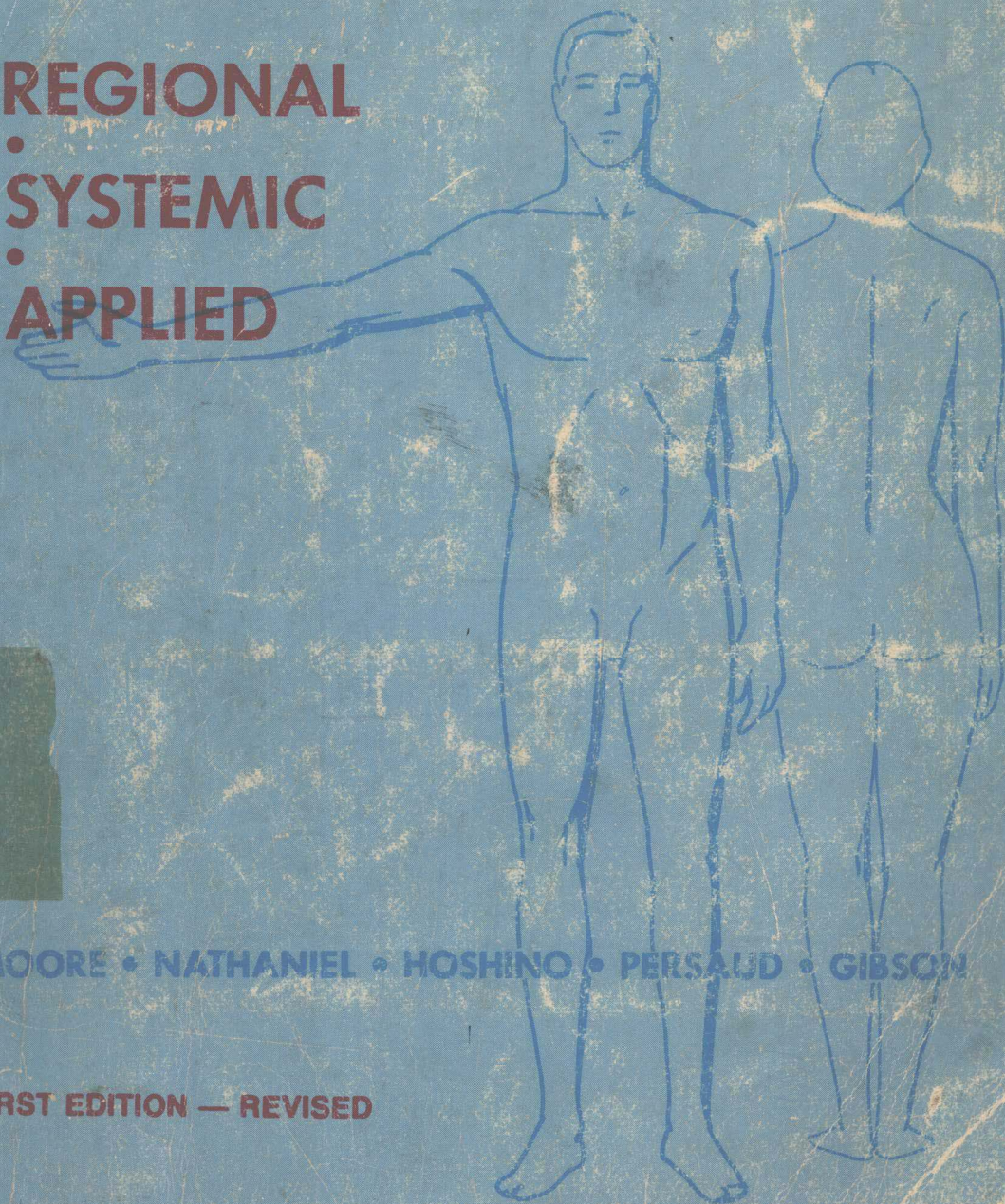


# STUDY GUIDE AND REVIEW MANUAL OF HUMAN ANATOMY

REGIONAL  
•  
SYSTEMIC  
•  
APPLIED



MOORE • NATHANIEL • HOSHINO • PERSAUD • GIBSON

FIRST EDITION — REVISED



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## PREFACE

During the last decade there has been much controversy about "new" and "old" anatomy and some uncertainty about how much anatomy should be taught. Because of the curtailment of time available for gross anatomy, there has been a trend to teach the anatomy that will be useful in clinical practice. Students naturally wish to know what the faculty expects them to learn during their undergraduate medical years. We believe much uncertainty can be dispelled by defining the instructional objectives of the undergraduate curriculum, and by emphasizing the foundation of anatomical knowledge upon which more can be added when detailed knowledge becomes necessary.

Mager\* has said, "If you give a learner a copy of your objectives, you may not have to do much else." The implications of this statement support our view that medical students must accept responsibility for acquiring and continuing their education.

The objectives listed at the beginning of each chapter in this Study Guide and Review Manual define what students should be able to do in Anatomy when they begin their clinical studies. The objectives are based on the view that it is neither necessary nor desirable to expect students to master the vast amount of anatomical knowledge that exists and was once taught. By restricting the amount of formal instruction to "core anatomy" and by formulating instructional objectives, students are afforded the opportunity of acquiring this knowledge for themselves through lectures, reading, dissection, use of prosected material, models and audiovisual aids, and by interaction with basic science and clinical teachers.

The objectives defined in this guide are based on the stated goal of our faculty "to produce a physician who, at graduation, is able to embark upon any one of the potential pathways of graduate education and practice". Acquisition of anatomical knowledge beyond the stated objectives will depend greatly upon the branch of medicine in which the student wishes to practise.

Because multiple-choice examinations are being used more and more, and are formidable even to the best prepared, commonly used types of these questions have been developed around each region and system of the body, with special emphasis on the stated instructional objectives. Many questions have been formulated to exemplify the clinical applications of gross anatomy and to vitalize the students' interest in clinically oriented anatomy. Questions dealing with clinical problems and requiring anatomical knowledge are used frequently, and emphasis is placed on living and radiological anatomy because these aspects are routinely used by most doctors. The test questions are intended for those wishing to determine the state of their knowledge, and to improve their skills with multiple-choice examinations.

The terminology used is the Nomina Anatomica, fourth edition, 1977, translated into English where applicable. Names that are widely used clinically appear in parentheses.

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\*Mager, R. F. Preparing Instructional Objectives. Fearon Publishers, Belmont, California, 1962.

In this Study Guide and Review Manual, anatomy is treated both by regions and by systems. Many structures are found in different regions of the body, e.g., the vagus nerves, but it is not feasible to dissect the body system by system for technical reasons; thus, it is dissected region by region. Moreover a good knowledge of the structures occupying any given region is absolutely essential for many clinical purposes, e.g., in cut-wounds of the throat. Hence, a study of regional anatomy is scarcely less important than that of the various systems.

Because we have attempted to establish what aspects of anatomy are important for every medical student to know, we should appreciate receiving constructive criticism of the instructional objectives and questions. We should like the questions and answers to be free of ambiguity and representative not only of important aspects of anatomy, but also of high standards of education.

The radiographs were taken by Dr. Paul Major of the Departments of Radiology and Anatomy; the illustrations were drawn by one of us (Dr M.H. Lindsay Gibson). We thank Mr. Walter Bailey, President of the W.B. Saunders Company of Canada for his guidance in the preparation of this Revised Edition.

*The Authors*

## USER'S GUIDE

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This guide is designed to help you study, and later review, human anatomy by providing learning objectives and various types of multiple-choice questions based on these objectives.

The questions are not intended as a substitute for careful study, but to enable you to detect areas of weakness and to afford you the opportunity to correct deficits in your knowledge. Although answers to questions are explained and relevant notes are given, you should consult your textbook for a comprehensive review of difficult concepts and processes. Through discussion of weak areas with your colleagues and instructors, you can test your ability to do the things listed as objectives at the beginning of each chapter.

To use this guide most effectively, the following steps are suggested.

1. Read the objectives listed at the beginning of the chapter you plan to study.
2. Carefully study the appropriate chapter(s) in your textbook, focusing on the objectives.
3. After study, or the lecture, answer the multiple-choice questions. The questions indicate how much knowledge you are expected to acquire to fulfill the objectives. The questions are similar to those used in various board and school multiple-choice examinations, and are designed to be answered at the rate of about one per minute.

As you complete each set of questions, check your answers. If any of your answers are wrong, read the notes and explanations and study the appropriate material and illustrations in your textbooks before proceeding to the next set of questions.

4. If you get 80 per cent or more of the questions correct on the first trial, or during a subsequent review, you have performed very well and should have no difficulty answering similar questions based on the objectives given in this guide.
5. When you have completed the study of a region, attempt the review examination on the region. If your level of performance is not superior, determine where your knowledge is defective and attempt the examination at a later date.
6. As you complete the study of a system, attempt the review examination on the system. If you do poorly on the examination, revise your knowledge and attempt the examination at a subsequent time. Your level of performance should be no lower than the superior-very superior range.

PART ONE

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## REGIONAL ANATOMY





# 1. THE UPPER LIMB

## OBJECTIVES

### Axilla and Pectoral Region

#### Be Able To:

- \* Define the boundaries of the axilla and list its contents.
- \* Delineate the extent and relationships of the axillary artery and vein, including their branches.
- \* Schematically illustrate the formation of the brachial plexus of nerves and its branches.
- \* Draw and label the location and drainage patterns of the axillary group of lymph nodes and vessels, showing its relationships to the axillary blood vessels.
- \* Describe the pectoral muscles as to their attachments, functions, innervation, and relationships to the axillary artery.
- \* Discuss the anatomical location of the female breast on the thoracic wall, illustrating its general structure and lymphatic drainage.

### Shoulder

#### Be Able To:

- \* Point out the anatomical features of the scapula, the clavicle, and the proximal half of the humerus, using anatomical specimens and radiographs.
- \* Use simple sketches to illustrate the articulations of the shoulder girdle and its ligamentous and muscular support.
- \* Describe the muscles responsible for movements of the shoulder girdle with specific reference to movements of the scapula and clavicle.
- \* Discuss the arterial anastomosis around the scapula.

### Arm and Elbow

#### Be Able To:

- \* Compare and contrast the attachments, the functions, and the innervation of the muscles of the anterior and posterior compartments of the arm.
- \* Discuss the clinical significance of the following anatomical relationships

in the arm: proximity of the axillary, radial, and ulnar nerves to the humerus; displacement fractures above and below the insertion of the deltoid muscle; and displacement of supracondylar fractures.

- \* Use bones or radiographs to describe the articulating surfaces of the elbow and proximal radio-ulnar joints, the movements permitted, and the supporting ligaments.

- \* Illustrate the arterial anastomoses around the elbow.

- \* Make a sketch of the cubital fossa showing its boundaries and contents and write a note on its clinical significance.

### Forearm and Wrist

Be Able To:

- \* Prepare a sketch illustrating the muscles originating from the medial and lateral epicondyles and supracondylar ridges of the humerus, indicating their anatomical position, insertion, functions, and innervation.

- \* Describe with the aid of a drawing the muscles originating from and acting between the radius and ulna, indicating their general insertion, functions, and innervation.

- \* Describe the course of the following branches of the brachial artery: ulnar, radial, and common, anterior, and posterior interosseous arteries.

- \* Give the anatomical basis and clinical significance for locating the brachial and radial pulses.

- \* Write brief notes on the distal radio-ulnar and wrist (radiocarpal) joints, describing their articulating surfaces, movements, and relations.

- \* Briefly describe the attachments of the flexor retinaculum at the wrist, listing the tendons, nerves, and blood vessels passing superficial and deep to it.

- \* Give an account of the clinical significance of the flexor retinaculum at the wrist.

### Hand

Be Able To:

- \* Describe the arrangement of the carpal bones.

- \* Define the movements of the thumb and fingers correlating them with the innervation of the thenar, hypothenar, and other intrinsic and extrinsic muscles of the hand.

- \* Define the tendons forming the boundaries of the "anatomical snuff-box", giving its relation to the following: radial artery and nerve, cephalic vein, and scaphoid bone.

- \* Describe the motor and sensory deficiencies of the hand resulting from injury of: the radial nerve in the midhumeral region; the median and ulnar nerves at

the elbow; and the radial nerve at the wrist.

AXILLA AND PECTORAL REGION

F I V E - C H O I C E C O M P L E T I O N Q U E S T I O N S

DIRECTIONS: Each of the following questions or incomplete statements is followed by five suggested answers or completions. SELECT THE ONE BEST ANSWER in each case and then underline the appropriate letter at the lower right of each question.

1. THE AXILLARY ARTERY EXTENDS FROM THE OUTER BORDER OF THE FIRST RIB TO THE:  
A. Lower border of pectoralis major muscle  
B. Upper border of pectoralis minor muscle  
C. Lower border of teres major muscle  
D. Upper border of subscapularis muscle  
E. Outer border of the second rib

ABCDE
2. THE \_\_\_\_\_ MUSCLE IS ATTACHED TO THE STERNUM.  
A. Brachialis  
B. Deltoid  
C. Pectoralis major  
D. Pectoralis minor  
E. Subclavius

ABCDE
3. THE \_\_\_\_\_ ARTERY IS NOT A BRANCH OF THE AXILLARY ARTERY.  
A. Lateral thoracic  
B. Subscapular  
C. Superior thoracic  
D. Suprascapular  
E. Thoracoacromial

ABCDE
4. ALL THE FOLLOWING STATEMENTS ABOUT THE FEMALE BREAST ARE TRUE EXCEPT:  
A. Consists of 15-20 lobes  
B. Nipple contains ampullae  
C. Contains fibrous septa  
D. Lies entirely beneath the deep fascia  
E. Has an axillary tail

ABCDE
5. THE CORDS OF THE BRACHIAL PLEXUS ARE NAMED AFTER THEIR RELATIONSHIP TO:  
A. Each other  
B. The first part of the axillary artery  
C. The subclavian artery  
D. The third part of the axillary artery  
E. The second part of the axillary artery

ABCDE
6. WHICH NERVE PASSES DEEP TO THE DELTOID MUSCLE?  
A. Ulnar  
B. Radial  
C. Median  
D. Axillary  
E. Musculocutaneous

ABCDE
7. WHICH OF THE FOLLOWING STRUCTURES DOES NOT FORM A BOUNDARY OF THE AXILLA?  
A. Humerus  
B. Brachialis muscle  
C. Intercostal muscle  
D. Latissimus dorsi muscle  
E. Pectoralis major muscle

ABCDE

**SELECT THE ONE BEST ANSWER**

8. THE \_\_\_\_\_ VEIN COURSES BETWEEN THE DELTOID AND PECTORALIS MAJOR MUSCLES.

- |             |                   |
|-------------|-------------------|
| A. Axillary | D. Cephalic       |
| B. Basilic  | E. Median cubital |
| C. Brachial |                   |

**A B C D E**

----- ANSWERS, NOTES AND EXPLANATIONS -----

1. C. The axillary artery, a continuation of the subclavian artery, begins at the lateral border of the first rib. It courses through the axilla and terminates at the lower border of the teres major muscle. The axillary artery continues as the brachial artery.
2. C. The pectoralis major muscle, besides attaching to the sternum, also originates from the clavicle, the upper six costal cartilages, the aponeurosis of the external oblique muscles, and inserts into the crest of the greater tubercle of the humerus.
3. D. The branches of the axillary artery are: the superior thoracic, thoracoacromial, lateral thoracic, subscapular, and the anterior and posterior circumflex humeral arteries. The suprascapular artery is a branch of the thyrocervical trunk from the first part of the subclavian artery. The suprascapular artery crosses the superior margin of the scapula to supply the supraspinatus and infraspinatus muscles, and is involved with the scapular anastomosis.
4. D. The female breast contains 15-20 lobes, each of which drains via a lactiferous duct. Its terminal expanded portion forms the lactiferous sinus which opens at the summit of the nipple. The nipple is surrounded by a pigmented area of skin called the areola. The lobes of the breast are separated from each other by fibrous connective tissue septa. The gland lies within the superficial fascia except for a part that pierces the deep fascia and extends laterally and upward into the axilla. This portion of the gland is known as the axillary tail.
5. E. The cords of the brachial plexus are named according to their relationship to the second part of the axillary artery, which lies deep to the upper portion of the pectoralis minor muscle. All three cords of the plexus lie above and lateral to the first part of the artery. As they course distally, the medial cord crosses behind the artery to reach the medial side of the second segment of the artery. The posterior cord becomes posterior to the second part of the artery, whereas the lateral cord retains its lateral relationship to the artery.
6. D. All these nerves are formed from the three cords of the brachial plexus of nerves, and are originally medial to the deltoid muscle. Only the axillary nerve reaches the deep aspect of the deltoid muscle, after passing to the back of the arm and through the quadrangular space.
7. B. The walls of the axilla are formed laterally by the humerus, biceps brachii and coracobrachialis muscles; posteriorly by the latissimus dorsi, subscapularis and teres major muscles; medially by the upper intercostal and serratus anterior muscles and the ribs; and anteriorly by the pectoralis major, pectoralis minor and subclavius muscles.
8. D. The cephalic vein begins on the dorsum of the hand and ascends on the radial aspect of the anterior forearm and elbow region. It then ascends along

the lateral margin of the biceps brachii muscle and courses between the medial fibers of the deltoid and the upper lateral fibers of the pectoralis major muscles, the deltopectoral triangle. It then pierces the clavipectoral fascia and joins the axillary vein.

## MULTI-COMPLETION QUESTIONS

**DIRECTIONS:** In each of the following questions or incomplete statements, ONE OR MORE of the completions given is correct. At the lower right of each question, underline A if 1, 2 and 3 are correct; B if 1 and 3 are correct; C if 2 and 4 are correct; D if only 4 is correct; and E if all are correct.

1. THE AXILLARY NERVE INNERVATES THE FOLLOWING MUSCLE(S):

- |                |                      |
|----------------|----------------------|
| 1. Deltoid     | 3. Teres minor       |
| 2. Teres major | 4. Serratus anterior |

A B C D E

2. THE MEDIAN NERVE:

1. Is derived from the lateral and medial cords of the brachial plexus
2. Passes through the cubital fossa
3. Gives rise to the anterior interosseous nerve
4. Supplies the interossei muscles

A B C D E

3. WHICH OF THE FOLLOWING NERVES ARISE(S) FROM THE POSTERIOR CORD OF THE BRACHIAL PLEXUS OF NERVES?

- |                    |                  |
|--------------------|------------------|
| 1. Dorsal scapular | 3. Suprascapular |
| 2. Thoracodorsal   | 4. Subscapular   |

A B C D E

4. THE BRANCH(ES) OF THE SECOND PART OF THE AXILLARY ARTERY IS (ARE) THE:

- |                     |                                |
|---------------------|--------------------------------|
| 1. Supreme thoracic | 3. Anterior circumflex humeral |
| 2. Subscapular      | 4. Thoracoacromial             |

A B C D E

5. THE BASILIC VEIN:

1. Arises on the dorsum of the hand
2. Joins the internal jugular vein
3. Accompanies the median antebrachial cutaneous nerve
4. Is a deep vein of the forearm

A B C D E

6. THE PECTORALIS MAJOR MUSCLE TAKES ORIGIN FROM THE:

1. Anterior aspect of the medial portion of the clavicle
2. Aponeurosis of the external oblique muscle of the abdomen
3. Anterior aspect of the sternum
4. Upper six bony ribs

A B C D E

7. THE ARTERIAL SUPPLY OF THE MAMMARY GLAND IS DERIVED FROM THE \_\_\_\_\_ ARTERIES.

- |                      |                        |
|----------------------|------------------------|
| 1. Internal thoracic | 3. Lateral thoracic    |
| 2. Intercostal       | 4. Superior epigastric |

A B C D E

8. THE AXILLARY LYMPH NODES DRAIN:

- |                      |                         |
|----------------------|-------------------------|
| 1. The upper limb    | 3. Part of the trunk    |
| 2. The mammary gland | 4. The root of the neck |

A B C D E

9. THE POSTERIOR WALL OF THE AXILLA IS FORMED BY THE \_\_\_\_\_ MUSCLES.

- |                     |                  |
|---------------------|------------------|
| 1. Teres major      | 3. Subscapularis |
| 2. Latissimus dorsi | 4. Subclavius    |

A B C D E



A 1,2,3	B 1,3	C 2,4	D only 4	E all correct
------------	----------	----------	-------------	------------------

10. THE DEEP VEINS IN THE UPPER EXTREMITY ARE THE:

- |               |             |
|---------------|-------------|
| 1. Axillary   | 3. Brachial |
| 2. Subclavian | 4. Basilic  |

A B C D E

11. THE LATERAL PECTORAL NERVE:

1. Innervates only the pectoralis minor muscle
2. Arises from the lateral cord of the brachial plexus
3. Is usually found lateral to the medial pectoral nerve
4. Pierces the clavipectoral fascia

A B C D E

-----ANSWERS, NOTES AND EXPLANATIONS-----

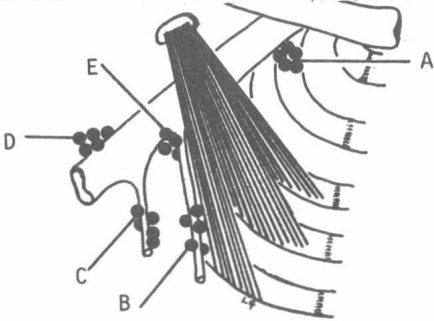
1. B. 1 and 3 are correct. The axillary nerve arises from the posterior cord of the brachial plexus, passes through the quadrangular space accompanied by the posterior humeral circumflex artery, and supplies both the deltoid and teres minor muscles. Teres major and serratus anterior are innervated by the lower subscapular (also from the posterior cord) and the long thoracic nerves, respectively.
2. A. 1, 2 and 3 are correct. The median nerve receives contributions from the ventral primary rami of spinal nerves C5, 6, and 7, via the lateral cord and C8 and T1, in the arm and enters the cubital fossa, where it gives off branches to some muscles of the flexor compartment of the forearm. The interosseous nerve supplies the flexor pollicis longus, pronator quadratus, and the lateral half of the flexor digitorum profundus muscles. In the hand, the median nerve supplies three thenar muscles, the lateral two lumbricals, the palmar skin of the lateral three and a half digits, and the dorsal skin of the tips of these same digits.
3. C. 2 and 4 are correct. All these nerves are branches of the brachial plexus, however, only the thoracodorsal and the subscapular nerves are branches of the posterior cord of the brachial plexus. The dorsal scapular nerve arises chiefly from the ventral ramus of the fifth cervical spinal nerve (C5) and the suprascapular nerve (C5,6) is the branch of the upper trunk of the brachial plexus.
4. D. 4 only is correct. The axillary artery can be divided into three segments according to its relationship to the pectoralis minor muscle. The first part lies between the lateral border of the first rib and the upper border of the pectoralis minor muscle; the second part lies behind the pectoralis minor muscle, and the third part extends from the lower border of pectoralis minor to the lower border of teres major muscle. The thoracoacromial and lateral thoracic arteries are branches of the second part, the supreme (highest) thoracic artery is a branch of the first part, whereas the branches of the third part are the subscapular and the anterior and posterior circumflex humeral arteries.
5. B. 1 and 3 are correct. The basilic vein arises superficially on the dorsum of the hand and ascends on the posteromedial surface of the forearm. Before reaching the elbow it curves around the forearm to the anteromedial surface. Here it is joined by the median cubital vein and ascends up the arm, piercing the deep fascia about the middle of the arm. It joins the brachial veins to form the axillary vein at the lower border of the teres major muscle.
6. A. 1, 2, and 3 are correct. The origin of the pectoralis major muscle is broad and includes: (1) the clavicular portion, from the anterior surface of

the medial half of the clavicle; (2) the sternal portion, from the anterior surface of the manubrium and body of the sternum; (3) the costal portion, commonly from the second to sixth costal cartilages, but occasionally from the first and seventh costal cartilages as well; and (4) the aponeurosis of the external oblique muscle of the abdomen.

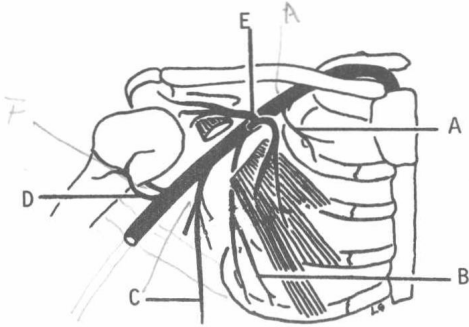
7. A. 1, 2, and 3 are correct. The arterial supply to the mammary gland is derived from branches of the subclavian, intercostal, and axillary arteries. The internal thoracic artery, a branch of the subclavian, supplies the gland directly via its perforating branches of the second, third, and fourth intercostal spaces. The lateral thoracic and thoracoacromial branches of the axillary artery supply the lateral and superior aspects of the gland proper, including the axillary tail.
8. E. All are correct. The axillary lymph nodes can be divided into five groups: lateral, posterior, pectoral, central, and apical. The lateral and posterior groups of lymph nodes drain the upper limb and the posterior aspect of the shoulder, respectively. The pectoral group drains the breast. The pectoral, lateral, and posterior groups all drain into the large central group. The apical group of nodes, situated below the clavicle in the clavipectoral fascia, drains the central group and empties eventually into the venous system.
9. A. 1, 2, and 3 are correct. The teres major, latissimus dorsi and subscapularis muscles form the posterior wall of the axilla. The teres major and subscapularis muscles originate from the scapula; the subscapularis form the subscapular fossa, and the teres major form the posterior surface of the lower lateral border of the scapula. The latissimus dorsi originates from the posterior part of the iliac crest, the lumbar fascia, the spines of the lower six thoracic vertebrae, and the lower three or four ribs. The three muscles converge towards the humerus, forming the posterior axillary wall. The teres major and latissimus dorsi muscles insert on the medial lip and floor of the bicipital groove, respectively. The subscapularis muscle inserts on the lesser tuberosity of the humerus. The subclavius muscle forms part of the anterior axillary wall.
10. B. 1 and 3 are correct. The deep veins follow the arteries and have similar names. The axillary vein is the main vein carrying blood from the upper limb. At the outer border of the first rib, the axillary vein continues as the subclavian vein in the neck. Hence, the subclavian vein is not a deep vein in the upper extremity. The brachial veins are on each side of the brachial artery and join the axillary vein near the lower border of the subscapularis muscle. The basilic vein is a superficial vein of the upper limb.
11. C. 2 and 4 are correct. The lateral pectoral nerve arises from the lateral cord of the brachial plexus of nerves; contains nerve fibers from the anterior divisions of the fifth, sixth, and seventh cervical spinal nerves; pierces the clavipectoral fascia medial to the medial pectoral nerve and innervates chiefly the pectoralis major muscle, but contributes fibers to the pectoralis minor muscle as well. The lateral pectoral nerve sends a branch over the first part of the axillary artery to the medial pectoral nerve, and forms a loop through which the lateral pectoral nerve carries motor fibers to the pectoralis minor muscle. The median and lateral designations of the medial and lateral pectoral nerves refer to the cords of their origins, not to their topographical relationships.

## FIVE-CHOICE ASSOCIATION QUESTIONS

**DIRECTIONS:** Each group of questions below consists of a numbered list of descriptive words or phrases accompanied by a diagram with certain parts indicated by letters, or by a list of lettered headings. For each numbered word or phrase, **SELECT THE LETTERED PART OR HEADING** that matches it correctly. Then insert the letter in the space to the right of the appropriate number. Sometimes more than one numbered word or phrase may be correctly matched to the same lettered part or heading.



1. \_\_\_\_ Largest group of axillary lymph nodes
2. \_\_\_\_ Nodes lying along the lateral thoracic vessels
3. \_\_\_\_ Nodes draining most of the upper limb
4. \_\_\_\_ The posterior group of nodes
5. \_\_\_\_ Nodes lying medial to the axillary vein



6. \_\_\_\_ Anterior circumflex humeral artery
7. \_\_\_\_ Lateral thoracic artery
8. \_\_\_\_ Thoracoacromial (trunk) artery
9. \_\_\_\_ Subscapular artery
10. \_\_\_\_ Superior thoracic artery

### -----ANSWERS, NOTES AND EXPLANATIONS-----

1. **E.** The central nodes lie at the base of the axilla and receive lymph from the lateral, pectoral, and posterior groups of nodes. They form the largest group (10-14 nodes) and are often palpable.
2. **B.** The pectoral nodes surround the lateral thoracic vessels as they follow the lateral margin of the pectoralis minor muscle. This group of nodes receives most of the lymph draining from the breast, however, other groups of nodes also drain the breast.
3. **D.** The lateral (brachial) group of 10-14 lymph nodes, lying posterior to the axillary vein, drains the superficial and deep lymphatics of the upper limb. The deep lymphatics ascend in the arm accompanying the larger vessels.
4. **C.** The subscapular (posterior) nodes accompany the subscapular vein along the lateral border of the scapula. These nodes and their efferent vessels drain the posterior aspect of the shoulder.
5. **A.** The apical (infraclavicular) group of nodes lies medial to the proximal part of the axillary vein, superior to the upper border of the pectoralis minor muscle. These nodes lie deep to the clavipectoral fascia and drain lymph from the other groups of axillary nodes; occasionally they directly drain the breast. The apical group then drains, via two or three efferent

subclavian trunks, to the jugulosubclavian venous junction or to the lower deep cervical group of nodes.

6. **D.** The anterior circumflex humeral is a small artery arising from the third part of the axillary artery. It lies on the anterior surface of the surgical neck of the humerus, and supplies the shoulder joint and the head of the humerus. It anastomoses with the larger posterior circumflex humeral artery.
7. **B.** The lateral thoracic artery, along with the thoracoacromial artery, arises from the second part of the axillary artery. The second part of the axillary artery is defined as the segment located deep to the pectoralis minor muscle. The lateral thoracic artery courses along the lower border of the pectoralis minor muscle and supplies the serratus anterior and pectoral muscles.
8. **E.** The thoracoacromial artery, a short trunk, arises from the second part of the axillary artery. As it passes around the margin of pectoralis minor muscle, it gives rise to four branches: pectoral, acromial, clavicular, and deltoid, supplying the regions indicated by their names.
9. **C.** The subscapular artery is the largest branch of the third part of the axillary artery. It arises at the lower border of the subscapularis muscle and follows it to the inferior angle of the scapula. The subscapular artery supplies adjacent muscles and freely anastomoses with the suprascapular and dorsal scapular arteries.
10. **A.** The superior thoracic artery is a small branch that arises from the first part of the axillary artery near the lower border of the subclavius muscle. It supplies the subclavius and pectoral muscles and a small part of the thoracic wall.

## SHOULDER

### FIVE-CHOICE COMPLETION QUESTIONS

**DIRECTIONS:** Each of the following questions or incomplete statements is followed by five suggested answers or completions. SELECT THE ONE BEST ANSWER in each case and then underline the appropriate letter at the lower right of each question.

1. WHICH OF THE FOLLOWING MUSCLES CONTRIBUTES TO THE STABILITY OF THE SHOULDER JOINT?  
A. Subscapularis  
B. Supraspinatus  
C. Infraspinatus  
D. Teres minor  
E. All of the above
2. ALL THE FOLLOWING MUSCLES WILL ROTATE THE ARM MEDIANLY EXCEPT THE:  
A. Latissimus dorsi  
B. Teres major  
C. Infraspinatus  
D. Subscapularis  
E. Pectoralis major
3. THE LONG THORACIC NERVE INNERVATES THE \_\_\_\_\_ MUSCLE.  
A. Trapezius  
B. Rhomboid major  
C. Latissimus dorsi  
D. Pectoralis major  
E. Serratus anterior

A B C D E

A B C D E

A B C D E