understand basic physical principles involved in the functioning of body organs in normal and diseased conditions.

Total time for teaching Biophysics = 5 hours
Out of which: 1. Didactic lectures = 3 hours
2. Tutorial/group discussion = 1 hour
3. Practical = 1 hour

(b) Topic distribution

(1) Lectures :

(i) Physical principles of transport across cell membranes and across capillary wall.

(ii) Biopotentials.

(iii) Physical principles governing flow of blood in heart and blood vessels.

Also physical principles governing flow of air in air passages.

2. Tutorial/group discussion: On the topic covered in didactic lectures.

3. Practicals:

Demonstration of :

(a) Biopotential on oscilloscope
(b) Electro Encephalogram (EEG)
(c) Electro Myelogram (EMG)
(d) Electro Cardiogram (ECG)

Teaching Schedule (Physiology)

METHODOLOGY
(For duration of the entire course)
Total Working Hrs: : 480 hrs.
(Including Lectures, Practicals, Tutorials, Demonstrations & Seminars)

			Number
(1)	Didactic Lectures	:	228
(2)	Demonstrations	:	36
(3)	Tutorials	:	32
(4)	Seminars conducted during the year	:	10
(5)	Practical	:	174
(6)	Any other teaching/training activities	:	Group Discussion, Microteaching, Symposium, Debates, CME
(7)	Is there any integrated teaching?		**YES**
	If yes,		With Anatomy , Biochemistry, Medicine & Surgery
(8)	Records Methods of Assessment thereof (Time table of lectures, demonstrations, seminars, tutorials and practical)	:	

Syllabus: Lectures and Systems for Physiology

Topics	No. of lectures
General Physiology:-	
- Cell physiology	2
- Transport across cell membrane	2
- Homeostasis & stress	2
- Action Potential, Ionic composition	2

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BLOOD :-	
- Composition and function of blood	1
- Plasma proteins	1
- RBC – Erythropoiesis and function of RBC	2
- Hb	1
- Anaemias	1
- WBC – Development and functions	2
- Platelets	1
- Blood coagulation disorders and mechanism of haemostasis.	2
- Blood Groups / Blood Volume	2
- Immunity	1
- R.E. system & Lymphatic system	1

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MUSCLE NERVE :-	
- Structure and function of skeletal muscle & smooth muscle	2
- Properties of skeletal muscle & generation of potentials	2
- Transmission along cell membrane	1
- Mechanism of muscle contraction	2
- Transmission of impulse along neuromuscular junction	1
- Myasthenia gravis and neurotransmitters, Neuromuscular blocking agents	2
- Structure, Function and classification of Neurons	2
- Origin and transmission of impulse in nerve fiber	1
- Degeneration & regeneration in nerve, reaction of degeneration.	2

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DIGESTIVE SYSTEM :-	
- Digestive tract and functions of salivary glands	1
- Composition, function & mechanism of secretion of saliva	1

-	Composition, function & mechanism of secretion of gastric juice	2
-	Hypochlorhydria, hyperchlorhydria, peptic & duodenal ulcer;. their correlation with stress	1
-	Composition, functions & mechanism of secretion of pancreatic juices	1
-	Composition, functions & mechanism of secretion of bile	1
-	Composition, function & mechanism of secretion of succus entericus	1
-	Function of large intestine	1
-	Function of liver	3
-	Movements of alimentary canal	2
-	Digestion & absorption of various food stuff	1

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RESPIRATORY SYSTEM :-

-	Respiratory tract & function of respiratory system	2
-	Lung volume & capacities	1
-	Intrapulmonary & intra-pleural pressure & surfactant	1
-	Lung Compliance	1
-	Mechanics of breathing	1
-	O2 carriage	1
-	Co2 carriage	1
-	Hypoxia	1
-	Control of respiration	1
-	Physiology of High altitude & acclimatization	1
-	Periodic Breathing, Dysbarism	1
-	Cyanosis and Asphyxia	1
-	Applied Physiology	2

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EXCRETION :-

-	Structure, blood supply & functions of kidney	2
-	Mechanism of filtration & GFR	2
-	Tubular function	2
-	Micturition & its control	1
-	Renal function tests & pathogenesis of renal disorders	2
-	Functions of skin & Regulation of body temperature	2
-	Water balance, diuretics, dialysis and applied physiology	3

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C.V.S. :-

-	Structure & properties of cardiac muscle	1
-	Generation of action potential & transmission of cardiac impulse in conductive tissues	2
-	ECG	1
-	Cardiac cycle, Volume and pressure changes, correlation with ECG & phonocardiogram.	2
-	Heart sounds and murmurs	1
-	Hemodynamics	1
-	Cardiac output & its control	2
-	Heart rate and its control, various arrhythmias	2

-	Arterial B.P. & its control, Hypertension & Hypotension	2
-	Physiology of coronary circulation	1
-	Other Regional circulation	1
-	Physiological basis of shock	1

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ENDOCRINE :-

-	General considerations of endocrine system	1
-	Names, synthesis, actions, control of secretion, function tests & disorders of hormones of Pituitary gland.	2
-	Thyroid gland	2
-	Parathyroid gland	2
-	Adrenal cortex	2
-	Adrenal medulla	2
-	Pancreas Hormones, Diabetes	3
-	Thymus, pineal and local hormones	1

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REPRODUCTION:-

-	Growth & Development of body, influence of various hormones & Puberty	2
-	Male reproductive system & functions of testes	2
-	Reproductive cycles in female & its disorders	2
-	Physiology of pregnancy	1
-	Parturition & physiology of lactation	2
-	Pathogenesis & treatment of gonad disorders in males & females	2
-	Contraceptives & Infertility	2
-	Physio of Newborn, Respi distress syndrome, Circulatory changes	2

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ANS & CNS

-	General considerations of CNS & ANS	1
-	Structure & properties of synapse and synaptic transmission	2
-	Receptors, their functions with physiology of pain in particular	3
-	Reflexes, Reflex action and their properties	1
-	Tracts of spinal cord, their functions and effects of hemi section and Transaction of spinal cord	4
-	Autonomic nervous system	2
-	Physiology of sleep and speech with their disorders, E.E.G.	3
-	Functions of C.S.F. and lumbar puncture	1

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Normal functioning of the following parts of the brain, their disorders and an outline of treatment

1.	Hypothalamus	2
2.	Thalamus	2
3.	Reticular formation	2
4.	Cerebellum	2
5.	Basal Ganglia	2
6.	Cerebral cortex	4
-	Tone, Posture & Equilibrium	2
-	Conditioned Reflex	1
-	Limbic system	1

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SPECIAL SENSES

-	Various parts of eyeball and their functions	1
-	Refractive media and optics	1
-	Errors of refraction & Accommodation in eye	2
-	Photochemistry of vision	1
-	Acuity & field of vision with disorders	1
-	Colour vision and colour blindness	1
-	Dark & light adaptation, monocular and binocular vision	1
-	Visual pathway and lesions at different levels	1
-	Functions of external ear, middle ear and cochlea	1
-	Mechanism of hearing and endocochlear potentials	2
-	Physiology of taste	1
-	Physiology of smell	1

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BIOPHYSICS :-

-	Principles of biophysics and its applied aspects	1
-	Biopotentials and its applied aspects	1
-	Transport across cell membrane	1

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ENVIRONMENTAL, REGULATORY & EXERCISE PHYSIOLOGY:-

-	Physiology of high altitude, acclimatization & effect of high atmospheric pressure	2
-	Aviation & space physiology	1
-	Body temperature regulation, Hypo & Hyperthermia	2
-	Physiology of exercise & yoga	2

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TUTORIALS

1. Haemoglobin	1
2. Blood groups	2
3. Neurons and Neuroglia	1
4. Rigor mortis & Myasthenia gravis	1
5. Lymph & R.E. System	1
6. Radial pulse Tracing	1
7. Bleeding Disorders	1
8. Isotonic & Isometric contraction	1
9. Hypoxia, O2 therapy & cyanosis	2
10. Deglutition and vomiting	1
11. Emptying of stomach & peristalsis	1

12. Movements of small & large intestine, Defecation	1
13. Skin – structure & function	1
14. Asphyxia, Hypercapnia	1
15. O2 & CO2 dissociation curve periodic breathing	1
16. Acidification of urine, role of kidney in Ph regulation	1
17. Adrenal Medulla	1
18. Cutaneous Circulation	1
19. E.E.G.	1
20. Speech and Aphasia	1

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EXAMINATIONS REGULATIONS

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ESSENTIALITIES FOR QUALIFYING TO APPEAR IN PROFESSIONAL EXAMINATIONS

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

(1) Attendance

75% of attendance in a subject for appearing in the examination is compulsory inclusive of attendance in non lecture teaching. i.e. seminars, group discussions, tutorials, demonstrations, practicals, Hospital (Tertiary, Secondary, Primary) postings and bed side clinics, etc.

(2) 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 questions 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 35% 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 participation in learning process during semesters in 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.

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 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 for 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.

During evaluation (both Internal and External) it shall be ascertained if the candidate has acquired the skills as detailed in Appendex-B.

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. Universities Examinations shall beheld as under:-

First Professional:-

In the second Semester of Phase 1 training, in the subjects of Anatomy, Physiology and Bio- Chemistry.

Note :-

Results of all university examinations shall be declared before the start of teaching for next semester.

DISTRIBUTION OF MARKS TO VARIOUS DISCIPLINES :

(A) FIRST PROFESSIONAL EXAMINATION:(Pre-clinical Subjects):-

(a) Physiology

Theory-Two papers of 50 marks each	
(One applied question of 10 marks in each paper)	100 marks
Oral (Viva)	20 marks
Practical	40 marks
Internal Assessment	
(Theory-20; Practical-20)	40 marks
Total	200 marks

Pass: In each of the subjects, **a candidate must obtain 50% in aggregate with a minimum of 50% in Theory including orals and minimum of 50% in Practicals.**

APPOINTMENT OF EXAMINERS:

(1) No person shall be appointed as an examiner in any of the subjects of the Professional examination leading to and including the final Professional examinations for the award of the MBBS degree unless he has taken at least five years previously, a doctorate degree of a recognized university or an equivalent qualification in the particular subject as per recommendation of the Council on teachers' eligibility qualifications and has had at least five years of total teaching experience in the subject concerned in a college affiliated to a recognized university at a faculty position.

(2) There shall be at least four examiners for 100 students, out of whom not less than 50% must be external examiners. Of the four examiners, the senior most internal examiner will act as the Chairman and co-ordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained. Where candidates appearing are more than 100, one additional examiner, for every additional 50 or part thereof candidates appearing, be appointed.

(3) Non medical scientists engaged in the teaching of medical students as whole time teachers, may be appointed examiners in their concerned subjects provided they possess requisite doctorate qualifications and five year teaching experience of medical students after obtaining their postgraduate qualifications. Provided further that the 50% of the examiners (Internal & External) are from the medical qualification stream

(4) External examiners shall not be from the same university and preferably be from outside the state.

(5) The internal examiner in a subject shall not accept external examiner ship for a college from which external examiner is appointed in his subject.

(6) A university having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college.

(7) External examiners shall rotate at an interval of 2 years.

(8) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

(9) Except Head of the department of subject concerned in a college/institution, all other with the rank of reader or equivalent and above with requisite qualifications and experience shall be appointed internal examiners by rotation in their subjects; provided that where there are no posts of readers, then an Assistant Professor of 5 years standing as Assistant Professor may be considered for appointment as examiner.

(10) The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a student who has failed only in one subject but has passed in all other subjects.

Subject 2. Human Physiology

Examinations Schedule

No.	Type	Marks	Month
1.	1st Periodic Assessment	50	October/November
2.	2nd Periodic Assessment	50	March
3.	Internal Assessment Theory & Practical	100 (70+30)	Dec /January
4.	Preliminary Assessment*	160 (120+40)	May
5	Final University Theory Examination-two Papers each of 50 Marks	100 (50+50)	JUNE
6	Final University Practical examinations and Viva voce	40 + 20	July
*examination held as per final university examination pattern			

Internal Assessment Marks Calculation (Physiology)

Total Internal Assessment Marks		
1	Theory	20 marks
2	Practical	20 marks
Internal assessment marks Calculation		
1 **Theory**		
	Lectures Attendance and day to day evaluation*	2.5 marks
	Internal assessment - One	5 marks
	Preliminary assessment	7.5 marks
	Periodic assessment - One &Two	5 marks
	Total	**20 marks**
2 Practical		
	Practical Attendance and day to day evaluation**	2.5 marks
	Internal Practical Assessment	5 marks
	Preliminary Assessment	7.5 marks
	Journal evaluation	5 marks
	Total	**20 marks**

***Day to day evaluation for theory includes MCQs, Short Notes and objective questions**

****Day to day evaluation for Practical includes individual performance in Practical class and Journal Completion**

Final University Physiology Examination

MARKS SCHEME FOR FINAL UNIVERSITY EXAM 2019-20

Theory		
	Marks	
Paper-I	50 3hrs	
Paper-II	50 3 hrs	
Oral Viva (During Practicals)	20	
Internal Assessment	20	
Total	**140**	
Practical		
	Marks	
Haematology	15 Marks	
Clinical Physiology	10 Marks	
Calculation, graph, Chart, Photograph Etc	10 Marks	
Instruments	05 Marks	
Internal Assessment	20 Marks	
Total	**60 Marks**	
Division of Marks in Pairs of the practical examiners.		
Pair-I Oral Viva	20 Marks	All candidates
Pair-II Haematology Instruments	15 Marks 05 Marks	All candidates All candidates
Pair-III Clinical Physiology Calculation, graph Chart, Photograph etc	10 Marks 10 Marks	All candidates All candidates

PAPER WISE DISTRIBUTION OF TOPICS IN HUMAN PHYSIOLOGY

PAPER-I	• Cell & general physiology • Hematology • Nerve-Muscle physiology • Digestive system • Respiratory system • Cardiovascular physiology • ANS • Body temperature & BMR
PAPER – II	• Endocrinology • Reproductive system • Central Nervous system • Higher Functions • Special Senses • Peripheral Nervous System (Reflexes, synapse, Receptors) • Excretory system

PHYSIOLOGY EXAMINATIONS :--

THEORY (Scheme of paper)

	PAPER 1	Total 50 Marks
	Section 1	
Q-1 Applied physiology of Systems covered in paper -1	(2 out of 3)	2 x 5 =10
Q-2 (a) Blood	(2 out of 3)	2x 3 =06
(b)General Physiology & biophysics	(1 out of 2)	1 x3 =03
Q-3 Excretory system including Skin	(2 out of 3)	2 x3 = 06
	Section 2	
Q-4 Cardiovascular System	(2 out of 3)	2 x 5 =10
Q-5 (a) Respiratory System	(2 out of 3)	2 x3 = 06
(b)Environmental phy. & Exercise phy.	(1 out of 2)	1 x3 =03
Q-6 Objective questions from systems covered in Paper1	(6 out of 8)	6 x 1 =06
	PAPER 2	Total 50 Marks
	Section 1	
Q-1 Applied physiology of Systems covered in paper -2	(2 out of 3)	2 x 5 =10
Q-2 (a) Endocrines	(2 out of 3)	2x 3 =06
(b) Reproductive system	(1 out of 2)	1 x3 =03
Q-3 Digestive system	(2 out of 3)	2 x3 = 06
	Section 2	
Q-4 Central nervous System including autonomic system	(2 out of 3)	2 x 5 =10
Q-5 (a) Special senses	(2 out of 3)	2 x3 = 06
(b) Nerve muscle physiology	(1 out of 2)	1 x3 =03
Q-6 Objective questions from systems covered in Paper2	(6 out of 8)	6 x 1 =06

PRACTICAL (Paper Scheme)

Practicals	Total 60 Marks
Haematology	15
Clinical Physiology	10
Calculations, Graphs, Charts, Photographs	10
Instruments	05
Oral Viva	
Paper 1 Topics	10
Paper 2 Topics	10

Duration of MBBS Course for the Batch 2019-20

			Subjects	Duration	Date:
1	First MBBS		1) Human Anatomy 2) Human Physiology 3) Biochemistry	1 Year	1/08/2019 to 31/07/2020
2	Second MBBS		1) Pathology 2) Microbiology 3) Pharmacology 4) Forensic Medicine	1½ Years	1/08/2020 to 31/01/2022
3	Third MBBS	Part I	1) Ophthalmology 2) Oto-Rhino-Laryngeal (ENT) 3) Community Medicine	1 Year	1/02/2022 to 31/01/2023
		Part II	1) Medicine 2) General Surgery 3) Obstretrics & Gynecology 4) Paediatrics	1 Year	1/02/2023 to 31/01/2024
			Total	4½ Years	
4	Internship			1 Year	February -March 2024 to February -March 2025