### HUMAN PHYSIOLOGY

<table>
<thead>
<tr>
<th>Must Know-</th>
<th>Expected to Know-</th>
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<tbody>
<tr>
<td>1. GENERAL PHYSIOLOGY</td>
<td>Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.</td>
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<tr>
<td>1. Homeostasis: Basic concept, Feedback mechanisms</td>
<td>Body fluids: distribution of total body water, intracellular &amp; extracellular compartments, major anions &amp; cations in intra and extra cellular fluid.</td>
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<td>2. BLOOD: Composition &amp; functions of blood.</td>
<td>Functions of reticulo endothelial system.</td>
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<td>Specific gravity, Packed cell volume, factors affecting &amp; methods of determination.</td>
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<td>Plasma proteins - Types, concentration, functions &amp; variations.</td>
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<td>ESR - Methods of estimation, factors affecting, variations &amp; significance.</td>
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<td>Haemoglobin - Normal concentration, method of determination &amp; variation in concentration.</td>
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<td>Anaemia: Definition, classification, life span of RBC’s destruction of RBC’s, formation &amp; fate of bile pigments, Jaundice - types.</td>
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<td>Leucocytes: Classification, number, percentage, distribution morphology, properties, functions &amp; variation. Role of lymphocytes in immunity, leucopoiesis life span &amp; fate of leucocytes.</td>
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<td>Thrombocytes - Morphology, number, variations, function &amp; thrombopoiesis.</td>
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<td>Blood groups: ABO &amp; Rh system, method of determination, importance, indications &amp; dangers of blood transfusion, blood substitutes.</td>
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<td>Blood volume: Normal values, variations.</td>
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<td>3. MUSCLE AND NERVE</td>
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<td>6. BODY TEMPERATURE</td>
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<td>Other hormones - Angiotensin, A.N.F.</td>
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<td>8. REPRODUCTION Sex differentiation, Physiological anatomy of male and female sex organs, Female reproductive system : Menstrual cycle, functions of ovary, actions of oestrogen &amp; Progesterone, control of secretion of ovarian hormones, tests for ovulation, fertilisation, implantation, maternal changes during pregnancy, pregnancy tests &amp; parturition.</td>
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<td>Lactation, composition of milk, factors controlling lactation, milk ejection, reflex, Male reproductive system :spermatogenesis, semen and contraception.</td>
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| 9. CARDIO VASCULAR SYSTEM  
Functional anatomy and innervation of heart Properties of cardiac muscle  
Origin & propagation of cardiac impulse and heart block.  
Electrocardiogram - Normal electrocardiogram. Two changes in ECG in myocardial infarction.  
Cardiac cycle - Phases, Pressure changes in atria, ventricles & aorta.  
Volume changes in ventricles. arterial pulse.  
Heart sounds: Mention of murmurs.  
Heart rate: Normal value, variation & regulation.  
Cardiac output: Definition, normal values, one method of determination, variation, factors affecting heart rate and stroke volume.  
Arterial blood pressure: Definition, normal values & variations,determinants, regulation & measurement of blood pressure. |
| Coronary circulation.  
Cardio vascular homeostasis - Exercise & posture  
Jugular venous pulse, |
| 10. RESPIRATORY SYSTEM  
Physiology of Respiration : External & internal respiration.  
Functional anatomy of respiratory passage & lungs.  
Respiratory movements: Muscles of respiration, Mechanism of inflation & deflation of lungs.  
Intra pleural & intra pulmonary pressures & their changes during the phases of respiration.  
Mechanics of breathing - surfactant, compliance & work of breathing.  
Spirometry: Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.  
Pulmonary ventilation - alveolar ventilation & dead space – ventilation.  
Exchange of gases: Diffusing capacity, factors affecting it.  
Transport of Oxygen & carbon dioxide in the blood.  
Regulation of respiration – neural & chemical.  
Hypoxia, cyanosis, dyspnoea, periodic breathing. |
| Artificial respiration, pulmonary function tests.  
Composition of inspired air, alveolar air and expired air. |
| 11. CENTRAL NERVOUS SYSTEM  
1. Organisation of central nervous system  
2. Neuronal organisation at spinal cord level  
3. Synapse receptors, reflexes, sensations and tracts  
4. Physiology of pain  
5. Functions of cerebellum, thalamus, hypothalamus and cerebral cortex.  
6. Formation and functions of CSF  
7. Autonomic nervous system  
8. SPECIAL SENSES  
Fundamental knowledge of vision, hearing, taste and smell. |
PRACTICALS

The following list of practical is minimum and essential. All the practical have been categorised as procedures and demonstrations. The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination. Those categorised as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURES
1. Enumeration of Red Blood Cells
2. Enumeration of White Blood Cells
3. Differential leucocyte counts
4. Determination of Haemoglobin
5. Determination of blood group
6. Determination of bleeding time and clotting time
7. Examination of pulse
8. Recording of blood pressure.

DEMONSTRATION:
1. Determination of packed cell volume and erythrocyte sedimentation rate
2. Determination of specific gravity of blood
3. Determination of erythrocyte fragility
4. Determination of vital capacity and timed vital capacity


6. Electrocardiography: Demonstration of recording of normal Electro cardiogram
7. Clinical examination of cardiovascular and respiratory system.

TEXT BOOKS:
Ganong; Review of Medical Physiology, 19th edition
Vander; Human physiology, 5th edition
Choudhari; Concise Medical Physiology, 2nd edition
Chaterjee; Human Physiology, 10th edition
A.K. Jain; Human Physiology for BDS students, 1st edition

BOOKS FOR REFERENCE:
i) Berne & Levey; Physiology, 2nd edition
ii) West-Best & Taylor’s, Physiological basis of Medical Practise, 11th edition

EXPERIMENTAL PHYSIOLOGY:
i) Rannade; Practical Physiology, 4th edition
ii) Ghai; a text book of practical physiology
iii) Hutchison’s; Clinical Methods, 20th edition