**Learning objectives**

**Neurosciences-1B module**

**TOTAL WEEKS-5**

**Central Curriculum Committee, Khyber Medical University**

**List of themes**

|  |  |  |
| --- | --- | --- |
| **Sr. No** | **Themes**  | **Duration in weeks** |
| 1 | Facial palsy (face, 5th and 7th cranial nerves) | 1 |
| 2 | Neck swelling (thyroid, larynx, neck, muscles etc.) | 1 |
| 3 &4 | Cleft palate (palate, tongue, pharynx) | 1 |
| Anosmia  |
| 5 | Diplopia / blindness (2nd, 3rd, 4th, 6th cranial nerve / eye ball / orbit) | 1 |
| 6 | Deafness (ear / 8th nerve) | 1 |

**General learning outcomes**

At the end of this module, the 2nd year students will be able to:

1. Describe the structure of vertebrae, skull bones palate, pharynx, larynx, facial bones and base of the skull
2. Describe the contents walls and boundaries of anterior and posterior triangles of the neck
3. Describe the structure, relation, blood supply and venous drainage of thyroid
4. Describe the arteries, veins and nerves of the neck including cervical plexuses
5. Describe the nuclei, course, relations, and structures supplies by all cranial nerves
6. Describe the origin, course, relations and structures supplies by the arteries, veins and lymphatics of head and neck
7. Describe the anatomy of all the muscles of facial expression and head and neck
8. Describe the structure and functions of eye, ears, nose and paranasal sinuses
9. Describe the development of different structures of organs of the head and neck
10. Identify the microscopic structure of salivary glands and tongue
11. Examine a standardized patient`s cranial nerves
12. Demonstrate Perimetry and Audiometry

|  |
| --- |
| **specific learning objectives****Theme-1 (Facial palsy)** |
| Subject  | Topic  | S. No | Learning objectives |
| Gross anatomy | Osteology of mandible  | 1 | Describe the gross features of adult mandible. |
|  |  | 2 | Describe the bony features of mandible |
|  |  | 3 | Name the joints formed by mandible |
|  |  | 4 | Name the attachment of muscles and ligaments on mandible |
|  | Norma frontalis  | 5 | Describe the bony features of frontal view of skull |
|  | Norma basalis | 6 | Name the bones forming the base of skull |
|  |  | 7 | Name the bony features |
|  |  | 8 | Identify the different foramina and name the structures passing through these foramina |
|  |  | 9 | Describe the attachment and relation of base of skull |
|  |  | 10 | Describe the clinical importance |
|  | Norma lateralis | 11 | Name the boundaries of temporal fossa  |
|  |  | 12 | Enumerate the contents of temporal fossa |
|  |  | 13 | Describe the relations of temporal fossa |
|  |  | 14 | Name the boundaries of infratemporal fossa  |
|  |  | 15 | Enlist the contents of fossa |
|  |  | 16 | Describe the relations of Infratemporal fossa |
|  |  | 17 | Name the layers of scalp |
|  | Scalp and muscles of facial expression | 18 | Describe the muscles of scalp |
|  |  | 19 | Name the neurovascular supply of scalp |
|  |  | 20 | Describe the lymphatic drainage of scalp |
|  |  | 21 | Name the fascial muscles along with attachments, nerve supply and actions |
|  | Muscles of mastication | 22 | Enumerate the muscles od mastication along with their attachments, nerve supply and actions |
|  | Blood supply and lymphatic drainage of face | 23 | Describe the blood supply and lymphatic drainage of face portion |
|  | Temporomandibular joint (TMJ) | 24 | Name the type of TMJ |
|  |  | 25 | Name the ligaments related with TMJ |
|  |  | 26 | Describe the relations of TMJ |
|  |  | 27 | Name the muscles causing movements of TMJ |
|  |  | 28 | Name the neurovascular supply of TMJ |
|  | Extra cranial course of CN VII | 29 | Describe the extra cranial course of CN VII along with its clinical importance |
| Embryology | Face development  | 30 | Discuss the five facial primordia |
|  |  | 31 | Describe the inter-maxillary segment |
|  |  | 32 | Describe the embryological defects of face |
| Histology  | Parotid glands  | 33 | Identify the variety of gland according to nature of its acinus |
|  |  | 34 | Discuss the capsular structure and its extensions in the gland |
|  |  | 35 | Differentiate between the stroma and parenchyma of parotid gland |
|  |  | 36 | Describe the ductal system of the gland and its lining epithelium |
|  |  | 37 | Differentiate between the intercalated and striated ducts in intralobular parts of gland |
|  |  | 38 | Describe the detailed structure of serous acinus |
|  |  | 39 | Discuss the location of stenson,s duct and its structure |
|  |  | 40 | Discuss clinical conditions related with parotid gland |
| Biochemistry  | Biotechnology  | 41 | Describe the indications and procedure of Polymerase Chain Reaction (PCR), Cloning and Restriction fragment length polymorphism (RFLP) |
|  | Purine Nucleotide synthesis and degradation |  42 | Describe the process of nucleotide synthesis and degradation |
|  | Hyperuricemia- Gout |  43 | Describe the normal levels of serum Uric acid in the blood |
|  |   |  44 | Describe the mechanism of synthesis of Uric acid from Purines |
|  |   |  45 | Describe the etiology, pathogenesis and clinical features of Gout |
|  | Pyrimidine Nucleotide synthesis and degradation |  46 | Describe the mechanisms of Pyrimidines synthesis and degradation |
|  | Salvage pathway of nucleotide synthesis |  47 | Explain the salvage pathway of Nucleotide synthesis |
|  | The structural basis of cellular information |  48 | Explain the structural basis of cellular information |
|  | DNA, chromosomes, discovery and organization in genome |  49 | Explain the structure, organization and functions of Chromosomes, DNA and genes |
|  | DNA replication |  50 | Describe the process of DNA replication |
|  | Transcription |  51 | Describe the mechanism of transcription |
|  | Protein synthesis |  52 | Explain the mechanisms of protein synthesis |
|  | Mutation |  53 | Define mutation |
|  | DNA, damage and repairs |  54 | Explain the mechanisms of DNA damage and repair |
| Medicine  | Bell`s palsy | 55 | Describe the clinical features and management of Bell`s palsy |
| **Skills and affective domain** |
| Histology  | Submandibular and Sublingual Salivary Gland  | 56 | Identify the slide of submandibular and sublingual salivary glands under the microscope |
| Physiology  | Examination ofCranial nerves, V, VII | 57 | Examine the cranial nerves V & VII on a standardized patient  |

**Theme-2 (neck swelling)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject**  | **Topic**  | **S. No** | **Learning objectives** |
| Gross Anatomy  | Typical cervical vertebra | 58 | Describe the bony features of typical cervical vertebrae |
|  |  | 59 | Name the joints formed by typical vertebrae |
|  |  | 60 | Describe the attachments |
|  | Atypical cervical vertebra | 61 | Describe the bony features of atypical cervical vertebrae |
|  |  | 62 | Name the joints formed by atypical vertebrae |
|  |  | 63 | Describe the attachments |
|  | Hyoid bone | 64 | Describe the bony features of hyoid bone |
|  |  | 65 | Describe the attachments of muscles and ligaments with hyoid bone |
|  | Pterygopalatine fossa | 66 | Name the boundaries of pterygopalatine fossa  |
|  |  | 67 | Enumerate the contents of pterygopalatine fossa |
|  |  | 68 | Describe the relations of pterygopalatine fossa |
|  | Deep fascia of neck | 69 | Enumerate the layers of deep cervical fascia |
|  |  | 70 | Draw and labelled diagram of transverse section of neck showing deep cervical fascia  |
|  |  | 71 | Describe the layers of deep cervical fascia along with its clinical importance |
|  | Larynx | 72 | Name the paired and unpaired cartilages of larynx |
|  |  | 73 | Enumerate the ligaments and membrane of larynx |
|  |  | 74 | Describe the sensory and blood supply of larynx |
|  |  | 75 | Enumerate the intrinsic and extrinsic muscle of larynx along with its actions and nerve supply |
|  |  | 76 | Describe the pyriform fossa |
|  | Ant. triangle of neck | 77 | Enlist the subdivisions of anterior triangle of neck |
|  |  | 78 | Describe the boundaries and contents of submental triangle |
|  |  | 79 | Describe the boundaries and contents of carotid triangle Describe the boundaries and contents of digastric triangle Describe the boundaries and contents of muscular triangle |
|  | Post triangle of neck | 80 | Enlist the subdivisions of posterior triangle of neck |
|  |  | 81 | Describe the boundaries and contents of occipital triangle |
|  |  | 82 | Describe the boundaries and contents of supraclavicular triangle |
|  | Arteries of neck | 83 | Describe the course, Distribution and branches of main arteries of neck |
|  | veins of neck | 84 | Describe the course, Draining and tributaries of main veins of neck |
|  | cervical plexus and nerves of neck | 85 | Describe the cervical plexus along with its branches and distribution |
| Embryology  | Pharyngeal apparatus | 86 | Describe the components of pharyngeal apparatus. |
|  |  | 87 | Describe the development of pharyngeal apparatus |
|  |  | 88 | Enlist the derivatives of the first pharyngeal arch |
|  |  | 89 | Define the terms pharyngeal arch, pouch, cleft and membrane |
|  |  | 90 | Enumerate the derivatives of the second pharyngeal arch |
|  |  | 91 | Enumerate the derivatives of the 3rd pharyngeal arch |
|  |  | 92 | Enumerate the derivatives of the 4th pharyngeal arch |
|  |  | 93 | Enlist the derivatives of 1st ,2nd, 3rd and 4th pharyngeal pouches  |
|  |  | 94 | Describe the derivatives of pharyngeal, grooves, and membranes |
|  |  | 95 | Discuss the arterial supply and innervation of the pharyngeal arches |
|  |  | 96 | Describe the pharyngeal membranes |
|  |  | 97 | Discuss the branchial cyst, sinuses, and fistula |
|  |  | 98 | Describe the 1st arch developmental defects |
| Histology  | Thyroid gland | 99 | Discuss the structural unit of thyroid gland |
|  |  | 100 | Identify the lining epithelium of follicular cells |
|  |  | 101 | Discuss the formation and storage of colloid in the lumen of follicular cells |
|  |  | 102 | Describe the location and structure of parafollicular cells |
|  |  | 103 | Discuss the interfollicular connective tissue |
| ENT  | Lump in neck | 104 | Approach to a patient with lump in the neck |
| **Skills and affective domain** |
| Histology  | Thyroid gland  | 105 | Identify the slide of thyroid gland under the microscope |
| Physiology  | Examination of Cranial nerves XI, XII | 106 | Examine a standardized patient for Cranial nerves XI, XII |
| **Theme-3 (Anosmia)** |
| **Subject**  | **Topic**  | **S. No** | **Learning objectives** |
| Anatomy  | Nose and paranasal sinuses | 107 | Describe the external features of nose |
|  |  | 108 | Describe the relations of nose with other structures |
|  |  | 109 | Describe the nasal septum  |
|  |  | 110 | Describe the lateral wall of nose |
|  |  | 111 | Name the neurovascular supply of nose |
|  |  | 112 | Describe the olfactory nerve |
|  |  | 113 | Describe the paranasal sinuses along with its clinical importance |
| Embryology  | Development of nose  | 114 | Describe the development of nasal cavities and paranasal air sinuses. |
|  |  | 115 | Describe the development of nasolacrimal groove, duct, and sac |
|  |  | 116 | Enlist developmental defects of nose |
| Physiology  | Sense of Smell | 117 | Describe olfactory membrane |
|  |  | 118 | Explain mechanism of excitation of the olfactory cells. |
|  |  | 119 | Discuss Rapid Adaptation of Olfactory Sensations. |
|  |  | 120 | Define threshold for smell |
|  |  | 121 | Describe transmission of smell signals into the central nervous system |
|  |  | 122 | Describe primitive and newer olfactory pathways into the central nervous system |
|  |  | 123 | Describe centrifugal control of activity in the olfactory bulb by the central nervous system. |
| ENT  | Sinusitis  | 124 | Describe the causes and clinical features of acute and chronic sinusitis  |
| Gross anatomy | Tongue  | 125 | Describe the mucosa and muscles of tongue along with its attachments, nerve supply and actions |
|  | Salivary glands  | 126 | Name the salivary glands |
|  |  | 127 | Describe the location of each gland |
|  |  | 128 | Describe the relations of each gland |
|  |  | 129 | Name the nerve supply  |
|  |  | 130 | Describe the drainage of salivary glands along with its importance |
|  | Palate  | 131 | Name the bones forming the hard palate |
|  |  | 132 | Describe the soft palate along with its muscles, attachments and nerve supply |
|  |  | 133 | Describe the relations of palate |
|  |  | 134 | Name the neurovascular supply of palate |
|  | Pharynx  | 135 | Enumerate the division of pharynx |
|  |  | 136 | Describe the nasopharynx with its clinical significance |
|  |  | 137 | Describe the oropharynx with its clinical significance |
|  |  | 138 | Describe the laryngopharynx with its clinical significance |
|  |  | 139 | Enlist the muscles of pharynx with its nerve supply and actions |
|  | Extra-cranial course of CN IX, XXi, XII | 140 | Describe the extra cranial course of CN IX, X, XI and XII |
| Embryology  | Tongue  | 141 | Describe the development of anterior 2/3 of the tongue |
|  |  | 142 | Discuss the role of the third pharyngeal arch in tongue development. |
|  |  | 143 | Discuss the innervation, blood vessels, and muscles of tongue. |
|  |  | 144 | Describe the development of papillae, taste buds and salivary glands. |
|  |  | 145 | Describe the developmental anomalies of tongue. |
|  | Palate  | 146 | Describe the development of primary and secondary palate. |
|  |  | 147 | Discuss the developmental defects of lip and primary, secondary palate |
| Histology | Submandibular glands  | 148 | Identify the variety of gland according to nature of its acinus. |
|  |  | 149 | Discuss the capsular structure and its extensions in the gland |
|  |  | 150 | Differentiate between the stroma and parenchyma of submandibular gland |
|  |  | 151 | Describe the ductal system of the gland and its differences with parotid gland |
|  |  | 152 | Describe the detailed structure of serous and mucous acinus |
|  |  | 153 | Discuss the formation of serous demilune |
|  |  | 154 | Discuss the opening of Wharton,s duct |
|  |  | 155 | Discuss different pathological conditions of the gland |
|  | Sublingual glands | 156 | Identify the variety of gland according to its nature of acinus |
|  |  | 157 | Differentiate between the stroma and parenchyma of sublingual gland  |
|  |  | 158 | Describe the ductal system of the gland and its lining epithelium |
|  |  | 159 | Describe the detailed structure of its acinus |
|  |  | 160 | Discuss the opening of Bartholin ducts |
|  |  | 161 | Discuss different pathological conditions of the gland |
| Physiology  | Sense of Taste | 162 | Discuss primary sensations of taste |
|  |  | 163 | Explain threshold for taste |
|  |  | 164 | Describe the taste bud and its function |
|  |  | 165 | Describe mechanism of stimulation of taste buds |
|  |  | 166 | Describe transmission of taste signals into the central nervous system |
| Pediatric surgery  | Cleft palate | 167 | Describe the pathogenesis, clinical features and management of a patient with cleft palate |
| **Skills and affective domain** |
| Histology  | Tongue | 168 | Identify the slide of tongue under the microscope |
| Physiology  | Examination ofCranial nerves I, IX, X | 169 | Examine a standardized patient for cranial nerve I, IX, X examination (sense of smell, taste, gag reflex) |
| **Theme-4 (Diplopia)** |
| **Subject**  | **Topic**  | **S. No** | **Learning objectives** |
| Gross anatomy  | Bony orbit | 170 | Name the bones forming the bony orbit |
|  |  | 171 | Identify the foramina, fissures, and fossae associated with the orbit and what are the structures transmitted through these openings**.** |
|  |  | 172 | Name the contents of orbit |
|  | Eye ball  | 173 | Name the layers of eyeball |
|  |  | 174 | Describe the fibrous layer of eyeball |
|  |  | 175 | Describe the pigmented layers of eyeball |
|  |  | 176 | Describe the inner nervous layer of eyeball |
|  |  | 177 | Describe the chambers and of eyeball |
|  |  | 178 | Describe the secretion and drainage of aqueous humor and vitrous humor |
|  |  | 179 | Describe the neurovascular supply of eye  |
|  |  | 180 | Describe the intra and extraoccualr muscles with their attachment, actions and nerve supply |
|  | Extra cranial course of CN III, IV, VI | 181 | Describe the course of optic, oculomotor, trochlear andabducent nerve with clinical importance |
| Embryology | Development of eye | 182 | Define lens placode and formation of retina. |
|  |  | 183 | Describe the development of ciliary body, iris, lens and choroid. |
|  |  | 184 | Discuss the formation of sclera, cornea, sphincter and dilator pupillae |
|  |  | 185 | Discuss the development of virtreous body and optic nerve  |
|  |  | 186 | Describe developmental anomalies of eye |
| Histology  | Eye  | 187 | Enlist different histological layers of the eye |
|  |  | 188 | Discuss retinal pigment epithelium(RPE) in detail |
|  |  | 189 | Describe the structural details of rods  |
|  |  | 190 | and cones and the supporting cells |
|  |  | 191 | Discuss structure of macula densa |
|  |  | 192 | Describe the histological layers of cornea and retina |
| Physiology  | Physical Principles of Optics | 193 | Describe refraction at interface between two media. |
|  |  | 194 | Describe the physical principles of optics. |
|  |  | 195 | Apply refractive principles to lenses |
|  |  | 196 | Describe Focal Length of a Lens |
|  |  | 197 | Explain formation of image by convex lenses |
|  |  | 198 | Explain how to measure refractive power of a lens |
|  | Optics of The Eye | 199 | Explain lens system of the eye. |
|  |  | 200 | Describe the concept of “Reduced” Eye. |
|  |  | 201 | Explain accommodation reflex. |
|  |  | 202 | Explain presbyopia |
|  |  | 203 | Describe that “depth of focus” of the lens system increases with decreasing pupillary diameter |
|  |  | 204 | Define visual acuity. |
|  |  | 205 | Explain the determination of distance of an object from the eye- —“DEPTH PERCEPTION” |
|  |  | 206 | Describe errors of refraction |
|  | Fluid System of The Eye—Intraocular Fluid | 207 | Describe the formation of aqueous humor by the ciliary body |
|  |  | 208 | Describe the outflow of aqueous humor from the eye |
|  |  | 209 | Describe Regulation of Intraocular Pressure and Glaucoma |
|  | Anatomy and Function of The Structural Elements of The Retina | 210 | Describe foveal region of the retina and its importance in acute vision. |
|  |  | 211 | Discuss the functional parts of the Rods and Cones. |
|  |  | 212 | Describe blood supply of the retina—the central retinal artery and the choroid |
|  | Photochemistry of Vision | 213 | Explain rhodopsin-retinal visual cycle and excitation of the rods |
|  |  | 214 | Explain the role of vitamin A for formation of rhodopsin. |
|  |  | 215 | Describe excitation of the rod when rhodopsin is activated by light |
|  |  | 216 | Describe receptor potential, and logarithmic relation of the receptor potential to light intensity |
|  |  | 217 | Describe mechanism by which rhodopsin decomposition decreases membrane sodium conductance—the excitation “cascade.” |
|  |  | 218 | Explain dark and light adaptation. |
|  | Color Vision | 219 | Describe photochemistry of color vision by the cones |
|  |  | 220 | Explain tricolor mechanism of color detection |
|  |  | 221 | Explain Young-Helmholtz theory of color vision. |
|  |  | 222 | Explain color blindness. |
|  | Neural Function of The Retina | 223 | Describe different neuronal cell types and their functions |
|  |  | 224 | Describe the visual pathway from the cones to the ganglion cells  |
|  |  | 225 | Discuss the retinal neurotransmitters. |
|  |  | 226 | Discuss retinal ganglion cells and their respective fields |
|  |  | 227 | Describe lateral inhibition. |
|  |  | 228 | Explain excitation of ganglion cells. |
|  |  | 229 | Discuss on and off response of ganglion cells. |
|  | Visual Pathways | 230 | Discuss the function of the dorsal lateral geniculate nucleus of the thalamus. |
|  |  | 231 | Describe organization and function of the visual cortex |
|  |  | 232 | Describe primary visual cortex. |
|  |  | 233 | Describe secondary visual areas of the cortex. |
|  |  | 234 | Describe two major pathways for analysis of visual information: (1) the fast “position” and “motion” pathwayand (2) the accurate color pathway |
|  |  | 235 | Describe neuronal patterns of stimulation during analysis of the visual image |
|  |  | 236 | Discuss detection of color |
|  | Eye Movements and Their Control | 237 | Describe muscular control of eye movements. |
|  |  | 238 | Describe neural pathways for control of eye movements. |
|  |  | 239 | Describe fixation movements of the eyes |
|  |  | 240 | Explain mechanism of involuntary locking fixation—role of the superior colliculi. |
|  |  | 241 | Explain “Fusion” of the visual imagesfrom the two eyes |
|  |  | 242 | Describe neural mechanism of stereopsis for judging distances of visual objects |
|  | Autonomic control of Accommodation and pupillary aperture | 243 | Describe autonomic nerves to the eyes |
|  |  | 244 | Describe control of accommodation |
|  |  | 245 | Describe control of pupillary diameter |
|  |  | 246 | Discuss Pupillary reflexes or reactions in central nervous system disease. |
| Community medicine | Prevention of blindness | 247 | Describe the causative agents and prevention of community blindness |
| Medicine  | Ocular nerves palsies | 248 | Describe the clinical features and etiology of 3, 4 and 6th nerve palsies |
| Ophthalmology  | blindness | 249 | Approach a patient with unilateral and bilateral blindness |
| **Skills and affective domain** |
| Histology  | Parotid Gland | 250 | Identify the histological layers of parotid gland under the microscope |
| Physiology  | Visual Acuity | 251 | Examine a standardized patient for visual acuity and errors of refraction |
|  | Perimetry | 252 | Examine a standardized patient for visual field function  |
| **Theme-6 (Deafness)** |
| **Subject**  | **Topic**  | **S. No** | **Learning objectives** |
| Gross anatomy  | External and middle ear | 253 | Describe the auricle  |
|  |  | 254 | Describe the external auditory meatus with clinical importance |
|  |  | 255 | Name the neurovascular supply of external ear |
|  |  | 256 | Name the boundaries of middle ear |
|  |  | 257 | Describe the contents of middle ear |
|  |  | 258 | Describe the auditory tube along with its clinical importance |
|  | Inner ear | 259 | Describe the bony labyrinth |
|  |  | 260 | Describe the membranous labyrinth |
|  |  | 261 | Describe the course of CN VIII along with its clinical importance |
| Embryology  | Development of ears | 262 | Describe the development of external and middle ear |
|  |  | 263 | Explain the origin of internal ear along the relationship of saccule, utricle, semi-circular canals |
|  |  | 264 | Describe the development of cochlear duct and organ of corti |
|  |  | 265 | Enlist the developmental anomalies of external middle and internal ear |
| Physiology  | Tympanic Membrane andThe Ossicular system | 266 | Explain conduction of sound from the tympanic membrane to the cochlea. |
|  |  | 267 | Describe “Impedance Matching” by the Ossicular System. |
|  |  | 268 | Describe attenuation of sound by contraction of the tensor tympani and stapedius muscles. |
|  |  | 269 | Describe transmission of sound through bone. |
|  | Cochlea | 270 | Describe functional anatomy of the cochlea |
|  |  | 271 | Describe basilar membrane and resonance in the cochlea. |
|  |  | 272 | Describe transmission of sound waves in the cochlea—“traveling wave” |
|  |  | 273 | Describe pattern of vibration of the basilar membrane for different sound frequencies. |
|  |  | 274 | Describe amplitude pattern of vibration of the basilar membrane. |
|  |  | 275 | Describe function of the organ of corti |
|  |  | 276 | Describe Excitation of the Hair Cells |
|  |  | 277 | Discuss the “place” principle |
|  |  | 278 | Describe detection of changes in loudness—the power law. |
|  |  | 279 | Describe threshold for hearing sound at different frequencies. |
|  | Auditory Nervous Pathways | 280 | Describe auditory pathway. |
|  |  | 281 | Explain the function of the cerebral cortex in hearing. |
|  |  | 282 | Describe how to determine the direction from which sounds come. |
|  |  | 283 | Describe transmission of centrifugal signals from CNS to lower auditory centres |
|  |  | 284 | Describe different types of deafness. |
|  | Vestibular Sensations andMaintenance of Equilibrium | 285 | Describe the physiologic anatomy of vestibular apparatus |
|  |  | 286 | Describe function of the utricle andsaccule in the maintenance of static equilibrium |
|  |  | 287 | Describe function of semi-circular ducts |
|  |  | 288 | Describe Neuronal Connections of the Vestibular Apparatus  |
|  |  | 289 | Describe Vestibular mechanism for stabilizing the eyes  |
| ENT  | Hearing loss  | 290 | Describe different clinical tests for hearing loss |
|  |  | 291 | Describe the etiology and management of conduction and sensorineural hearing loss |
| **Skills and affective domain** |
| Physiology  | Examination of Cranial Nerves III, IV and VI | 292 | Examine a standardized patient for oculomotor, Abducens and Trochlear nerves with an ophthalmoscope |
| Physiology  | Tuning fork test | 293 | Examine a standardized patient for hearing loss with tuning fork (Weber and Rinne`s test) |
| Physiology  | Audiometry | 293 | Examine a standardized patient for functions of inner ear |