ACEM PRIMARY 2010/1 ANATOMY VIVA **Day: Thursday** **Session: am** *Candidate Number*..... AGREED MARK.....

TOPIC	QUESTION	ESSENTIAL KNOWLEDGE	NOTES
Question 1: Xray:Facial	(a) Demonstrate the walls of the orbit on this xray and name the bones that form them. Prompt: What bone forms each wall? (b) Demonstrate the position of the infra-orbital nerve on this xray. (c) What structures does the infra-orbital nerve innervate?	Roof – orbital part of frontal b and posteriorly the lesser wing of the sphenoid. Medial- ethmoid with contributions from frontal process of maxilla, lacrimal and sphenoids Lateral – frontal process of zygomatic b and the greater wing of sphenoid Floor – Maxilla and partly by zygomatic and palatine bone Mucosa of max sinuses **Upper medial teeth** (Premolars, canines, incisors) **Skin of cheek** Skin of lateral nose Skin/conjunctiva of inferior eyelid Anteroinferior nasal septum **Skin and oral mucosa of upper lip**	**All 4 walls and** **Frontal** **Maxilla** **Ethmoid** **Zygomatic** Need Bold to pass Demonstrate region of infra-orbital foramen/notch Bold to pass

Question 2:
 	
Bone: Pelvis
	a. What bones make up this structure, and what are their major features?	a. Pelvis
		• **Acetabulum** (with acetabular notch)
		• **Obturator foramen** (with obturator groove)
		• **Ilium**
		  ○ Ala
		  ○ **Iliac crest**
		  ○ Inferior, anterior and posterior gluteal lines
		  ○ **Anterior superior**, anterior inferior, posterior superior and posterior inferior iliac spines
		  ○ Greater sciatic notch
		• **Ischium**
		  ○ **Ischial spine**
		  ○ Lesser sciatic notch
		  ○ Ischial tuberosity
		  ○ Ischiopubic ramus
		• **Pubis**
		  ○ **Superior pubic ramus**
		  ○ Pubic symphysis
			a. Need all bold to pass, and able to demonstrate aspects of bony parts

	b. What are the lateral rotators of the femur, and where do they originate?	b. Lateral rotators of hip
		• **Piriformis**
		  ○ anterior sacrum and sacrotuberous ligament
		• **Obturator internus / (externus)**
		  ○ Pelvic/ext surface of obturator membrane and surrounding bones
		• **Superior gemellus**
		  ○ Ischial spine
		• **Inferior gemellus**
		  ○ Ischial tuberosity
		• **Quadratus femoris**
		  ○ lateral border of ischial tuberosity
		• **Gluteus maximus** (minor)
		  ○ ilium posterior to posterior gluteal line, dorsal surface of sacrum and coccyx, sacrotuberous ligament
			Need 2 to pass

Question 3: Model: Heart (Heart model assembled at start of question, remove aorto-pulmonary root as question asked)	a) Using this model, describe the arterial supply of the heart	Main coronary vessels arise from **corresponding aortic sinus** above aortic valve. **R coronary** courses inf in av groove Gives off branches to SA node **Marginal** **Post interventric** AV nodal\ **L coronary** bifurcates into **Circumflex** and **LAD (anterior I – V art)** Circ gives off **Marginal** branch, and LAD gives off **diagonals.**	5/9 bold to pass
	b) What does the R coronary artery supply?	**R atrium** **Most of RV** **Diaphragmatic surface LV** **Post 1/3 septum** **60% SA** **80% AV**	3/6 bolded to pass
	c) Demonstrate the venous drainage of the heart (BONUS MARKS)	Major drainage is via the **Coronary sinus** 3 main tributaries are **great**(accompanies LAD, then Circ), **middle** (accompanies PIV) and	3/6 to pass

		small cardiac veins (accompanies R marginal). Oblique vn L atrium marks start of sinus. **Ant cardiac vn's** start ant surface RV, drain straight into r atrium **Smallest cardiac vn's** (venae cordis minimae) drain direct into chambers	
Question 4: Photo: Brachial Plexus	a) Identify the components of the brachial plexus as shown in this photo. The vessels have been removed. PROMPT: Direct candidates to start at superior aspect. b) Identify the muscles visible in this photo	**Posterior Cord** **Radial Nerve (Terminal br)** Axillary Nerve (Terminal br) Thoracodorsal n Upper and Lower Subscapular nn **Lateral Cord** Musculocutaneous n (terminal br) Lat root of median n (terminal br) **Medial Cord** **Ulnar nerve (Terminal Br)** Med root of median nerve (terminal br) Medial cut nn of arm and forearm **Median nerve** Surrounding muscles: Deltoid, biceps, coracobrachialis, pec minor, triceps, lat dorsi, subscapularis, teres major	Identify – 3 cords, 3 bolded branches and 2 others to pass Identify 3 muscles to pass
Question 5: Discussion	Describe the superficial venous drainage of the lower limb	Dorsal v arch of foot drain to GSV, ascends ant to MM, then behind med fem condyle (hand breadth post to patella), then up med thigh through fascia lata in saph opening into fem V. Numerous valves, perforators to deep system and anastomoses with SSV. Laterally, Small SV arises from dorsal venous arch, ascends behind LM, lateral to Achilles, penetrates fascia at mid-line, between heads of gastroc to join popliteal vein	1.Identify MM, fem condyle and saph opening landmarks of GSV 2.Name SSV and general location 3.Identify connection with deep system via perforators

ACEM PRIMARY 2010/1 ANATOMY VIVA Day: Thursday Session: pm *Candidate Number*..... AGREED MARK.....

TOPIC	QUESTION	ESSENTIAL KNOWLEDGE	NOTES
Question 1: Xray : lateral C spine	(a) Identify the major bony features of the cervical spine on this xray.	**Atlas** - Anterior and posterior arches **Axis –Dens,** spinous process **C3-7: Body**, pedicle, lamina, superior and inferior articular process, **spinous process** **Zygapophysial (facet) joint** Intervertebral disc space	Bold to pass
	(b) Describe the ligaments which maintain alignment of the cervical spine. Prompt: Which ligaments support the dens?	**Anterior Longitudinal ligament** / Anterior atlanto-occipital membrane **Posterior longitudinal ligament** / Tectorial membrane Ligamentum flavum / Posterior atlanto-occipital membrane Interspinous ligaments Supraspinous/nuchal ligaments Intertransverse ligament **Transverse ligament of the atlas** Cruciate ligament Alar ligament	Bold plus 2 others
Question 2: Bone: First rib	a. What bone is this? PROMPT: What side is it from?	a. **First rib** **Appropriate side**	a. Need all bold to pass

	b. What are the bony landmarks?	b. Landmarks
		• **Head** (with single facet for T1)
		• Neck
		• **Tubercle** for transverse process of T1
		• Superior surface, medial to lateral:
		  ○ **Groove for subclavian artery**
		  ○ **Scalene tubercle and ridge**
		  ○ **Groove for subclavian vein**
		• Costal groove
			b. Need all bold to pass

	PROMPT: What vessels are related to this bone? c. What muscles attach to this bone?	c. Muscles • **Anterior scalene** (tubercle) • **Middle scalene** (medial to groove for artery) • Longissimus portion of erector spinae attaches between tubercle and angle • **Intercostals** • Subclavius (at costochondral jn)	c. Need all bold to pass

		• Serratus anterior (lateral)	
Question 3: Model: Elbow	a. Demonstrate the bony features of the elbow joint.	Humerus, Olecranon of ulna, and Radial head. Other features are coronoid of Ulna, Trochlea, Capitulum, lateral and medial epicondyles, olecranon fossa, coronoid fossa	7/10 to pass
	b. Demonstrate the capsular attachments of the elbow.	Fibrous layer: surrounds whole joint, proximally above the coronoid and olecranon fossae, distally across neck of radius and adjacent ulna. Synovial layer, lines the internal surface of fibrous layer and non articular parts of the humerus….is continuous distally with synovial membrane of prox radioulnar joint	Need either good description of upper or lower margin to pass
	c. Describe the collateral ligaments of the elbow.	**Radial-** lat epicondyle of humerus and blends distally with annular ligt of radius. Ulnar- medial epicondyle of humerus to 1) coronoid tubercle (**anterior band**)..strongest 2) **Posterior fan like band** weakest and 3) slender **oblique band.**	2/4 bold to pass
	d. Describe the movements of the elbow joint	Flexion Extension	Both to pass (Pronation/supination is critical error)
Question 4: Photo: Female Pelvis	a. This is a midline sagittal section of a pelvis. Name the major anatomical structures. PROMPT: this is a female pelvis	Major: **Pubic symphysis, Bladder, Vagina, Uterus, Rectum, Sacrum, Blue marker through cervix., External anal sphincter.** Minor: Ovary, Tube, suspensory ligament (difficult), L5/S1 disc, Sigmoid, Ureter (difficult)	5 of bold to pass
	b. Describe the boundaries and relations of the Pouch of Douglas	"Recto-uterine pouch". Inferior most extension of the peritoneal cavity, between anterior rectum and posterior uterus. Close to cervix and posterior fornix of vagina. Open above to peritoneum	Rectum, uterus, open above.
Question 5: Discussion: Common fibularis (common fibular n/common peroneal n)	a. Outline the course of the common fibular nerve and its main branches. b. What does it supply? (Motor and sensory)	Origin: from **sciatic n** as it bifurcates in **apex pop fossa** Passes over **post head of fib** and then winds around neck of fib Divides into **sup and deep fib n,** also br to knee jt. Common- supplies **skin posterolat leg** Superficial br –**motor supply to lateral compartment**, and sensory supply **distal 1/3 ant leg and foot** Deep branch motor to **ant mm of leg and dorsum of foot**, and Sensory to **1st web space foot.**	For a pass: Origin, Fib head, Main branches, Motor and sens supply

ACEM PRIMARY 2010/1 ANATOMY VIVA Day Friday Session: am *Candidate Number*..... AGREED MARK.....

TOPIC	QUESTION	ESSENTIAL KNOWLEDGE	NOTES
Question 1: Xray: CT abdomen	a. Identify the intra-abdominal structures visible on this CT scan	**Liver**/ porta hepatis /duodenum/IVC / **pancreas** /splenic vein/**kidneys/spleen/ aorta**/ coeliac trunk/ crus of diaphragm/ small bowel	Bold + 2 to pass
	b. Describe the relations of the right kidney (see diagrams Moore page 291-293,324)	Surrounded by peri-nephric fat Superiorly- R adrenal + liver+ portal vein Supero-laterally- Right lobe of liver Medially-Psoas + vertebrae Posteriorly- 12th Rib + abdo muscles(TA, IO, EO),deep back muscles (erector spinae/quadratus lumborum) Anteriorly- gall bladder + duodenum + ascending colon Antero-medially-R renal vein + IVC, pancreas more anteriorly	Correct structures related in 3 directions to pass

Question 2:
 	
Bone: Femur
	a. Identify this bone, and identify the significant bony landmarks of its proximal portion
	
	PROMPT: Ask for side if needed
		a. Femur, appropriate side (head superomedially, distal intercondylar fossa posterior)
		Landmarks:
		• **Head**
		  ○ fovea for ligament of the head
		• **Neck**
		• **Lesser Trochanter**
		• **Greater trochanter**
		• Intertrochanteric line (anteriorly)- continues as spiral line
		• **Intertrochanteric crest** (posteriorly)
		  ○ Quadrate tubercle
			a. Need all bold

	b. What is the blood supply of the neck and head of the femur?
	
	PROMPT: Which is the main supply?
		b. Blood supply to neck and head
		  ○ Medial and lateral circumflex femoral aa
		  ○ Usually branches of deep artery of thigh (profunda femoris)
		  ○ Branch to form retinacular aa (from medial>lateral), feed under the posterior unattached capsule (med) or through the iliofemoral ligament (lat)
		• Artery to the head of the femur (less)
		  ○ Branch of obturator a
		  ○ travels in the ligament of the head
			b. Need to demonstrate understanding of dual supply, and relative contributions (circumflex aa>a of head of femur)

	c. How does the capsule of the hip joint attach on this bone? (BONUS)	c. Capsule of hip joint on femur • Most fibres spiral around the joint to attach at the intertrochanteric line and root of greater trochanter • Posteriorly, fibrous layer crosses the neck proximal to the intertrochanteric crest, but is not attached • deep fibres pass circularly around the neck to form orbicular zone • The capsule thickens into three ligaments: o Iliofemoral- intertrochanteric line o Pubofemoral- merges with fibrous capsule o Ischiofemoral- into femoral neck, medial to the base of the greater trochanter	c. Be able to demonstrate understanding of capsular attachment
Question 3: Model: Larynx	a. Identify the structures that make up the larynx PROMPT: Identify the structures that make up the larynx b. Describe the nerve supply of the larynx	Single Cartilages: **thyroid, cricoid, epiglottis** Paired Cartilages: arytenoids, corniculates and cuneiforms Ligaments/Membranes: *thyrohyoid memb; cricotracheal, hyoepiglottic and thyroepiglottic ligaments* Intrinsic: quadrangular memb, **cricothyroid membrane,** includes cricothyroid ligs , vestibular fold/ligaments, **vocal cords** (are the upper part of the cricovocal memb), **ari-epiglottic fold/ligament** Muscles: Extrinsic and Intrinsic – eg cricothyroid and arytenoid muscles Recesses: vallecula, piriform fossa Nerve supply: Motor: (Cranial X- vagus N) **Infr laryngeal nerve** (continuation of Recurrent laryngeal nerve) supplies all muscles except cricothyroid, and sensory below the cords (**Ext laryngeal N** supplies Cricothyroid M – tenses the cords) Sensory: Internal Laryngeal N above the cords (sensory and autonomic) and NB Int and Ext Laryng N are terminal brs of Supr Laryng N	**Bold to pass**
Question 4: Photo: Upper Limb	Describe the superficial venous drainage of the upper limb. Use this photograph if you need to. PROMPT: identify the veins first. Once identified, track distally and describe proximal path	Hand: dorsal and palmar networks drain to **cephalic** (anterolateral) and **basilic** (posteromedial, around medial epicondyle). Connected in cubital fossa by **median cubital.** Basilic goes deep distal/middle 1/3s of arm with axillary artery to become axillary vein. Cephalic in deltopectoral groove, deep through DP fascia,	Bold to pass

		inferior to clavicle.	
Question 5: Discussion	a. Draw or describe the circle of Willis	**IC x 2 → MCAx2 and ACAx2** **VA x2 → Basilar x1→PCAx2** ACA linked by ant communicating artery PCA each join IC by post comm. Art	a. Identify 3 paired arteries and their origin
	b. Which part of the brain is supplied by each of the major arteries?	ACA – medial/sup surface of cerebrum except occ MCA – lateral surface and temporal lobes PCA – occipital lobe, inferior cerebrum	b. Name supplied area of at least one major artery