

Compiler



Dr. Muhammad Attique
M.Phil. (Thesis in process)
Senior Demonstrator
Physiology
Avicenna Medical College

PRACTICAL PHYSIOLOGY
PART II
Original version dedicated to
Avicenna Medical College

CONTENTS

1	BODY TEMPERATURE
2	LEWIS TRIPLE RESPONSE
3	URINE SPECIFIC GRAVITY
4	PREGNANCY TEST
5	DORSAL COLUMN SYSTEM
6	ANTEROLATERAL SYSTEM
7	BULK ,TONE MUSCLES.
8	POWER MUSCLES
9	COORDINATION
10	DEEP REFLEXES
11	SUPERFICIAL REFLEXES
12	OLFACTION
13	OPTIC
14	VISUAL ACUITY
15	COLOUR VISION
16	VISUAL FIELD
17	FUNDOSCOPY
18	OCULOMOTOR
19	TROCHLEAR
20	TRIGEMINAL
21	ABDUCENT
22	FACIAL
23	GUSTATION
24	COCHLEAR
25	VESTIBULAR
26	GLOSSOPHARYNGEAL
27	VAGUS

28	ACCESSORY
29	HYPOGLOSSAL
30	SPECIMEN PAPER/KEY
31	OBSERVED STATIONS/MARKS DISTRIBUTION
32	RESEARCH ARTICLE/CRANIAL NERVE EXAMINATION

1A PRACTICAL OBJECTIVE

TO STUDY THE BODY TEMPERATURE PRINCIPLE

The core body temperature depends on the net product of heat generation and heat loss by the body.

PRACTICAL NEEDS

clinical thermometer , antiseptic solution.

PROCEDURE Shake the clinical thermometer to set the mercury down below normal. Place the clinical thermometer in the armpit for two minutes. Take the thermometer out of the armpit and take the reading. Shake the clinical thermometer to set the mercury down below normal. Place the thermometer under the tongue for two minutes. Take the thermometer out of the mouth and take the reading.

PRECAUTIONS

Immerse the thermometer in antiseptic solution before and after each use. Instruct the subject to hold the thermometer by lip pressure and not by teeth.

Practical Achievement Temperature C⁰

outdoor	Indoor	Axillary	Oral



1b VIVA /OSPE /FAQ . TO STUDY THE BODY TEMPERATURE Q.1.Describe the effects of low body temperatures on body physiology.

TEMPERATURE C ⁰	EFFECT
37	NORMAL
36	MILD/MODERATE SHIVERING
35 HYPOTHERMIA	INTENSE SHIVERING
34	SEVERE SHIVERING
33	NO SHIVERING,SLEEPINESS,HR ↓↓,RR ↓↓
32	NO SHIVERING,CNS CONFUSION,DEPRESSION
31 MEDICAL EMERGENCY	NO SHIVERING,HR ↓↓,RR ↓↓,COMA,DEATH

Q.2.What is the core temperature?

A.The internal body temperature recordable from rectum,vagina,esophagus 1.0 C⁰ higher than oral.

Q.3.How much is the difference between oral and axillary temperature?

A.oral temperature is 0.5C⁰ higher than the axillary temperature.

Q.4.Where is the thermometer placed in adults? A.mouth or axilla Q.5.Where

is the thermometer placed in young children? A.rectum or groin

Q.6.Name the sources of heat production by the body.

A.basal body metabolism,specific dynamic action of foods,muscular activity.

Q.7.Name the channels of heat loss by the body.

A.radiation,conduction convection,evaporation,expiration,urination,defecation.

Q.8.How do high body temperatures affect the body physiology?

TEMPERATURE C ⁰	EFFECTS
37	NORMAL
38	SWEATING
39	SEVERE SWEATING,HR ↑↑,RR ↑↑
40	PROFUSE SWEATING,DEHYDRATION,FAINTING
41 (MEDICAL EMERGENCY)	HEADACHE,DELIRIUM,PALPITATIONS,DYSPNEA
42	HR ↑↑,CONVULSIONS ,COMA
43	BRAIN DAMAGE,HR ↓↓,RR ↓↓,DEATH

2A PRACTICAL OBJECTIVE

TO STUDY LEWIS TRIPLE RESPONSE

PRINCIPLE

When the skin is stroked by a blunt object ,three vascular responses are observed.

PRACTICAL

NEEDS

any blunt object ,spirit swab ,antiseptic solution

PROCEDURE

Stroke the skin of forearm firmly .

PRECAUTIONS

the blunt object should be washed with antiseptic solution.

The skin should be cleaned with spirit swab.

PRACTICAL ACHIEVEMENT

Observation	Reason
Red reaction	Vasodilation
Flare	Hyperemia
Wheal	↑ permeability



Q.1.What is Lewis triple response?

A.The characteristic 3 part response that develops when a line is made by a pointed object on the skin

Q.2.What causes the triple response?

A.Due to release of histamine by mast cells.

Q. 3.How is histamine produced in the body?

A.Histidine is changed to Histamine by decarboxylase.

Q.4.Describe the mechanism of triple response.

A.Trauma \Rightarrow antigen release \Rightarrow interacts with membrane bound immunoglobulin E on mast cells \Rightarrow histamine release \Rightarrow vasodilation and fluid movement into the extracellular space. Q.5.What is red reaction?

A.Red reaction is a red line due to transient local vasodilation by histamine release in 3 to 15 seconds.

Q.6.What is flare?

A.Flare,due to axon reflex ,raising the local temperature ,by hyperemia ,in 20 to 40 seconds.

Q.7.What is wheal?

A.Wheal is localized edema due to increased vascular permeability in 60 seconds.

Q.8.Name the cells that take part in triple response.

A.vascular endothelium,vascular smooth muscle,sensory nerve endings.

Q.9.Tabulate the triple response.

response	Onset after seconds	Caused by	Mechanism	Blood vessel involved
Red reaction	3 to 15	Vasodilation	Histamine	Capillaries
Flare	20 to 40	Hyperemia	Axon reflex	Arterioles
Wheal	60 to 120	\uparrow permeability	Histamine	Venules

Q.10.What is the difference between active hyperemia and reactive hyperemia?

A.Active hyperemia is due to increased metabolic rate in the tissue.Passive hyperemia is transient increase in tissue blood flow following a brief period of ischemia.

3A PRACTICAL OBJECTIVE

TO FIND OUT URINE SPECIFIC GRAVITY

PRINCIPLE

urine specific gravity is useful in diagnosis of some renal /extrarenal diseases

PRACTICAL NEEDS

Urinometer ,urine sample

PROCEDURE

Fill the urinometer with the urine sample.

Take the reading.

PRECAUTIONS

Avoid parallax error

PRACTICAL ACHIEVEMENT

gravity=====



urine specific

3B. VIVA/OSPE FAQ TO FIND OUT URINE SPECIFIC GRAVITY

Q.1. Define specific gravity.

A. The ratio of density of a substance compared to the density of water.

Q.2. What is the normal value of specific gravity of plasma.

A. 1.0310.

Q.3. What is the normal range of specific gravity of urine.

A. 1.010 to 1.025

Q.4. Define osmolarity.

A. The number of osmoles of solute per liter of solution.

Q.5. What is the normal value of osmolarity of plasma.

A. 300 milliosmoles per liter.

Q.6. What is the normal range of osmolarity of urine.

A. 50 to 1400 mosm/l.

Q.7. Name the principal hormone which controls plasma osmolarity.

A. Antidiuretic hormone.

Q.8. Name the principal hormone which controls plasma volume.

A. Aldosterone.

Q.9. Enumerate the conditions in which urine specific gravity is increased.

A. Addison's Disease, Diabetes Mellitus, Dehydration, Syndrome of inappropriate hypersecretion ADH.

Q.10. Enumerate the conditions in which urine specific gravity is decreased.

A. Aldosteronism, Diabetes insipidus, Overhydration, Renal failure.

Q.11. Name the hormones produced by the kidney.

A. Renin, Erythropoietin, Active form vitamin D,

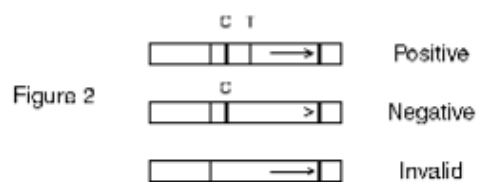
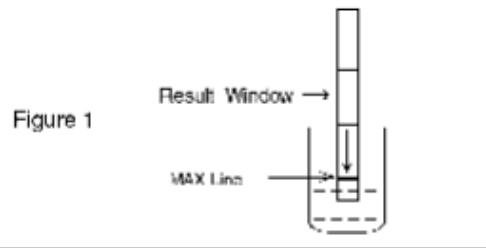
Q.12. Name the hormones which affect kidney function.

A. ADH, Parathormone, aldosterone, atrial natriuretic factor.

PRACTICAL OBJECTIVE

TO PERFORM PREGNANCY TEST PRINCIPLE

HCG is secreted by trophoblast cells ,its presence in urine is an indicator of pregnancy.



PRACTICAL NEEDS

Pregnancy test strips, urine sample

PROCEDURE

Immerse the strip in the urine sample.

Take the reading.

PRECAUTIONS

Read the instructions in the kit.

Check the expiry date on the kit.

PRACTICAL ACHIEVEMENT

Pregnancy test

+ive / -ive

4B . VIVA /OSPE /FAQ . TO PERFORM PREGNANCY TEST

Q.1.What is the principle of pregnancy test.

A.Human Chorionic Gonadotrophin is secreted by trophoblast cells as early as 6 days after conception,is detectable in urine

Q.2.What are the causes of false positive pregnancy test?

A.tumours,expired kit,erroneous performance

Q.3.What are the causes of false negative pregnancy test?

A.The test is performed during the very early stages of pregnancy.erroneous performance,expired kit

Q.4.What is the detection threshold of beta subunit of HCG in urine by immunologic test?

A.10 million international units per ml.

Q.5.How early in pregnancy can this test be performed?

A.The test can be carried out on a sample of urine from the first day of a missed period.

Q.6.What is the time of the urine sample?

A.urine can be collected at any time of the day.

Q.7.What are the precautions of urine collection.

A.urine should be collected in a clean,soapfree dry container.

Q.8.Name the hormones secreted by the placenta.

A.HCG human chorionic gonadotropin,hPL human placental lactogen ,estrogen,progesterone

Q.9.What are the functions of HCG?

A.HCG ensures that corpus luteum continues to secrete progesterone and estrogen. HCG suppresses the maternal immunologic response so that the placenta (bearing alien antigens)is not rejected. Q.10.Name a condition in which HCG is present in urine of a male.

A.testicular carcinoma

Q.11.What type of test is pregnancy test?

'A.immunologic,qualitative test.HCG is the antigen,the strip is coated with anti HCG antibody.

5A PRACTICAL OBJECTIVE

TO TEST THE SENSATIONS TRANSMITTED BY DORSAL COLUMN SYSTEM

PRINCIPLE

The sensations transmitted by dorsal column system include fine touch , two point discrimination/localization , vibration , conscious proprioception / position , tactile pressure , barognosis , graphaesthesia , stereognosis , texture recognition , kinesthesia ,

PRACTICAL NEEDS

blunt divider/blunt pin,128hz tuning fork

PROCEDURE Sensation tested	Method	Result
Extinction	Eyes closed.touch corresponding points on both sides.Ask the subject one side is touched or both sides?	
Fine touch	Use blunt divider/pin for two point discrimination/localization on palm/sole.eyes closed.	
Graphaesthesia	Draw a letter or a number on palm (eyes closed)with blunt object.Ask what is drawn?	
Position (proprioception)	(eyes closed)Passively move different joints and ask the position.	
Stereognosis	(eyes closed)the subject holds different objects and describes the object.	
Vibration	Place vibrating tuning fork on any bony point.eyes closed.	

PRECAUTIONS

Introduce yourself.Explain the procedure.Take consent.Be gentle and mild in your approach.Thank your subject.Wash your hands. Subject's eyes closed.Work from medial to lateral,proximal to distal .

PRACTICAL ACHIEVEMENT . Dorsal column sensations ,intact /impaired



5B. VIVA/OSPE/FAQ . TO TEST THE SENSATIONS TRANSMITTED BY DORSAL COLUMN. Q.1.What are the

causes of loss of dorsal column sensations?

A.stroke,neuropathies,neurotoxins,sensory ataxia,B1 deficiency,alcoholism

Q.2.Describe the route of dorsal column sensations.

A.receptor⇒peripheral nerve ⇒dorsal root ganglion ⇒dorsal columns in cord ⇒1st order ends in nucleus gracilis (lower limb) nucleus cuneatus (upper limb) in medulla ⇒cross to opposite side ⇒

Ascend as medial lemniscus ⇒2nd order ends in thalamus⇒3rd order ends in sensory cortex. Q.3.How are the dorsal column sensations tested?

SENSATION	METHOD	OBSERVATION
Extinction	Eyes Closed. Touch Left leg. Ask. Touch Left , Right leg. Ask.	If extinction is present,the patient will say only one side was touched while in fact both sides were touched simultaneously.
Graphaesthesia	Eyes closed.Letter, Number drawn on palm by blunt object	Normally the letter or number is recognized.
Stereognosis	Eyes Closed Feel Objects	Normally,the objects are recognized.
Position	Eyes Closed Move Leg,fingers,toes	Normally,the position is judged correctly.
Fine Touch	Blunt Divider Or Blunt pin	Normal two point discrimination localization= 2mm on fingers, 1cm on toes
Vibration	128 Hz tuning fork. Clavicle/sternum/knuckle	Normally vibration sensation perceived.

Q.4.Name one test that can evaluate the integrity of the dorsal column system.

A.Romberg's test .Inability to stand up with eyes closed is positive Romberg in sensory ataxia.

Q.5.Name the sensations conveyed by the dorsal column system.

A.Fine touch,vibration,conscious proprioceptive information,tactile pressure,barognosis,graphaesthesia,sterognosis,texture,kinesthesia,two point discrimination 6A

6A. PRACTICAL OBJECTIVE

TO TEST THE SENSATIONS TRANSMITTED BY ANTEROLATERAL SYSTEM

PRINCIPLE

The sensations transmitted by anterolateral system include crude touch , tickle , pain , cold , warmth.

PRACTICAL NEEDS

cotton wool / brush , sharp pin , hot /cold test tubes / metal plate

PROCEDURE

Sensation	How tested	Result
Crude touch	Cotton wool/brush.	
Cold	Cold test tube/metal plate	
Pain	Sharp pin by dragging motion.	
Warm	Hot test tube/metal plate	

PRECAUTIONS

Introduce yourself.Explain procedure.Take consent.Thank your subject.Wash your hands.

Subject's eyes closed.Work from medial to lateral,proximal to distal.

PRACTICAL ACHIEVEMENT

Anterolateral sensations intact / impaired.



6B. VIVA/OSPE/FAQ .TO TEST THE SENSATIONS TRANSMITTED BY

ANTEROLATERAL (SPINOTHALAMIC) SYSTEM

Q.1.What are the characteristic features of anterolateral transmission?

A.The types of sensory information transmitted via the anterolateral system are described as affective sensations accompanied by a compulsion/urge to act/react.Itch is accompanied by a need to scratch.Pain makes us take evasive/preventive measures.

Q.2.Name the sensations carried by spinothalamic system.

A.crude touch ,cold,warmth,pain,itch.

Q.3.Compare the dorsal column system with the spinothalamic system.

	1 st order ends	Crossing	Travels in cord	2 nd order ends	3 rd Order ends
Dorsal column	Medulla	Medulla	Dorsal cmlumn	Thalamus	Sensory cortex
spinothalamic	Cord	Cord	anterolateral	Thalamus	Sensory cortex

Q.4.How is the spinothalamic system tested?

Sensation	How tested
Cold	Test Tubes. Metal Plate.
Pain	Pin Prick. Distal To Proximal. Medial To Lateral.
warmth	Test tubes,metal plate.
Crude touch	Cotton wool,brush

Q.5.Trace the route of anterolateral transmission.

A.Receptornd ⇒ Peripheral nerve ⇒ Posterior Root Ganglionrd ⇒crossing in cord⇒1st order ends ⇒spinothalamic tracts⇒2 order ends in thalamus ⇒3 order ends in sensory cortex.

Q.6.What are the causes of loss of sensations carried by the anterolateral system?

A.tabes dorsalis,syringomyelia,neuropathy,injury,neurotoxins,

Q.7.Define

Anaesthesia	Permanent/temporary , generalized/localized, inhibition of sensory perception
Hypoaesthesia	Partial loss of sensitivity to sensory stimuli
Hyperaesthesia	Abnormal increase in sensitivity to stimuli
Paraesthesia	Numbness or tingling often associated with damage to sensory nerves
Formication	Abnormal sensation of insects crawling over skin
Phantom pain	Sensations perceived in a limb not physically part of the body
hypoalgesia	Decreased sensitivity to pain stimuli
hyperalgesia	Enhanced sensitivity to pain stimuli

Q.8.What are the two main parts of the anterolateral system?

Lateral spinothaamic tract	Pain,temperature
Ante rior spin othal amic tract	Crude touch, pressu re

.9.Describe the subsystems of the anterolateral pathway.

Direct projection	Conscious appreciation of pain
Indirect arousal impact	Spino-reticuo-thalamo-cortical ,ARAS ascending reticular arousal system.

Indirect affective impact	Spino-mesencephalic-limbic
---------------------------	----------------------------

PRACTICAL OBJECTIVE

TO STUDY THE BULK/TONE OF SKELETAL MUSCLES

PRINCIPLE

The bulk / tone of skeletal muscles is assessed to analyze the integrity of the motor system by inspection , palpation , passive movements.

PRACTICAL NEEDS

measuring tape.

PROCEDURE

Bulk	Inspection/palpation/measurement
Tone	The examiner moves the joints passively

PRECAUTIONS

Introduce yourself.Explain procedure.Take consent.Thank your subject.Wash your hands

Test corresponding parts/points/muscles/joints of both sides.

Be gentle and mild in your approach.

PRACTICAL ACHIEVEMENT

Bulk / tone normal / wasting / hypotonia / hypertonia.



7B. VIVA/OSPE FAQ . TO STUDY THE BULK / TONE OF SKELETAL MUSCLES.

.1.What is meant by spasticity?

A.Abnormal increase in the velocity dependent resistance to passive stretch of skeletal muscles.

Q.2.What is meant by rigidity?

A.Abnormal increase in the resistance to passive movement of skeletal muscles throughout motion.

Q.3.Name a few causes of UMNL.

A.stroke,trauma,cerebral palsy,multiple sclerosis.

Q.4.Describe some signs and symptoms pf UMNL.

A. weakness,slowness,spasticity,hyperreflexia,clonus,Babinski +

Q.5.Name a few causes of LMNL.

A.trauma,polio,botulism.

Q.6.Describe some signs and symptoms of LMNL.

A.flaccidity,fasciculations,fibrillations,paresis,hypotonia,areflexia,wasting

Q.7.What are the components of examination of motor system.

A.bulk,tone,strength,reflexes,coordination,gait,involuntary movements.

Q.8.Describe the grades of muscle power.

No contraction	Slight contraction on movement	Movement minus gravity	Movement plus gravity	Movement against gravity	Movement against gravity and resistance
0	1	2	3	4	5

Q.9.Compare upper motor neuron lesion UMNL with lower motor neuron lesion LMNL.

Parameter	UMNL	LMNL
Bulk of muscle	Rigidity	Wasting.fasciculations,fibrillations
Tone of muscle	Spasticity,hypertonia	Flaccidity,hypotonia,atonia
Strength of muscle	Weakness ,slowness	Weakness Deep reflexes
Exaggerated	Absent	
Superficial reflexes	Depressed	Absent Clonus Present
Side affected	Contralateral	Ipsilateral
Site of lesion	Above anterior horn cells cord	Below anterior horn cells cord

8 A PRACTICAL OBJECTIVE

TO STUDY THE POWER OF SKELETAL MUSCLES.

PRINCIPLE

The subject moves a joint against resistance offered by the examiner to enable the examiner to assess the power of skeletal muscles acting on that joint.

PRACTICAL NEEDS

None

PROCEDURE

Ask the subject to perform some active movement against resistance offered by the examiner.

PRECAUTIONS

Introduce yourself. Explain the procedure. Take consent. Thank your subject. Wash your hands.

Test corresponding muscles/muscle groups /joints on both sides.

PRACTICAL ACHIEVEMENT

Muscle/muscle group	Left	Power grade	Right	Power grade
Neck				
Upper limb				
Lower limb				



8B.VIVA /OSPE FAQ. TO STUDY THE POWER OF SKELETAL MUSCLES .

Q.1.What is meant by spasticity?

A.Abnormal increase in the velocity dependent resistance to passive stretch of skeletal muscles.

Q.2.What is meant by rigidity?

A.Abnormal increase in the resistance to passive movement of skeletal muscles throughout motion.

Q.3.Name a few causes of UMNL.

A.stroke,trauma,cerebral palsy,multiple sclerosis.

Q.4.Describe some signs and symptoms pf UMNL.

A. weakness,slowness,spasticity,hyperreflexia,clonus,Babinski +

Q.5.Name a few causes of LMNL.

A.trauma,polio,botulism.

Q.6.Describe some signs and symptoms of LMNL.

A.flaccidity,fasciculations,fibrillations,paresis,hypotonia,areflexia,wasting

Q.7.What are the components of examination of motor system.

A.bulk,tone,strength,reflexes,coordination,gait,involuntary movements.

Q.8.Describe the grades of muscle power.

No contraction	Slight contraction on movement	Movement minus gravity	Movement plus gravity	Movement against gravity	Movement against gravity and resistance
0	1	2	3	4	5

Q.9.Compare upper motor neuron lesion UMNL with lower motor neuron lesion LMNL.

Parameter	UMNL	LMNL
Bulk of muscle	Rigidity	Wasting.fasciculations,fibrillations
Tone of muscle	Spasticity,hypertonia	Flaccidity,hypotonia,atonia
Strength of muscle	Weakness ,slowness	Weakness
Deep reflexes	Exaggerated	Absent
Superficial reflexes	Depressed	Absent
Clonus	Present	Absent
Side affected	Contralateral	Ipsilateral
Site of lesion	Above anterior horn cells cord	Below anterior horn cells cord

9A PRACTICAL OBJECTIVE

TO STUDY COORDINATION (CEREBELLAR FUNCTION)

PRINCIPLE

Motor coordination is the combination of body movements created with the kinematic (spatial direction) and kinetic (force) parameters that result in intended actions.

PRACTICAL NEEDS

none

PROCEDURE

test	Method
Finger nose	Ask the subject to touch own nose with finger
Heel shin	Ask the subject to touch own shin with heel
Diadochokinesis	Ask the subject to do pronation/supination rapidly/repeatedly
Gait	Ask the subject to walk along a straight line
Tremor	Observe for intention tremor
Speech pattern	Check for ataxic dysarthria

PRECAUTIONS

Introduce yourself.Explain procedure.Take consent.Thank your subject.Wash hands.

PRACTICAL ACHIEVEMENT

Test	Normal cerebellar function	Cerebellar dysfunction
Finger nose	Ok	Past pointing
Heel shin	Ok	Overshooting
Diadochokinesis	Ok	Disdiadochokinesis
Gait	Ok	Zigzag
Tremor	None	Intention tremor
Speech pattern	Ok	'Scanning ', 'slurred ', 'stressed'



9B. VIVA /OSPE /FAQ .TO STUDY COORDINATION (CEREBELLAR FUNCTION)

Q.1.What is meant by diadochokinesia?

A.Ability to perform rapidly repeatedly pronation supination of forearm.

Q.2.What is meant by Romberg’s sign?

A.Inability to stand with eyes closed.It is a sign of sensory ataxia,loss of position sense.

Q.3.Describe the various characteristic gaits.

Gait	Dragging feet	Stamping	Reeling zigzag	Festinant	Waddling
Disease	Hemiplegia	Sensory ataxia	cerebellar	Basal ganglia	Muscular weakness

Q.4.What are the features of cerebellar dysfunction?

A.ataxia,dysarthria,intention tremor,past pointing,macrographia,disdiadochokinesia,reeling gait.

Q.6.Describe the various characteristic tremors.

Tremor	Intention	Fine,rapid	Pinrolling
Cause	Cerebellar dysfunction	Anxiety,thyrotoxicosis	Basal ganglia lesion

Q.Compare the handwriting pattern change in cerebellar and basal ganglia dysfunction.

Cerebellar	Macrographia
Basal ganglia	Micrographia

Q.7.Tabulate the abnormal findings in cerebellar damage.

Eye	Eye	Fundus	Move Tongue	Repeat Baby Hippopotamus	Finger Nose Test	Repeat Pronation Supination	Heel Shin Test	Knee Jerk
Ophthalmoplegia	Nystagmus	Papilloedema	Slow	Dysarthria	Past Pointing	Disdiadochokinesia	Incoordination	Pendular

Q.8.Name the three essential inputs for maintaining balance of body.

A.visual,vestibular,peripheral proprioception.

Q.9.What are the causes of cerebellar dysfunction?

A.injury,tumour,alcoholism,vascular accident.

10A PRACTICAL OBJECTIVE

TO STUDY DEEP REFLEXES

PRINCIPLE

The neurologic functional status of a muscle is evaluated by a sharp tap on muscle/tendon to induce brief stretch followed by contraction.

PRACTICAL NEEDS

clinical hammer

PROCEDURE

Jaw jerk	Tap on index finger on chin(mouth half open)
Biceps jerk	Tap on index finger on biceps tendon(elbow semiflexed,forearm semipronated)
Triceps jerk	Tap on triceps tendon just above olecranon(forearm resting across chest in lap)
Supinator jerk	Tap on styloid process of radius (elbow semiflexed,forearm supinated.
Knee jerk	Tap patellar tendon(legs dangling freely)
Ankle jerk	Tap Achilles tendon(ankle semidorsiflexed)

PRECAUTIONS

Introduce yourself.Explain procedure.Take consent.Thank your subject.Wash your hands.Be gentle and mild in your approach.Ensure proper exposure of the skin overlying the muscle being tested.The clinical hammer should fall on its own weight while tapping.Only the wrist joint of the examiner should move while tapping.Apply Jardiski's manoeuvre .



PRACTICAL ACHIEVEMENT

Deep reflexes normal / absent /exaggerated /clonus

10 B. VIVA / OSPE / FAQ. TO STUDY DEEP REFLEXES. Q.1.Describe grading of reflexes..

GRADE	0	1	2	3	4
REFLEX	absent	Normal	brisk	Very brisk	clonus

Q.2.when are the deep reflexes diminished or absent?

A.sleep,Imnl

Q.3.when are the deep reflexes exaggerated?

A.umnl,anxiety,hyperthyroidism.

Q.4.Describe the various deep reflexes.

reflex	receptor	Afferent	Centre	Efferent	Effector	effect
Jaw	Primary Nerve Endings muscle spindle	Mandibular	V pons	Mandibular	Masseter	Jaw closed
biceps		Musculo-cutaneous	C5 C6	Musculo-cutaneous	Biceps	Elbow flex
triceps		radial	C6 C7	Radial	Triceps	Elbow extend
supinator		Posterior Interosseous	C5 C6	Posterior interosseous	Supinator	Elbow supinated
knee		Femoral	L2 L3 L4	Femoral	Quadriceps	Knee extended
ankle		Tibial	S1 S2	Tibial	Gastrocnemius	Ankle planterflexion

Reflex	Position	Procedure	Result	Root
Jaw	Mouth half open	Tap finger on chin	Jaw closed	V pons
Biceps	Elbow semi flexed semipronated	Tap finger on biceps tendon	Elbow flexed	C5 C6
Triceps	Elbow flexed.fore-arm in lap	Tap triceps tendon	Elbow extended	C6 C7
Supinator	Elbow semiflexed semipronated	Tap supinator tendon on styloid process radius	Elbow supinated	C5 C6
Knee	Legs dangling	Tap patellar tendon	Knee extended	L2,3,4
Ankle	Ankle semiflexed everted,foot dorsiflexed	Tap Achilles tendon	Ankle plantarflexion	S1 S2

Q.5.Describe reinforcement.

A.clenching jaw(for jaw jerk),locking fingers(for upper limb),pushing feet(for lower limb) , done when the reflex is not elicitable normally.

Q.6.Describe clonus.

A.Clonus is elicitable when deep reflexes are exaggerated (hyperreflexia) in UMNL.In ankle clonus ,the foot is maintained in dorsiflexion by the examiner after giving three sharp jerks at ankle , A series of movements are seen if clonus is present. In Patellar clonus , three sharp jerks are given at knee .a series of movements are seen if clonus is present.

11 A PRACTICAL OBJECTIVE

TO STUDY SUPERFICIAL REFLEXES.

PRINCIPLE

Stimulating areas of skin or mucosa causes contraction of corresponding muscles due to their surface origin. •Study of these superficial reflexes gives information about the integrity of their afferent/efferent/central components.

PRACTICAL NEEDS

cotton wool , torch , disposable tongue depressor , blunt object/key/ stick

PROCEDURE

Test	Method	Result
Corneal	Blow puff of air into eye.	Eye closes
Cojunctival	Touch outer sclera with cotton wisp.	Eye closes
Pupillary	Throw light into eye from side.	Pupil constricts
Palatal/pharyngeal/gag/laryngeal	Touch with tongue depressor posterior wall of pharynx.	Pharynx contracts
Scapular	Stroke skin interscapular region by blunt object.	Scapulae approximate
Abdominal	Stroke skin from groin to midline	Umbilicus deviates
Plantar	Stroke skin from outer edge of sole to midline.	Toes fan out/plantarflex

PRECAUTIONS

Introduce yourself.Explain procedure.Take consent.Thank your subject.Wash your hands.Be gentle and mild in your approach.Elicit one reflex only in one attempt.If not elicitable due to any reason ,do not make repeated futile attempts.

PRACTICAL ACHIEVEMENT Superficial reflexes normal / absent



11B VIVA /OSPE / FAQ, TO STUDY SUPERFICIAL REFLEXES.

Q.1.Give examples of superficial reflexes.

A.corneal,conjunctival,pupillary,pharyngeal,scapular,abdominal,plantar.

Reflex	receptor	Afferent	Centre	efferent	effector	Effect
Corneal	Free endings	V	Pons V	VII	Orbicularis oculi	Closure of eyes
conjunctival	Free endings	V	Pons V	VII	Orbicularis oculi	Closure of eyes
Papillary	rods	II	Superior colliculus	III	Radial muscle iris	Miosis
pharyngeal	touch	IX	Medulla	X XII	Pharyngeal muscles	Gag
Scapular	touch	C3 C4	XI	XI	scapular	Scapulae approximated
Abdominal	touch	Thoracic	T 7 T 12	thoracic	abdominal	Movement of umbilicus
Plantar	touch	Tibial	L5 S1	Tibial	Muscles of toes	Plantarflexion

Q.2,What is the difference between superficial reflexes and deep reflexes.

	Superficial reflexes	Deep reflexes
Synapse	Polysynaptic	Monosynaptic
Umnl	Depressed	Exaggerated
Lmnl	Diminished	Absent/diminished

Q.3.what is Babinski's sign? A.extensor plantar reflex ,upgoing,in umnl and below one year age.

Q.4.Describe the various superficial reflexes.

Reflex	Procedure	Response
Corneal	Blow puff of air in eye	Eye closed
Conjunctival	Touch sclera with cotton	Blinking
Pupillary	Throw light in eye	Miosis
Pharyngeal	Touch pharyngeal wall	Coughing,gagging
Scapular	Scratch interscapular skin	Approximation of scapulae
Abdominal	Scratch abdominal skin	Movement of umbilicus
Plantar	Scratch edge of foot	Plantarflexion

Q.5.What are the causes of absent abdominal reflex.

Physiological	Obesity,laxity,scars
Pathological	Brown sequard syndrome,neurogenic bladder

12 A

PRACTICAL OBJECTIVE

TO STUDY THE SENSE OF OLFACTION

PRINCIPLE

Olfactory Nerve is the 1st cranial nerve subserving the sense of smell.

PRACTICAL NEEDS

clove ,cinnamon ,coffee

PROCEDURE

With both eyes closed and one nostril closed,bring the specimen close to the subject and ask about the smell.

PRECAUTIONS

Introduce yourself.Explain procedureTake consent. Avoid irritating and offensive smells.The nose should not be blocked .Give two minutes break between two specimens.

PRACTICAL ACHIEVEMENT

SPECIMEN	LEFT NOSTRIL	RIGHT NOSTRIL
CLOVE		
CINNAMON		
COFFEE		



12B . VIVA /OSPE /FAQ. TO STUDY THE SENSE OF OLFACTION.

Q.1.Name the chemosensory senses.

A.olfaction,gustation

Q.2.Trace the olfactory pathway.

A.olfactory epithelium,olfactory receptors,bipolar olfactory neurons,olfactory nerve,olfactory bulb,mitral cells in glomeruli,anterior olfactory nucleus,piriform cortex,amygdala, Q3.Enumerate a few causes of anosmia.

A.respiratory infection,head injury,congenital,degenerative brain disease,toxins,aging.

Q.4.How will you test olfaction?

A.coffee,orange,peppermint,clove,cinnamon

Q.5.Which is the only sensation that does not pass through the thalamus?

A.olfaction

Q.6.Compare unilateral loss of olfaction with bilateral loss of olfaction.

Unilateral	Deviated septum,nerve lesion
Bilateral	Rhinitis,smoking,aging

Q.7.Where is the olfactory area of cerebral cortex located?

A.Uncus of parahippocampal gyrus.

Anosmia	Inability to smell
Dysosmia	Things smell different than they should
Hyperosmia	Abnormally acute sense of smell
Hyposmia	Decreased ability to smell
Parosmia	Things smell worse than they should
Phantosmia	Hallucinated smell

13A PRACTICAL OBJECTIVE

TO STUDY THE SENSE OF SIGHT

PRINCIPLE

Optic Nerve is the 2nd cranial nerve subserving the sense of sight.

PRACTICAL NEEDS

NEAR VISION	Jegger's chart	Read/identify the lowest possible line
FAR VISION	Snellen's chart	Read/identify the lowest possible line
COLOUR VISION	Ishihara's chart	Tell the number in the circle
FIELD OF VIISION	Perimeter	Chart the extent of visual field
FUNDUS	Ophthalmoscope	Examine the retina
LIGHT REFLEX	Torch	Throw light into eye from side to see pupil constrict

PROCEDURE

Refer to relevant sections.

PRECAUTIONS

Introduce yourself.explain procedure.take consent.Test each eye separately.

PRACTICAL ACHIEVEMENT

Refer to relevant sections.



13B. VIVA /OSPE /FAQ . TO STUDY THE SENSE OF SIGHT.

Q.1.What is the function of the optic nerve?

A.It transmits visual information from retina to brain.

Q.2.From which cell does the optic nerve arise?

A.It is composed of retinal ganglion cells axons.

Q.3.What is blindspot or scotoma?

A.Absence of photoreceptors in the retina where the optic nerve leaves the eye is the blindspot

Q.4.What is fovea?

A.in the fovea,no rods,only cones,one ganglion cell synapses with 5 cones, for sharp/acute vision

Q.5.What is the result of damage to the optic nerve?

A.Damage to the optic nerve causes loss of vision and loss of pupillary light reflex.

Site of lesion	Optic nerve fibres affected	Visual field loss
Anterior to optic chiasma	All	Monocular total
At optic chiasma	Left right nasal	Bitemporal hemianopia
Posterior to optic chiasma	Left right temporal	Contralaterally both fields

Q.6.Enumerate a few causes of optic nerve damage.

A.neuropathy,glaucoma,trauma,toxicity,inflammation,ischemia,aneurysm.

Q.7.Name the components of the visual pathway.

A.retina,optic nerves,optic chiasma,optic tract,lateral geniculate body,superior colliculus,pretectal region,internal capsule,optic radiation,calcrine sulcus,primary visual cortex occipital lobe area 17,18..

Test	Method
Near vision	Jegger's chart
Far vision	Snellen' schart
Colour vision	Ishihara's chart
Field of vision	Perimeter
Fundoscopy	Ophthalmoscope

Q.8.Name the parts of accommodation reflex.

Convergence of eyeballs	Medial recti
Constriction of pupil	Constrictor pupillae(circular muscle iris)
Convexity of lens	Ciliary muscle

14A PRACTICAL OBJECTIVE

TO FIND THE VISUAL ACUITY

PRINCIPLE

The letters on the test charts are drawn such that each letter subtends an angle of 5 minutes, each part of letter subtends an angle of 1 minute. Two points located closely can be identified as two at 1 minute visual angle.

PRACTICAL NEEDS

Jaeger's chart, Snellen's chart, eye occlude, measuring tape

PROCEDURE

FAR VISION	The distance between the Snellen' chart and the subject is 6 meters . Note the lowest line read by the subject.
NEAR VISION	The distance between the jaeger's chart and the subject is 45 centimeters . Note the lowest line read by the subject.

PRECAUTIONS

Introduce yourself. explain procedure. take consent. Test each eye separately. Make sure the subject is otherwise familiar with the 'contents' of testing. Proper illumination.

PRACTICAL ACHIEVEMENT

d=the distance at which the subject can read

D=the distance at which a normal eye can read

Visual acuity=d/D= (5/6,6/6,9/6,12/6,18/6,24/6,36/6,60/6)

F P	2	20/100
T O Z	3	20/70
L P E D	4	20/50
P E C F D	5	20/40
E D F C Z P	6	20/30
F E L O P Z D	7	20/25
D E F F O T E C	8	20/20

Near vision=N () (36/18/12/10/8/6)

14B. VIVA /OSPE /FAQ. TO FIND THE VISUAL ACUITY.

Q.1. Define visual acuity.

A. The ability of the eye to resolve two points separately when situated close to each other.

Q.2. What is the difference between eyesight and visual acuity?

A. Eyesight without aids, visual acuity is vision fully corrected (spectacles, contact lens, intraocular lens)

Q.3. What is the normal two points resolution?

A. Two points located closely can be identified as two at 1 minute visual angle (1 degree=60 minutes)

Q.4. How are the letters on the test charts drawn?

A. Each letter subtends an angle of 5 minutes. Each part of the letter subtends an angle of 1 minute.

Q.5. How is the Snellen's chart designed?

A. A normal person should read the letters in the smallest (7th) line at 6 metres.

Q.6. What is the formula of visual acuity?

A. d/D . (d is the distance between the chart and the subject, D the distance a normal person reads.)

Q.7. Enumerate the factors affecting visual acuity.

A. errors of refraction, corneal or lenticular opacities, illumination

Q.8. What is the reading distance between Jaeger's chart and subject? A. 45 cm.

Q.9. What is done when the subject is not able to read even the topmost letter from 6 metres.

A. Make sure the subject is otherwise fully familiar with the text. Bring him closer to the chart, at 5, 4, 3, 2, 1 meter. then test by finger counting, then by hand movement, finally by torchlight.

Q.10. what is presbyopia? A. Farsightedness due to loss of elasticity of lens in middle and old age.

Q.11. what is meant by myopia/ hypermetropia?

A. Difficulty focusing on far/near objects.

Q.12. On what two basic factors does the visual acuity depend?

A(a). sharpness of the retinal focus, (b) sensitivity of the interpretative faculty of brain.

15A PRACTICAL OBJECTIVE

TO STUDY COLOUR VISION

PRINCIPLE

Different colours are recognized when different cones are stimulated to different extent.

Wavelength	Name of cone	Maximal stimulation by
Short	S	Blue
Medium	M	Green
Long	L	Yellow

PRACTICAL NEEDS

Ishihara charts , eye occluder,

PROCEDURE

The distance between the Ishihara chart and the subject should be 50 cm.

The time allowed for one page is 5 seconds.

One eye should be tested at a time.

PRECAUTIONS

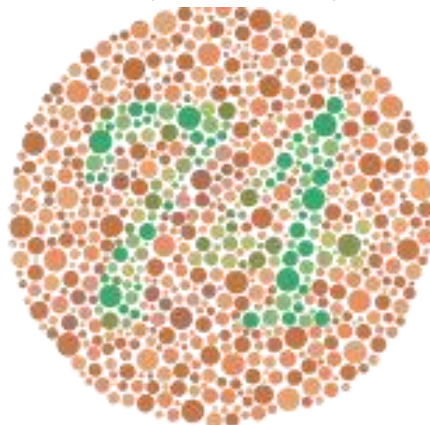
Introduce yourself.explain procedure.take consent.

Ensure proper illumination.

PRACTICAL ACHIEVEMENTS

The subject is -----

(TRICHROMATE/DICHROMATE/MONOCROMATE)



Q.1.What is meant by Deuteranopia?

A.Loss of function of the M cones,defect in distinguishing between red and green.

Q.2.What is meant by Tritanopia?

A.Loss of function of the S cones,inability to distinguish colours along the blue dimension.

Q.3.What is meant by Protanopia?

A.Loss of function of the M cones,insensitivity to red light.

Q.4.What is dichromacy?

A.One of the three basic types of cones is absent or non functional.

Q.5.What is trichromacy?

A.Possessing three basic types of cones L,M,S.

Q.6.What is meant by monochromacy?

A.Possessing only a single channel for conveying information about colour,total colour blindness.

Q.7.What are the different types of cones?

A.absorption spectra of different cones differ,one is maximally sensitive to short wavelengths 'S' (blue),one to medium wavelengths 'M' (green),and the third to long wavelengths 'L'(yellow). Q.8.What is the significance of testing colour vision?

A.pilots ,drivers,special skills/professions need to be screened.

Q.9.What is the mode of inheritance of colourblindness?

A.X linked recessive

Q.10.What is the prevalence of colour blindness In the general population?

A.8%of males,0.4%of females.

Q.11.Describe the mechanism of colour perception.

A.Differnt colours are recognized when the different types of cones are stimulated to different extent.

Q.12.What are the functions of cones? A.Visual receptors in the retina responsible for clear vision,colour vision,light vision.

16A PRACTICAL OBJECTIVE

TO STUDY THE VISUAL FIELD

PRINCIPLE

The extent of the area that can be seen by one eye at a fixed gaze can be mapped by using perimeter.

PRACTICAL NEEDS

eye occluder, adjustable stool, perimeter charts ,lead pencil ,test objects,perimeter.

PROCEDURE

Fix the chart behind the perimeter. The subject sits on adjustable stool , chin rests on chin rest.

The subject's eye should be at the level of white spot , fixation point , at centre.

The subject is asked to maintain the gaze at the fixation point throughout.

The object is moved from the outer to the inner aspect along the concavity of the semicircular arc.

Note the angle at which the subject is able to see the object.

Mark the point on the perimeter chart on the same isoptor.

Repeat same in 12 meridians .

All the points are joined together to map the visual field.



Repeat same using different colours.

Repeat same in other eye.

PRECAUTIONS

Introduce yourself.explain procedure.take consent.Adequate illumination.Remove spectacles of subject (if any).The subject must not move head or eye (gaze).

PRACTICAL ACHIEVEMENT

	Upward	Outward	downward	inward	Blindspot
Left eye					
Right eye					

16 B VIVA /OSPE /FAQ. TO STUDY THE VISUAL FIELD .

Q.1. Define field of vision.

A. The extent of the area that can be seen at fixed gaze by one eye.

Q.2. Define Perimetry.

A. The measurement of the boundaries of the field of vision.

Q.3. Describe the normal extent of the visual field.

Upward	60°
Outward	90°
Downward	70°
Inward	60°

Q.4. What is physiological blindspot.

A. Absence of photoreceptors in optic disc area, where the optic nerve leaves the eyeball, located in temporal field from 10° to 15° and 86° to 93° meridians.

Q.5. What are isoptors.

A. The concentric circles drawn at intervals of 10°

A. The radii of the circles drawn at intervals of 15°

Q.6. What are meridians?

A. size, colour, contrast, illumination, state, nature, features of objects.

Q.7. Enumerate the factors affecting the visual field.

A. sightlessness due to defect in the visual field.

Q.8. What is anopia?

A. Loss of vision in the same field of both eyes, either the right halves or the left halves of both eyes

Q.9. What is homonymous hemianopia.

A. optic nerve, optic chiasma, optic tract, lateral geniculate body, optic radiation, visual cortex.

Q.10. Describe the visual pathway.

A. Any lesion affecting the optic chiasma.

Q.11. What are the causes of visual field loss in bitemporal hemianopia?

A. Region of greatest visual acuity. No rods. Only cones.

Q.12. What is macula?

17 A PRACTICAL OBJECTIVE

TO STUDY THE FUNDUS BY OPHTHALMOSCOPY (FUNDOSCOPY)

PRINCIPLE

Ophthalmoscope is used to visualize retinal blood vessels, macula lutea, optic disc.

It aids in diagnosis of ocular/systemic disorders.

PRACTICAL NEEDS

ophthalmoscope, mydriatic drops

PROCEDURE

The subject sits in a dark room. 1 drop of mydriatic is instilled in each eye. After 30 minutes, the pupil is fully dilated. The examiner uses right eye to see right eye of subject and left eye to see left eye of subject. Hold the head of the subject with one hand and use the other hand to adjust the wheel of the ophthalmoscope. The subject is asked to see at some distance. Make appropriate corrections for refractive errors of examiner/subject, if any. Observe the retina. Note arteries, veins, a-v nipping, soft/hard exudates, hemorrhages. Ask the subject to see in the light to see macula lutea

PRECAUTIONS

introduce yourself. explain procedure. take consent. The subject must not drive/operate machinery after the examination until the effect of mydriatic used is over.

PRACTICAL ACHIEVEMENT

	shape	Margin	Colour	fovea	macula	vessels
Left eye						
Right eye						



17 B. VIVA /OSPE /FAQ. TO STUDY THE FUNDUS BY OPHTHALMOSCOPY.

Q.1.What is the power of the lens used to see retina?

A.0 dioptor lens is used to view retina.

Q.2.How can we dilate the pupil?

A.dark room.dim light.mydriatic drops.

Q.3.How can both CN II and CN III be tested simultaneously ?

A.Pupillary light reflex test.CN II is afferent,CNIII is efferent.

.7.Name a few conditions of the eye where ophthalmoscopic study is helpful. A.papilledema,retinitis pigmentosa,retinoblastoma,myopia,hypermetropia.

Q.8.Name a few systemic conditions where ophthalmoscopic study is helpful.

A.diabetes mellitus,raised intracranial pressure,hypertension,arteriosclerosis.

Q.9.When is ophthalmoscopy performed?

A.it is done as part of an eye examination and in routine physical examination.

Q.10.State the significance of ophthalmoscopy.

A.It can detect early stages and effects of many serious diseases.

Q.11.Describe the fundoscopic view in diabetic retinopathy.

A.cotton wool spots,flame hemorrhages,dot-blot hemorrhages.

Q.12.Describe the fundoscopic view in hypertensive retinopathy.

grade	Features
1	Generalized arteriolar constriction,silver wiring,vascular tortuosities
2	Tight constrictions,AV nicking(or nipping)
3	Cotton wool spots,flame hemorrhages
4	Optic disc swelling(papilledema)

Q.13.Define fundus.

A.The posterior part of the eye is called fundus.

18A PRACTICAL OBJECTIVE

TO STUDY OCULOMOTOR NERVE

PRINCIPLE

Oculomotor Nerve supplies all extraocular muscles (except superior oblique and lateral rectus), constrictor pupillae, levator palpebrae superioris and muscle of iris.

PRACTICAL NEEDS torch

PROCEDURE	Muscle	Test
	inferior oblique	Ask the subject to follow the movement of examiner's finger upward and outward.
	Medial rectus	Ask the subject to follow the movement of examiner's finger inward.
	Superior rectus	Ask the subject to follow the movement of Examiner's finger upward.
	Inferior rectus	Ask the subject to follow the movement of examiner's finger downward.
	Sphincter papillae	Throw light into subject's eye from side.
	Levator palpebrae superioris	Look for any evidence of ptosis.
	Muscle of iris	Ask the subject to look at a far object and then look at an object close to the eye.

PRECAUTIONS introduce yourself. explain procedure. take consent The subject should be instructed to move eyeball only and keep the head stable .Test each eye separately.



PRACTICAL

ACHIEVEMENT

Ocular movements	Smooth
Pupil	Reacts to light ipsilaterally as well as contralaterally. reacts to accommodation.
Accommodation	All the three components of accommodation intact
Ptosis ,squint ,nystagmus	No evidence

18B . VIVA/OSPE/FAQ. TO STUDY OCULOMOTOR NERVE.

Q.1.what is the function of oculomotor nerve?

A.it supplies

Inferior oblique,medial rectus,superior rectus,inferior rectus,

Sphincter pupillae,levator palpebrae superioris,ciliary muscle

Q.2.How is the C .N.III tested.

A.light reflex,

Consensual light reflex,

Accommodation reflex,

Ask the subject to look

Medially / Upward

Q.3.state a few causes of oculomotor nerve palsy.

A. trauma ,Raised intracranial pressure ,Cancer ,Brain hemorrhage Diabetes mellitus

Q.4.Describe the position of the eye in 3rd nerve palsy.

A.Down and out.

Q.5.Define ptosis

A.drooping of the upper eyelid due to 3rd nerve palsy.

Q.6.Define squint.

A..A permanent deviation in the direction of gaze of one eye.

Q.7.Define nystagmus.

A.rapid involuntary movements of the eyes.

Q.8.Define Horner's syndrome.

A. unilateral .miosis,ptosis,anhidrosis due to damage to superior sympathetic ganglion in the neck.

19A

PRACTICAL OBJECTIVE

TO STUDY TROCHLEAR NERVE

PRINCIPLE

Trochlear Nerve supplies superior Oblique muscle of eyeball.



PRACTICAL NEEDS none **PROCEDURE**

Ask the subject to follow the movement of examiner's finger downward and outward.

PRECAUTIONS

introduce yourself. Explain procedure .take consent.

Only the eyeball of the subject should move.

The subject must not move head.

Test each eye separately.

PRACTICAL ACHIEVEMENT

CN IV nerve functional/non functional

19B. .

VIVA /OSPE / FAQ .TO STUDY TROCHLEAR NERVE Q.1.what

is the function of the trochlear nerve?

A,It supplies superior oblique extraocular eye muscle which produces,

Eyeball depression when adducted

Eyeball intorsion when abducted.

Q.2.How is CN IV tested?

A.Ask the subject to look in downward and inward direction.

Q.3.Describe the position of the eye in CN IV palsy.

A.vertical diplopia,on looking down.

the affected eye drifts upwards relative to normal eye.

diplopia during newspaper reading and walking downstairs.

Q.4.Describe the characteristic (attempted compensation)appearance of CN IV palsy.

A.head tilted to one side.chin tucked in.

Q.5.Describe some unique features of CN IV.

A.Trochlear nerve is the

Smallest cranial nerve in terms of number of axons

Longest intracranial route

Decussates before innervating its target.

Arises from the posterior aspect of brainstem.

20A PRACTICAL OBJECTIVE

TO STUDY THE FUNCTION OF TRIGEMINAL NERVE

PRINCIPLE

Trigeminal nerve carries general sensations from the face ,
 provides motor supply for the muscles of mastication.



PRACTICAL NEEDS Cotton wool , pin , clinical hammer ,

PROCEDURE .

Ophthalmic Sensory	Touch	Maxillary sensory	touch	Mandibular sensory	touch	pain
Right						
Left						

	Jaw jerk	Corneal reflex	Mandibular motor	bulk	power	tone
Stimulus	Tap on chin	Blow in eye	Right			
response	Mouth closes	blinking	Left			

PRECAUTIONS

Introduce yourself, explain procedure, take consent . compare both sides. Thank your subject.

PRACTICAL ACHIEVEMENT

Status of CN V = _____right _____left

20 B. VIVA /OSPE /FAQ TO STUDY THE FUNCTION OF TRIGEMINAL NERVE

Q.1.What are the functions of CN V.

A.tactile,proprioceptive and nociceptive afference of face and mouth and motor for chewing.

Q.2.What is Wallenberg syndrome?

A.A stroke causes loss of pain/temperature sensation from one side of the face,other side of body.

Q.3.How is the CN V tested?

Division	Apparatus	region	Sensation
Ophthalmic	Cotton wisp/pin	Forehead	Light touch/pain
Maxillary	Cotton wisp/pin	cheeks	Light touch/pain
Mandibular	Cotton wisp/pin	Chin	Light touch/pain

Muscle	Inspection/palpation	Movement
Temporalis/masseter	Check atrophy	Clench jaw
Pterygoids	Jaw jerk reflex	Open mouth/move from side to side against resistance

Q.4.Name the muscles supplied by mandibular nerve.

A.tensor tympani,tensor veli palatini , mylohyoid ,pterygoids , masseter , temporalis , anterior belly digastrics.

Q.5.compare supranuclear , nuclear , infranuclear lesion of mandibular nerve.

	Supranuclear	nuclear	Infranuclear
Tone	↑↑	↓↓	↓↓
Atrophy/wasting	Absent	present	Present
side	Contralateral	ipsilateral	Ipsilateral
Jaw jerk	Exaggerated	weak	Absent

Q.6.What is the position of the mandible in unilateral masticatory muscles paralysis?

A.The mandible upon opening deviates towards the paralyzed side due to the action of normal pterygoids on the opposite side.

Q.7.What is the position of the mandible in bilateral masticatory muscles paralysis?

A.The mandible droops and no jaw movement is possible.

Q.8.Describe the nerve supply of corneal / conjunctival reflex.

A .Afferent component ophthalmic (trigeminal) , Efferent component facial

PRACTICAL OBJECTIVE PRINCIPLE

TO STUDY THE FUNCTION OF ABDUCENT NERVE.

Abducent nerve supplies lateral rectus extraocular muscle

PRACTICAL NEEDS none



follow the

of examiner's finger outward.

PROCEDURE

**Ask the subject to
movement**

PRECAUTIONS

introduce yourself.explain procedure.take consent.

The subject should move eyeball only.

**The subject should not move head. Test
each eye separately.**

PRACTICAL ACHIEVEMENT

nerve CN IV functional / non functional

21B.VIVA /OSPE/FAQ .TO STUDY THE FUNCTION OF CN VI.

Q.1.What is the function of the abducent nerve?

**A.It supplies the lateral rectus extraocular muscle
,which pulls the eyeball outwards.**

Q.2.Describe the appearance of patient with VI nerve palsy.

A.The affected eye is pulled medially.

**Diplopia on lateral gaze. In attempted compensation,
head is rotated such that both eyes are looking sideways.**

**A.the affected eye cannot abduct past the midline , it
cannot look sideways**

Q3.State a few causes of 6th nerve damage.

A.trauma,tumour,stroke,diabetic neuropathy,

Q.4. What is the function of the MEDIAL LONGITUDINAL FASCICULUS

In the brainstem

**A.it connects the cranial nuclei of III,IV,VI
to make possible conjugate gaze. Q.5.How**

is the 6th nerve tested?

A.Ask the subject to look outward

22A

PRACTICAL OBJECTIVE

TO STUDY THE FUNCTION OF FACIAL NERVE

PRINCIPLE

Facial nerve supplies the muscles of facial expression.

PRACTICAL NEEDS

Taste testing materials



PROCEDURE

Ask the subject to.....

up forehead	eyebrows		yes
ut cheeks	teeth	station anterior tongue	yes closed against examiner's resistance

PRECAUTIONS

Introduce yourself.explain procedure.obtain consent.Be mild and gentle in your approach.Whistle test should not be used (not ethical/ not everybody can whistle).

PRACTICAL ACHIEVEMENT. CN .VII .LEFT / RIGHT.

normal /umnl /lmnl

22 B /OSPE /FAQ. TO STUDY THE FUNCTION OF CRANIAL NERVE VII (FACIAL).

Q.1.What are the functions of facial nerve?

A.It is motor nerve for the muscles of facial expression.

Q.2.How is the CN VII tested?

A.Inspect for facial asymmetry and involuntary movements.

Raise both eyebrows

Frown

Close both eyes tightly against resistance

Show teeth

Puff cheeks

Test for taste sensations anterior two thirds tongue

Test for corneal reflex

Q.3.What is Bell's palsy?

A .Inability to control facial muscles on the affected side due to idiopathic unilateral acute mononeuropathy CN VII infranuclear lower motor neuron type.

Due to compression of Facial nerve in the Facial canal. Q.4.Describe

the features of UMNL CN VII.

A. only the lower part of the face on the contralateral side will be affected due to the bilateral control of upper facial muscles Frontalis and Orbicularis oculi. Q.5.Describe the features of LMNL CN VII.

A. Both upper and lower facial paralysis ipsilaterally.

Q.6.Which reflex simultaneously tests both CN V and CN VII?

A.Corneal and conjunctival reflexes.

23A

PRACTICAL OBJECTIVE

TO STUDY THE GUSTATORY SENSATION

PRINCIPLE

Tongue	Nerve
Anterior two-thirds	Facial
Posterior one-third	Glossopharyngeal

PRACTICAL NEEDS

Sugar solution , salt solution ,quinine solution ,
lemonade.Disposable cotton tipped applicator sticks.

	Anterior tongue	Posterior tongue
Right side		
Left side		

PROCEDURE

PRECAUTIONS

Introduce yourself.explain procedure.obtain consent.After each taste mouth should be rinsed and rested . Bitter taste should be tested last of all.Nose should be clamped.



PRACTICAL

Taste sensation
present/absent

ACHIEVEMENT

right/left anterior/posterior

23B.VIVA /OSPE /FAQ. TO STUDY THE GUSTATORY SENSATION. Q.1.Name

the five basic tastes.

A.sweet,salty,sour,bitter,umami

Q.2.Describe the gustatory transmission to brain.

A.facial VII =anterior two thirds of tongue

Glossopharyngeal IX= posterior one third of tongue

Vagus X =back of oral cavity

Taste receptors in taste buds are the afferent nerve endings.

Q.3.what type of receptors are the taste receptors? A.chemoreceptors.

Q.4.name the components of sense of flavor.A.smell,taste,texture,temperature.

Q.5.Enumerate a few causes of gustatory dysfunction.

A.olfactory dysfunction,,,respiratory infection,head injury,lesions at any site from the mucosa ,taste buds,nerves,brainstem,oral inflammations,poor oral hygiene,cancers,aging.oral prosthesis,

Q.6.define hypogeusia. A.decrease in taste sensitivity

Q.7.Define cacogeusia. A.perception of bad taste not due to ingested material.

Q.8.Describe the regions of the tongue specific for specific tastes.

Sweet	Tongue tip
Salty	Anterolateral border
Sour	Back

Q.9Where are the taste buds located

A.tongue,soft palate,epiglottis,larynx,pharynx

PRACTICAL OBJECTIVE TO PERFORM TUNING FORK HEARING TESTS

PRINCIPLE Hearing receptors in the inner ear are stimulated In two ways,
 By sound waves transmitted through the vibrations of the bones of skull, and By
 sound waves transmitted through the ossicular system of middle ear.

**PRACTICAL
 NEEDS Tuning**

fork

PROCEDURE Test	Method	Result
Rinne's	Place a vibrating tuning fork on mastoid And then next to ear and ask which is louder.	Normally second position Louder
Weber's	Place a vibrating tuning fork in the centre of forehead and ask if it is louder in either ear	Normally it should be heard equally in both ears.
Schawabach's	Place a vibrating tuning fork on mastoid of subject and when no longer heard place it on mastoid of examiner.	Normally the timing of both the subject and the examiner should be equal.
Modified Schawabach's	Place a vibrating tuning fork on mastoid of the subject with external auditory meatus closed, and when no longer heard place it on mastoid of examiner with external auditory meatus closed.	Normally the timing of both the subject and the examiner should be equal.



PRECAUTIONS

Introduce
yourself. Explain
procedure. Obtain
consent.

**PRACTICAL
 ACHIEVEMENT.**

hearing=normal/impaired, right/left

24B. VIVA /OSPE/FAQ.TO PERFORM TUNING FORK HEARING TESTS

Q.1.Enumerate a few causes of conductive hearing loss.

A.impaired sound transmission through external ear or middle ear due to wax,infection,otosclerosis.

Q.2.State a few causes of perceptive hearing loss.

A.disease or damage to cochlea or auditory pathway due to tumour,trauma or inflammation.

Q.3.Name some screening tests of hearing.A.Rinne,Weber.Schwaback

Q.4.Name the evaluation test of hearing. A.Audiometry.

Q.5.Describe the result of Weber's test in a normal individual.A.sound is heard in both the ears equally.

Q.6.Describe the result of Weber's test in conductivehearing loss.

A.the sound will be heard better in the ear having conductive hearing loss.

Q.7.Describe the result of Weber's test in perceptive hearing loss.A.sound will be heard better in normal ear.

Q.8How is Schwaback's test interpreted?

A.in perceptive deafness,time is shorter in the subject;in conductive deafness it is longer.

Q.9.What is the difference between Schwaback's and modified Schwaback's?

A.in modified Schwaback's the external auditory meatus of the examiner is closed.

Q.10.what is meant by Rinne's positive?A.No hearing loss,normal person,air conduction is more than bone conduction.

Q.11.what is meant by Rinne's negative?A.conductive hearing loss, air conduction is less than bone conduction.

Q.12.what is Rinne's false negative?A.perceptive hearing loss,sound heard via bone conduction other ear.

Q13.what is meant by Rinne's reduced positive?A.perceptive hearing loss,ac>bc.

Q.14.what is the reason of sound heard better in the ear having conductive hearing loss in Weber's test?

A.due to noise and attenuation reflex in normal ear dampen the sound .

25A PRACTICAL OBJECTIVE

TO PERFORM CALORIC STIMULATION TEST FOR VESTIBULO OCULAR REFLEX

PRINCIPLE

Irrigation of external auditory meatus with hot/cold water sets up convection currents in endolymph of the horizontal semicircular canal which stimulates the vestibular nerve resulting in nystagmus.



PRACTICAL NEEDS

Disposable syringe, hot and cold water.

PROCEDURE

Side	Temperature of water C ^o	Direction of quick component of nystagmus
Left	30	Right
Left	44	Left
Right	30	Left
right	44	Right

PRECAUTIONS

There should be no disease of external /middle ear.

Give ten minutes rest between hot/ cold water , right/left side.

If the subject gets vertigo , nausea , vomiting , stop the test.

PRACTICAL ACHIEVEMENT

Vestibulo ocular reflex intact , left / right.

25B. VIVA /OSPE /FAQ. TO PERFORM CALORIC STIMULATION

TEST(VESTIBULOOCULAR REFLEX)

Q.1.What is the function of the vestibular nerve?

A.It sends sensory input to CNS regarding gravity,linear acceleration /rotational movement of head.

Receptor	Sensory organ	Function
Vestibular hair cells	Utricle,sacculle	Gravity,head linear acceleration
Vestibular hair cells	3 semicircularcanals	Head rotational movement

Q.2.Describe the vestibular pathway.

A.Vestibular nerve arises from bipolar cells in the vestibular ganglion (ganglion of Scarpa)in upper ,outer internal auditory meatus.It synapses with vestibular nuclei in pons and medulla.it sends connections to ipsilateral and contralateral CN III and CN VI,to cerebellum,to anterior horn cells via vestibulospinal tract.the Vestibular nerve implicitly plays a role in maintaining stable blood pressure during movement ,maintaining balance control,spatial memory ,spatial navigation.

Q.3.Enumerate a few causes of vestibular dysfunction.A.ototoxic antibiotics,Meniere’s disease,encephalitis ,labrynthitis,vesitibularneuritis,alcoholism,aging,

Q.4.What are the symptoms of vestibular dysfunction?A.Acute attacks of vertigo,nausea,vomiting,inability to maintain posture, horizontal nystagmus

Q.5.What is caloric reflex test? A.Caloric reflex test or vestibular caloric stimulation test is a test of vestibuloocular reflex done by irrigating external auditory canal with hot or cold water to stimulate horizontal semicircular canals.

TEMPERATURE OF WATER C ⁰	Firing rate from horizontal canal	Direction of saccade
44	↑↑from ipsilateral	Same side of stimulation
30	↓↓from ipsilateral	Opposite side of stimulation

Q.6.Describe the vestibuloocular reflex? A.vestibulo ocular reflex is a reflex eye movement that stabilizes images on the retina during head movement by producing eye movement in a direction opposite to that of head movement thus preserving the image on the center of the visual field.

stimulus	Receptor	afferent	Centre	Efferent	effector	Effect
Head moves	Vestibular hair cells	Vestibular nerve	Vestibular nuclei	CN III CN ,VI	Extraocular muscles	Eye movement

Q.7.Describe the mnemonic to remember the normal direction of saccade in caloric test.

A.COWS:C=cold O=opposite W=warm S=same.Cold water leads to saccade in the direction opposite to side irrigated .Warm water leads to saccade in the same side of irrigation. Q.8.What is the effect of hot/cold water in outer ear canal?

A.convection currents in endolymph.

26A PRACTICAL OBJECTIVE

TO STUDY THE FUNCTION OF GLOSSOPHARYNGEAL NERVE

PRINCIPLE

Glossopharyngeal nerve

Taste	Posterior third tongue
Motor	Stylopharyngeus
Sensory	Palate

PRACTICAL NEEDS

Torch , disposable tongue depressor ,disposable probe

PROCEDURE

Gag/pharyngeal/laryngeal/palatal /cough reflex

Position of subject	Method	Observation
Eyes closed. Mouth open. Tongue depressed.	Touch with disposable probe posterior wall of pharynx.	Elevation of soft palate.
Swallowing test	Subject sips	Observe
Taste test	Posterior tongue	Check



PRECAUTIONS

Introduce yourself.explain procedure.obtain

consent.

PRACTICAL ACHIEVEMENT . CN. IX. left/right. normal /impaired.

26B VIVA /OSPE /FAQ . TO STUDY THE FUNCTION OF CRANIAL NERVE IX GLOSSOPHARYNGEAL

Q.1.What are the functions of CN IX?

A.

Sensory from	Tonsils , pharynx , middle ear , posterior third tongue ,
Taste from	Posterior third tongue
Afferent from	Carotid body , carotid sinus
Parasympathetic secretomotor	Parotid gland
Motor	Stylopharyngeus

Q.2.How is the CN IX tested?

A.test gag reflex,swallowing test,cough test,taste test back of tongue

Q.3.Describe the position of the uvula in CN IX palsy.

A.Uvula deviates to the healthier side.

Q.4. Describe the carotid sinus reflex.

A.pressing / massaging the skin over the carotid sinus in the neck results in slowing of heart rate.

Q.5.What are the effects of damage to CN IX?

A.Loss of bitter and sour taste.Regurgitation through nose during swallowing . Speech impediments.

Q.6.What is the function of Stylopharyngeus muscle?

A.Elevation of pharynx during swallowing and speech.

Q.7.Name the afferent component of the gag reflex.

A.Glossopharyngeal.

Q.8.Name the efferent component of the gag reflex.

A.Vagus.

Q.9.What is the difference between carotid body and carotid sinus?

A.Carotid body contains chemoreceptors , sensory supply by glossopharyngeal.

Carotid sinus contains baroreceptors , sensory supply by glossopharyngeal.

27A PRACTICAL OBJECTIVE TO STUDY THE FUNCTION OF CN X (VAGUS)



PRINCIPLE

CN X supplies soft palate, pharynx, larynx, pulmonary system, gastrointestinal system, cardiovascular system

PRACTICAL NEEDS

Torch, disposable tongue depressor, disposable probe,

PROCEDURE

Subject	Hallmarks of CN X dysfunction
Talks	Hoarseness, whispering, nasal speech
Sips	Aspiration, regurgitation, choking
Opens mouth	Palatal arch asymmetry, uvula not central

Gag/pharyngeal/laryngeal/palatal/cough reflex

Position of subject	Method	Observation
Eyes closed. Mouth open. Tongue depressed.	Touch with disposable probe posterior wall of pharynx.	Elevation of soft palate.

PRECAUTIONS

Introduce yourself. Explain procedure. Obtain consent

PRACTICAL ACHIEVEMENT .CN X right / left normal / impaired.

27 B. VIVA /OSPE /FAQ TO STUDY THE FUNCTION OF CRANIAL NERVE X (vagus) Q.1.How

is the vagus nerve tested?

A.Ask the patient to swallow,to say 'AHH',do gag reflex test,

Q.2.What are the functions of the CN X?

A.CN X is responsible for heart rate,gut peristalsis , sweating , speech , swallowing , breathing

Q.3.What are the signs of CN X dysfunction?

A.hoarseness,dysphagia,loss of gag reflex,uvula deviates away from side of lesion no palatal elevation

Q.4.How is palatal articulation tested?

A.Ask the subject to say 'KA'

Q.5.How is guttural articulation tested?

A.Ask the subject to say 'GO'

Q.6.Describe dysarthria due to central lesions.

A.strained strangled voice quality.

Q.7.Describe dysarthria due to peripheral lesions

A.hoarse nasal voice

Q.8.What is pseudobulbar palsy?

A.bilateral supranuclear denervation CN X due to interruption of corticobulbar pathway.

Q.9.What will happen in case of bilateral CN X nuclear lesion?

A. Death with pharyngeal and laryngeal paralysis and cardiac arrhythmias.

Q.10.What will happen in case of unilateral CN X lesion?

A.Unilateral nuclear / infranuclear lesion causes ipsilateral paralysis soft palate , pharynx , larynx

28A PRACTICAL OBJECTIVE

TO STUDY THE FUNCTION OF CN XI ACCESSORY NERVE

PRINCIPLE

CN XI is motor to Sternocleidomastoid and Trapezius.



PRACTICAL NEEDS

none

PROCEDURE

Inspection/Palpation/Passive movement by examiner

Active movement by examiner against resistance offered by subject

Active movement by subject against resistance offered by examiner

PRECAUTIONS

Introduce yourself.Explain procedure.Obtain consent.

PRACTICAL ACHIEVEMENT .

CN XI right / left normal / impaired.

28B. VIVA /OSPE /FAQ . TO STUDY THE FUNCTION OF CRANIAL NERVE XI (ACCESSORY) Q.1.What

is the function of CN XI?

A.Motor supply to sternocleidomastoid and trapezius,which have the following functions,

Contraction of	Action
LEFT Sternocleidomastoid	Rotation of head toward RIGHT
LEFT Sternocleidomastoid	Tilting of head toward LEFT
BOTH Sternocleidomastoids	Flexion of neck
Trapezius	Elevation of shoulders
Trapezius	Drawing head back to face upward

Q.2.How is the CN XI tested?

A.Inspection of Sternocleidomastoid and Trapezius for atrophy, wasting,fasciculations,signs of nuclear/infranuclear (lower motor neuron)lesion.Palpation of sternocleidomastoid and trapezius for assessing tone.Ask the subject to shrug shoulders/turn head against resistance to assess strength.

Q.3.Describe CN XI injury.

Weak	CN XI injured	Muscle affected
Right sided shrug of shoulder	Right side	Right trapezius
Right sided turn of head	Left side	Left sternocleidomastoid
Left sided turn of head	Right side	Right sternocleidomastoid

Q.4.Describe Accessory nerve disorder.

Muscle affected	Presentation
Sternocleidomastoid	Asymmetric neckline
Trapezius	Drooping shoulder,winged scapula

Q.5.What are the causes of CN 11 palsy?

A.neck surgery,gunshot wounds

Q.6.How is CN11 assessed?

Inspection	Atrophy,fasciculation,winged scapula
Range of motion	Head tilt,head rotation,shrug shoulders
Strength	Against examiner's resistance

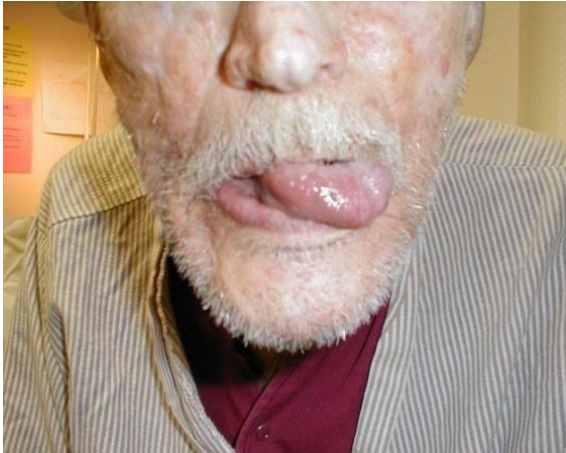
29A

PRACTICAL OBJECTIVE

TO STUDY THE FUNCTION OF CN XII HYPOGLOSSAL

PRINCIPLE

The Hypoglossal nerve supplies the muscles of tongue.



PRACTICAL NEEDS None PROCEDURE

Inspection	Wasting / fasciculations / deviation
Palpation	Asymmetry / smoothness / texture
Movement	Protrusion

PRECAUTIONS.

Introduce yourself.Explain procedure.Obtain consent
.Thank your subject.Wash your hands.

PRACTICAL ACHIEVEMENT.

CN XII right / left normal / impaired.

29^B. VA /OSPE /FAQ. TO STUDY THE FUNCTION OF CN XII HYPOGLOSSAL

Q1.what is the function of the 12th cranial nerve?

A.It supplies all the muscles of the tongue except palatoglossus.(swallowing/speaking)

Q.2.How is the 12th nerve tested?

A.Ask the subject to stick the tongue out. Ask him to say DOWN ,LIGHT to evaluate lingual sounds.

Q.3.Describe the position of the tongue in 12th nerve palsy.

A.The tongue will deviate to the affected side.(unopposed action of opposite Genioglossus)

In lmnI , the protruded tongue will deviate toward the side of lesion

In umnl , the protruded tongue will deviate away from the side of lesion

Q4.Differentiate between UMNL and LMNL in case of 12th nerve damage.

A.fasciculation and atrophy in LMNL.

Q.5.How is the strength of 12th nerve tested?

A.Ask the subject to poke the inside of cheek and feel the pressure outside.

Q.6.What is the sign of weakness of tongue?

A.slurred speech.tongue feels thick.

Q.7.Display CN 12 palsy.

Lesion	Result
Nuclear/infranuclear	Ipsilateral atrophy/fasciculations
Supranuclear(unilateral)	Contralateral weakness
Supranuclear (bilateral)	Tongue disability

Q.8.What are the causes of nuclear lesions CN12?

A.polio,syringobulbia,infarction,tumours,injury,surgery,neuropathy

Q.9.Why are the nuclear lesions of CN 12 often bilateral?

A.Because the two nuclei are situated closely in medulla.

Q.10.What is pseudobulbar palsy?A.The combination of a bilateral upper motor neurone lesion of CN IX,X,XII 30A

- Q.1. (a) Give two causes of raised specific gravity of urine. 1
(b) Give two differences between superficial reflexes and deep reflexes. 1
- Q.2. (a) Name the afferent and efferent nerve of the light reflex. 1
(b) What is Argyll Robertson pupil? 1
- Q.3. (a) Name two causes of bilateral loss of sense of smell. 1
(b) What is Horner's syndrome? 1
- Q.4. (a) Name the afferent and efferent nerve of conjunctival reflex. 1
(b) Which test is used for evaluation of power of hearing. 1
- Q.5. (a) What is Romberg's sign? 1
(b) What is Pseudobulbar Palsy? 1
- Q.6. (a) Describe the position of the tongue in left sided Hypoglossal palsy, 1
(b) Name any two features of UMNL. 1
- Q.7. (a) Give two signs of cerebellar disease. 1
(b) Presence of 'extinction' points to which disease. 1
- Q.8. (a) What is graphaesthesia? 1
(b) What can cause bitemporal hemianopia? 1
- Q.9. (a) What is Bell's palsy? 1
(b) Which semicircular canal is stimulated in vestibular caloric test? 1
- Q.10. (a) Give two features of hypothermia. 1
(b) In which condition is the Babinski's sign positive? 1

30B KEY

UNOBSERVED STATIONS

1a. Dehydration, diabetes mellitus, Addison's disease, Syndrome of inappropriate hypersecretion ADH

1b. Superficial reflexes are polysynaptic, ↓ UMNL. Deep reflexes are monosynaptic, ↑ UMNL.

2a. Optic. Oculomotor.

2b. Responds to accommodation, does not respond to light, sign of Neurosyphilis. 3a. smoking, rhinitis

3b. ptosis, miosis, anhidrosis,, superior sympathetic cervical ganglion interruption.

4a. ophthalmic(trigeminal). Facial.

4b. audiometry.

5a. Inability to stand with eyes closed. sensory ataxia, dorsal column disease.

5b. pathological laughter/crying , bilateral corticobulbar lesion.

6a. deviated to left due to unopposed action of genioglossus.

6b. hyperreflexia, clonus, rigidity, spasticity, Babinski positive.

7a. disdiadochokinesis, intention tremor, dysarthria.

7b. Contralateral dorsal column lesion.

8a. Ability to recognize letter or number written on palm by blunt object.

8b. Optic chiasma.

9a. LMNL Facial Nerve lesion due to compression in Facial canal.

9b. Horizontal.

10a. Core temperature 35, intense shivering.

10b. Less than one year, UMNL.

31A

OBSERVED STATIONS

4 MINUTES AT EACH STATION

5X3=15 MARKS

Q.11.(a)Perform Supinator Jerk. 4
(b)What is the root value of Supinator Jerk. 1

Q.12. (a)Perform Rinne’s test. 4 (b)What is meant by Rinne’s positive. 1

Q13.(a)Test power of muscles of upper limb. 4
(b)Define power of muscle. 1

KEY

OBSERVED STATIONS

11a.Introduce yourself.Explain the procedure.Take consent.Elbow semiflexed,semipronated,forearm supinated. Strike on styloid process of radius .Supinator(Brachioradialis)contracts.

11b.C5.C6

12a.Introduce yourself .Explain the procedure.Take consent.Place a vibrating tuning fork on the mastoid and transfer it to just outside external auditory canal when the subject tells the voice is no longer heard at the mastoid.Normally ,the subject should be able to hear sound at external auditory meatus because air conduction is better than bone conduction.

12b.Normal power of hearing,no hearing loss.

13a. Ask the subject to perform some active movement against resistance offered by the examiner

13b.force generated er unit time.

TOTAL MARKS 100

OSPE	30
Unobserved Stations	1.5x1=15
Observed Stations	5x3=15

PROCEDURE WRITING	5
Principle	1
apparatus	1
Procedure	1
Precautions	1
Results	1

PRACTICAL JOURNAL	5
Complete	2
Checked	2
Covered	1

PRACTICAL	20
Performance	5 (by external)
	5 (by internal)
Viva	5 (by external)
	5 (internal)

STRUCTURED CURRICULAR VIVA	30
	15 (by external)
	15 (by internal)
CONTINUOUS INTERNAL ASSESSMENT (Based on percentage of marks obtained in class tests during the session.)	10

32A.

HOW TO CONSULT A RESEARCH ARTICLE

Q.1. Define research.

A. Research and experimental development comprise creative work undertaken on a systematic basis to increase the stock of knowledge.

Q.2. What is the usefulness of research?

A. It is used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories.

Q.3. What kind of research is done on past work in a field.

A. To test the validity of instruments, procedures, or experiments.

Q.4. What are the primary purposes of basic research?

A. Documentation, discovery, interpretation,

Q.5. Describe the major steps in conducting research.

A. Identification of research problem

Literature review

Specifying the purpose of research

Determine specific research questions or hypothesis

Data collection

Analyzing and interpreting the data

Reporting and evaluating research.

Q.6. What are the types of research papers?

A. Academic paper published in journals .

Term paper written by college students. Thesis or dissertation, a document submitted in support of a candidature for degree or professional qualification, presenting the author's research and findings.

32B

CRANIAL NERVES EXAMINATION



NERVE	EVALUATION
OLFACTORY	Test each nostril separately by non-irritating ,identifiable stimuli(cinnamon,cloves)
OPTIC	Test each eye separately for near vision(Jegger's chart),far vision(Snellen's chart),colour vision(Ishihara chart),visual field (perimeter),fundoscopy(ophthalmoscope) ,direct and consensual pupillary light reflexes ,accommodation reflex.
OCULOMOTOR TROCHLEAR ABDUCENT	A commonly used abbreviation to describe normal pupils PERRLA (pupils equal,round,reactive to light,accommodation.look for ptosis,nystagmus.Ask the subject to follow a target with eyes onlyand not the head.The target is moved in an 'H'shape and the subject is asked to report any diplopia.
TRIGEMINAL	Light touch by point stimulus of cotton wisp. Pain by stroking motion of sharp object. Temperature by cold tuning fork. tested in each of the three divisions(ophthalmic=forehead,maxillary=cheeks,mandibular=chin) and on each side of the face. Sensory component of corneal reflex is served by ophthalmic, Motor component of corneal reflex is served by facial. Inspection and palpation of temporalis and masseter for atrophy. Pterygoids can be tested by asking the subject to keep the mouth open and move from side to side against resistance. Tap the finger on the chin to check jaw reflex.
FACIAL	Inspect for facial asymmetry and involuntary movements.Raise both eyebrows,frown,close both eyes against resistance,show both upper and lower teeth,smile,puff out both cheeks . Test gustation anterior two thirds tongue.
COCHLEAR	Test each ear separately by Rinne's ,Weber's,Schawbach's.
VESTIBULAR	Caloric stimulation test
GLOSSOPHARYNGEAL VAGUS	Gag reflex. Palatal articulation 'KA' Guttural articulation 'GO'
ACCESSORY	Shrug shoulders. Turn head from side to side.
HYPOGLOSSAL	Inspection/palpation tongue for atrophy/asymmetry/fasciculations Tongue movements.