

乳房攝影測驗

Mammography

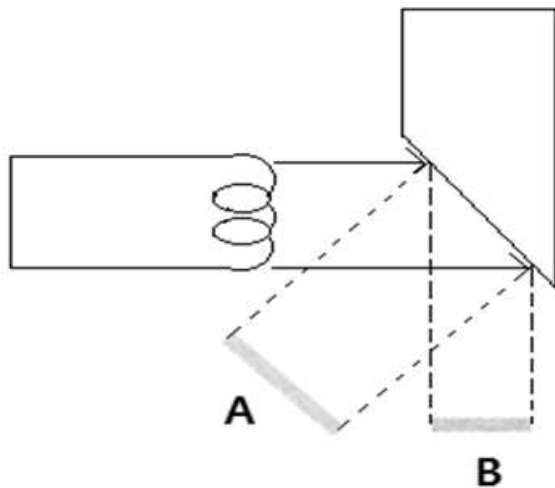
2024 年 8 月 24 日星期六

1. 除題意不清楚或是圖片有問題，禁止詢問與試題有關的問題。
2. 應答時禁止使用任何文件。
3. 請在電腦答案卡上圈選作答

項目	填寫內容
姓名	您的中文與英文姓名
試題名稱	<b>MAMMO Test</b>
項目	不用填寫
科目	不用填寫
受試者識別代碼	您的准考證號碼 <b>24XXX</b> 請填寫准考證後 5 碼，將您選定之數字的圓圈塗滿。
科目代碼	不用填寫
地點代碼	不用填寫
作答方式	本測驗共有 65 題問題。請使用 1 到 65 作答欄位。 請將測驗卷 Q1 的答案填入答案卷的答案選擇 1。Q2 = 答案選擇 2，Q3 = 答案選擇 3...Q65 = 答案選擇 65。

1. What are the correct characteristics related to beam quality?
  - a) Off-focus radiation can occur due to the use of a collimator.
  - b) Materials such as molybdenum (0.5 mm) and aluminum (0.03 mm) are used for filtration
  - c) Beryllium is used as the window material in X-ray tubes to adequately contain high-energy photons
  - d) The size of the focal spot observed from the central axis direction of emitted X-rays is referred to as the actual focal spot.
  - e) The large focal spot is commonly used for mammography purposes
  
2. What is not a characteristic of the air-gap technique used in breast imaging?
  - a) It allows the use of a small focal spot.
  - b) It is used for magnification mammography.
  - c) It employs high-sensitivity screens and film
  - d) It enables detailed visualization of microcalcifications.
  - e) It uses a grid to minimize scatter radiation.
  
3. Among the quality factors of breast imaging, what is the factor referring to the formation of particles clustered in a granular shape, where photons or quanta within the radiation field appear as spots on the film?
  - a) Density
  - b) Contrast
  - c) Resolution
  - d) Sensitivity
  - e) Noise
  
4. Among the contrast-related factors in X-ray imaging, which one is different in nature?
  - a) Breast compression
  - b) Air gap
  - c) Target material
  - d) Collimator
  - e) kVp

5. Which one is not related to an increase in anode angle?
- a) Increase as the target angle decreases
  - b) Decrease in the area covered by the useful beam
  - c) Occurrence of the heel effect
  - d) Increase in the effective focal spot size
  - e) Increase in the X-ray intensity at the cathode
6. Choose the corresponding terms for A and B regarding the focal point.



- a) A) Point focus B) Effective focal spot
  - b) A) Point focus B) Actual focal spot
  - c) A) Actual focal spot B) Effective focal spot
  - d) A) Effective focal spot B) Actual focal spot
  - e) A) Actual focal spot B) Point focus
7. What is the purpose of tilting the X-ray tube of a mammography device?
- a) Decrease in X-rays toward the chest wall
  - b) Reduction of the heel effect
  - c) Application of the line-focus principle
  - d) Decrease in patient dose
  - e) Increase in filtration effect"

8. Why is the negative side of the X-ray tube in a mammography device positioned towards the chest wall?

- a) Line-focus principle
- b) Heel effect
- c) Off-focus radiation
- d) Filament current
- e) Saturation current

9. In a mammography device with a tungsten target X-ray tube, using 30 kVp and a 0.5 mmAl filter, at what electron angle does characteristic radiation of 12 keV occur?

- a) K
- b) L
- c) M
- d) N
- e) O

10. Which of the following statements regarding the description of a grid for mammography is incorrect?

- a) The grid ratio should be kept as low as possible and the x-ray absorption of the material minimized.
- b) The most commonly used grid ratio is 5:1.
- c) The use of a grid leads to an increase in X-ray exposure.
- d) It plays a role in reducing scattered radiation.
- e) It is necessary for discerning microcalcifications.

11. Which of the following statements regarding off-focus radiation is incorrect?

- a) Secondary radiation is generated as a result.
- b) Off-focus radiation has lower intensity than primary X-rays.
- c) Off-focus radiation creates scattered forms that cannot be used for diagnosis.
- d) Placing the tube as far away as possible from the collimator can help reduce off-focus radiation.
- e) Cone or multiple aperture diaphragms are used.

12. Which of the following statements regarding mammography devices is incorrect?

- a) Solid-state detectors have high efficiency for low-energy X-rays.
- b) The appropriate compression force for breast compression devices is 25-40 pounds.
- c) The appropriate thickness for breast compression devices is 1-4 mm.
- d) Collimation is performed to reduce scattered radiation and patient exposure.
- e) The X-ray field size at the collimator should be smaller than the image receptor.

13. In the standards for the installation of diagnostic X-ray generators, what is the maximum external radiation dose rate permitted in a mammography room, expressed in mSv per week?

- a) 0.2
- b) 0.3
- c) 0.4
- d) 0.5
- e) 0.6

14. Which of the following statements regarding digital systems is incorrect?

- a) Bit depth (gray scale) represents the range of pixel values for quantization.
- b) Larger detector elements result in improved spatial resolution.
- c) Sampling is related to spatial resolution.
- d) Quantization is related to contrast resolution.
- e) Detecting small lesions requires a smaller sampling interval.

15. How many bits make up one byte?

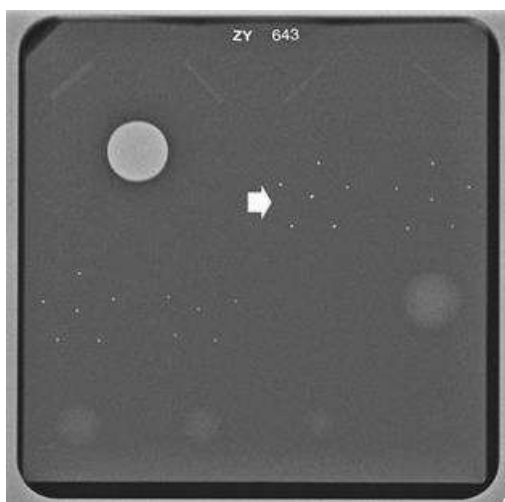
- a) 2
- b) 4
- c) 6
- d) 8
- e) 10

16) What evaluation item should precede the determination of the average glandular dose conversion factor?



- a) Half-value layer measurement
- b) Compression pressure assessment
- c) Phantom performance evaluation
- d) Compression paddle size test
- e) Collimation field alignment assessment

17. Phantom images for quality assurance of mammography units typically include descriptions related to arrows. Which of the following statements regarding the arrows is correct?



- a) It can measure contrast differences.
- b) It should show three or more simulated lesions for masses.

- c) It should show four or more simulated lesions for fibrous lesions.
- d) It should show three or more simulated lesions for calcifications.
- e) It should show five or more simulated lesions for artifacts.

18. In the inspection criteria for diagnostic X-ray generators, which of the following is the permissible range for the percentage average error (PAE) for the observation current (mA) test?

- a) Within  $\pm 5\%$  of the set value (indication value).
- b) Within  $\pm 10\%$  of the set value (indication value).
- c) Within  $\pm 15\%$  of the set value (indication value).
- d) Within  $\pm 20\%$  of the set value (indication value).
- e) Within  $\pm 30\%$  of the set value (indication value).

19. For the reference values of quality control for a DR mammography device, which statement is correct?

- a) The MTF measurement should be  $>55\%$  for 2lp/mm and  $>25\%$  for 4lp/mm.
  - b) The repeat rate should be maintained within 3%.
  - c) In the inspection using a standard phantom, there should be at least 4 fibers, 3 groups of calcifications, and 2 masses identified.
  - d) The passing criterion for clinical image evaluation should be a score of 70 or above.
  - e) In the resolution evaluation, when perpendicular to the cathode axis, it should be  $\geq 5$  lp/mm, and when parallel to the cathode axis, it should be  $\geq 7-8$  lp/mm.
- 

20. Which of the following statements about the anatomy of the breast is incorrect?

- a) The artery that supplies the most blood to the breast is the Internal mammary artery.
- b) The artery that supplies blood to the posterior part of the breast is the Thoracoacromial artery.
- c) The largest vein in the breast is the Internal thoracic vein.
- d) The glandular tissue of the breast is influenced by sensory nerves.
- e) The nipple and areola are influenced by sensory nerves.



21. What is the largest vein in the breast?
- a) Thoracic acromial vein
  - b) Subscapular vein
  - c) Internal thoracic vein
  - d) Internal mammary vein
  - e) Axillary vein
22. Which structure is not typically visible in mammographic images of a normal adult?
- a) Fat
  - b) artery
  - c) nipple
  - d) major pectoral muscle
  - e) infra-mammary fold
23. How many categories does the Breast Imaging and Reporting Data System (BI-RADS) divide the evaluations into as a fundamental criterion?
- a) 3
  - b) 4
  - c) 5
  - d) 6
  - e) 7
24. How many levels are lymph nodes classified into based on their topographical distribution?
- a) 2
  - b) 3
  - c) 4
  - d) 5
  - e) 6
25. Which blood vessel supplies the medial aspect of the breast and accounts for 60% of the total breast?
- a) intercostal artery
  - b) subscapular artery
  - c) thoracodorsal artery
  - d) thoracoacromial artery
  - e) internal mammary artery

26. Which lymph node discharges 85% of waste material?

- a) axillary lymph node
- b) apical axillary lymph node
- c) internal mammary lymph node
- d) intramammary lymph node
- e) interpectoral lymph node

27. Which of the following statements about acini is correct?

- a) Clearly observed in breast imaging.
- b) Located beneath the connective tissue supporting the ductules, composed of multiple layers of epithelium.
- c) Increases during the resting phase of the breast.
- d) The secretory cells are arranged in a linear shape.
- e) It is the final conduit of the ductal system.

28. Which of the following statements about Epithelial tissue is correct?

- a) It consists of three layers.
- b) Most breast diseases occur in the basal layer.
- c) The layer of epithelial cells is located at the inner edge of the basement membrane.
- d) The basal layer and basement membrane are not influenced by hormones.
- e) The basal layer and basement membrane proliferate due to pathological changes.

29. Among the following, which malignant tumor histologically occurs most frequently in breast cancer?

- a) Adenocarcinoma
- b) myosarcoma
- c) Undifferentiated carcinoma
- d) Fibrosarcoma
- e) Squamous cell carcinoma

30. What are the risk factors for breast cancer?
- a) Non-smokers have a higher risk of breast cancer.
  - b) The risk of breast cancer increases with weight gain in premenopausal women.
  - c) The incidence of breast cancer in women over 40 is low.
  - d) If the first pregnancy occurs before the age of 30, the risk of breast cancer is higher.
  - e) The association between caffeine and breast cancer is not clear.
31. What hormone contracts the myoepithelial cells in the lactiferous ducts to induce milk secretion through the nipple in the lactating breast?
- a) Insulin
  - b) Oxytocin
  - c) Prolactin
  - d) Estrogen
  - e) Progesterone
32. Among the following, which is more likely to progress as an invasive tumor?
- a) Ductal carcinoma
  - b) Lobular carcinoma
  - c) Tubular carcinoma
  - d) Mucinous carcinoma
  - e) Medullary carcinoma
33. What is correct about mucinous carcinoma?
- a) It accounts for approximately 30% of all infiltrating carcinomas.
  - b) It occurs most frequently in individuals in their 30s.
  - c) The tumor grows rapidly.
  - d) The prognosis is favorable.
  - e) It has a high rate of metastasis to lymph nodes.
34. What is correct about intraductal papilloma?
- a) It occurs most frequently in individuals in their 50s.
  - b) The size varies, but generally, it is over 1 cm.
  - c) Central papillomas arise from segmental ducts.
  - d) Central papillomas rarely occur in isolation.
  - e) In most cases, patients complain of bloody or serous nipple discharge

35) What is correct about breast tuberculosis?

- a) It is a very rare condition.
- b) It primarily occurs in the breast.
- c) Histologically, it infiltrates the ducts more than the stroma.
- d) It is mostly found in bilateral axillary lymph nodes.
- e) Mycobacterium tuberculosis is always detected within the tissues.

36. What is correct about papilloma?

- a) It is a benign condition arising from the nipple.
- b) It is a malignant condition arising from the nipple.
- c) It is a benign condition arising from the duct.
- d) It is a malignant condition arising from the duct.
- e) It is a proliferative lesion arising from the lobules.

37. What is not correct about pathologically diagnosed Paget's disease?

- a) It may show inflammation accompanied by purulent necrosis.
- b) The nipple may become crusted or develop a rash on the surface.
- c) It is a special form of ductal carcinoma in situ that early invades the skin of the nipple and areola.
- d) The cells are round or oval with round nuclei and abundant, clear cytoplasm.
- e) It is the most common benign tumor of the breast, occurring in young women, especially in the age group of 21 to 25.

38. What among the following malignant diseases is non-invasive?

- a) Inflammatory carcinoma
- b) Medullary carcinoma
- c) Ductal carcinoma in situ
- d) Metastatic breast cancer
- e) All of the above options

39. Mammogram Image Labeling: What Should Be Included?

Incorrect options for mammogram labeling:

- a) hospital Name
- b) Patient's Name
- c) Patient's Registration Number
- d) Patient's Phone number
- e) Date of Examination

40. Which of the following is correct answer for the Mammography technique that using marker on the lesion for checking the palpable mass and calcificated lesions near skin?

- a) Axillary view
- b) Tangential view
- c) Craniocaudal view
- d) Mediolateral view
- e) Mediolateral oblique view

41. Which of the following is incorrect regarding standard abbreviations?

- a) When taking caudocranial views, it is indicated by the abbreviation FB.
- b) When taking mammography with spot compression, the abbreviation SC is indicated.
- c) When taking lateromedial oblique views, the abbreviation for LMO is indicated.
- d) When taking exaggerated craniocaudal views, the abbreviation XCCL is indicated.
- e) When taking axillary tail compression views, the abbreviation AT is indicated.

42. Which of the followings is NOT correct regarding the Mediolateral oblique projection?

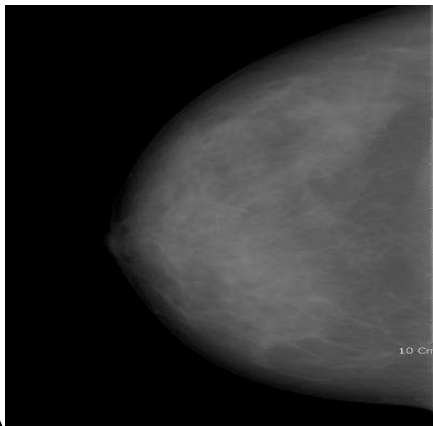
- a) Separates the inner and outer breast tissue.
- b) Stretch out the pectoralis major muscle and include it below the nipple line.
- c) nipple should be contained within the breast parenchyma.
- d) This method is the imaging method that can include the most breast tissue.
- e) The inframammary fold (IMF) should be expanded and included in the picture.

43. The following is one of the basic imaging methods in breast imaging. What is the correct explanation for the image?



- a) All medial tissues should be included.
- b) Be sure to include the pectoralis major muscle.
- c) RMLO and LMLO are used for notation.
- d) This is the imaging method that can include the most breast tissue.
- e) To ensure that the nipple is positioned in the center, less breast tissue may be included.

44. Among the additional imaging methods for mammography, which is the correct image for 'Eklund modification projection'?



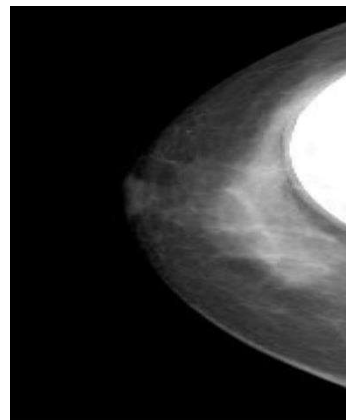
a) A



b) B

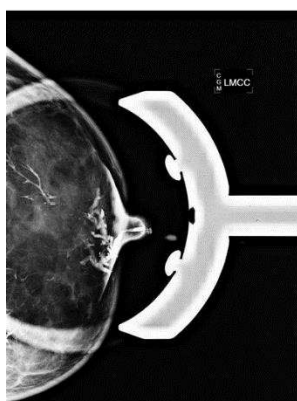


c) C



d) D

e) E



a) A

b) B

c) C

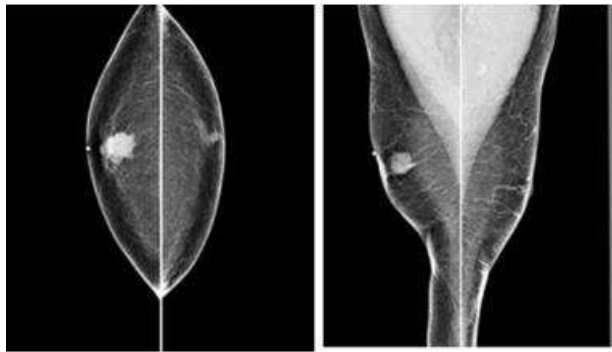
d) D

e) E

45. Which of the following is incorrect for the purpose of compression in mammography?

- a) Radiation dose reduction
- b) Uniform the picture's density
- c) Firmly fix the breast
- d) Improved contrast by reducing scattered rays
- e) Increased resolution by reducing the distance between focus and constant receptors

46. Which of the following is a correct explanation for the image?



- a) The most common carcinoma is lobular carcinoma.
- b) It is a benign lesion belonging to BI-RADS category 2.
- c) It is a disease caused by hormonal imbalance.
- d) It can occur due to continuous use of certain medications.
- e) Lymph node metastasis and chest wall or skin invasion are common.

47. What is the imaging method to separate the overlapped breast tissue?

- a) Roll projection
- b) Cleavage projection
- c) Magnification technique
- d) Axillary tail projection
- e) Exaggerated craniocaudal projection



48. What is the breast imaging method to check if calcification is on the skin?

- a) Roll projection
- b) Cleavage projection
- c) Axillary tail projection
- d) Tangential projection
- e) Exaggerated craniocaudal projection

49. The description that is not correct for mammography images is?

- a) The breast is composed of glandular tissue, fibrous tissue, and fatty tissue
- b) In breast imaging, glandular and fibrous tissue appear as low density, while fatty tissue appears as high density.
- c) In fatty breasts, ducts, fibrous bands, blood vessels, etc., which appear as linear opacities, can be observed.
- d) Breast density is determined by the proportion of glandular fibrous tissue, and it correlates with the sensitivity of breast imaging techniques
- e) Dense breasts may not be adequately diagnosed with breast imaging alone.

50. In the evaluation criteria for craniocaudal (CC) view mammography, what could result in a deduction?

- a) Inner breast tissue is included
- b) A large pectoralis muscle is included in about 30%.
- c) The nipple-areolar complex is observed laterally in relation to the center of the breast.
- d) There is a significant amount of retromammary fat included.
- e) The length of the posterior nipple line should be more than 1 cm compared to the mediolateral oblique (MLO) view.

51. The incorrect criterion for image evaluation in the craniocaudal (CC) projection is?
- a) Inner breast tissue is included.
  - b) The nipple contour is observed laterally in relation to the center of the breast.
  - c) A significant amount of retromammary fat is included.
  - d) The length of the posterior nipple line should be more than 1 cm compared to the mediolateral oblique (MLO) view.
  - e) Included large pectoral muscles (in 30-40% of patients).
52. Which of the following descriptions about the CC view is correct?
- a) All outer breast tissue should be included.
  - b) It is acceptable to include less breast tissue to center the nipple
  - c) At least 30-40% of patients should include the large pectoral muscle.
  - d) The inframammary fold should be spread out and included in the picture.
  - e) Retroglandular fat does not need to be included.
53. What is performed just before surgery for breast tumor removal?
- a) Roll Method
  - b) Galactography
  - c) Localization
  - d) Implant Displacement
  - e) Fine needle aspiration cytology
54. What is the purpose of tangential projection?
- a) It is to separate overlapping breast tissue.
  - b) It is to confirm whether calcifications are present in the skin.
  - c) It is to confirm the presence of abnormal tissue.
  - d) It is performed to ensure accurate interpretation when the lesion is visible in only one projection.
  - e) It is a test applied when the lesion is located deep between the two breasts.

55. Which of the following descriptions about breast augmentation imaging is incorrect?
- a) The marking method attaches an ID at the end.
  - b) It is referred to as "Eklund modification projection."
  - c) In addition to the basic imaging technique, a separation imaging technique must be performed.
  - d) The basic imaging technique CC and MLO views use automatic exposure conditions.
  - e) If the adjunct does not separate, a 90° lateral imaging technique is added as a standard procedure.
56. Which of the following is the correct explanation of calcifications seen on breast imaging?
- a) Calcifications always occur with masses.
  - b) Lobular calcifications appear in one area of the breast at the same time.
  - c) Calcifications can be associated with masses or occur on their own.
  - d) Among the shapes of calcifications, "polverulent" calcifications appear like fine powder.
  - e) If the size, density, and distribution of calcifications are uniform and scattered, they must be malignant.
57. Which is the correct stage for a breast cancer patient with a tumor size of 4 cm, 3 lymph nodes involved in the axillary region, and no distant metastasis?
- a) T2N4M0
  - b) T2N1M0
  - c) T3N2M0
  - d) T3N3M0
  - e) T4N3M1

58. Which of the following is the correct explanation of digital mammography?

- a) It does not produce artifacts.
- b) It has high spatial resolution.
- c) The characteristic curve of the image receptor is linear.
- d) It is difficult to reduce or eliminate noise in the image receptor.
- e) The signal-to-noise ratio is low, making it difficult to detect lesions in dense breasts.

59. Which of the following is the correct explanation of tomosynthesis?

- a) It reduces the positive predictive value.
- b) It increases the recall rate, leading to increased radiation exposure.
- c) It allows for clearer visualization of lesion margins and detection of subtle lesions.
- d) It acquires multiple sections from multiple angles to create a single four-dimensional breast image.
- e) It increases the overlap of breast tissue compared to standard mammography.

60. Which of the following is the correct explanation of computer-aided detection (CAD) in mammography?

- a) It increases the false-negative rate.
- b) It decreases the recall rate.
- c) It increases time, labor, and costs.
- d) Dual reading is impossible.
- e) It can be considered as a second opinion.

61. Where is the least frequent site of breast cancer occurrence?

- a) Upper Outer Quadrant
- b) Upper Inner Quadrant
- c) Lower Outer Quadrant
- d) Lower Inner Quadrant
- e) Subareolar

62. Which of the following corresponds to the TNM classification in staging breast cancer? (Tumor size 4cm, 5 lymph node metastases, no metastasis to other organs)
- a) T1N1M0
  - b) T2N1M0
  - c) T2N2M0
  - d) T3N2M0
  - e) T3N1M0
63. Which of the following is not a correct method for diagnosing breast cancer?
- a) Elastography
  - b) BSE (breast self exam)
  - c) High resolution CT
  - d) CBE (clinical breast exam)
  - e) ABUS (Auto breast ultrasound)
64. Which of the following is not a correct characteristic of breast MRI?
- a) It shows low contrast in dense breasts
  - b) It has no radiation exposure and is a non-invasive method.
  - c) Both sides can be examined simultaneously, allowing for objective evaluation
  - d) Contrast-enhanced magnetic resonance imaging (MRI) has the highest sensitivity among various tests for diagnosing breast cancer
  - e) It is useful for confirming the extent of invasion of breast cancer before surgical procedures and for detecting multiple cancers in the same or opposite breast.
65. Which disease is associated with traumatic fat necrosis?
- a) Oil cyst
  - b) abscess
  - c) Hamartoma
  - d) Fibroadenoma
  - e) Medullary cancer