Contents

STUDYGUIDE
1st Year BDS
Department of Physiology

Description: This study guidebook is designed by combining the efforts of all topics throughout the year to give 1st year BDS students of Women Dental College a resource material that highlights significant components of the curriculum. The aim is to promote self-directed lifelong learning

Overview:

Program	Bachelor of Dental Surgery
Course Name	Physiology
Contact Hours	280
InfrastructureRequirements	Lecture Hall Tutorial Room Physiology Lab

FacultyResponsibleforCourseConduction:

Sr.No	Faculty	Designation
1	Dr Sheherbano Yhaya	Assistant Professor
2	Dr Kashmala Khan	Lecturer
3	Dr Kinza Hassan	Lecturer

DetailsOfSupportingStaff:

Sr.No	Staff	Designation
1	Mr Shujah	Lab attendent
2	Miss Shahzana	Lab attendent

Objectives&LearningStrategies/TOS:

S.No.	Topic	LearningOutcomes	Teaching Hours	Mode of Teaching	Assessment Tools
1	Homeostasis	By the end of the lecture, students will be able to describe physiology, its importance and hemostasis	2 Hours	LGS	SAQ's/MCQ's/ OSPE/ Presentation
2	Control system of the body	Aware of important control systems, working for homeostasis and their mechanism	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
3	Organization & cell membrane function	Describe cellular organization, cell membrane structure and function	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation SAQ's/MCQ's/ OSPE/ Presentation
4	Function of organelles	Describe functions of the organelles	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
5	Cytoskeleton & gap junction	Describe organization and functions of cytoskeleton and gap junctions	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
6	Ingestion by the cell	Describe cellular processes of ingestion	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
7	Membrane channel proteins	Describe structure, types and functions of membrane protein channels	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
8	Passive transport	Describe mechanism of passive transport with examples	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
9	Active transport	Describe mechanism, types and functions of active transport	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
10	Resting membrane potential & Action potential	Describe how resting membrane potential is achieved, why is it negative, what makes action potential positive	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
11	Structure and properties of	Describe morphology of a skeletal muscle and its	2	LGS	SAQ's/MCQ's/ OSPE/

	skeletal muscle	different properties			Presentation
12	Excitation contraction coupling (Neuromuscular junction)	Describe how muscle respond to external stimulus	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
13	Mechanics of skeletal muscle contraction	Describe mechanics of skeletal muscle contraction	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
14	Nerve impulse transmission	Describe how impulse is transmitted through a nerve fiber	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
15	Introduction of smooth muscles	Differentiate between structure of smooth and skeletal muscle, mechanism of muscle contraction and different types	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
16	Humoral and neuronal control of smooth muscle	Describe humoral	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
17	Difference between skeletal and smooth muscles	Differentiate between skeletal and smooth muscles	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
18	Cardiac muscle physiology	Explain action potential in cardiac muscle and differentiate between cardiac and smooth muscles	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
19	Cardiac Cycle	Explain steps involved in cardiac cycle, concept of systole and diastole	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
20	ECG	Describe normal pattern of ECG	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
21	Electrocardiography	Explain how to record ECG	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
22	Rhythmic excitation of the heart	Describe excitatory and conductive system of the heart	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
23	Cardiac Output and venous return	Describe cardiac output and venous return	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
24	Regulation of short term BP	Explain regulation of short term BP	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
25	Regulation of long term BP	Explain regulation of long term BP	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
26	Physiological anatomy of kidney	Describe basic morphology of kidneys	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
27	Functions of	Describe functions of kidneys	2	LGS	SAQ's/MCQ's/

	kidneys				OSPE/ Presentation
28	GFR, normal rate, factors affecting GFR	Describe GFR, its normal values and factors affecting it	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
29	Micturition reflex	Explain micturition reflex	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
30	Hormones of the kidneys	Describe different renal hormones and their functions	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
31	Concentrated and dilute urine	Describe the mechanism of concentrated and dilute urine	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
32	Auto regulation of GFR	Describe myogenic and tubule glomerular feedback mechanism of autoregulation	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
33	Structure and functions of GI Tract	Describe functions and morphology of the GI Tract	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
34	Enteric nervous system, swallowing , mastication	Explain the normal mechanism of swallowing and mastication and their control through autonomic nervous system	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
35	Functions and movements of stomach and intestines	Describe functions and moven=ments of the GITract	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
36	Vomiting defecation and its pathways	Explain the process of vomiting and defecation and how the reflexes are mediated	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
37	Functions of liver	Enlist the functions of liver	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
38	Organization of the respiratory tract	Describe organization of the respiratory tract	1	SGF	SAQ's/MCQ's/ OSPE/ Presentation
39	Respiratory and non-respiratory functions of the lungs	Enlist respiratory and non-respiratory functions of the liver	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
40	Mechanics of breathing	Describe the mechanics of breathing	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
41	Lung volumes and capacities	Describe lung volumes and capacities along with their importance in respiratory pathologies	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
42	Dead space, respiratory membrane and diffusion of gases	Know the concept of dead space, respiratory membrane and diffusion of respiratory gases along the membrane	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
43	Co2 transport	Describe how co2 is transported from the tissues to	2	LGS	SAQ's/MCQ's/ OSPE/

		2the lungs			Presentation
44	Regulation of respiration	Describe how respiration is chemically and through nervous system regulated	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
45	Abnormal breathing, hypoxia, cyanosis, artificial oxygenation	Know the concepts of abnormal breathing, hypoxia, cyanosis and artificial oxygenation	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
46	Organization of the nervous system	Describe organization of the nervous system	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
47	Classification of the nerve fibers	Classify nerve fibers	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
48	Properties of synaptic transmission	Describe properties of synaptic transmission	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
49	Types and functions of sensory receptors	Enlist types and functions of sensory receptors	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
50	Ascending descending tracts and the impulses that they carry	Describe the sensory tracts	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
51	Spinal cord reflexes	Describe different spinal cord reflexes	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
52	Sensory and motor cortex	Describe sensory and motor cortex	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
53	Basal ganglia, parkinson's	Describe basal ganglia and its connections along with pathologies	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
54	Vestibular apparatus	Describe reticular and vestibular nuclei and how sound is perceived through vestibular apparatus	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
55	Sleep, smell, taste and speech physiology	Know the concepts of sleep, smell, taste and speech physiology	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
56	Thalamus, hypothalamus, limbic system	Describe the nuclei and functions of thalamus, hypothalamus, limbic system	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
57	Autonomic nervous system	Explain the types and functions of autonomic nervous	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
58	General principles, classifications and mechanisms of endocrine system	Describe principles, mechanism and classification of endocrine physiology	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation

59	Pituitary gland	Describe types, cells, hormones and their functions	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
60	Thyroid gland	Describe physiological anatomy, synthesis and regulationof the hormones and abnormalities of the gland	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
61	Parathyroid gland	Describe Physiological anatomy, hormones synthesis and regulation along with abnormalities of the gland	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
62	Pancreas	Describe Pancreatic physiology, cells, hormone secretion, glucose metabolism and pathologies of the gland	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation
63	Adrenal gland	Describe Physiological anatomy, hormones secretion and functions along with abnormalities	2	LGS	SAQ's/MCQ's/ OSPE/ Presentation

LearningResources:

Sr.No	Text/ReferenceBooks	Edition
1	Guyton and Hall	14 Edition
2	Ganong's review of medical physiology	26 Edition

AdditionalLearningResources:

Handson	Blood group, Blood pressure, Pulse determination
SkillsLab	Cardiopulmonary Resuscitation
Videos	www.drnajeeblectures.com
InternetResources	www.wmcmis.com www.wmc.edu.pk

AssessmentMethods:

MCQs:

MultipleChoicequestions;SinglebestType

OSPE/OSCE:ObjectiveStructuredPractical/Clinicalexamination

Presentation:

MultipleChoiceQuestions:

1. SinglebesttypeMCQshavingfiveoptionswithonecorrectanswerandfour distractorsare partofassessment.
2. Correctanswercarriesonemark,andincorrectwillbemarkedzero.Ruleofne gativemarkingis not applicable.
3. Students mark their responses on specified computer-based designedsheet.

ObjectiveStructuredPractical/ClinicalExamination

1. NineOSCEstationsareusedforformativeaswellassummativeassessment.
2. TimeallocatedforeachstationisfiveminutesasperExaminationrulesofKh yberMedicalUniversity,Peshawar.
3. Allstudentsarerotatedthroughthesamestations.
4. Stationsusedareunobserved,observed,interactiveandreststations.
5. Onunobservedstations, models, labreports,radiographs, flowcharts,case scenariosmaybeused to assesscognitive domain.
6. On observed station, examiners don’t interact with candidate and justobservetheperformance ofskills /procedures.
7. On interactive station, examiner ask questions related to the task withintheallocatedtime.
8. Onreststation,studentsarenotgivenanytask.Theyjustwaitto movetothenextstation.

Presentation:

Studentsaregiventopicsforpresentationeitherindividuallyoringroups.Theyareencouraged toprepare presentationsonpowerpointtoenhancetheirunderstandingofthetopic.

InternalAssessmentCriteria:

1. 10%weightageofInternalAssessmentinprofessionalexamispolicyof KhyberMedical University.
2. ThisInternalAssessmentwillcompriseoffollowingcomponents

a) Attendance
b) Classpresentations
c) Monthlytests
d) Midterms
e) Pre-Prof

ExaminationRules&Regulations:

1. Oneclasstestofthesubjectmaybe heldmonthly,marksofwhichwillbe included in internal assessment. Marks for class test can varyaccording tosyllabusandteachers'choice.
2. Mid-Termexamcomprising 45MCQsofsinglebesttypeand45 marksSEQswillbeheldinthe middleofthesession.
3. Pre-profExamcomprising45MCQsofsinglebesttypeand45marksSEQswillb econductedattheendofsessionbeforeprepleaves.
4. The pattern of class tests, Mid-term & Pre-prof will be same as theProfessionalExamtakenbyKhyberMedicalUniversity,Peshawar.
5. OSPEswillbeconductedattheendofMid-term&pre-profExam.

FeedbackOnExamination:

1. Students' feedbackonassessment strategieswillbetakenin apreformedproformaforfeedbacktwiceayeari.e.,Mid-termandpre-profexams.

2. FeedbackoftheoryaswellasOSPE &Vivawillbetaken.
3. Department of Medical Education & Quality Enhancement Cell incollaborationwithExamCellofWDCisresponsibletoconductthisexercise.

ModelQuestions:

MultipleChoiceQuestion

Question: Which of the following decreases the conversion of 25 hydroxycholecalciferol to 1,25-dihydroxycholecalciferol

1. Hypocalcemia
2. Hypoparathyroidism
3. A diet low in calcium
4. Chronic renal failure
5. Skin diseases

ANS - 4

ShortAnswerQuestion:

Q - Briefly discuss hormones on the basis of their chemical structure with one example?

ANS) On the basis of chemical structure, hormones are classified in to three types

1. Steroid Hormones
2. Protein Hormones
3. Amino Acid Tyrosin Derivatives
    1. Steriod Hormones: Fat soluble, cannot be stored, diffuses out of the cell memberane
       Example :Estrogen

    2. Protein Hormones
       Fat insoluble
       Made up of amino acid (<100 – Polypeptides
       >100 – Proteins)
       Cannot be stored
       Example TSH

    3. Amino Acid Tyrosin Derivatives
       Hormones of the adrenal medulla
       Adrenalin, Nor-Adrenalin

SuggestionsForNextAcademicYear:

My suggestion for the next academic year is to implement modular system to increase effectiveness of the teaching-learning process and to break a barrier between basic and clinical sciences. The Integrative system is followed globally and in various medical colleges of Pakistan which shows promising results of the students so Women Dental College should also implement modern teaching techniques

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