

BOWEN UNIVERSITY IWO, OSUN STATE
COLLEGE OF HEALTH OF BASIC MEDICAL SCIENCE
ANATOMY PROGRAMME

FIRST SEMESTER 2023/2024 SESSION

Date: TUESDAY 30/01/2024 EXAMINATION TIME: 3 HOURS

ANA 411 (SURFACE ANATOMY/ANTHROPOMETRY) (3 UNITS)

INSTRUCTIONS: READ AND FOLLOW THE INSTRUCTIONS FOR EACH SECTION AND QUESTION CAREFULLY

SECTION A (COMPULSORY)

1. a. Discuss the surface markings of the cubital fossa.
b. Add notes on:
 - i. Location
 - ii. Contents
 - iii. Functional Anatomy
 - iv. Diagram
2. a. Discuss Dermatomes.
b. With the aid of a diagram, discuss the dermatomes of the upper limb

SECTION B: ANSWER QUESTION NUMBER 3 AND ANY OTHER TWO

3. i. Define in detail the surface markings for the following landmarks in the body.
 - a. Suprasternal notch
 - b. Sternal angle of Louis
 - c. Subcostal angle
 - d. Nipple in the adult male subject
 - e. Subcutaneous inguinal ring
 - f. McBurney's Point
 - g. Hesselbach's triangle
 - h. Metopic suture
 - i. Pterion
 - j. Frankfort horizontal plane
- ii. State exactly the vertebral levels of the following landmarks:
 - a. Xiphisternal joint
 - b. Lowest point of the costal margin
 - c. Superior and inferior angles of the scapula
 - d. Root of the spine of scapula
 - e. Vertebra prominens
 - f. Umbilicus
 - g. Pyloric and cardiac orifices of the stomach
 - h. Termination of abdominal aorta
 - i. Pancreas
- iii. Where will you locate the following auscultating areas and orifices of the heart?
 - a. Aortic area
 - b. Pulmonary area
 - c. Mitral area

- d. Tricuspid area
 - e. Aortic orifice
 - f. Pulmonary orifice
4. Using the given information below, and with very well labeled diagrams, indicate/represent the outline of any two of the following viscera on the surface of the body: (10 marks each)
- a. **A quadrangular figure representing the heart: STEPS**
- i. Determine the apex of the heart first, as a point in the fifth interspace, 9 cm. to the left of the midsternal line.
Next: Mark out the other three points:
 - ii. the seventh right sternocostal articulation (point A)
 - iii. a point on the upper border of the third right costal cartilage 1 cm. from the right lateral sternal line (point B)
 - iv. a point on the lower border of the second left costal cartilage 2.5 cm. from the left lateral sternal line (Point C)
Next: Join the points:
 - v. A line joining the apex to point (A) and traversing the junction of the body of the sternum with the xiphoid process represents the lowest limit of the heart—its acute margin.
 - vi. The right and left borders are represented respectively by lines joining (B) to (C) and the apex to (C); both lines are convex lateralward, but the convexity is more marked on the right where its summit is 4 cm. distant from the midsternal line opposite the fourth costal cartilage.
- b. **The Liver**— Using Birmingham's formula modified.
Take three points: (a) 1.25 cm below the right nipple;
- i. (b) 1.25 cm below the tip of the tenth rib;
 - ii. (c) 2.5 cm below the left nipple.
Join:
 - iii. (a) and (c) by a line slightly convex upward;
 - iv. (a) and (b) by a line slightly convex lateralward;
 - v. (b) and (c) by a line slightly convex downward ($\frac{1}{2}$ way) and concave upwards ($\frac{1}{2}$ way).
- c. The position of the **kidney** from the back, using the parallelogram of Morris:
- i. Two vertical lines are drawn, the first 2.5 cm., the second 9.5 cm. from the middle line.
 - ii. The parallelogram is completed by two horizontal lines drawn respectively at the levels of the tips of the spinous process of T11 and the lower border of the spinous process of L3 vertebra
Use the following surface markings for each:
 - iii. On the front of the abdomen the upper pole lies midway between the plane of the lower end of the body of the sternum and the transpyloric plane, 5 cm from the middle line.
 - iv. The lower pole is situated midway between the transpyloric and intertubercular planes, 7 cm. from the middle line.
 - v. The hilum is on the transpyloric plane, 5 cm. from the middle line at the level of the spinous process of L1 vertebra.
5. **Write short notes on any four of the following:**
- a. Lymph drainage of the breast with reference to its quadrants
 - b. Forensic estimation of age from human remains using bone and teeth
 - c. Lines of orientation on: i. Anterior and posterior chest walls ii. Anterior/front of the abdomen
 - d. i. Four (4) major craniometric points ii. Anterior and posterior diagrammatic representations of the cutaneous nerves of face and scalp

- e. Characteristics and classification of fingerprints and lip prints
 - f. Highlights and pictorial representation of dermatomes of thorax and abdomen
6. a. In a forensic bag labelled 'co-mingled human skull remains of Caucasians, Negroes and the Mongoloids: i. describe how you will identify them according to their races. ii. Correctly separate male from female bones.
- b. Given then following data on the pelvic bone, calculate the sacral (IS) and the ischiopubic (IPI) indices using appropriate set of data:
- i. Anterior length of sacrum (AB) = 245 cm and Breadth of base of sacrum (CO) = 220 cm.
 - ii. AB = 262 cm and CO = 232 cm.
 - vi. AB = 260 cm and CO = 220 cm.
 - vii. Ischial length (MN) = 85cm and Pubic length (NP) = 78cm.
 - viii. MN = 95 cm and NP = 92cm.
 - ix. MN = 103cm; 150cm and NP = 92cm; 148cm.

Add a note on the sex identity of each specimen.

Key: SI = Sacral breadth divided by sacral length x 100.

IPI = Pubic length divided by ischial length x 100

7. **PRACTICAL**

Use the information below to determine your body fat percentage with the aid of Jackson, A.S., Pollock, M.L., and Siri et al. approaches.

Step 1. Determine your body density using the formula below:

Males: $BD = 1.112 - (0.00043499 \times S) + (0.00000055 \times S^2) - (0.00028826 \times A)$ {Jackson & Pollock Equation}

Females: $BD = 1.097 - (0.00046971 \times S) + (0.00000056 \times S^2) - (0.00012828 \times A)$ {Jackson & Pollock Equation}

Where **BD** is body density, **S** is the sum of your skin fold measurements (in mm), **A** is your age (in years)

Step 2: Calculate your % body fat as follows:

% body fat = $(4.95 / BD - 4.50) \times 100$ [Siri Equation]

Key: Use S = 110 mm for males and 120 mm for females