VIRAR HOMEOPATHIC MEDICAL COLLEGE
PHYSIOLOGY AND BIOCHEMISTRY DEPARTMENT

SEMESTER 1 LECTURES- 100 HRS, NON- LECTURES - 115 HRS

1) **GENERAL PHYSIOLOGY**

SR NO	DATE	TOPICS	HRS
1.	26/11/24	Define Physiology	1
2.	28/11/24	Discuss the importance of learning physiology in a homeopathic course	1
3.	29/11/24	Discuss the internal and external environment of body	1
4.	3/12/24	Explain the regulation of internal environment	1
5.	5/12/24	Explain homeostasis and its control	1
6.	6/12/24	Describe the structure of cell	1
7.	10/12/24	Describe the function of cell	1
8.	12/12/24	Describe the list of organelles present in cell	1
9.	13/12/24	Enumerate the functions of organelles	1
10.	17/12/24	List the name of intracellular junction	1
11.	19/12/24 20/12/24	Discuss the importance of intracellular junction	2
12.	24/12/24 26/12/24	Explain Passive transportation	2
13.	27/12/24 31/12/24	Explain Active transportation	2
14.	2/1/25 3/1/25	Explain Vesicular Transportation	2
15.	7/1/25 9/1/25	Demonstrate history taking process	2
		TOTAL HRS	20

2) **BIOPHYSICS**

Sr No.	DATE	Topics	Hrs
1.	25/11/24	Define the terms Filtration and Ultrafiltration	1
2.	25/11/24	Define intracellular communication	1
3.	25/11/24	Define the terms adsorption and Absorption	1
4.	2/12/24	Define the terms Hydrotrophy, Dialysis and Assimilation	1
5.	2/12/24	Define Surface tension	1
6.	2/12/24	Explain Action potential	1
7.	9/12/24	Define Donnan Equilibrium	1
8.	9/12/24	Define Transmembrane potential	1

9.	9/12/24	Explain nerve action potential	1
10.	16/12/24	Define tracer elements	1
11.	16/12/24	Define Rhythmicity of some excitable tissues	1
12.	16/12/24	Describe the ionic bond	1
13.	23/12/24	Describe the covalent bond, Discuss the characteristics of acids ,base and salts	1
14.	23/12/24	Describe the hydrogen bond, Discuss acid-base balance and its application to its concept of pH	1
15.	23/12/24	Define the terms Colloid, Solution and suspension Describe the maintenance of pH :Buffer System	1
		TOTAL HRS	15

3) **SKIN AND INTEGUMENTARY SYSTEM**

SR NO	DATE	Topics	Hrs
1.	27/11/24 4/12/24	Discuss layers of skin with their functions	2
2.	11/12/24 18/12/24	Relate the structure of hair with its function	2
3.	1/1/25 8/1/25	Relate the structure of nail with its function	2
4.	15/1/25 22/1/25	Relate the structure of different glands of skin with their functions	2
5.	29/1/25 5/2/25	Describe the glands of skin	2
6.	12/2/25 5/3/25	Explain the regulation of body temperature through skin	2
7.	12/3/25	Demonstrate the examination of Skin and Mucus membrane	1
8.	19/3/25 26/3/25	Demonstrate the examination of Conjunctiva, Nails and Glands	2
		TOTAL HRS	15

4) **BODY FLUIDS AND IMMUNE MECHANISM**

SR NO	DATE	TOPICS	HRS
1	10/1/25	Discuss the composition of Blood, Describe the function of blood	1
2	16/1/25	Define serum, explain the difference between serum and Plasma	1
3	17/1/25	Discuss the origin of plasma proteins, explain the forms and functions of plasma proteins	1
4	21/1/25	Identify the relation of diet to plasma protein, Illustrate the structure of Haemoglobin	1
5	23/1/25	Discuss the synthesis of Haemoglobin, Define normal Function of Haemoglobin,	1
6	24/1/25	State normal Value of different varieties of Haemoglobin, Explain Iron Metabolism	1
7	28/1/25	Discuss the normal structure of RBC with its morphology, Discuss stages and regulation of erythropoiesis	1
8	30/1/25	Discuss the fate of RBC, Discuss the haemolysis	1
9	31/1/25	Classify the anaemias according to their morphology and aetiology, Discuss the different anaemia	1
10	4/2/25	Enumerate the different abnormal functions in anaemia Discuss the fate of bilirubin	1
11	6/2/25	Explain Physiological Jaundice, Explain Jaundice in new born	1
12	7/2/25	Explain different condition of leucocyte count in our body, Classify different types of WBC	1
13	11/2/25	Discuss the function of WBC as per their classification Discuss the phagocytosis	1
14	13/2/25	Discuss the stages of leucopoiesis with its regulation, Discuss the conditions that cause abnormal value of leucocyte	1
15	14/2/25	Discuss the structure and function of Platelets,	1
16	18/2/25	Discuss the Thrombopoiesis	1
17	20/2/25	Discuss the count and variations of platelets	1
18	21/2/25	Describe the process of coagulation	1
19	25/2/25	Discuss the mechanism of haemostasis,	1
20	27/2/25	Explain stages of clotting mechanism	1
21	28/2/25	Discuss haemorrhagic disorder	1

22	4/3/25	Classify the ABO blood group system	1
23	6/3/25	Discuss Landsteiners Law,	1
24	7/3/25	Describe Rhesus Blood group	1
25	11/3/25	Discuss RH incompatibility	1
26	13/3/25	Discuss the importance of Blood transfusion	1
27	18/3/25	List causes for blood transfusion reaction,	1
28	20/3/25	Discuss Tissue macrophage system	1
29	21/3/25	Describe the morphology and function of lymphocytes and Plasma cell	1
30	25/3/25	Explain the function of spleen	1
31	27/3/25	Discuss the formation and function of lymph	1
32	28/3/25	Define immunity	1
33	1/4/25	Explain different type of immunity	1
34	3/4/25	Discuss development of immune response	1
35	4/4/25	Discuss Autoimmunity and Hypersensitivity Discuss immunodeficiency diseases	1
		TOTAL	35

5) **NERVE MUSCLE PHYSIOLOGY**

SR NO	DATE	Topics	Hrs
1	30/12/24	Define Neurone Classify neurons	1
2	30/12/24	Explain Structure and function of neuroglia	1
3	30/12/24	Describe terms Excitability and Conductivity	1
4	6/1/25	Discuss graded and action potential	1
5	6/1/25	Discuss the cause of grade of injury	1
6	6/1/25	Identify the stages of degeneration	1
7	13/1/25	Discuss the stages of regeneration	1
8	13/1/25	Illustrate the structure of Neuro-Muscular Junction	1
9	13/1/25	Discuss the Neuromuscular Transmission, Illustrate Functional Anatomy of Cardiac muscle	1
10	20/1/25	Discuss Disorders of neuromuscular Junction, Explain Nervous and hormonal control of smooth muscle contraction	1
11	20/1/25	Illustrate the mechanism of skeletal muscle contraction., Describe the general mechanism of muscle contraction	1
12	20/1/25	Discuss molecular mechanism, Explain the process of excitability and contactibility	1
13	27/1/25	Discuss Energetic of muscle contraction, Explain the properties of cardiac muscle	1

14	27/1/25	Discuss Excitation of skeletal muscle, Discuss the disorders of Skeletal muscles	1
15	27/1/25	Explain Contraction of smooth muscle, Measure the parameters of cardio-pulmonary changes during exercise changes in cardio respiratory parameters	1
		TOTAL HRS	15

Non-teaching / Practicals

SR NO	DATE	TOPICS	HRS
1	26/11/24 27/11/24	Case taking and Approach to Patient	6
2	3/12/24 4/12/24	Demonstration of General Examination	6
3	10/12/24 11/12/24	Demonstrate effect of mild, moderate and severe exercise and record changes in cardio respiratory parameters	6
4	17/12/24 18/12/24	Examination of muscles, joints	6
5	24/12/24 31/12/24	Study of Compound Microscope	6
6	1/1/25 7/1/25	Collection of Blood samples	6
7	8/1/25 15/1/25	Estimation of Haemoglobin Concentration	6
8	21/1/25 22/1/25	Hemocytometry	6
9	28/1/25 29/1/25	Total RBC Count	6
10	4/2/25 5/2/25 11/2/25 12/2/25	Determination of RBC indices	12
11	18/2/25 25/2/25 4/3/25 5/3/25	Total WBC count	12
12	11/3/25 12/3/25	Preparation and Examination of Blood smear	6
13	18/3/25 19/3/25 25/3/25 26/3/25	Differential Leucocyte Count	13
14	1/4/25 2/4/25	Determination of Erythrocyte Sedimentation Rate	6
15	8/4/25 9/4/25	Determination of Blood groups	6
16	15/4/25 16/4/25	Determination of bleeding time and Coagulation time	6
		TOTAL HRS	115

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SEMESTER 2 - LECTURES: 110 HRS, NON-LECTURES: 110 HRS

1) **CARDIOVASCULAR SYSTEM**

SR. NO.	DATE	TOPICS	HRS
1.	02/4/25	Describe the chambers of heart Discuss the valves & the walls of heart	1
2.	09/4/25	Explain the pacemaker of heart. Describe the conducting system	1
3.	16/4/25	Discuss the Morphological Properties of heart	1
4.	23/4/25	Discuss the electrical properties of heart Discuss the mechanical & metabolic Properties of heart.	1
5.	30/4/25	Define Cardiac cycle Discuss the events of cardiac cycle	1
6.	07/5/25	Explain the pressure changes during cardiac cycle Explain the ECG changes during each cardiac cycle	1
7.	14/5/25	Define Heart Sound Explain different heart sounds with their measurement technique Discuss the clinical importance of Murmurs & Triple heart sound	1
8.	04/6/25	Discuss normal ECG with its waves and intervals Explain in electrocardiography with unipolar & bipolar recording.	1
9.	11/6/25	Classify arrhythmias	1
10.	18/6/25	Explain Different degree of heart block. Explain Myocardial Infarction	1
11.	25/6/25	List the functions of circulation State the functions of heart	1
12.	02/7/25	Discuss the pressure changes in vascular system Recall the structure of the blood vessels	1
13.	09/7/25	Identify the factors affecting heart rate and how it affects Discuss the mechanism of control of heart rate	1
14.	16/7/25	Define cardiac output Discuss the distribution of cardiac output	1
15.	23/7/25	Discuss the factors affecting cardiac output Discuss in detail the Control mechanism of cardiac output	1
16.	30/7/25	Discuss the importance of blood pressure State the factors affecting arterial blood pressure	1

17.	06/8/25	Discuss the determinants of arterial blood pressure Describe regulation of arterial blood pressure	1
18.	13/8/25	Discuss the capillary circulation Discuss the Coronary circulation	1
19.	20/8/25	Discuss the Cerebral circulation Discuss the Splenic circulation Discuss Pulmonary circulation	1
20.	03/9/25	Explain mechanism responsible for shock & syncope Discuss the mechanism of hypertension	1
		TOTAL HRS	20

2) **RESPIRATORY & ENVIRONMENTAL PHYSIOLOGY**

SR No.	DATE	TOPICS	HRS
1.	03/2/25	Identify the different parts of upper respiratory tract	1
2.	03/2/25	Describe the importance of different parts of lower respiratory tract	1
3.	03/2/25	Identify the different parts of tracheo–bronchial tree, Respiratory membrane & pleura	1
4.	10/2/25	Explain the properties of Gases	1
5.	10/2/25	Discuss non-respiratory function of respiratory system	1
6.	10/2/25	Discuss the mechanism of Inspiration	1
7.	17/2/25	Discuss the mechanism of Expiration	1
8.	17/2/25	Discuss intra-pulmonary pressure	1
9.	17/2/25	Discuss intra pleural pressure	1
10.	24/2/25	Discuss static lung volume & capacities	1
11.	24/2/25	Discuss dynamic lung volume and capacities	1
12.	24/2/25	Define surface tension	1
13.	03/3/25	Discuss the significance of lung surfactant	1
14.	03/3/25	Describe the Oxygen transportation	1
15.	03/3/25	Explain the carbon dioxide transportation	1
16.	10/3/25	Discuss the nervous regulation of respiration	1
17.	10/3/25	Discuss the Chemical regulation of respiration	1
18.	10/3/25	Discuss the physio clinical aspect of Apnea	1
19.	17/3/25	Discuss the physio clinical aspect of Dyspnoea, Asphyxia, Oxygen toxicity	1

20.	17/3/25	Define Hypoxia	1
21.	17/3/25	Classify hypoxia. Define Cyanosis	1
22.	24/3/25	Discuss the principles of artificial respiration	1
23.	24/3/25	Discuss the Methods of artificial respiration	1
24.	24/3/25	Discuss the pressure changes during high altitude Discuss the effect during Rapid & slow ascent on high altitude	1
25.	07/4/25	Discuss the pressure changes during deep sea diving	1
		TOTAL HRS	20

3) **CENTRAL NERVOUS SYSTEM**

SR NO	DATE	TOPICS	HRS
1.	08/4/25	Identify the parts of central nervous system – brain & spinal cord with its function Discuss the developmental aspect of central nervous system Classify nervous system	1
2.	10/4/25	Illustrate the physiological anatomy of synapse Discuss the electrical events occurring at synapses Discuss the properties of synapse.	1
3.	11/4/25	Define receptor Classify the sensory receptors. Describe the Cutaneous receptor Explain the properties of receptor	1
4.	15/4/25	Discuss reflex arc Classify reflexes Discuss the properties of reflex	1
5.	17/4/25	Classify neuro-transmitters Explain the different types of neuro- transmitter	1
6.	22/4/25	Define sensory system Discuss different sensory tracts of spinal cord Describe the sensory tracts of spinal cord	1
7.	24/4/25	Explain the somato-sensory cortex Explain the somatic sensation – touch, pressure, pain, temperature, proprioception	1
8.	25/4/25	Discuss motor areas Discuss different motor tracts of spinal cord	1
9.	29/4/25	Discuss the motor tracts of spinal cord Discuss the clinical significance of Motor tracts of	1

		spinal cord	
10.	02/5/25	Discuss the physiological anatomy of vestibular apparatus	1
11.	06/5/25	Explain the functions of vestibular apparatus	1
12.	08/5/25	Discuss the common vestibular dysfunctions	1
13.	09/5/25	Differentiate between somatic and autonomic nervous system	1
14.	13/5/25	Describe the divisions of Autonomic nervous system	1
15.	03/6/25	Discuss the responses of effector organ to autonomic nerve impulse	1
16.	05/6/25	List the functions of Spinal cord	1
17.	06/6/25	Illustrate the transection of spinal cord	1
18.	10/6/25	Describe the sensory disturbances of spinal cord	1
19.	12/6/25	Discuss the connections & functions of cerebral cortex	1
20.	13/6/25	Discuss the connections& functions of Basal Ganglia	1
21.	17/6/25	Explain the connections & functions of Thalamus	1
22.	19/6/25	Explain the connections & functions of Hypothalamus	1
23.	20/6/25	Discuss the connections & functions of Limbic system	1
24.	24/6/25	Explain the connections & functions of Cerebellum	1
25.	26/6/25	Explain the cerebellar lesions	1
26.	27/6/25	Discuss the importance of EEG	1
27.	01/7/25	Explain the Physiological Basis of EEG	1
28.	03/7/25	Discuss the factors affecting sleep	1
29.	04/7/25	Describe the Physiological changes during sleep	1
30.	08/7/25	Classify the types of sleep	1
31.	10/7/25	Discuss the factors controlling sleep cycle	1
32.	11/7/25	Discuss the mechanism and development of speech	1
33.	15/7/25	Describe the physiological basis of learning	1
34.	17/7/25	Discuss the physiological basis of memory.	1
35.	18/7/25	Discuss the applied physiology of memory	1
		TOTAL	35

4) **ENDOCRINE SYSTEM**

SR NO	DATE	TOPICS	HRS
1.	07/4/25	Define hormones Discuss the characteristic of hormones Classify the hormones as per their chemistry	1
2.	07/4/25	Discuss the regulation of hormone from the hypothalamus Discuss the homoeostatic mechanism of secretion of hormone through Hypothalamus	1
3.	21/4/25	Discuss the physiological anatomy of pituitary gland Explain the secretion of anterior pituitary hormone	1
4.	21/4/25	Explain the secretion of growth hormone Describe the functions of growth hormone	1
5.	21/4/25	List the factors affecting growth hormone Discuss the effects of altered secretion of growth hormone	1
6.	28/4/25	Explain the actions and control of secretion of prolactin	1
7.	28/4/25	Discuss the secretion of posterior Pituitary hormones	1
8.	28/4/25	Explain the functions of ADH	1
9.	05/5/25	Discuss the functions of Oxytocin	1
10.	05/5/25	Describe pituitary insufficiency	1
11.	05/5/25	Discuss the physiological anatomy of Thyroid gland Describe the formation & secretion of thyroid hormone Explain the transport & metabolism of thyroid hormone	1
12.	02/6/25	Discuss the regulation and action of thyroid hormone Explain the effect of altered secretion of Thyroid hormone	1
13.	02/6/25	Discuss the calcium & phosphate metabolism	1
14.	02/6/25	Discuss the action of parathormone	1
15.	09/6/25	Describe the action of Calcitonin	1
16.	09/6/25	Discuss the role of Calcitonin in the maintenance of calcium homoeostasis in body	1
17.	09/6/25	Discuss the effect of altered secretion of para thyroid hormone	1
18.	16/6/25	Discuss the physiological anatomy of Adrenal Cortex gland	1
19.	16/6/25	Describe the formation, secretion, and functions of Glucocorticoid hormone	1
20.	16/6/25	Describe the formation, secretion, and functions	1

		of Mineralocorticoid hormone	
21.	23/6/25	Describe the formation, secretion, and functions of Sex hormones	1
22.	23/6/25	Explain the effects of altered secretion of Adrenal cortex hormone	1
23.	23/6/25	Discuss the physiological anatomy of Adrenal Medullary gland	1
24.	30/6/25	Explain the physiological anatomy of Pancreatic gland	1
25.	30/6/25	Discuss the action and regulation of Glucagon	1
26.	30/6/25	Discuss the action and regulation of Insulin	1
27.	07/7/25	Describe the effects of altered secretion of Pancreatic Hormone	1
28.	07/7/25	Describe the functions of hormone of thymus gland	1
29.	07/7/25	Discuss the functions of hormone of pineal gland	1
30.	14/7/25	State the functions of Local hormones	1
		TOTAL	25

Non-teaching/ Practicals

SR NO	TOPICS	HRS
1.	Examination of muscles, joints	20
2.	Cardio-Vascular System – Blood Pressure Recording, Radial Pulse, ECG, Clinical Examination	20
3.	Respiratory System- Clinical Examination, Spirometry, Stethography	20
4.	OPD (Applied Physiology)	10
5.	Nervous System- Clinical Examination	10
6,	Special Senses- Clinical Examination	10
7.	Reproductive System – Diagnosis of pregnancy	10
8.	OPD	10