

Section 1

Upper Limb Anatomy

- 1) With regard to the pectoral girdle:
 - a) contains three joints, the sternoclavicular, the acromioclavicular and the glenohumeral
 - b) serratus anterior, the rhomboids and subclavius attach the scapula to the axial skeleton
 - c) pectoralis major and deltoid are the only muscular attachments between the clavicle and the upper limb
 - d) teres major provides attachment between the axial skeleton and the girdle

- 2) Choose the odd muscle out as regards insertion/origin:
 - a) supraspinatus
 - b) subscapularis
 - c) biceps
 - d) teres minor
 - e) deltoid

- 3) Which muscle does not insert in or next to the intertubercular groove of the upper humerus?
 - a) pectoralis major
 - b) pectoralis minor
 - c) latissimus dorsi
 - d) teres major

- 4) Identify the incorrect pairing for testing muscles:
 - a) latissimus dorsi – abduct to 60° and adduct against resistance
 - b) trapezius – shrug shoulders against resistance
 - c) rhomboids – place hands on hips and draw elbows back and scapulae together
 - d) serratus anterior – push with arms outstretched against a wall

- 5) Identify the incorrect innervation:
 - a) subclavius – own nerve from the brachial plexus
 - b) serratus anterior – long thoracic nerve
 - c) clavicular head of pectoralis major – medial pectoral nerve
 - d) latissimus dorsi – dorsal scapular nerve
 - e) trapezius – accessory nerve

- 6) Which muscle does not extend from the posterior surface of the scapula to the greater tubercle of the humerus?
 - a) teres major
 - b) infraspinatus
 - c) supraspinatus
 - d) teres minor

- 7) With regard to action, which muscle is the odd one out?
 - a) teres minor
 - b) deltoid
 - c) teres major
 - d) subscapularis

- 8) Which statement is INCORRECT?
- a) the muscles of the rotator cuff are deemed to be such because all their tendons fuse with the lateral part of the shoulder capsule and are attached to the humerus near the joint
 - b) the capsule of the shoulder joint is attached at the line of the anatomical head except inferiorly where it extends to the level of the surgical neck
 - c) the subacromial bursa lies between the tendon of supraspinatus and the coraco-acromial ligament and communicates with the shoulder joint
 - d) the long tendon of biceps lies intracapsular and is sheathed by synovial membrane that allows it to slide with movement
- 9) Stabilising factors of the shoulder joint include all but:
- a) a tight capsule
 - b) tendons that fuse with the capsule
 - c) glenohumeral and coracohumeral ligaments
 - d) labrum
 - e) splinting of the humeral head between the tendons of biceps and triceps
- 10) Regarding the brachial plexus, which is INCORRECT?
- a) it is derived from the anterior rami of C5-T1 after they have given off segmental supply to the prevertebral and scalene muscles
 - b) the roots give off three branches including the long thoracic nerve to latissimus dorsi
 - c) the trunks give off one branch
 - d) the cords are divided into anterior and posterior divisions that supply the flexor and extensor compartments respectively and give off 13 branches
 - e) the lateral cord supplies part of the median nerve
- 11) Regarding lymph nodes, the lateral side of the arm and forearm is drained initially to the:
- a) supratrochlear nodes
 - b) posterior axillary nodes
 - c) infraclavicular nodes
 - d) central axillary nodes
- 12) Which of the following has some nerve supply from the radial nerve?
- a) long head of biceps
 - b) coracobrachialis
 - c) short head of biceps
 - d) brachialis
- 13) As it emerges from the axilla, the median nerve lies where with regards to the brachial artery?
- a) lateral
 - b) anterior
 - c) medial
 - d) posterior

- 14) With regards to the posterior compartment of the arm, which is FALSE?
- the medial head of triceps lies deep to the long and lateral heads
 - triceps inserts onto the upper surface of the olecranon
 - midshaft fracture of the humerus can damage the radial nerve resulting in paralysis of triceps
 - the medial intermuscular septum divides it from the anterior compartment and runs from the axilla to the elbow
- 15) Blood supply to the upper limb, which is FALSE?
- the subclavian artery is divided schematically by scalenus anterior
 - usually all branches of the subclavian come from the first segment
 - the dorsal scapular branch may arise from the third segment
 - pectoralis major schematically divides the axillary artery into three parts
 - the acromial branch of the thoracoacromial trunk accompanies the cephalic vein in the deltopectoral triangle
- 16) Regarding the brachial plexus, which is FALSE?
- the nerve to serratus anterior comes from the anterior rami of C5-C7
 - the suprascapular nerve arises from C5 anterior ramus
 - the divisions are at the level of the clavicle
 - the thoracodorsal nerve arises from the posterior cord
 - the radial nerve is the largest branch of the brachial plexus
- 17) Regarding the brachial plexus:
- the lateral cord contains fibres from C5, 6, 7 & 8
 - the posterior cord has fibres from C5, 6, 7, 8 & T1
 - the medial cord has fibres from C8 and T1
 - the suprascapular nerve arises from C5
 - the ulnar nerve is a continuation of the medial cord
- 18) Which is CORRECT?
- medial pectoral nerve C7 C8
 - ulnar nerve C7 C8 T1
 - dorsal scapular nerve C5 C6
 - long thoracic nerve C6 C7 C8
 - musculocutaneous C5 C6
- 19) Regarding the brachial plexus:
- the roots lie behind scalenus medius muscle
 - the trunks are formed behind the clavicle
 - at the first rib, the cords are formed
 - the cords give branches around second part of artery
- 20) In the cubital fossa:
- median nerve lies lateral to the biceps tendon
 - radial nerve and interosseous branch lies beneath the brachialis
 - radial artery passes between heads of pronator teres
 - brachial artery lies beneath biceps aponeurosis
 - radial nerve leaves fossa between heads of supinator

- 21) The clavicle:
- ossifies at eight weeks
 - has atypical synovial joints at both ends
 - articulates with the first rib
 - is more curved in females
 - usually fractures between deltoid tubercle and coranoid tubercle
- 22) Regarding innervation of hand muscles:
- opponens pollicis may be supplied by ulnar nerve
 - opponens digiti minimi may be supplied by median nerve
 - two radial interossei are usually supplied by median nerve
 - nail beds are supplied $3\frac{1}{2}$ to $1\frac{1}{2}$ by branches of radial and ulnar nerves
 - adductor pollicis is supplied by muscular (recurrent) branch of median nerve
- 23) At the wrist / carpal tunnel:
- flexor retinaculum attaches to scaphoid and trapezoid laterally
 - all superficial and deep flexors, except flexor pollicis longus, share a common flexor sheath
 - the ulnar nerve lies medial to pisiform
 - tendons of flexor digitorum remain attached until they reach the palm
 - median nerve lies beneath flexor retinaculum between flexor digitorum superficialis and flexor pollicis longus
- 24) Axillary artery:
- first part is separated from the cords by axillary sheath
 - lies posterior lateral to vein – all three parts
 - medial root of median nerve crosses behind ????? to join lateral root.
 - leaves axillar through quadrangular space
 - supplies the breast via thoracoacromial branch
- 25) All the following arise from the common extensor origin EXCEPT:
- extensor carpi radialis brevis
 - extensor carpi radialis longus
 - extensor digitorum
 - extensor digitorum minimi
 - extensor carpi ulnaris
- 26) Regarding triceps:
- lateral head arises from humerus below radial groove
 - midshaft humerus fractures may paralyse triceps
 - has an insertion into the elbow joint capsule
 - aids in adduction of shoulder
 - is pierced by ulnar nerve
- 27) Which of the following pairs do not match with regard to mode of ossification?
- ribs and cranium
 - clavicle and humerus
 - femur and 1st metatarsal
 - patella and pisiform
 - mandible and clavicle

- 28) Which joint is the odd one out with regard to degrees of freedom?
- 1st carpometacarpal joint
 - radiohumeral joint
 - sternoclavicular joint
 - acromioclavicular joint
 - radiocarpal joint
- 29) Which of the statements regarding ligaments is FALSE?
- ligaments are relatively avascular
 - final healing following sprains usually restores full strength
 - torn ligaments may predispose to dislocation
 - Sharpey's fibres penetrate the bone
 - a healed sprain may be predisposed to reinjury
- 30) Regarding cartilage, which is FALSE?
- it is essentially avascular
 - hyaline cartilage contains hyaluronic acid
 - rib cartilage is elastic type
 - TMJ is fibrous
 - all contain mucopolysaccharides
- 31) Regarding types of joints, which pairing is CORRECT?
- diarthrosis – cranial suture
 - synarthrosis – symphysis pubis
 - amphiarthrosis – sternoclavicular joint
 - gomphosis – intervertebral joints
 - syndesmoses – tibiofibular joint
- 32) Types of muscles, which pairing is INCORRECT?
- unipennate – flexor pollicis longus
 - bipennate – 4th lumbrical
 - fusiform – supraspinatus
 - bipennate – soleus
 - multi-pennate – anterior deltoid
- 33) Regarding muscle strength, which is NOT a factor?
- resting length of muscle
 - cross sectional area
 - lever arm length
 - the extent to which the muscle is contracted
 - configuration of fibres, eg fusiform, c.f. bipennate
- 34) Regarding the autonomic nervous system, visceral pain is not referred to L3-5 and S1 because:
- there are no visceral afferents related to these lumbar splanchnic nerves
 - there are no white rami communicans to these spinal nerves
 - there are no sympathetic ganglia associated with these spinal segments
 - there is no sympathetic efferent supply to these spinal nerves
 - there are no grey rami communicans associated with the autonomic ganglia of L3-S1 spinal nerves

Section 1

Upper Limb Anatomy – Answers

- | | |
|----|-----------------|
| 1 | C |
| 2 | E |
| 3 | B |
| 4 | A |
| 5 | D |
| 6 | A |
| 7 | A |
| 8 | C |
| 9 | A |
| 10 | B |
| 11 | C |
| 12 | D |
| 13 | A |
| 14 | C |
| 15 | D & B |
| 16 | All are correct |
| 17 | A |
| 18 | No answer |
| 19 | No answer |
| 20 | No answer |
| 21 | No answer |
| 22 | No answer |
| 23 | No answer |
| 24 | No answer |
| 25 | No answer |
| 26 | No answer |
| 27 | B |
| 28 | A |
| 29 | B |
| 30 | C |
| 31 | E |
| 32 | E |
| 33 | A |
| 34 | B |

Section 2

- 1) At the elbow joint:
 - a) the tilt of the trochlear of the humerus is the **main** cause for the carrying angle of the elbow
 - b) the capsule is not attached to the radius
 - c) the annular ligament is attached to the head and neck of the radius
 - d) the middle band is the strongest of the three bands that make up the ulnar collateral ligament
 - e) the carrying angle is the angle between the extended ulna and the vertical

- 2) Regarding palmar spaces:
 - a) the hypothenar space contains the long tendon of abductor digiti minimi
 - b) the midpalmar space is deep to the common synovial sheath and flexor tendons
 - c) the midpalmar space is not continuous with the three ulnar lumbrical canals
 - d) the thenar space is open at the wrist
 - e) prevent spread of infection

- 3) Which is NOT an origin of supinator
 - a) radial tuberosity
 - b) radial collateral ligament
 - c) lateral epicondyle of humerus
 - d) supinator crest of ulnar
 - e) aponeurosis overlying supinator muscle

- 4) Regarding the nerves and vessels of the arm:
 - a) the circumflex vessels and the axillary nerve enter the extensor compartment in the axilla through the triangular space
 - b) the ulnar nerve pierces the lateral intermuscular septum in the lower third of the arm
 - c) the median nerve crosses obliquely in front of the radial artery in the arm
 - d) supratrochlear lymph nodes lie in the subcutaneous ????? just above the medial epicondyle
 - e) the basilic vein is lateral to the cephalic vein

- 5) Brachial plexus:
 - a) the five roots lie in front of scalenus anterior muscle
 - b) the anterior division of the central trunk runs on as the medial cord
 - c) the suprascapular nerve is the only branch from the trunks
 - d) the radial nerve is a branch of the lateral cord
 - e) the ulna nerve is a branch of the posterior cord

- 6) The musculocutaneous nerve passes through which muscle?
 - a) coracobrachialis
 - b) short head of biceps
 - c) brachialis
 - d) medial head of triceps
 - e) long head of biceps

- 7) What structure does NOT lie in the anatomical snuff box?
- cephalic vein
 - radial artery
 - radial styloid
 - first metacarpal bone
 - extensor pollicis longus
- 8) Latissimus dorsi:
- is an accessory muscle of inspiration and expiration
 - is supplied by the dorsal scapular nerve
 - forms the lower border of the medially axillary fold
 - laterally rotates the humerus
 - lies superficial to trapezius at its upper border
- 9) Regarding the shoulder joint, which is INCORRECT?
- full abduction requires medial rotation
 - the long head of biceps is intracapsular
 - the subacromial bursa is attached to the coracoacromial ligaments
 - flexion involves pec major, deltoid, coracobrachialis and biceps
 - supraspinatus initiates abduction
- 10) In the forearm:
- the median nerve passes between the two heads of pronator teres
 - the ulnar nerve lies deep to flexor digitorum profundus
 - superficial fibres of flexor digitorum superficialis gives rise to the tendons for index and middle fingers
 - the radial artery is on the lateral side of the radial nerve
 - the fibres of the interosseous membrane run obliquely down from ulna to radius
- 11) What structure does NOT pierce the clavipectoral fascia?
- cephalic vein
 - lymphatics
 - lateral thoracic artery
 - lateral pectoral nerve
 - thoracoacromial artery
- 12) Regarding the thumb:
- abductor pollicis longus originates from both radius and ulna
 - opponens pollicis rotates the first metacarpal on the triquetral
 - adductor pollicis inserts on to the radial sesamoid of the thumb, then the base of the proximal phalanx
 - nerve supply is by the median nerve (C7, C8)
 - adductor pollicis lies superficial to the thenar space
- 13) Which artery is the main supply of triceps?
- dorsal scapular artery
 - brachial artery
 - profunda brachii artery
 - radial artery
 - posterior circumflex humeral artery

- 14) Teres major:
- a) receives its nerve supply from the lateral cord of the brachial plexus
 - b) is part of the medial wall of the axilla
 - c) forms the medial border of the triangular space
 - d) is separated from teres minor by the long head of triceps
 - e) has the same nerve supply as teres minor
- 15) Regarding the brachial plexus:
- a) the dorsal scapular nerve is the only branch from the trunks
 - b) the axillary nerve is derived from C5, 6, 7, 8, T1
 - c) the ulnar nerve is the largest branch of the whole plexus
 - d) the axillary nerve passes below teres major
 - e) the thoracodorsal nerve supplies lateral dorsi
- 16) Flexor pollicis longus:
- a) is a bipennate muscle
 - b) arises from the common flexor origin
 - c) pierces the flexor retinaculum at the wrist
 - d) inserts into the radial border of the proximal phalanx
 - e) has fleshy fibres to a point, just above the wrist
- 17) Which nerve supplies serratus anterior?
- a) axillary nerve (C5, C6)
 - b) long thoracic nerve (C5, C6, C7)
 - c) musculocutaneous nerve (C5, C6)
 - d) thoracodorsal nerve (C6, C7, C8)
 - e) suprascapular nerve (C5, C6)
- 18) At the elbow joint:
- a) there is no communication with the proximal radioulnar joint
 - b) the capsule is attached to the neck of the radius
 - c) the radial collateral ligament is made up of three bands
 - d) the ulnar nerve passes between the anterior and posterior bands of the ulnar collateral ligament
 - e) the carrying angle is greater in men
- 19) Which structure does NOT insert into the flexor retinaculum?
- a) abductor pollicis brevis
 - b) flexor digiti minimi brevis
 - c) palmaris longus
 - d) opponens pollicis
 - e) flexor pollicis brevis
- 20) Which nerve does NOT make contact with periosteum?
- a) radial nerve
 - b) axillary nerve
 - c) median nerve
 - d) ulnar nerve
 - e) anterior interosseous nerve

- 21) Regarding the clavicle, which is false?
- the clavicle is longer and its curvatures more pronounced in the male
 - the articulating sternal end is covered by fibrocartilage
 - it is the first bone to ossify in the foetus
 - it has four named ligaments attached to it
 - fractures of the clavicle tend to occur between the costoclavicular and the coracoclavicular ligaments
- 22) Which is true of muscles of the pectoral girdle?
- "direct" muscles are inserted into the clavicle or scapula from the axial skeleton, eg pectoralis major
 - "indirect" attachment to the axial skeleton is represented by serratus anterior
 - the sternocostal fibres of pectoralis major from the 6th costal cartilage are inserted higher on the lateral lip of the intertubercular soleus than the fibres from the first cartilage
 - biceps muscle gives no stability to the shoulder joint
 - trapezius is the only muscle to be supplied by all five segments of the brachial plexus
- 23) The clavipectoral fascia is pierced by all but one of the following structures:
- lymphatic drainage from the infraclavicular nodes to apical axillary nodes
 - cephalic vein
 - lateral pectoral nerve
 - thoracoacromial artery
 - pectoralis minor
- 24) With respect to the axilla:
- the thoracodorsal nerve runs posterior to the mid axillary line on serratus anterior, which it supplies
 - the axillary artery is divided into three parts by scalenus anterior
 - the lateral wall is made up of latissimus dorsi tendon, subscapularis, teres major
 - the lateral thoracic vein is connected by the thoracoepigastric vein to the superficial epigastric vein, therefore bypassing the IVC in its obstruction
 - the axillary vein commences at the upper border of teres major as a continuation of the basilic vein
- 25) With respect to the brachial plexus:
- it consists of the entire anterior rami of C5 → T1
 - there are five roots, three trunks, five divisions and three cords
 - there are two branches from the divisions
 - there are a total of 13 branches from the cords
 - there are two branches from the roots
- 26) With respect to the brachial plexus:
- the lateral cord lies in the axilla
 - the median nerve is the largest branch of the whole plexus
 - the roots lie within the posterior triangle of the neck
 - the ulnar nerve is a branch of the lateral cord
 - the musculocutaneous nerve is a branch of the medial cord

- 27) The blood supply to the breast involves all but one of the following:
- lateral thoracic artery
 - long thoracic artery
 - internal thoracic artery
 - posterior intercostal artery
 - thoracoacromial artery
- 28) Which muscle takes origin (in part) from both the medial and lateral intermuscular septa?
- biceps
 - brachioradialis
 - extensor carpi radialis longus
 - supinator
 - triceps
- 29) The carpus:
- there are five extensor tunnel compartments
 - the extensor expansion attaches to the anterolateral border of the radius above the styloid process, and distally to the pisiform and trapezoid bones
 - the radiocarpal joint is an uniaxial synovial joint
 - there are no muscular attachments to the extensor surface of the carpus
 - the bones palpable in the anatomical snuff box are the radial styloid, triquetral, scaphoid and base of first metacarpal
- 30) Which is true?
- the flexor synovial sheath is only continuous from wrist to distal phalanx in the thumb
 - the medial cutaneous nerve is the smallest nerve branch of the brachial plexus
 - the capitate bone within the carpus is the last of these to ossify
 - the pisiform bone is the first bone of the carpus to ossify
 - superficial lymphatics lie with arteries, deep lymphatics with veins

Section 2

Answers

- | | |
|----|---|
| 1 | B |
| 2 | B |
| 3 | A |
| 4 | D |
| 5 | C |
| 6 | A |
| 7 | E |
| 8 | A |
| 9 | A |
| 10 | A |
| 11 | C |
| 12 | A |
| 13 | C |
| 14 | D |
| 15 | E |
| 16 | E |
| 17 | B |
| 18 | D |
| 19 | C |
| 20 | C |
| 21 | D |
| 22 | C |
| 23 | E |
| 24 | D |
| 25 | D |
| 26 | A |
| 27 | B |
| 28 | E |
| 29 | D |
| 30 | B |

Section 4

Upper Limb

- 1) Which is true?
 - a) epidermis derives from mesoderma
 - b) the sweat glands, sebaceous glands are mesodermal in origin
 - c) the colour of the skin is determined by the number of melanocytes in the skin
 - d) the dermis has a mesodermal origin

- 2) Regarding sweat glands, which is true?
 - a) the main nerve supply is via cholinergic sympathetic fibres
 - b) the main nerve supply is via adrenergic sympathetic nerves
 - c) the sweat glands derive from the mesoderm
 - d) the normal tubular sweat glands undergo cyclical changes with the menstrual cycle
 - e) the highest number of sweat glands are found on the soles and palms

- 3) Regarding cartilage, which is true?
 - a) they have a rich blood supply
 - b) the intervertebral discs are hyaline cartilages
 - c) the hyaline and fibrocartilages never calcify
 - d) the elastic cartilage never calcifies
 - e) the commonest cartilage type is elastic cartilage

- 4) Regarding muscles, which is true?
 - a) the cardiac muscle is more powerful than the other two muscle types
 - b) the skeletal muscle fibre is spindle shaped
 - c) the smooth muscles do not have actin and myosin
 - d) the skeletal muscle contraction causes peristalsis in the GI tract and ureter
 - e) the cardiac muscle is short, branched, mononuclear and a striated muscle

- 5) Regarding periosteum, which is TRUE?
 - a) it is an avascular fibrous tissue
 - b) it is osteogenic
 - c) it covers the articular surfaces of long bones
 - d) it covers the inner surface of the medullary cavity
 - e) it receives its blood supply from overlying muscle

- 6) An example of secondary cartilaginous joint include:
 - a) hip joint
 - b) manubrio-sternal joint
 - c) costochondral joint
 - d) epiphysis joint
 - e) wrist joint

- 7) An example of a fibrous joint include:
- structures of the vault of the skull
 - the vertebral columns
 - pubic symphysis
 - hip joint
 - manubrio-sternal joint
- 8) Which of the following peripheral fibres have pain and temperature fibres?
- α neurone
 - β neurone
 - γ neurone
 - δ neurone
 - group B fibres
- 9) Pectoralis major:
- is innervated laterally by the lateral pectoral nerve
 - inserts into the medial lip of the intertubercular sulcus
 - receives its arterial supply via the thoracoacromial artery
 - can act as an accessory muscle of inspiration
 - acts with latissimus dorsi and teres minor to adduct the arm
- 10) Regarding the brachial plexus:
- the suprascapular nerve arises from the anterior C5, 6 division
 - ulnar nerve often carries fibres from C7
 - the radial nerve leaves the axilla via the quadrangular space
 - the radial artery lies anterior to the medial and lateral roots of the median nerve
 - the long thoracic nerve arises from the C5 nerve root only
- 11) The subacromial bursa:
- communicates with the shoulder joint
 - does not extend beyond the lateral aspect of the acromion
 - innervated in part by the dorsal scapular nerve
 - attached superiorly to the conoid trapezoid and conoid ligaments
 - attached inferiorly to the tendon of supraspinatus
- 12) The subclavius muscle:
- arises from the costochondral junction of the second rib
 - passes in the subclavian groove on the inferior aspect of the clavicle to attach to the acromion
 - is enclosed by the upper attachment of the clavipectoral fascia
 - is supplied by C7 and C8
 - assists shoulder adduction
- 13) Pectoralis minor:
- inserts into the lateral tip of the intertubercular groove of the humerus
 - is a rectangular muscle
 - is a guide for the underlying subclavian artery
 - is superior to the suspensory ligament of the axilla
 - is supplied by the subclavian nerve

- 14) Teres major:
- is separated from subscapularis by the quadrangular space in the posterior wall of the axilla
 - is supplied by the lateral subscapular nerve
 - inserts into the lateral lip of the intertubercular groove of the humerus
 - acting alone, it abducts and medially rotates the humerus at the shoulder joint
 - arises from the lateral side of the inferior angle of the ventral aspect of the scapula
- 15) The shoulder joint:
- subscapularis, supraspinatus, infraspinatus and teres minor all have rotatory action on the humerus and their tendons form the rotator cuff with the lateral part of the shoulder capsule
 - the subacromial bursa rolls inwards under the acromion when the arm is adducted
 - the joint capsule is attached to the surgical neck of the humerus inferiorly
 - the articular surface of the head of the humerus is five times the area of the glenoid cavity
 - upward thrust on the humerus will preferentially fracture the coracoacromial arch
- 16) Regarding the nerves and vessels of the arm:
- the circumflex vessels and the axillary nerve enter the extensor compartment in the axilla through the triangular space
 - the ulnar nerve pierces the lateral intermuscular septum in the lower third of the arm
 - the median nerve crosses obliquely in front of the radial artery in the arm
 - supratrochlear lymph nodes lie in the subcutaneous fat just above the medial epicondyle
 - the basilic vein is lateral to the cephalic vein
- 17) Regarding triceps:
- the long head is lateral to the medial head
 - it inserts into the posterior aspect of the radial tuberosity
 - attachment to the olecranon is by a tendon only
 - the long head receives two branches of the radial nerve
 - the medial head has origins in both lateral and medial intermuscular septums
- 18) Regarding the brachial plexus:
- the medial cord has three branches
 - the lateral cord has fibres from C7, C8 and T1
 - the musculocutaneous nerve is a branch of the medial cord
 - the five roots are found from the posterior rami and C5 – T1 nerves
 - none of the above
- 19) At the carpal tunnel:
- the flexor tendon synovial sheath is incomplete on the ulnar side
 - the superficial tendons lie in the same plane
 - the four profundus tendons have not yet separated
 - the median nerve lies lateral to flexor digitorum superficialis
 - median nerve compression causes anaesthesia over the thenar eminence

- 20) What structure pierces the flexor retinaculum?
- ulnar nerve
 - flexor carpi radialis tendon
 - palmar branch of median nerve
 - flexor pollicis longus tendon
 - ulnar artery
- 21) The lumbrical muscles:
- arise from the four superficial tendons
 - are all bicipital muscles
 - pass along the ulnar side of the metacarpophalangeal joint
 - flex the metacarpophalangeal joint
 - attach directly to the first phalanx
- 22) The following are true about flexor carpi radialis EXCEPT:
- it arises from the common flexor origin at the humerus
 - it has its own compartment in the flexor retinaculum
 - the radial artery lies laterally to it at the wrist
 - flexor pollicis longus lies medially
 - it is supplied by the median nerve
 - it inserts into the base of the 2nd and 3rd metacarpals
- 23) Which is the smallest branch of the medial cord of the brachial plexus?
- medial pectoral nerve
 - medial root of the median nerve
 - medial cutaneous nerve of the arm
 - medial cutaneous nerve of the forearm
 - ulnar nerve
- 24) The nerve supply of serratus anterior is:
- axillary nerve
 - C4
 - dorsal scapular nerve
 - thoracodorsal nerve
 - long thoracic nerve
- 25) Which muscle arises from both the radius and ulna:
- extensor pollicis longus
 - extensor pollicis brevis
 - abductor pollicis longus
 - extensor indicis
 - extensor digitorum
- 26) Which lymphatics do not drain the breast?
- subscapular nodes
 - infraclavicular nodes
 - lateral axillary nodes
 - parasternal nodes
 - pectoral nodes

27) At the cubital fossa:

- a) the median nerve is medial to the brachial artery
- b) the biceps tendon separates the brachial artery from the median nerve
- c) the radial artery leaves the brachial artery at right angles
- d) the medial cutaneous nerve of the forearm runs deep to the bicipital aponeurosis
- e) pronator teres forms the floor of the fossa

Section 4

Upper Limb – Answers

1	E
2	A
3	D
4	E
5	B
6	B
7	A
8	D
9	D
10	B
11	E
12	?
13	?
14	?
15	??
16	??
17	?
18	E
19	D
20	B
21	D
22	D
23	C
24	E
25	C
26	C
27	A

Section 5

General Principles

- 1) Regarding tissues:
 - a) cartilage is very vascular
 - b) ligaments do not stretch
 - c) deep fascia is not sensitive
 - d) cardiac muscle is nonstriated
 - e) periosteum is not sensitive

- 2) An example of a unipennate muscle is:
 - a) sartorius
 - b) flexor pollicis longus
 - c) rectus femoris
 - d) deltoid
 - e) tibialis anterior

- 3) An example of a secondary cartilaginous joint is:
 - a) distal tibiofibular joint
 - b) costochondral joint
 - c) sagittal suture
 - d) sternal angle joint
 - e) knee joint

- 4) Which vessel is not an end-artery?
 - a) renal artery
 - b) retinal artery
 - c) pulmonary artery
 - d) intercostal artery
 - e) splenic artery

- 5) A group C nerve fibre:
 - a) is up to 20 nm in diameter
 - b) is myelinated
 - c) has motor function
 - d) is fusimotor to muscle spindles
 - e) is post-ganglionic autonomic

- 6) Regarding cartilage, which is INCORRECT?
 - a) it is essentially avascular
 - b) hyaline cartilage contains hyaluronic acid
 - c) rib cartilage is elastic type
 - d) TMJ is fibrous
 - e) all contain mucopolysaccharides

- 7) At birth:
- a) the transverse diameter of the thorax is thrice the AP diameter
 - b) the liver is relatively twice as big as that of the adult
 - c) the suprarenal gland is twice as big as the kidney
 - d) the spinal cord extends to L5
 - e) the rib cage is more vertically inclined than in the adult
- 8) In the foetal skull:
- a) the vertical height of the orbit is equal to the combined vertical heights of the maxilla and the mandible
 - b) the mandible is ossified at birth
 - c) the anterior fontanelle is closed at the end of the first year
 - d) the volume of the vault is equal to that of the face
 - e) the bones of the face and the vault ossify at six years
- 9) Regarding the sympathetic nervous system:
- a) every spinal nerve receives a white ramus communicans
 - b) efferent post ganglionic fibres are myelinated
 - c) afferent sympathetic fibres synapse in the sympathetic trunk
 - d) preganglionic cell bodies lie within the lateral horn cells of the T1-L2 spinal segments
 - e) each cervical ganglion gives off one ramus communicans
- 10) Which of the following nerve roots is correctly associated with the corresponding muscle action?
- a) L5 – plantar flexion of the foot
 - b) L2 – knee extension
 - c) C5 – abduction of the shoulder
 - d) C8 – abduction of the thumb
 - e) S1 – extension of the great toe
- 11) In the skin:
- a) apocrine sweat glands are confined to the axillae, breasts and urogenital region
 - b) dark skinned races possess greater numbers of melanocytes
 - c) sebaceous glands are abundant on the palms and soles
 - d) melanocytes predominate in the dermis
 - e) eccrine glands develop under the influence of the sex hormones
- 12) Regarding bone:
- a) cancellous and compact bone show marked microscopic differences
 - b) the clavicle ossifies in membrane
 - c) the bones of the skull and face ossify in cartilage
 - d) the epiphyseal plates of growing bones are composed of fibrocartilage
 - e) sesamoid bones are only associated with flexor tendons
- 13) The metacarpophalangeal joints are:
- a) planar
 - b) ellipsoid
 - c) hinge
 - d) saddle
 - e) ball in socket

- 14) Regarding the intrinsic muscles of the hand, which of the following is NOT true?
- a) the palmar and dorsal interossei are supplied by the deep branch of the median nerve
 - b) the intrinsic muscles of the thumb are abductor pollicis brevis, flexor pollicis brevis, opponens pollicis, adductor pollicis, first palmar and first dorsal interossei
 - c) opponens pollicis acts only on the carpometacarpal joint
 - d) their motor supply is derived from segment T1 of the spinal cord
 - e) the thenar muscles are supplied by the recurrent branch of the median nerve
- 15) Regarding the synovial flexor sheaths, which of the following is NOT true?
- a) three synovial sheaths are found on the front of the wrist
 - b) a common synovial sheath envelops all the superficialis and profundus tendons
 - c) the sheath around flexor pollicis longus tendon extends almost to its insertion
 - d) the flexor carpi ulnaris tendon has a short sheath
 - e) the ring, middle and index fingers have digital sheaths that do not extend to the common sheath
- 16) The recurrent branch of the median nerve supplies:
- a) opponens digiti minimi
 - b) first dorsal interosseous
 - c) adductor pollicis
 - d) first lumbrical
 - e) abductor pollicis brevis
- 17) The coracobrachialis muscle:
- a) is functionally important
 - b) origin = apex of acromion
 - c) insertion = lateral border of humerus
 - d) nerve supply = C4, C5
 - e) is pierced by the musculocutaneous nerve
- 18) Which structure lies in the deltopectoral groove?
- a) median pectoral nerve
 - b) lateral pectoral nerve
 - c) cephalic vein
 - d) basilic vein
 - e) axillary vein
- 19) Which lymph nodes drain the ulnar side of the forearm?
- a) infratrochlear
 - b) supratrochlear
 - c) infraclavicular
 - d) anterior axillary
 - e) ulnar trochlear
- 20) Which does NOT enter posterior compartment of the arm?
- a) radial nerve
 - b) profunda brachii artery
 - c) ulnar nerve
 - d) posterior cutaneous nerve of forearm
 - e) superior ulnar collateral artery

- 21) The annular ligament of the elbow:
- has minimal usefulness
 - is attached to margins of the radial notch of the ulna
 - is attached to the head and neck of the radius
 - has common attachment with ulnar collateral ligament
 - is attached to the lateral epicondyle????????
- 22) Extensor pollicis brevis:
- origin – radius and interosseous membrane
 - lies on ulnar side of snuffbox
 - inserts into the base of the first distal phalanx
 - nerve supply = ulnar nerve
 - joins extensor digitorum tendon at metacarpophalangeal joint
- 23) Extensor pollicis longus – which is INCORRECT?
- origin = ulnar just distal to adductor pollicis longus
 - insertion = base of first distal phalanx
 - tendon hooks around Lister's tubercle (radius)
 - forms radial boundary of snuffbox
 - nerve supply – posterior interosseous nerve (C7, 8)
- 24) Extensor indicis:
- origin = radius
 - shares a common synovial sheath with E.D. (?extensor digitorum)
 - tendon lies on radial side of E.D. tendon index finger
 - separate insertion from dorsal expansion E.D.
 - nerve supply = median nerve
- 25) The extensor retinaculum attaches between:
- radius and ulna
 - scaphoid and ulna
 - radius and triquetrum and pisiform
 - radius and lunate
 - trapezium and ulnar
- 26) All the following statements concerning the scaphoid bone are true EXCEPT:
- it articulates with radius proximally in abduction
 - it is the most susceptible of the carpal bones to fracture
 - it participates in the midcarpal joint
 - it receives an attachment for the transverse carpal ligament
 - fracture of the scaphoid is a common cause for median nerve compression in carpal tunnel syndrome
- 27) All of the following structures pass deep to the transverse carpal ligament EXCEPT the:
- flexor digitorum superficialis tendon
 - flexor digitorum profundus tendon
 - flexor pollicis longus tendon
 - median nerve
 - ulnar artery

- 28) Laceration of the recurrent branch of the median nerve results in paralysis of all the following muscles of the thumb EXCEPT:
- abductor pollicis brevis
 - deep head of flexor pollicis brevis
 - opponens pollicis
 - superficial head of flexor pollicis brevis
- 29) Which muscle is the odd one out?
- pronator teres
 - flexor carpi radialis
 - first lumbrical of the hand
 - fourth lumbrical of the hand
 - flexor pollicis longus
- 30) Infection in the volar aspect of the little finger can spread to all EXCEPT:
- distally to the ring finger via the tendon sheath
 - to the flexor sheath of the thumb
 - to the distal forearm through the carpal tunnel
 - rupture of the sheath and spread to deep spaces of the palm
 - ischaemic necrosis may occur to the flexor tendon involved
- 31) Wrist:
- the flexor retinaculum runs between the styloid process of the radius and the pisiform and hook of hamate
 - the median nerve passes beneath the flexor retinaculum between flexor digitorum superficialis and flexor carpi ulnaris
 - the ulnar nerve lies on the flexor retinaculum with the ulnar artery on its ulnar side
 - the wrist joint involves the radius, ulna, scaphoid, lunate and triquetral bones
 - the radiocarpal joint is separated from the distal radioulnar joint by a triangular fibrocartilage
- 32) Hand:
- palmar brevis lies across the base of the thenar eminence
 - abductor pollicis brevis and opponens pollicis both arise from the flexor retinaculum and adjacent trapezium
 - flexor pollicis brevis lies to radial side of abductor pollicis brevis
 - the muscles of the thenar eminence are usually supplied by the recurrent branch of the median nerve
 - opponens pollicis inserts into the whole of the ulnar border of the first metacarpal
- 33) Trapezius inserts into:
- vertebral border scapula
 - scapula spine
 - proximal humerus
 - medial clavicle
 - none of the above

- 34) Myotome of elbow flexion:
- a) C5, 6
 - b) C6, 7
 - c) C7, 8
 - d) C5
 - e) C6
- 35) Vincula:
- a) papillary ridges of skin that form finger prints
 - b) superficial fibres of palmar aponeurosis that insert into the skin
 - c) remnant fibres of palmar interossei inserting into the proximal phalanx at the thumb
 - d) communication between common flexor sheath and sheath of pollicis longus present in 50% of people
 - e) vascular synovial folds of flexor tendons
- 36) Of the hand joints, which is INCORRECT?
- a) the midcarpal joint is S shaped
 - b) joint between hamate and fifth metacarpal is most mobile at four digits
 - c) the first carpometacarpal joint is reinforced by the medial and palmar ligaments
 - d) palmar ligaments of metacarpophalangeal joints limit extension of joint
 - e) interphalangeal joints have to obliquely place collateral ligaments as a mechanism of tightening re flexion and extension
- 37) Which is true of brachial plexus?
- a) the trunks lie behind scalene muscle
 - b) accessory phrenic nerve fibres run to superior mediastinum with long thoracic nerve
 - c) median nerve divides at the carpal tunnel, lateral branch supplies thenar muscles and medial branch supplies lumbricals (2)
 - d) ulnar nerve in 95% of cases picks up C7 fibres from lateral cord
 - e) branches of radial nerve rise just proximal to their destination

Section 5

General Principals – Answers

- 1) B
- 2) B
- 3) D
- 4) D
- 5) E
- 6) C
- 7) B
- 8) A
- 9) D
- 10) C
- 11) A
- 12) B
- 13) D
- 14) A
- 15) D
- 16) C
- 17) E
- 18) C
- 19) B
- 20) E
- 21) B
- 22) A
- 23) D
- 24) B
- 25) C
- 26) E
- 27) E
- 28) B
- 29) D
- 30) A
- 31) E
- 32) D
- 33) B
- 34) A
- 35) E
- 36) C
- 37) D

Section 6

Upper Limb

- 1) The radial nerve gives rise to all the following except the:
 - a) posterior cutaneous nerve of the arm
 - b) lower lateral cutaneous nerve of the arm
 - c) posterior cutaneous nerve of the forearm
 - d) posterior interosseous nerve
 - e) medial cutaneous nerve of the arm

- 2) Which of the following is INCORRECT? Pectoralis minor:
 - a) arises from the 3rd, 4th and 5th ribs
 - b) inserts into the coracoid process of the scapula
 - c) is innervated by both pectoral nerves
 - d) is an important landmark to the underlying axillary artery
 - e) is a medial rotator and adductor of the arm

- 3) Which of the following is INCORRECT? Pectoralis major:
 - a) consists of clavicular and sternocostal heads
 - b) is innervated by C6 to T1
 - c) medially rotates and abducts the arm
 - d) assists flexion at the shoulder
 - e) can act as an accessory muscle of respiration

- 4) The nerve supply of latissimus dorsi is from the:
 - a) pectoral nerves
 - b) thoracodorsal nerve
 - c) axillary nerve
 - d) long thoracic nerve
 - e) dorsal scapular nerve

- 5) The nerve supply of rhomboid major and rhomboid minor is from the:
 - a) pectoral nerves
 - b) thoracodorsal nerve
 - c) axillary nerve
 - d) long thoracic nerve
 - e) dorsal scapular nerve

- 6) The nerve supply of serratus anterior is from the:
 - a) pectoral nerves
 - b) thoracodorsal nerve
 - c) axillary nerve
 - d) long thoracic nerve
 - e) dorsal scapular nerve

- 7) The nerve supply of pectoralis minor is from the:
- pectoral nerves
 - thoracodorsal nerve
 - axillary nerve
 - long thoracic nerve
 - dorsal scapular nerve
- 8) The nerve supply to deltoid is from the:
- pectoral nerves
 - thoracodorsal nerve
 - axillary nerve
 - long thoracic nerve
 - dorsal scapular nerve
- 9) Which of the following is INCORRECT? The biceps:
- is a powerful flexor of the elbow
 - supinates the forearm
 - is paralysed by an injury to the posterior cord of the brachial plexus
 - is a weak flexor of the shoulder
 - inserts into the bicipital aponeurosis
- 10) Which of the following is not a direct attachment of the pectoral girdle to the trunk?
- pectoralis minor
 - pectoralis major
 - trapezius
 - serratus anterior
 - levator scapulae
- 11) Which of the following does not connect the arm to the pelvic girdle?
- deltoid
 - biceps
 - subclavius
 - subscapularis
 - supraspinatus
- 12) The nerve supply to supraspinatus is from the:
- lower subscapular nerve
 - dorsal scapular nerve
 - suprascapular nerve
 - upper subscapular nerve
 - thoracodorsal nerve
- 13) The nerve supply to teres major is from the:
- lower subscapular nerve
 - dorsal scapular nerve
 - suprascapular nerve
 - upper subscapular nerve
 - thoracodorsal nerve

- 14) Which of the following is INCORRECT, regarding branches of the posterior cord?
- a) C5, 6 – upper subscapular nerve
 - b) C6, 7, 8 – thoracodorsal nerve
 - c) C5, 6 – lower subscapular nerve
 - d) C7, 8 – axillary
 - e) C5, 6, 7, 8, T1 – radial nerve
- 15) What is the first bone of the skeleton?
- a) tibia
 - b) humerus
 - c) scapula
 - d) femur
 - e) clavicle
- 16) Regarding the humerus:
- a) the head forms half a sphere
 - b) the lateral epicondyle is more prominent
 - c) the axillary nerve winds around the anatomical neck
 - d) the greater tuberosity continues distally as the medial lip of the intertubercular groove
 - e) the capsule of the shoulder joint extends down the medial side of the humeral shaft
- 17) Which muscle does not arise from the common extensor origin?
- a) extensor carpi radialis brevis
 - b) extensor digitorum
 - c) extensor digiti minimi
 - d) extensor carpi radialis longus
 - e) extensor carpi ulnaris
- 18) Regarding the extensor retinaculum:
- a) septa divide the extensor region into four compartments
 - b) it attaches to the ulnar styloid
 - c) the four extensor digitorum tendons lie deep to extensor indicis
 - d) it is a thickening of the deep fascia of the forearm
 - e) it lies transversely across the extensor surface of the wrist joint
- 19) Brachialis is supplied by:
- a) median nerve
 - b) musculocutaneous nerve
 - c) radial nerve
 - d) median and musculocutaneous nn (?nerves)
 - e) musculocutaneous and radial nn (?nerves)
- 20) Which carpal bone is most commonly dislocated?
- a) lunate
 - b) scaphoid
 - c) trapezium
 - d) capitate
 - e) pisiform

- 21) Which muscle arises from both ulnar and radius?
- pronator teres
 - flexor carpi radialis
 - flexor digitorum superficialis
 - flexor digitorum profundus
 - flexor pollicis longus
- 22) Which structure is NOT attached to the pisiform?
- abductor digiti minimi
 - ulnar collateral ligament
 - flexor carpi ulnaris
 - extensor retinaculum
 - pisometacarpal ligament
- 23) The median nerve goes through the heads of which muscle?
- biceps brachii
 - supinator
 - pronator teres
 - pronator quadratus
 - flexor digitorum superficialis
- 24) Regarding the interosseous muscle:
- the palmar interossei have two heads
 - there are usually four palmar interossei
 - the tendons pass on the posterior side of the deep transverse ligament
 - they insert into the extensor expansion, not the proximal phalanges
 - they are supplied by the superficial branch of the ulnar nerve (C8, T1)
- 25) Which nerve arises from both radius and ulna?
- extensor pollicis longus
 - extensor pollicis brevis
 - abductor pollicis longus
 - extensor indicis
 - extensor digitorum
- 26) In the forearm:
- the brachial artery lies medial to the median nerve in the cubital fossa
 - the radial artery lies lateral to the radial nerve in the middle third
 - the anterior interosseous nerve arises from the radial nerve
 - the median nerve passes between the two heads of flexor carpi ulnaris
 - the posterior interosseous nerve passes between the two layers of the supinator
- 27) The radial artery:
- gives rise to the posterior interosseous artery
 - passes distally, lateral to the biceps tendon
 - passes across the tendon of abductor pollicis brevis to enter the anatomical snuffbox
 - passes over the tendon of insertion of pronator teres
 - none of the above

- 28) A high ulnar nerve injury might produce:
- a) weakness of elbow flexion
 - b) a 'claw hand'
 - c) weak abduction of the index finger
 - d) triceps paralysis
 - e) sensory loss over the radial three fingers
- 29) In the cubital fossa:
- a) the floor is formed mainly by the supinator
 - b) the medial wall is formed by pronator teres
 - c) the ulnar nerve lies medially
 - d) the radial nerve lies medial to the biceps tendon
 - e) none of the above
- 30) Regarding the anatomical snuffbox:
- a) the cephalic vein begins in the roof
 - b) the extensor pollicis brevis tendon forms the ulnar side
 - c) the trapezoid is palpable in the base
 - d) the cutaneous branches of the radial nerve run deep to the tendons
 - e) the flexor pollicis longus tendon forms the radial side
- 31) Pectoralis major:
- a) is supplied by all three cords of brachial plexus
 - b) is supplied by all five segments of brachial plexus
 - c) is inserted into the medial lip of the bicipital groove
 - d) clavicular fibres are strong adductors of shoulder joint
 - e) the lowermost sternocostal fibres insert into the lowermost part of the humeral insertion site
- 32) Pectoralis major arises from all EXCEPT the:
- a) lateral anterior half of manubrium
 - b) body of sternum
 - c) aponeurosis of external oblique
 - d) upper six ribs
 - e) medial half of anterior clavicle
- 33) Sternoclavicular joint:
- a) the sternoclavicular ligament provides most joint stability
 - b) joint surfaces are covered by hyaline cartilage
 - c) the entire clavicle joint surface is in contact with manubrium
 - d) anterior/posterior movement occurs between manubrium and disc
 - e) dislocation occurs frequently
- 34) Long head of triceps:
- a) lies between teres minor and teres major
 - b) is supplied by branch of radial nerve at the humeral groove
 - c) arises from the humerus above the radial groove
 - d) converges with the medial head
 - e) arises from the supraglenoid rim

35) Deltoid:

- a) anterior fibres arise from lateral two thirds of clavicle
- b) posterior fibres arise from superior lip of crest of scapular spine
- c) lateral fibres only are multi-pennate
- d) fibres strengthen shoulder joint capsule
- e) acts in isolation to abduct humerus

Section 6

Upper limb – Answers

- 1E
- 2E
- 3B
- 4B
- 5E
- 6D
- 7A
- 8C
- 9C
- 10 B
- 11 C
- 12 C
- 13 A
- 14 D
- 15 E
- 16 E
- 17 D
- 18 D
- 19 E
- 20 A
- 21 C
- 22 B
- 23 C
- 24 C
- 25 C
- 26 E
- 27 D
- 28 C
- 29 B
- 30 A
- 31 B
- 32 D
- 33 D
- 34 A
- 35 C

Section 7

Upper Limb

- 1) The elbow joint:
 - a) is supplied exclusively by the radial nerve
 - b) permits flexion/extension and pronation/supination
 - c) has a capsule which attaches in part to the radius
 - d) communicates with the superior radioulnar joint
 - e) none of the above

- 2) With respect to the thenar muscles:
 - a) abductor pollicis brevis inserts into the base of the distal phalanx of the thumb
 - b) all arise from the flexor retinaculum
 - c) flexor pollicis brevis is usually supplied by a branch from the ulnar nerve
 - d) abductor pollicis brevis has no role in opposition of the thumb
 - e) opponens pollicis is the most superficial muscle of the group

- 3) With respect to the flexor retinaculum:
 - a) it attaches to the scaphoid, hamate, pisiform and trapezium
 - b) the tendon of palmaris longus passes deep to it
 - c) the median nerve passes superficial to it
 - d) the ulnar artery passes deep to it
 - e) it is pierced by the tendon of flexor carpi ulnaris

- 4) The medial cutaneous nerve of the arm:
 - a) has fibres from C8 and T1
 - b) arises from the dorsal cord of the brachial plexus
 - c) pierces the deep fascia adjacent to the tendon of biceps
 - d) has communications with the circumflex nerve
 - e) none of the above

- 5) Pectoralis major:
 - a) is synergistic to serratus anterior
 - b) is innervated by the median nerve
 - c) can abduct the arm
 - d) can act as an accessory muscle of respiration
 - e) is a lateral rotator of the arm

- 6) The brachial plexus:
 - a) arises from C6 to T1
 - b) lies in the anterior triangle of the neck
 - c) carries sympathetic fibres
 - d) supplies all the skin of the upper limb
 - e) the posterior divisions supply the flexor compartments

- 7) The superficial palmar arch:
- a) lies level with the distal border of the outstretched thumb
 - b) is supplied mainly from the radial artery
 - c) supplies the thumb
 - d) lies deep to the long flexor tendons
 - e) arises proximal to the flexor retinaculum
- 8) Paralysis of which nerve results in inability to initiate abduction of the arm?
- a) the axillary nerve
 - b) the suprascapular nerve
 - c) the subscapular nerve
 - d) the dorsal scapular nerve
 - e) the thoracodorsal nerve
- 9) The axilla:
- a) communicates with the anterior triangle of the neck
 - b) contains lymph nodes draining the upper limb and lateral chest wall
 - c) has an anterior wall made up by the serratus anterior muscle
 - d) has an apex bounded by the humerus, clavicle and scapula
 - e) has no medial wall
- 10) Brachialis muscle:
- a) is innervated by the median nerve
 - b) arises from the upper third of the humerus
 - c) is both a flexor and extensor of the elbow joint
 - d) attaches to the bicipital tuberosity of the radius
 - e) has no relation to the medial intermuscular septum
- 11) Simple pronation:
- a) requires an intact radial nerve
 - b) requires an intact C8 nerve root
 - c) occurs without movement of the ulna
 - d) occurs about an axis which runs along the shaft of the radius
 - e) requires the action of anconeus
- 12) The musculocutaneous nerve:
- a) supplies brachioradialis
 - b) terminates as the posterior interosseous nerve
 - c) supplies all of the brachialis muscle
 - d) contains fibres from C5, C6, C7 and C8
 - e) arises from the lateral cord of the brachial plexus
- 13) Which of the following lies immediately medial to the tubercle of the radius (Lister's tubercle)?
- a) extensor carpi ulnaris
 - b) extensor carpi radialis
 - c) extensor pollicis longus
 - d) extensor pollicis brevis
 - e) extensor digitorum

- 14) Interossei muscles in the hand:
- flex the interphalangeal joints
 - assist in extension of metacarpophalangeal joints
 - cannot laterally deviate the middle finger
 - the palmar interossei have two heads of origin
 - are usually supplied by the ulnar nerve
- 15) The brachial artery:
- commences at the upper border of teres major
 - is in direct contact with the humerus
 - has biceps tendon lying medial to it
 - is readily compressible
 - is accompanied throughout its course by the basilic vein
- 16) The wrist (radiocarpal) joint:
- has a synovial cavity continuous with the inferior radioulnar joint
 - has a synovial cavity continuous with the midcarpal joint
 - permits flexion, extension, adduction and abduction, but little rotation
 - has the articular surface of the radius facing distally, medially and dorsally
 - has the flexor retinaculum anterior to it
- 17) The cephalic vein:
- arises in the region of the anatomical snuffbox
 - at the elbow, is deep to the lateral cutaneous nerve of the forearm
 - terminates by joining the brachial vein
 - is medial to biceps in the arm
 - has no valves
- 18) The upper end of the humerus:
- has the subscapularis attached to the greater tuberosity
 - has teres major attached to the floor of the bicipital groove
 - has three epiphyses which fuse separately with the shaft
 - has the capsular ligament of the shoulder joint attached to the whole of the anatomical neck
 - is the growing end of the humerus
- 19) In the antecubital fossa:
- the ulnar nerve is on the medial side
 - the median nerve is lateral to the brachial artery
 - the radial nerve is on the lateral side
 - all the superficial veins are deep to the cutaneous nerves
 - the brachial artery is lateral to the tendon of biceps
- 20) The lunate articulates with all of the following EXCEPT:
- scaphoid
 - triquetral
 - capitate
 - radius
 - trapezoid

- 21) The brachial artery:
- crosses anterior to the median nerve in the arm
 - gives off the nutrient artery to the humerus
 - lies deep to biceps
 - has the ulnar nerve on its medial side
 - gives muscular branches to triceps
- 22) Following a laceration to the anterior surface of the wrist, a patient is unable to flex the proximal interphalangeal joint of his middle finger when his other fingers are held in extension. The tendon of which muscle has been divided?
- palmaris longus
 - flexor indicis
 - flexor digitorum profundus
 - flexor digitorum superficialis
 - none of the above
- 23) The palmar interossei:
- abduct the fingers
 - are usually supplied by a branch of the ulnar nerve
 - have two heads
 - arise from the medial side of the metacarpal bone of the index, ring and little fingers
 - have no role in extension of the terminal phalanges
- 24) The cubital fossa:
- is bounded by pronator teres, brachioradialis and the tendon of biceps
 - the brachial artery lies lateral to the radial nerve
 - has a floor made up of brachialis and supinator
 - contains the median basilic vein
 - the radial nerve lies medial to the posterior interosseous nerve
- 25) The capsule of the shoulder joint:
- is supplied exclusively by the axillary nerve
 - is separated from the tendons of the short scapular muscles by a bursa
 - bridges the gap between the greater and lesser tuberosities as the transverse ligament
 - the long tendon of biceps is extracapsular
 - is the major stabilising factor for the shoulder joint
- 26) With respect to the carpus:
- the intercarpal joints share one continuous synovial space
 - the intercarpal synovial space is usually continuous with the wrist
 - the proximal row consists of scaphoid, lunate and trapezium
 - the scaphoid is the only carpal bone which articulates with the radius
 - in pronation/supination, the carpus moves with the ulna

- 27) Compression of the median nerve in the carpal tunnel produces:
- anaesthesia over the thenar eminence
 - wasting of the hypothenar eminence
 - loss of power of opposition of the thumb
 - anaesthesia of the little finger
 - loss of power of flexion of the thumb
- 28) A child has gashed the palmar aspect of her wrist on some glass. Which of the following would be evidence of damage to her median nerve?
- inability to flex the distal interphalangeal joint of the index finger
 - inability to flex the interphalangeal joint of the thumb
 - loss of sensation to the palmar aspect of the little finger
 - inability to oppose the thumb and little finger
 - inability to abduct the index finger
- 29) A 45-year-old man is unable to initiate abduction of the arm following reduction of a dislocated shoulder. Damage to which nerve is most likely to be responsible for this condition:
- the suprascapular nerve
 - the long thoracic nerve
 - the radial nerve
 - the infrascapular nerve
 - the axillary nerve
- 30) Direct attachment of the pectoral girdle to the trunk is provided by:
- pectoralis major
 - trapezium
 - latissimus dorsi
 - subscapularis
 - deltoid
- 31) The posterior interosseous nerve DOES NOT supply:
- the periosteum of the radius and ulna
 - the skin over the dorsal aspect of the thumb
 - extensor carpi ulnaris
 - extensor pollicis brevis
 - the interosseous membrane
- 32) The nerve supply of pectoralis minor is from the:
- dorsal scapular nerve
 - long thoracic nerve
 - pectoral nerves
 - lower subscapular nerve
 - axillary nerve

- 33) The insertion of latissimus dorsi in the arm is into the:
- lateral lip of the intertubercular groove
 - medial lip of the intertubercular groove
 - posterior border of the proximal humerus
 - floor of the intertubercular groove
 - superior facet of the greater trochanter
- 34) Regarding the sternoclavicular joint, the major stabilising factor is the:
- acromioclavicular ligament
 - costoclavicular ligament
 - interclavicular ligament
 - sternoclavicular ligament
 - coracoclavicular ligament
- 35) The nerve supply of infraspinatus is the:
- axillary nerve
 - long thoracic nerve
 - infrascapular nerve
 - suprascapular nerve
 - subscapular nerve
- 36) The cephalic vein:
- empties into the brachial vein
 - combines with the basilic vein to form the axillary vein
 - is the continuation of the median basilic and medial cephalic veins
 - empties into the axillary vein
 - none of the above
- 37) Which one of the following structures pass beneath the flexor retinaculum at the wrist?
- palmaris longus
 - ulnar nerve
 - radial artery
 - ulnar artery
 - median nerve
- 38) The skin of the top of the index finger is supplied by:
- radial nerve only
 - median nerve only
 - ulnar nerve only
 - radial and ulnar nerve
 - radial and median nerve
- 39) Extensor pollicis longus muscle:
- arises from the radius
 - extends the metacarpophalangeal joint of the thumb
 - is supplied by the arterial interosseous nerve
 - hooks around the dorsal tubercle of the radius (Lister's tubercle)
 - arises proximal to the abductor pollicis longus

- 40) The extensor retinaculum:
- a) lies transversely across the extensor surface of the wrist joint
 - b) is attached to the radius and the ulna
 - c) is attached to the pisiform
 - d) is attached to the scaphoid
 - e) is attached to the trapezium
- 41) The anatomical snuff box:
- a) is crossed by cutaneous branches of the median nerve
 - b) has the anterior interosseous artery on its floor
 - c) contains the origin of the basilic vein
 - d) has extensor pollicis longus on the radial side
 - e) is crossed by cutaneous branches of the radial nerve
- 42) Compression of structures in the carpal tunnel usually results in:
- a) weakness of the forearm flexors
 - b) weakness of flexion of the terminal phalanx of the thumb
 - c) weakness of the interossei muscles
 - d) normal sensation on the palmar surface of the little finger
 - e) weakness of the lumbrical muscles
- 43) Holding a heavy hammer in your hand involves:
- a) only the long flexors of the fingers
 - b) flexion of wrist to strengthen grip
 - c) immobilisation of the shoulder joint to strengthen grip
 - d) only the long flexors of fingers and opposition of the thumb
 - e) requires synergic contraction of wrist extensors
- 44) The anatomical snuff box:
- a) has the tendon of extensor pollicis brevis on its ulnar side
 - b) has the radial artery lying in its floor
 - c) has the radial styloid process as the only palpable bony point
 - d) has the tendon of abductor pollicis brevis on its radial side
 - e) contains the origin of the basilic vein
- 45) Rotator cuff muscles include:
- a) subclavius
 - b) teres minor
 - c) pectoralis major
 - d) teres major
 - e) deltoid
- 46) Regarding synovial flexor sheaths in the hand and wrist, which one of the following is INCORRECT?
- a) they surround flexor tendons in the carpal tunnel
 - b) the superficial and deep flexors are invested with a common synovial sheath
 - c) the common flexor sheaths can communicate with flexor pollicis longus sheath in some people
 - d) for the index, ring and middle finger, a separate synovial sheath lines the fibrous sheath over the phalanges
 - e) the sheath is the origin of the lumbricals

- 47) Which of the following structures is NOT one of the contents of the cubital fossa?
- brachial artery
 - tendon of biceps brachii
 - radial nerve
 - anterior interosseous nerve
 - median nerve
- 48) The superficial branch of the ulnar nerve supplies:
- palmaris brevis
 - flexor digitorum ulnaris
 - palmar aspect index finger
 - opponens pollicis
 - thenar eminence
- 49) The order of tendons in the extensor compartment of the distal forearm from radial to ulnar sides is:
- ED = extensor digitorum
 ECRB = extensor carpi radialis brevis
 FCU = flexor carpi ulnaris
 EI = extensor indicis
 ECRL = extensor carpi radialis longus
 ECU = extensor carpi ulnaris
 EPL = extensor pollicis longus
- ECRB; ECRL; EPL; ED; FCU; ECU; EI
 - ECRB; ECRL; EPL; ED; ECU; FCU; EI
 - ECRL; ECRB; EPL; ED; ECU; EI; FCU
 - ECRL; ECRB; EPL; ED & EI; ECU; FCU
 - ECRB; ECRL; EPL; ECU; FCU; ED & EI
- 50) Which of the following is true about flexor digitorum superficialis?
- origin forms upper limit of the space of parona
 - all four tendons lie on the same plane under flexor retinaculum
 - is innervated by median and ulnar nerves
 - tendon to index finger separates before other three tendons high in forearm
 - median nerve passes between its two heads
- 51) Which of the following statements about the brachial plexus is INCORRECT?
- long thoracic nerve arises from roots
 - Erb's palsy occurs following traction to upper roots and trunk
 - posterior cord has five branches
 - suprascapular nerve arises from trunks
 - trunks lie behind clavicle on first rib
- 52) Branches of the axillary artery DO NOT include:
- superior thoracic
 - subscapular
 - medial thoracic
 - thoracoacromial
 - posterior circumflex humeral

- 53) Which of the following is NOT TRUE regarding the breast?
- a) it arises from the midline to mid axillary line from the second to the sixth ribs
 - b) it is subcutaneous
 - c) blood supply is mainly from the lateral thoracic and internal thoracic artery
 - d) most lymph drains to the axillae
 - e) it is invested in a thick fibrous capsule
- 54) Biceps:
- a) long head arises from infraglenoid tubercle
 - b) is supplied by a branch of the medial cord of the brachial plexus
 - c) the two bellies do not merge
 - d) is a pronator of the forearm
 - e) short head arises from coracoid process, lateral to coracobrachialis
- 55) The radial nerve:
- a) supplies extensors to the elbow
 - b) pierces the medial intermuscular septum of the mid arm
 - c) supplies extensor carpi ulnaris
 - d) runs on the lateral side of the radial artery in the forearm
 - e) runs in the cubital fossa
- 56) Which of the following DOES NOT form one of the boundaries of the cubital fossa?
- a) brachialis
 - b) supinator
 - c) line connections the two humeral epicondyles
 - d) bicipital aponeurosis
 - e) medial margin of pronator teres
- 57) Which of the following muscles DOES NOT arise from the common extensor origin?
- a) extensor carpi radialis brevis
 - b) extensor digitorum communis
 - c) extensor carpi radialis longus
 - d) extensor digiti minimi
 - e) extensor carpi ulnaris
- 58) Regarding the shoulder joint:
- a) glenoid labrum is a ring of hyaline cartilage
 - b) subacromial bursa communicates with joint
 - c) capsule attaches only around the articular margin
 - d) subscapular bursa communicates with joint
 - e) supraspinatus is a medial rotator of humerus
- 59) Which of the following is CORRECT?
- a) the suprascapular nerve arises from the posterior aspect of C5
 - b) the five roots emerge between scalenus anterior and scalenus medius to form the trunks
 - c) the thoracodorsal nerve arises from the posterior aspect of C5
 - d) the axillary nerve passes through the triangular space to lie in contact with the surgical neck of humerus
 - e) the median nerve is the largest branch of the whole plexus

- 60) The quadrangular space between teres major and subscapularis transmits:
- lower subscapular nerve
 - axillary artery
 - profunda brachii vessels
 - radial nerve
 - post circumflex humeral artery
- 61) With regard to the elbow joint, which is NOT TRUE?
- it communicates with the radioulnar joint
 - the carrying angle is mostly determined by the obliquity of the ridge between coronoid and olecranon prominences
 - the radial collateral, ulnar collateral and annular ligaments keep the bones together
 - the carrying angle is partly determined by the bow in the ulnar and radial shafts
 - it is supplied by the brachial nerve
- 62) Which of the following DOES NOT arise from the roots of the brachial plexus?
- dorsal scapular
 - nerve to serratus anterior
 - medial pectoral nerve
 - nerve to subclavius
- 63) Regarding the hand:
- deep palmar arch is level with the distal border of the outstretched thumb web
 - the superficial branch of the ulnar nerve supplies the hypothenar muscles
 - deep branch of the ulnar nerve lies within the concavity of the deep palmar arch
 - flexor digitorum superficialis tendon inserts into the base of the distal pharynx
 - lumbricals insert into the extensor expansion and proximal phalanges
- 64) The venous systems that contribute least to venous drainage of the forearm is:
- the basilic vein
 - the cephalic vein
 - the deep veins which are often duplicate
 - the carpal rete
 - the median cubital
- 65) Which of the following IS NOT true about the flexor carpi ulnaris?
- acts as a synergist during wrist extension
 - ulnar artery passes deep to its deep head
 - inserts into base of fifth metacarpal
 - most medial muscles arising from the common flexor origin
 - ulnar nerve passes between its two heads
- 66) Which of the following structures DOES NOT pierce the clavipectoral fascia in the delto-pectoral triangle?
- lymphatics
 - medial pectoral nerve
 - acromiothoracic axis
 - lateral pectoral nerve
 - cephalic vein

- 67) Radial nerve:
- a) is the largest branch of the brachial plexus
 - b) occupies the length of the spiral groove
 - c) damage causes inability to extend the wrist and the interphalangeal joints
 - d) damage causes sensory loss to the palm
 - e) arises from the lateral cord of the brachial plexus
- 68) Regarding the shoulder joint:
- a) the glenoid labrum is the most important stabilising factor
 - b) the strong capsule is reinforced by tight glenohumeral ligaments
 - c) the coracoacromial arch prevents the humeral head from displacing
 - d) the long head of triceps gives stability to the abducted humerus
 - e) the pull of teres minor stabilises the abducted humerus
- 69) The articulating surfaces of which of the following synovial joints are covered by fibrocartilage?
- a) scapholunate joint
 - b) glenohumeral joint
 - c) acromioclavicular joint
 - d) manubriosternal joint
 - e) sternocostal joint
- 70) A structure that does not lie in the cubital fossa is:
- a) brachial artery
 - b) median nerve
 - c) median cubital vein
 - d) superficial radial artery
 - e) radial nerve if brachioradialis is lateralised
- 71) Which of the following is CORRECT concerning flexor digitorum profundus?
- a) it arises from both radius and ulna
 - b) is innervated by both median and ulnar nerves
 - c) the origins of the lumbricals arise from its tendons
 - d) it flexes the terminal phalangeal joints
- 72) Which of the following groups of lymph nodes directly drain the breast?
- a) lateral axillary nodes
 - b) subscapular nodes
 - c) pectoral nodes
 - d) parasternal nodes
 - e) infraclavicular nodes
- 73) Which of the following IS NOT true about pectoralis major?
- a) only upper limb muscle supplied by all five segments of brachial plexus
 - b) arises by two heads
 - c) inserts via a bilaminar tendon
 - d) innervated by lateral pectoral nerve
 - e) contributes to boundaries of axilla

- 74) Axillary artery:
- a) becomes brachial artery at lower border teres minor
 - b) axillary vein lies laterally to the artery
 - c) is divided into three parts by pectoralis minor
 - d) second part is clasped by the two heads of median nerve
 - e) gives off the superior thoracic artery from its second part
- 75) Regarding flexor digitorum profundus, which is NOT TRUE?
- a) is the most powerful and bulky muscle of the forearm
 - b) arises from the common flexor origin
 - c) the tendon for the index separates in the forearm from the three other tendons
 - d) it gives rise to origin of four lumbricals
 - e) it is supplied by the anterior interosseous nerve and the ulnar nerve in a variable distribution
- 76) Damage to the median nerve may be suggested clinically by:
- a) a wasting of the interossei
 - b) pointing index finger
 - c) 'claw hand'
 - d) sensory loss over ulnar side of hand
 - e) inability to abduct the index finger
- 77) Which of the following DOES NOT form the boundaries of the cubital fossa:
- a) anconeus
 - b) brachioradialis
 - c) pronator teres
 - d) deep fascia of the forearm
 - e) bicipital aponeurosis
- 78) Which of the following is NOT TRUE concerning the elbow joint?
- a) it is a synovial joint
 - b) the capsule of the synovial joint is attached to the radius distal to the annular ligament
 - c) the humeroulnar joint space communicates with the radioulnar joint space
 - d) the joint is supplied by musculocutaneous, median, radial and ulnar nerves
- 79) Which of the following statements about the glenohumeral (shoulder joint) is INCORRECT?
- a) long tendon of biceps is extrasynovial
 - b) subscapularis bursa communicates with joint cavity
 - c) innervated by medial pectoral nerve
 - d) branches of third part of axillary artery provide majority of blood supply
 - e) surface area of humeral head is about four times greater than that of glenoid fossa
- 80) Which of the following structures IS NOT one of the contents of the carpal tunnel?
- a) flexor digitorum superficialis
 - b) ulnar artery
 - c) flexor digitorum profundus
 - d) median nerve
 - e) flexor pollicis longus

- 81) Which of the following IS NOT true about pronator teres?
- a) ulnar artery passes between two heads
 - b) forms medial boundary of cubital fossa
 - c) arises from common flexor origin
 - d) adducts radius
 - e) less powerful pronator than pronator quadratus
- 82) Which of the following statements about the cubital (elbow) joint is INCORRECT?
- a) innervated by branch of musculocutaneous nerve to brachialis
 - b) "closed-packed" position is in extension
 - c) it is a compound synovial joint
 - d) radial collateral ligament consists of three separate bands
 - e) carrying-angle is about 160-170°
- 83) Which of the following is CORRECT about the latissimus dorsi?
- a) arises from all spinous processes from T8 and S5
 - b) known as the "boxers muscle"
 - c) innervated by the long thoracic nerve
 - d) derivative of upper limb myotomes
 - e) forms the superior border of the triangle of auscultation
- 84) Which of the following is CORRECT about flexor carpi radialis?
- a) tendon receives muscle fibres down to just above the wrist
 - b) tendon lies in a groove on the trapezoid
 - c) arises lateral to flexor digitorum superficialis
 - d) has median nerve 'plastered' to deep surface
 - e) tendon pierces flexor retinaculum
- 85) Which of the following pierce the medial intermuscular septum of the arm?
- a) medial cutaneous nerve of the arm
 - b) ulnar nerve
 - c) median nerve
 - d) basilic nerve
 - e) profunda brachii artery
- 86) Which of the following DOES NOT arise, in part, from the lateral intermuscular septum of the arm?
- a) brachioradialis
 - b) extensor carpi radialis longus
 - c) brachialis
 - d) medial head of triceps brachii
 - e) none of the above arise from the lateral intermuscular septum of the arm
- 87) Which of the following DOES NOT contribute to the innervation of the elbow joint?
- a) radial nerve
 - b) ulnar nerve
 - c) median nerve
 - d) musculocutaneous nerve
 - e) medial cutaneous nerve of the arm

- 88) Regarding the axilla:
- the posterior wall consists of subscapularis and teres minor
 - the medial wall is formed by serratus anterior down to the 6th intercostal space
 - the apex communicates directly with the posterior triangle of the neck
 - coracobrachialis forms part of the anterior wall
 - the axillary artery is generally described as having eight branches
- 89) The largest branch of the axillary artery is:
- superior thoracic artery
 - thoracoacromial artery
 - lateral thoracic artery
 - subscapular artery
 - posterior circumflex humeral artery
- 90) The cubital fossa has:
- a floor formed by the deep fascia of the forearm
 - the median cephalic vein lying medially on its roof
 - the brachial artery medial to the tendon of the biceps
 - supinator forming part of its lateral wall
 - flexor carpi radialis longus forming its lateral wall
- 91) The only carpal bone to give attached to both flexor and extensor retinacula is:
- scaphoid
 - trapezoid
 - hamate
 - triquetral
 - pisiform
- 92) In the carpal tunnel:
- the individual tendons arising from flexor digitorum profundus are all fused, and do not separate until they reach the palm
 - the synovial sheath of flexor digitorum superficialis arises from the ulna bursa, but the sheath of profundus does not
 - the tendon for the index finger from flexor digitorum superficialis lies medial to the median nerve
 - flexor carpi radialis and flexor pollicis longus tendons share a synovial sheath
 - the tendon of flexor digitorum superficialis to the middle finger lies deep to the tendons to the little finger
- 93) Structures in the anatomical snuff box include all the following EXCEPT:
- the radial tubercle
 - the scaphoid
 - the base of the thumb metacarpal
 - the trapezium
 - the radial artery

- 94) Which muscle arises in part from the scaphoid tubercle?
- a) flexor pollicis brevis
 - b) abductor pollicis brevis
 - c) opponens pollicis
 - d) adductor pollicis
 - e) first palmar interossei
- 95) Which of the following muscles arises, in part, from the radial collateral ligament of the elbow joint?
- a) extensor carpi radialis brevis
 - b) supinator
 - c) extensor digiti minimi
 - d) extensor carpi ulnaris
 - e) extensor digitorum
- 96) Which nerve is a branch of the lateral cord of the brachial plexus?
- a) upper subscapular nerve
 - b) thoracodorsal nerve
 - c) musculocutaneous nerve
 - d) ulnar nerve
 - e) lower subscapular nerve
- 97) The peripheral nerve arising directly from the upper trunk of the brachial plexus is the:
- a) dorsal scapular
 - b) thoracodorsal
 - c) suprascapular
 - d) upper subscapular
 - e) lower subscapular
- 98) The first part of the subclavian artery:
- a) usually gives off no branches
 - b) lies behind the anterior scalene muscle
 - c) makes a groove in the dome of the pleura
 - d) is encircled by the ansa cervicalis
 - e) on the left lies anterior to the common carotid artery

Section 7

Upper Limb – Answers

1	D	34	B	67	A
2	B	35	D	68	D
3	A	36	D	69	C
4	A	37	E	70	C
5	D	38	B	71	A
6	C	39	D	72	A
7	A	40	C	73	C
8	B	41	E	74	C
9	B	42	D	75	B
10	C	43	E	76	B
11	C	44	B	77	A
12	E	45	B	78	B
13	C	46	E	79	C
14	E	47	D	80	B
15	D	48	A	81	A
16	C	49	D	82	D
17	A	50	A	83	D
18	E	51	E	84	E
19	C	52	C	85	B
20	E	53	E	86	C
21	B	54	E	87	E
22	D	55	D	88	C
23	B	56	E	89	D
24	C	57	C	90	C
25	C	58	D	91	E
26	A	59	B	92	C
27	C	60	E	93	A
28	D	61	E	94	B
29	A	62	C	95	B
30	B	63	C	96	C
31	B	64	C	97	C
32	C	65	B	98	C
33	D	66	B		