

ANSWERS TO PRACTICAL OF NEUROANATOMY MARATHON PAPER WHICH WAS SENT ON THURSDAY 8th June 2017)

Number 1 (a)

A- Brocas area

B- Wernickes area

C- Primary motor area

(b) - Pre-rolandic branch of middle cerebral artery. (recall blood supply to the brain)

Number 2(a)

G- cerebellum

M- paracentral lobule

(b) - G= intensional tremors, past pointing, disdyochokinesia, unsteady gait, dismetria

M= contralateral hemiparesis of the lower limbs, contralateral loss of sensation from lower limbs

(attempt to name the other labelled parts)

Number 3(a)

Corticostriate, nigrostriate (afferents)

Striatothalamic, striatopallidal (efferents) - Remember to review formation of basal ganglia circuits for you essays.

(b) Corpus Callosum, its a commisural fibre - remember a lesions to it causes split brain

syndrome

Number 4(a)

A- septum pellucidum

B- midbrain

(b) = Red nucleus, motor nucleus of oculomotor, accessory nucleus of oculomotor (Edinger Westphal), trochlear nucleus

Number 5 (a)

A- Splenium of corpus callosum {Take note that if given a brain coronal or horizontal section and the corpus callosum pointed, they always want you to name the callosal fibres for instance either forceps anterior or forceps posterior but if given a mid sagittal section such as this one they want you to label parts of corpus callosum such as Splenium, rostrum, genu, body}

B- pre-cuneus gyrus

(b) - VPL = Sensory relay from spinal nerves

VPM= sensory relay from cranial nerves

Lateral geniculate body =Visual relay {Recall all the thalamic nuclei and their functions using a well labelled diagram}

Number 6- (a)

A- HYPOTHALAMUS =Anteriorly it extends to anterior perforated substance, and posteriorly to the posterior perforated substance, it extends into the interpeduncular fossa through the tuber cinereum and infundibular stalk, superiorly it extends upto the hypothalamic sulcus

(b) Branches of anterior cerebral (recall it supplies the medial and superolateral aspect of the brain) = Medial orbitofrontal, frontopolar, Pericallosal, callosomarginal,

Number 7(a)

A- lentiform nuclei

B- Optic radiations

(b) = floor by the following parts, enumerated in their order of position, from before backward: the caudate nucleus of the corpus striatum, the stria terminalis and the terminal vein, the lateral portion of the upper surface of the thalamus, the choroid plexus, and the lateral part of the fornix;

Number 8 (a)

A- Thalamus

B- insula cortex

Functions of the Thalamus

Sensory relay centre from spinal and cranial nerves (VPL and VPM nuclei)

Visual association (pulvinar)

Limbic function (anterior thalamic nuclei)

Basal ganglia function (VA & VL nuclei)

Number 9(a)

A- cauda Equina

B- spinal nerve

(b) 3 months in utero - Coccygeal

6 months in utero- S2

BIRTH - L 3

Puberty - L2

Adult - L1, L2

Number 10(a)

A- anterior corticospinal tract

B- Lateral spinothalamic

C- fasciculus cuneatus

(b) B(lateral spinothalamic) - carries pain and temp from upper limb and lower limb segments

- first order neurons terminate at the spinal cord at substantia gelatinosa nucleus
- Second order neurons arise and decussate at level of spinal cord
- uses spinal lemniscus to course within the cortex

C(fasciculus cuneatus)

- Carries conscious proprioception, fine touch, two point discrimination from upper limb only
- first order neurons terminate in cuneate nucleus at the medulla
- Second order neurons arise and decussate at level of Medulla
- Courses as medial lemniscus through the cortex.

Number 11(a)

Branches of basilar artery- anterior inferior cerebellar (AICA), labyrinthine, Pontine branches, superior cerebellar, posterior cerebral {Which nerve is in between labyrinthine and AICA, which nerve is in between superior cerebellar and posterior cerebral} =Recall formation and Branches and course of the vertebral arteries and circle of Willis

(b) Pyramids= contralateral hemiparesis due to affected pyramidal tracts

- hypoglossal nucleus= Ipsilateral paralysis of the tongue
- Medial lemniscus = contralateral loss of dorsal column modalities (conscious proprioception....)

-{In - text question=what is inferior alternating hemiplegia,? Why is it called as such?, look into wallenburg, superior & middle alternating hemiplegia syndromes:which vessels lesions causes them and their presentations?)

Number 12 (a) = Gracile Tubercle and the tract from it is medial lemniscus.

(b)

Specifically, the midbrain consists of:

-Tectum (inferior colliculi. superior colliculi.)

-Cerebral peduncle.(midbrain tegmentum. crus cerebri. substantia nigra.)

Number 13 (a) -

A- Its the substantia nigra composed of Pars compacta and pars reticulata

B- Crus cerebri consisting of medial 1/6(frontopontine) middle 2/3(corticospinal and corticobulbar)

Lateral 1/6(parietopontine,temporopontine,occipitopontine,)

(b) Degeneration of substantia nigra leads to Parkinsons syndrome presenting as, resting tremors, Parkinsons Posture, reduced facial expression, pin-roll tremors, rigidity of muscles.

Number 14 (a) - upper/ open medulla(evidenced by inferior Olivary nucleus)

(b) - A- inferior olivary nucleus

It is closely associated with the cerebellum, meaning that it is involved in control and coordination of movements,sensory processing and cognitive tasks likely by encoding the timing of sensory input independently of attention or awareness.Lesions to the inferior olive have been associated with a decreased ability to perfect highly specialized motor tasks, such as improving one's accuracy in hitting a target with a ball.

(c) B- lower part of 4th ventricle

Number 15 (a)

- paracentral lobule= contralateral hemiparesis of the lower limbs, contralateral loss of sensation from lower limbs

- Corpus callosum- split brain syndrome

- cingulate gyrus = limbic dysfunction

(b) - Dorsal Vagal nuclei (GVE)

- nucleus Ambiguus (SVE)

- nucleus of tractus solitarius (SVA)

- spinal nucleus of trigeminal(GSA)

Number 16 (a)

A- parahippocampus

B- Cingulate gyrus

(b) = Hippocampus, subiculum, entorhinal cortex, Dentate gyrus = HIPPOSED MNEMONIC

(review contents of limbic lobe and identify them in this section)

Number 17(a)

Part probed is mammillary bodies (in which fossa is it found? ;review the boundaries and contents of this fossa)

Efferents include - Mammillothalamic, mammilotegmental, (what are its afferents?)

(b) sleep wake cycle

Biological clock

(what is the reticular formation, what composes it?)

With lots of love and blessings,

Dr. Vincent Kipkorir.

