

VIVAs UPPER LIMB nerves/arteries/veins

Brachial plexus

Question 4: Photo: Brachial Plexus	<p>a) Identify the components of the brachial plexus as shown in this photo. The vessels have been removed.</p> <p>PROMPT: Direct candidates to start at superior aspect.</p> <p>b) Identify the muscles visible in this photo</p>	<p>Posterior Cord Radial Nerve (Terminal br) Axillary Nerve (Terminal br) Thoracodorsal n Upper and Lower Subscapular nn</p> <p>Lateral Cord Musculocutaneous n (terminal br) Lat root of median n (terminal br)</p> <p>Medial Cord Ulnar nerve (Terminal Br) Med root of median nerve (terminal br) Medial cut nn of arm and forearm</p> <p>Median nerve</p> <p>Surrounding muscles: Deltoid, biceps, coracobrachialis, pec minor, triceps, lat dorsi, subscapularis, teres major</p>	<p>Identify – 3 cords, 3 bolded branches and 2 others to pass</p> <p>Identify 3 muscles to pass</p>
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OPENING QUESTION	What is the brachial plexus and how is it formed?	COMMENTS
POINTS REQUIRED	1 Major nerve network supplying the upper limb, extends from neck to axilla.	Start proximally to distal
	2 Results in the formation of multisegmental peripheral nerves.	
	3 Initially formed by the union of the anterior rami (roots) lower cervical (C5-8) and first thoracic nerves.	
	4 These roots unite to form 3 trunks; superior, middle and inferior	
	5 Each trunk divides into anterior and posterior divisions	
	6 These division then form 3 cords: Anterior divisions of superior and middle trunks for the lateral cord, anterior division of inferior trunk forms medial cord, posterior divisions of all 3 trunks unite to form posterior cord	Need to know roots, trunks, divisions, cords to pass
Optional	7 Major peripheral nerves supplying upper limb form from these cords. Lateral cord gives rise to lateral pectoral n, musculocutaneous n and lateral root of median n. Medial cord gives rise to medial root median n, medial pectoral n, medial cutaneous n of arm, medial cutaneous n of forearm and ulnar n. Posterior cord gives rise to upper subscapular n, lower subscapular n, thoracodorsal n, axillary n, and radial n.	Name at least medial and lateral roots median n, axillary n, radial n and ulnar n.
PROMPTS	1. No need to describe supraclavicular branches of brachial plexus. 2. Would you prefer to describe the formation of the brachial	
SECOND		

TOPIC: Brachial Plexus _____ NUMBER: 1.5 _____

OPENING QUESTION	The anterior wall of the axilla has been removed. Show us the components of the p	COMMENTS
POINTS REQUIRED	1 Subscapularis (17)	2 of 3 to pass
	2 Teres Major (18)	
	3 Lattisimus Dorsi (19)	
	4	
	5	
	6	
	7	
PROMPTS	Brachial Plexus / Begin proximally and work distally	
SECOND QUESTION (if needed)	What are the branches of this structure? [identify medial cord - 3]	
POINTS REQUIRED	1 Medial pectoral nerve	4 of 5 to pass
	2 medial root median nerve (9)	
	3 medial cutaneous nerve of the arm (13)	
	4 medial cutaneous nerve of the forearm (15)	
	5 ulna nerve (14)	
	6	
PROMPTS	The Axillary Artery has been removed	
THIRD QUESTION (if needed)	What anatomical structures are associated with the various components of the brachial plexus	
POINTS REQUIRED	5 roots - behind scalenus anterior	
	3 trunks – lower part of posterior triangle	
	A/P divisions - behind clavicle	
	3 cords - outer border first rib (beginning of axilla)	
	cords enter above 1 st part of artery, approach and embrace its 2 nd part, give off branches around its 3 rd part	
PROMPTS		

Median Nerve

TOPIC: Median nerve: Course and distal supply

NUMBER: 11/4 - 3

OPENING QUESTION		COMMENTS
POINTS REQUIRED	1 Identification of median nerve (numbered 16)	Correct = pass
PROMPTS	Indicate features of a nerve versus tendon or vessel	Prompt = no pass
SECOND QUESTION	Describe on the course of the median nerve in the forearm, using the photograph where able?	At least all of 2, 4 and 5 to pass
POINTS REQUIRED	1 Emerges from cubital fossa	
	2 Passes between two heads of Pronator teres (PT)	
	3 Descends deep to Flexor digitorum superficialis (FDS) (numbered 12) closely attached to fascial sheath	
	4 Continues distally between FDS and Flexor digitorum profundus (FDP)	
	5 Becomes superficial at wrist, passing between tendons of FDS and Flexor carpi radialis (FCR) (numbered 8); deep to Palmaris longus (PL) if present	
	6 Passes deep to Flexor retinaculum	
PROMPTS	If state a structure, get candidate to identify it on the specimen.	Identify FDS and FCR
THIRD QUESTION (if needed)	What are the structures supplied by the median nerve?	8 structures to pass
POINTS REQUIRED	1 No branches in arm	
	2 Articular branches to elbow joint	
	3 Muscular branches to PT; FCR; PL; FDS	
	4 Anterior interosseous nerve to PQ; FPL; ½ FDP; articular branches to wrist joint	
	5 Palmar cutaneous branch to skin of lateral part of palm and adjacent thenar eminence	Numbered 18
	6 Recurrent branch to thumb muscles (APB; OP; FPB)	Numbered 19
	7 Palmar digital branches to lumbricals 1,2 and cutaneous supply	Numbered 17
PROMPTS	What muscles are supplied by the median nerve? Identify the numbered branches – what do they supply?	

ACEM 2007.1 PRIMARY VIVA EXAMINATION

SUBJECT: ANATOMY

TOPIC: Median Nerve in Forearm _____ **NUMBER: Thurs p.m. 3** _____

OPENING QUESTION	Demonstrate the course of the median nerve in the forearm and wrist	COMMENTS Must ID the median nerve + 3/4 muscles/tendons to pass
POINTS REQUIRED	1 Exits cubital fossa between 2 heads of pronator teres	
	2 Runs distally adherent to posterior aspect of FDS	
	3 At wrist emerges between FCR & FDS, just deep + lateral to palmaris longus	
	4 Deep to the flexor retinaculum	
PROMPTS	Show me the median nerve at the wrist. Name the tendons adjacent to it	
SECOND QUESTION (if needed)	What muscles does the median nerve supply in the forearm and hand?	Must address muscular and sensory components
POINTS REQUIRED 3 to pass	1 PT, FCR, PL, FDS + elbow + prox radio-ulnar joints	
3 to pass	2 Anterior interosseous branch: FDP (index+middle finger bellies), FPL, PQ, inf radio-ulnar, wrist + carpal joints	
	3 Palmar branch- supplies skin over thenar eminence	
	4 Radial 3 1/2 digits sensation	
	5 Radial 2 lumbricals	
	6	
PROMPTS		
THIRD QUESTION (if needed)		

ACEM 2005.2 PRIMARY VIVA EXAMINATION

SUBJECT: ANATOMY

TOPIC: Median Nerve: Position & distribution distal to elbow NUMBER: 2.5 _____

FIRST QUESTION	Describe the course of the median nerve distal to the elbow	COMMENTS
POINTS REQUIRED	1 Leaves cubital fossa between 2 heads of pronator teres	*
	2 Passes deep to fibrous arch of flex dig superficialis. It is adherent to the deep surface of this muscle as it runs distally.*	
	3 Above wrist it becomes more superficial between tendons of flex carpi radialis and flex dig superficialis *	
	4 Lies behind and slightly lat to tendon of palmaris longus *	
	5 Passes under flexor retinaculum between FDS tendon to middle finger and FCR tendon to enter hand *	
SECOND QUESTION	What are the branches of the median nerve distal to the flexor retinaculum and what do they supply?	
POINTS REQUIRED	Gives muscular branch (recurrent) which curls proximally around distal border of flexor ret. to supply thenar* mm.	*essential
	Medial branch Divides again into 2 and supplies the palm skin*, the cleft and adjacent sides of ring and middle fingers and the cleft and adjacent sides of middle and index fingers. This latter branch also supplies the second lumbrical Lateral branch Supplies palmar skin, radial side of index, the whole of the thumb and it's web on the palmar surface and the distal part of the dorsal surface. The branch to the index finger supplies the first lumbrical. These palmar digital branches also supply the nail beds and distal dorsal skin of the digits	*essential to demonstrate cutaneous distribution
PROMPT	Demonstrate the sensory distribution of the median nerve in the hand.	

COMMENTS

ACEM 2005.2 PRIMARY VIVA EXAMINATION

SUBJECT: ANATOMY

TOPIC: Median Nerve: Position & distribution distal to elbow NUMBER: 1.1 _____

OPENING QUESTION	Identify the muscles that make up the boundaries of the cubital fossa and its contents.	
	Pronator teres, medially; brachioradialis laterally, brachialis, base, medial to lateral Contents: median nerve, brachial artery, biceps tendon	2/3 muscles and 3 contents in correct relationship
SECOND QUESTION (if needed)	Describe the course of the median nerve between the elbow and the wrist	
POINTS REQUIRED	1 Leaves cubital fossa between 2 heads of pronator teres	*4/5 to pass
	2 Passes deep to fibrous arch of flex dig superficialis. It is adherent to the deep surface of this muscle as it runs distally.*	
	3 Above wrist it becomes more superficial between tendons of flex carpi radialis and flex dig superficialis *	
	4 Lies behind and slightly lat to tendon of palmaris longus *	
	5 Passes under flexor retinaculum*	
THIRD QUESTION	Describe the branches of the median nerve in the forearm and what they supply	
	1 Muscular branches near the elbow 1) Branch to pronator teres* 2) Branch to flexor carpi radialis* 3) Branch to palmaris longus* 4) Branch to flexor dig superficialis *(nb. Branch to index finger part of this mm arises in middle of forearm)	To Pass: Anterior interosseous + palmar cutaneous + 5 of 7 muscles supplied.
	2 Branches to elbow joint and proximal radio-ulnar jt*	
	3 Anterior interosseus branch Given off deep to FDS. Runs down with aa of same name Supplies Flex dig profundus (usually bellies for index and middle fingers) Flex poll longus Pronator quad Inferior radio-ulnar joint Wrist and carpal joints	
	4 Palmar branch*	

	Given off in distal forearm, runs above flex ret, supplies skin over thenar muscles	
PROMPTS		

COMMENTS

Radial Nerve

OPENING QUESTION	Describe the course of the radial nerve in the upper limb	COMMENTS
POINTS REQUIRED	1 C5-7 branch of posterior cord	
	2 Leaves axilla	
	3 Oblique across humerus	
	4 Heads triceps (bet long and med heads)	
	5 Spiral groove	
	6 Pierce intermuscular septum	
	7 Brachialis / brachioradialis – lies between	
	8. Ext carpi radialis longus	
PROMPTS		
SECOND QUESTION (if needed)	Name the major branches of this nerve in the arm	
POINTS REQUIRED	1 Triceps – long head, lat head, med head	
	2 Post cutaneous	
	3 Anconeus	
	4 lat Cut n of arm	
	5 Brachioradialis	
	6 Ext carpi radialis longus	
	7. Lat brachialis	
	8. Elbow joint	
	9. Post interosseous: ECRB and supinator in cubital fossa Ext compartment of forearm ED, EDM, ECU APL, EPL, EPB Ext indicis	

Dermatomes

SUBJECT: ANATOMY 6/9/07 morning

TOPIC: Discussion: upper limb sensation _____ **NUMBER: 4** _____

OPENING QUESTION		COMMENTS
POINTS REQUIRED	Please demonstrate on yourself the dermatomes of the UL	
	1 Indicate on self C4,C5, C6, C7, C8, T1,T2	Need to say right levels+areas
	2	
	3	
PROMPTS	Please be more accurate	
SECOND QUESTION (if needed)	Please describe the cutaneous innervation of the hand	Mention 3 nerves + reasonable distribution
POINTS REQUIRED	1 Median nerve – hand T/IF/MF/RF & thenar side	
	2 Ulnar nerve – hand LF/RF & hypothenar side & dorsal	
	3 Radial nerve – dorsal hand & thumb	
	5	
	6	
PROMPTS	Cutaneous innervation of rest of upper limb as supplementary	

Question 5 Discussion Dermatomes	<p>What are the dermatomes of the upper limb? Prompt to demonstrate on own arm</p> <p>What is the peripheral nerve supply to the skin of the hand? (Forearm as bonus)</p>	<p>C 3,4: base of neck, lateral over shoulder C5: lateral arm C6: lateral forearm and thumb C7 middle and ring(or mid 3) fingers and middle post surface of limb C8: Little finger, medial hand and forearm T1: mid forearm to axilla T2: small part of arm and axilla</p> <p>Forearm: Post cut n of forearm, from radial > post forearm. Med cut n of forearm from medial cord of B plexus > ant and medial forearm. Lat cut n of forearm, from musculocut > lat forearm</p> <p>Hand: Radial > base of thumb and lateral dorsum of hand Ulnar > ulnar 1 1/2 fingers and palm. Median > radial palm and 3 1/2 fingers inc post tips of these.</p>	<p>Need 5 correct to pass</p> <p>Need to name all 3 nerves to hand and reasonable distribution.</p>
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QUESTION	On your own arm, demonstrate the dermatomes of the upper limb	
POINTS REQUIRED	1. require C4 at shoulder to T2	
	3	
	4	
	5	
	6	
	7	
PROMPTS	What cervical and thoracic levels supply skin of the upper limb?	
SECOND QUESTION (if needed)	What functional deficit results from a radial nerve injury in the mid arm and explain why?	
POINTS REQUIRED	1 Elbow extension preserved – medial and long head triceps	
	2. wrist drop – inability to extend wrist and MCP jnts of fingers and thumb of muscles of common extensor origin: - extension BR, ECRL, ECRB, ED, EDM, ECU. + deep extensors Aconeus, supinator, ABPL, EPB, EPL, EI	
	3. Inter phalangeal jnts maintained due to humbricals and interossei	
	4. sensory loss usually small over 1 st interosseous space (radial 2/3 dorsum of hand)	
	5	
	6	
PROMPTS	What would you expect at the elbow? What muscles are supplied by radial nerve? What is its sensory distribution?	

Question 3: (Not related to photo)	Describe the sensory supply of the dorsum of the hand.	<ul style="list-style-type: none"> • Ulnar...medial 1 ½ digits via palmar cut branch • Radial....sup branch..lat half of dorsum of hand excluding distal digits. • Median...dorsum of radial 3 ½ digits, via dorsal branches of palmar dig nerves 	
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Vessels

Contents:	radial n deep to brachioradialis	artery and triceps tendon
Describe the course of the brachial artery as it passes through the arm (pull off both upper forearm muscles from model)	From lower border of teres major(cont. of axillary art) to neck of radius. Medial to humerus > bicipital groove, post to biceps, anterior to triceps medial head. Comes to lie on brachialis as descends to cubital fossa. Median nerve crosses anteriorly. Ulnar nerve a post	To pass – continuation of axillary artery, Division over proximal radius into ulna and radial artery, median nerve crosses.

TOPIC 5	Hand Vascular	
QUESTIONS AND POINTS REQUIRED	<p>On your hand, demonstrate the vascular supply to the hand:</p> <p>Ulna: superficial palmar arch with common digital to digital arteries to ulnar part of hand</p> <p>Radial: through snuffbox and between heads of 1st interosseous to form deep palmar arch: princeps pollicis, radialis indicis, metacarpal, common digital and digital</p> <p>Dorsal carpal arch and dorsal metacarpal and digital arteries (bonus)</p>	Ulna and superficial palmar arch, radial and deep palmar arch to pass

Question 3:	Describe the course of the subclavian vein	skin Becomes subclavian vein from axillary vein medial to the outer border of the first rib. Courses medially posterior to clavicle, superior to flat section of first rib (groove). Lies immediately anterior to Scalenus anterior which separates it from the Subclavian artery. Becomes brachiocephalic vein at medial border of Scalenus Anterior when it joins the IJV.	Originates from Axillary vein and becomes Brachiocephalic vein and demonstrates course posterior to clavicle to pass.
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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	<p>Hand: dorsal and palmar networks drain to cephalic (anterolateral) and basilic (posteromedial, around medial epicondyle).</p> <p>Connected in cubital fossa by median cubital.</p> <p>Basilic goes deep distal/middle 1/3s of arm with axillary artery to become axillary vein.</p> <p>Cephalic in deltopectoral groove, deep through DP fascia,</p>	Bold to pass
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ACEM 2003.1 PRIMARY VIVA EXAMINATION

SUBJECT: ANATOMY

TOPIC: VENOUS DRAINAGE UPPER LIMB _____ NUMBER: 2 _____

OPENING QUESTION	CAN YOU DESCRIBE THE VENOUS DRAINAGE OF THE UPPER LIMB	COMMENTS
POINTS REQUIRED	1. SUPERFICIAL & DEEP	4/5 TO PASS
	2 SUPERFICIAL: DORSAL VENOUS ARCH TO CEPHALIC & BASILIC VV	
	3 PALM DRAINS DORSALLY	EXTRA
	4 DEEP: CORRESPONDS TO ARTERIES	
	5 STARTS AS VENAE COMITANTES	
PROMPTS	FOR DETAILS OF COURSE OF CEPHALIC VEIN	

TOPIC	QUESTION	ESSENTIAL KNOWLEDGE	NOTES
Question 1:	Describe the drainage of the superficial lymphatics of the upper limb?	Superficial lymphatics originate from lymphatic plexuses in the hand & ascend mostly with the superficial cephalic & basilic Vs. Some accompanying the basilic v enter the cubital LNs. Efferent vessels from here drain -> humeral (lat) axillary LNs (-> central axillary LNs -> apical axillary LNs). Most travel with cephalic v and enter the apical axillary LNs, but some enter the deltpectoral LNs earlier.	Travel with superficial veins and drain into axillary LNs to pass.
Question 2:	Describe the drainage of the deep lymphatics of the upper limb.	Deep lymphatics accompany the major deep vs in the UL & terminate in the humeral (lat) axillary LNs. These drain -> central axillary LNs -> apical axillary LNs -> supraclavicular LNs -> R & L subclavian lymphatic trunks.	Travel with deep veins and drain into axillary LNs to pass.
Question 3:	How do the right & left subclavian lymphatic trunks drain?	The R subclavian lymphatic trunk may be joined by R jugular & bronchomediastinal trunks to form the R lymphatic duct or it may enter the right venous angle (junction of int jug & subclavian vs) independently. The L subclavian lymphatic trunk joins the thoracic duct.	R subclavian LT -> right venous angle and the L subclavian LT -> thoracic duct.