Principles of Medical Physiology

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Second Edition

Sabyasachi Sircar

Free Competency Mapping Booklet



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PY10.2	Describe and discuss the functions and properties of synapse, reflex, receptors	Synaptic transmission Postsynaptic potentials Synaptic plasticity Sensory receptors Monosynaptic reflex Long loop stretch reflex Golgi tendon reflex Regulation of muscle length Properties of reflexes	648 656 657–653 660–660 679 679 679 680 689–690
PY10.3	Describe and discuss somatic sensations and sensory tracts	Sensory Perception Sensory Pathways	672–675 666–672
PY10.4	Describe and discuss motor tracts, mechanism of maintenance of tone, control of body movements, posture and equilibrium and vestibular apparatus	Regulation of muscle length and tone Brainstem tracts and their nuclei Motor planning programming and execution Vestibular mechanisms	677–684 609–612 685–697 794–798
PY10.5	Describe and discuss structure and functions of reticular activating system, autonomic nervous system (ANS)	Reticular formation Autonomic nervous system	613–614 642–64
PY10.6	Describe and discuss Spinal cord, its functions, lesion and sensory disturbances	Spinal cord Sensory disorders	606–608 674–67
PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	Cerebral cortex Basal ganglia Thalamus Hypothalamus Cerebellum Limbic system–Limbic association area	632-640 626-630 622-624 624-625 615-62 638-640
PY10.8	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production	Sleep	715-719
PY10.9	Describe and discuss the physiological basis of memory, learning and speech	Memory and learning Language and speech	731–738 740–742
PY10.10	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element)	Neurotransmitters	649-65
PY10.13	Describe and discuss perception of smell and taste sensation	Olfactory and gustatory mechanisms	799-80
PY10.15	Describe and discuss functional anatomy of ear and auditory pathways and physiology of hearing	Auditory mechanisms	783–79
PY10.16	Describe and discuss pathophysiology of deafness. Describe hearing tests	Deafness tests for hearing	790–79
PY10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex	Functional anatomy of the eye Visual optics The retina and phototransduction Refractive errors Color vision and color blindness Accommodation and pupillary reflexes	744–74 749–75 760–76 751–75 773–77 780–78
PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	Visual pathways and image processing	766-77
PY10.19	Describe and discuss auditory and visual evoke potentials	Evoked potentials	711–71 791–79

Competency number	Competencies	Title in book	Page number in book
PY10.20	Demonstrate (i) Testing of visual acuity, colour and field of vision and (ii) hearing (iii) Testing for smell and (iv) taste sensation in volunteer/ simulated environment	Visual acuity Visual field Tests for hearing	754–759 754 790–793
Topic: Integra	ited Physiology		
PY11.1	Describe and discuss mechanism of temperature regulation	Regulation of body temperature	720–726
PY11.2	Describe and discuss adaptation to altered temperature (heat and cold)	Body heating mechanisms Body cooling mechanisms	722 722–723
PY11.3	Describe and discuss mechanism of fever, cold injuries and heat stroke	Hyperthermia and hypothermia Heat stroke	725–726 725
PY11.4	Describe and discuss cardio–respiratory and metabolic adjustments during exercise; physical training effects	Blood pressure in exercise Factors affecting pulmonary circulation: Exercise Muscle circulation Sympathetic affects in exercise Effect of exercise on gas exchange Oxygen dissociation curve: Effect of exercise Exercise induced hyperventilation RQ in exercise	281 305 308-309 278-279 346 349 360 495
PY11.5	Describe and discuss physiological consequences of sedentary lifestyle	Dietary planning	482
PY11.10	Interpret anthropometric assessment of infants	Anthropometry	481-482