



# UNIVERSITY OF NAIROBI

DEPARTMENT OF DIAGNOSTIC IMAGING AND RADIATION MEDICINE

UNDERGRADUATE PROGRAMME (MBCHB V)

CONTINUOUS ASSESSMENT TEST

MULTIPLE CHOICE QUESTIONS PAPER

DATE: Tuesday 14 July, 2015

TIME: 8.00AM - 10.00AM

## INSTRUCTIONS:

1. WRITE YOUR INDEX NUMBER (NOT YOUR NAME) ON THE SPACE PROVIDED ON THE ANSWER SHEET.
2. CIRCLE SINGLE BEST ANSWER USING A PENCIL
3. PLEASE NOTE THAT EACH QUESTION HAS ONLY ONE ANSWER.
4. MARKING WILL NOT BE DONE WHERE MORE THAN ONE ANSWER HAS BEEN GIVEN.

\* Barium meal.  
\* MRI

Lower esophagus  
Stomach  
Duodenum

Stw  
no  
Air - 1000  
Fat - 60  
Fluid 0-2  
Brain 20-  
Soft tissue 60  
Bone +100

1. When viewing a radiograph the following statement is true
- a) Increased transparency of rays appears as bright
  - b) Increased transparency of rays appears as dark
  - c) Decreased transparency of rays appears as dark
  - d) All of the above
  - e) None of the above

Air -1000  
 Fat -60-80  
 Fluid 0-20  
 Brain 20-40  
 Soft tissue 60-90  
 Bone +1000

2. In CT imaging
- a) Lungs show higher Hounsfield units (HU) than brain
  - b) Brain has higher HU than bones
  - c) Brain has lower HU than bones
  - d) Kidneys have lower HU than lungs
  - e) Subcutaneous fat has higher HU than liver

The more dense, the more HU

3. Concerning ultrasonography

- a) Sound waves of frequencies between 1-15 KHz are used
- b) Cystic lesions attenuate sound waves more than solid ones
- c) Radiation protection gear is required during image acquisition
- d) Air allows more sound waves through than soft tissues
- e) Bone causes acoustic shadow

eg<sup>a</sup>  
 2 MHz ~ 2000 Hz

4. During magnetic resonance imaging

- a) Fluid appears bright on T1W
- b) Fluid appears dark on T2W
- c) Fluid appears dark on T1W
- d) Contrast injection must be used for angiography
- e) Higher radiation dose is experienced compared to CT

5. Which one of the following should not appear in an imaging request

- a) Patient biodata
- b) Radiological examination being requested
- c) Relevant clinical information
- d) Past medical history
- e) None of the above

Lower esophagus  
 Stomach  
 Duodenum

6. During a barium meal examination

Barium  $SO_4 + H_2O$

- a) Image is generally viewed on a fluorescent screen
- b) Negative contrast is administered
- c) Cathode ray oscilloscope system is used to view the image
- d) No films are taken in the first ten minutes
- e) Contrast is ingested the day before the examination

7. In micturating cysto-urethrography

- a) ~~Non-water soluble contrast is used~~
- b) ~~Suprapubic introduction of contrast is contra-indicated~~
- c) ~~Both the bladder and the urethra are demonstrated~~
- d) ~~Only the urinary bladder is demonstrated~~
- e) ~~Vesico-ureteric reflux cannot be demonstrated~~

8. The following statement is true concerning intracranial hemorrhage CT

- a) ~~Acute epidural hematomas are concavoconvex and hyperdense~~
- b) ~~Chronic subdural hematoma is usually associated with major trauma~~
- c) ~~A subdural hematoma presents as a biconvex hyperdense lesion~~
- d) ~~Acute extradural hematoma is usually associated with a skull fracture~~
- e) ~~Hematomas that cross the midline are most likely subdural than extradural~~

9. Indications of cranial sonography include the following except

- a) ~~Suspected cystic cranial lesions in a 3 yr old child~~
- b) ~~Monitoring progress and complications of meningitis in a 1 yr old child~~
- c) ~~Evaluation of intracranial haemorrhage in a neonate~~
- d) ~~Evaluation of the infant brain~~
- e) ~~Evaluation of a suspected meningocele~~

10. Multiple lucent skull lesions are found on a skull radiograph. Which of the following is the least likely diagnosis

- a) ~~Prominent convolutional markings~~
- b) ~~Arachnoid granulations~~
- c) ~~Metastases~~
- d) ~~Surgical calvarial defect~~
- e) ~~Osteomas~~

*Impressions of gyri  
Copper Beaten skull. (3-7 yrs)  
Rapid brain growth*

*Radiodense Normal*

11. Which one of the following does not constitute a caution while performing magnetic resonance imaging

- a) ~~Acute intracranial haemorrhage~~
- b) ~~Cardiac pacemaker~~
- c) ~~Total hip replacement~~
- d) ~~Ear implant~~
- e) ~~None of the above~~

12. In chest radiography

- a) ~~Bronchi are next to arteries forming a figure 8 appearance~~
- b) ~~The left lung volume appears larger than the right~~
- c) ~~The left hemidiaphragm is usually higher than the right~~
- d) ~~The pulmonary bay is normally more prominent than the left atrial appendage~~
- e) ~~Bronchovascular markings are normally seen to the lung peripheries~~

13. In chest radiography air bronchograms can be present in

- a) Pneumonia
- b) Haemorrhage
- c) Pulmonary oedema
- d) Cancer

~~e) All of the above~~

→ IHD  
→ Atelectasis  
→ Infarction  
→ Normal expiration

14. Which one of the following is not a likely feature of pulmonary tuberculosis on a chest radiograph?

- a) Consolidation
- b) Nodules
- c) Atelectasis
- d) Flattening of hemidiaphragms
- e) Cavitation

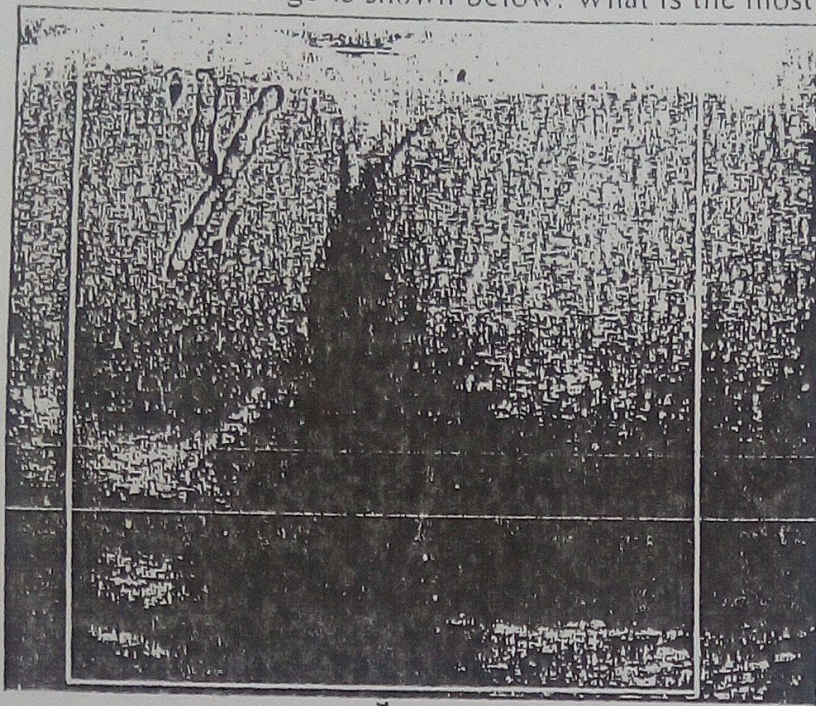
15. Global cardiomegaly is seen in

- a) Pleural effusion
- b) Cardiomyopathy
- c) Tetralogy of Fallot
- d) Right sided heart failure
- e) Emphysema

16. A 24-year old woman has marked increase in the size of her uterus between 26-30 weeks gestation. Obstetric ultrasound shows a marked increase in the amount of amniotic fluid. The fetus is normal for gestational age. Which of the following is the most likely diagnosis

- a) Congenital heart disease
- b) Duodenal atresia
- c) Erythroblastosis fetalis
- d) Horseshoe kidney
- e) Neural tube defect

17. An ultrasound image is shown below. What is the most likely diagnosis?



- a) Left hydrocele ✗
- b) Right varicocele ✗
- c) Left inguinal hernia ✗
- d) left testicular torsion
- e) normal testes ✗

2017

18. A 25-year old primigravida at 20 weeks of her pregnancy is found to have bacteriuria caused by E. coli in urine test. She is asymptomatic. Which of the following is the most appropriate plan of management?

- a) Reassurance without treatment ✗
- b) Repeat urine test at term ✗
- c) Commence with antibiotic treatment
- ~~d) Ultrasonography of her urinary bladder.~~
- e) Ultrasonography of her kidneys ✗

by Uterine tubes

19. A 33-year old female presents with right lumbar pain radiating to the groin. Which of the following is the most appropriate initial imaging modality to request?

- a) CT scan abdomen ✗
- b) Transabdominal pelvic ultrasound ✗
- c) Transvaginal pelvic ultrasound ✗
- d) Abdominopelvic ultrasound
- ~~e) Plain abdominal radiographs~~

not used in pregnancy

So, kidney - back of ovary  
 So, radiographs - not used

20. A 23-year old man presents to his physician for seeing blood in urine. The renal functions are within normal range. No family history is noted. Which of the following is the most appropriate initial imaging to request?

- a) Abdominopelvic ultrasound
- b) Micturatingcystourethrogram
- c) CT urogram
- d) IVU
- e) DSMA scan

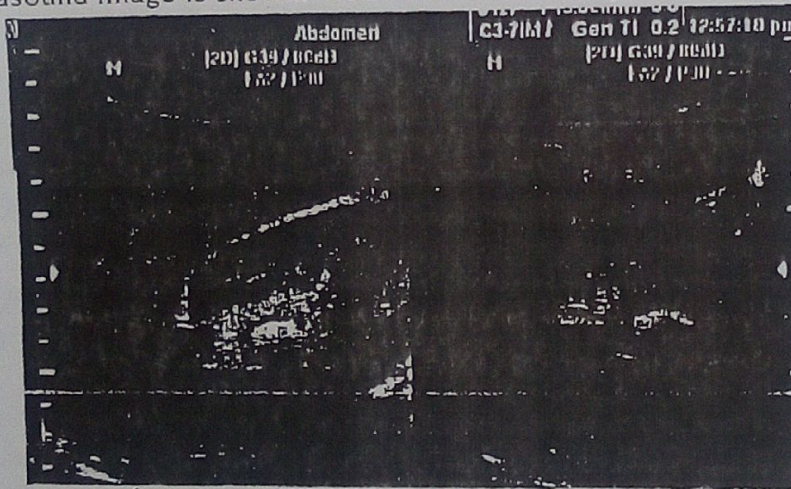
*Abdominal - CT + IVU*

21. During your rotations in the surgical outpatient clinic you clerk a 67-year old man who complains of hesitancy, frequency and dribbling of urine. Appropriate management includes which initial diagnostic test

- a) Micturatingcystourethrogram
- b) Abdominopelvic ultrasound
- c) CT abdomen
- d) IVU
- e) Transrectal ultrasound

*TRUS*

22. An ultrasound image is shown. What is the most likely diagnosis?



- a) Gravid uterus at 7 weeks
- b) Calcified uterine fibroids
- c) Renal calculus
- d) Glomerulonephritis
- e) Hydronephrosis

*PID*

23. Imaging findings in chronic pelvic inflammatory disease include the following except:

- a) Free pelvic fluid
- b) Adnexal complex mass
- c) Intra-uterine pregnancy
- d) Endometrial thickening
- e) Normal pelvic ultrasound

*on a string  
need sign  
red loops of  
ian tube*

*thickened dilated tubes  
need vasculature  
coagulation  
sign + heads on  
Mass + tubal*

*Test at 23 weeks*

24. A 27 year-old man presents in the emergency department with hematuria following a fight. Which of the following is the imaging modality of choice? *13 L*

- a) Abdominal ultrasound (FAST) *X*
- b) Contrast-enhanced CT abdomen *X*
- c) CT urogram *X*
- d) Plain abdominal film *X*
- e) Micturating cystourethrogram

25. A 40 year old female presents with features of hyperthyroidism. An ectopic parathyroid tissue is suspected. Which of the following is most appropriate imaging modality

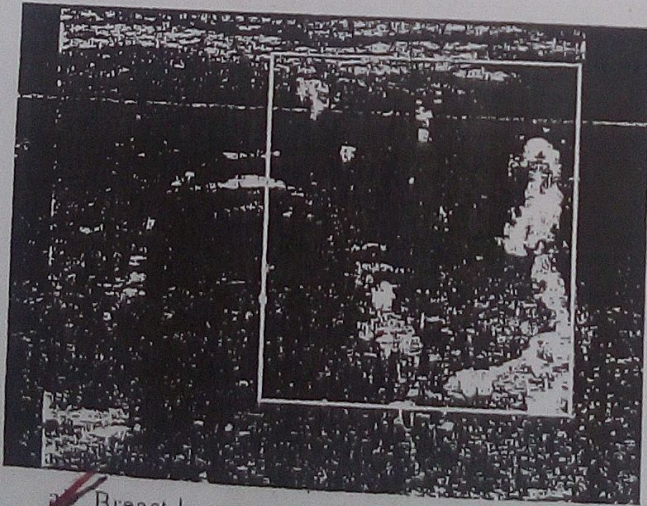
- a) Radionuclide imaging *ectopic tissue could be anywhere*
- b) MRI
- c) Plain radiography *X*
- d) CT *X*
- e) Ultrasound *X*

26. A 20 year old seeks your advice regarding screening for breast cancer. Her mother and two aunts have been diagnosed with breast cancer at the ages of between 28 and 35. Which imaging modality is most appropriate for her screening

- a) Breast MRI, *annually; with strong family hx*
- b) Breast ultrasound
- c) Mammography
- d) Ductography
- e) CT

*high risk*

27. This image was acquired from a patient who most likely presented with which symptom?



- a) Breast lump
- b) Exophthalmos
- c) Acute scrotal pain
- d) Right iliac fossa pain
- e) Vomiting

- 0 - Incomplete
- 1 - Negative
- 2 - Benign
- 3 - Probably benign
- 4 - Suspicious
- 5 - highly suggestive of malignancy
- 6 - known biopsy

28. In breast imaging reporting and data system (BI RADS):

III: *ston* suggests benign

IV: *sub* *IVA* *IVB* *IVC* *IVD* *IVE* *IVF* *IVG* *IVH* *IVI* *IVJ* *IVK* *IVL* *IVM* *IVN* *IVO* *IVP* *IVQ* *IVR* *IVS* *IVT* *IVU* *IVV* *IVW* *IVX* *IVY* *IVZ*

V: *app* suggests of malignancy be known over

VI: *known*

0 - Incomplete

1 - Negative

2 - Benign

3 - Probably benign

4 - Suspicious

5 - highly suggestive of malignancy

6 - known biopsy

29. Which one of the following signs will point to small bowel obstruction
- a) Few long air fluid levels *x Max - L.B.O*
  - b) Haustral markings *x L.B.O*
  - c) Air within the large bowel *- L.B.O*
  - d) Centrally placed loops *✓*
  - e) Few dilated bowel loops *- L.B.O*

**Small bowel**

- ✓ D > 3 cm
- ✓ central loops
- ✓ Many no of loops
- ✓ fluid levels many

Large

- D > 7 cm
- Peripherally placed
- few no of loops
- fluid levels (few)
- has axial chaffing



- The ultrasonic image above demonstrates
- a) Testicular torsion
  - b) Appendicitis
  - c) Intussusception
  - d) Biliary stone
  - e) Liver metastasis

31. The most current radiological modality of screening for rickets is
- a) Plain radiography *✓*
  - b) Radionuclide imaging *x*
  - c) CT Scan
  - d) MRI
  - e) Ultrasound



Subarticular Sclerosis  
Subchondral cyst

32. Hip fractures are best evaluated on which imaging modality?

- a) MRI
- b) CT Scan
- ~~c) Plain radiography~~
- d) Ultrasound
- e) Contrast arthrography

air -1000  
-1000 -30

Proximal

PIP hypodense  
OA L-  
O-  
S-  
S-

33. Which one of the following is not a feature of rheumatoid arthritis

- a) Commonly affects the distal interphalangeal joints
- b) Tends to spare the distal interphalangeal joints
- c) Accompanied soft tissue swelling
- d) Periarticular osteopenia
- e) Erosive arthropathy

Proximal PIP hypodense  
OA L-  
O-  
S-  
S-

4

34. The following statement is true concerning scalp masses at CT

- a) Subgaleal hematomas are usually confined by cranial sutures \*
- b) Scalp lipomas are hyperdense \*
- c) A history of trauma will be elicited in sebaceous cysts \*
- ~~d) Scalp masses with associated destructive skull lesion are most likely malignant~~
- e) Acute subgaleal hematomas are of CSF density at CT \*

35. A 14 year old boy presents with severe acute scrotal swelling over the past two hours.

The most appropriate urgent imaging modality is

- a) Ultrasound
- b) Ultrasound with colour Doppler
- c) MRI
- d) Plain radiograph of the scrotum
- e) CT of the pelvis

TT  
not recommended as initial screening test  
use noninvasive

36. In Deep Venous Thrombosis (DVT)

- a) Conventional venography is the imaging modality of choice \*
- b) Acute thrombus is echogenic at ultrasonography
- c) Doppler ultrasound is the examination of choice - noninvasive
- d) Diagnosis is made on early films at arteriography
- e) Venography is contraindicated

Ultrasound  
venography  
Plethysmography

37. After an RTA, an 18 year old male suffers injury to the thoracic spine. A plain radiograph shows a fracture of T9 with suspicion of bone fragment within the spinal canal. Which of the following is the best examination of choice?

- a) Thoracic myelogram
- b) MRI of the spine
- c) Radionuclide bone scan
- d) Discography
- ~~e) CT scan of the spine~~

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Appendix



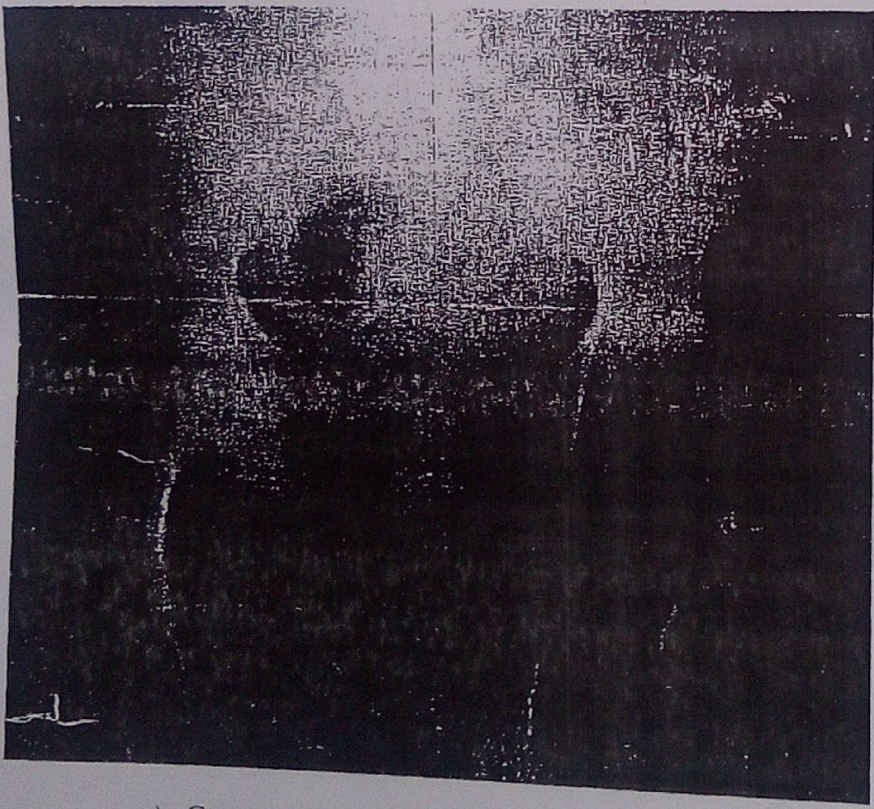
38. At plain radiography fractures of the base of skull are best studied on the following view

- a) Occipitofrontal view / Caldwell's view → frontal sinuses
- ~~b) Occipitofrontal view / Caldwell's view → frontal sinuses~~
- c) Lateral view - overview of entire skull
- d) Submentovertical view / Basal → base of skull + foramen orb, sparsum, spl sin
- e) Townes view → AP skull → # of mandible - assess mandibular condyle  
occipital bone, post fossa space

39. A 33-year old female presents with right lumbar pain radiating to the groin. Which of the following is the most appropriate initial imaging modality to request?

- a) CT scan abdomen
- b) Transabdominal pelvic ultrasound
- c) Transvaginal pelvic ultrasound
- d) Abdominopelvic ultrasound
- e) Plain abdominal radiographs

40. The following AP radiograph of the pelvis was taken from a 56 year old female patient with history of polyarthralgia. What is your diagnosis?



- a) Gout
- b) Psoriatic arthropathy
- c) Rheumatoid arthritis
- d) Hyperparathyroidism
- e) Osteoarthritis