電腦斷層測驗

Computed Tomography

2015 年 8 月 30 日星期日

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	CT Test
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 1"000**" 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 90 題問題。請使用 1 到 90 作答欄位。 請將測驗卷 Q1 的答案填入答案卷的解答番號 1。Q2 = 解答番號 2，Q3 = 解答番號 3…Q90 = 解答番號 90。

Q1. Which of the following is correct answer about the point of hand washing ?
  1. after moving patients to CT table
  2. before calling patients for exam explain
  3. after directly touching urine bag of emergeny patients
  4. After talking with an examinee by calling at health care center
  1) 1,2   2) 2,4   3) 1,3   4) 2,3

Q2. What is the correct answer for examination of patients who having active TB virus?
  1) put on the N95 mask
  2) that is no matter wating them with normal patients
  3) essentially puton glove and apron
  4) as possible as don't use contrast media

Q3. What is incorrect about infection control in CT rooms?
  1) put on the protection glove and mask in case of the exmine related contact blood
  2) throw out leftover needle at the needle container or trash bin
  3) We should clean the table using alcohol swabs and replace the table sheet according to patient who having a VRE or MRSA.
  4) when wet blood on the sheet, replace the table sheet.

Q4. Which of following is the <u>correct</u> direction for management of contrast media?
  1) when place on the heating cabinet, keep it simillary body fluid temperature
  2) keep it out more light than heat
  3) more higher storage temperature makes high viscosity
  4) keep term is loger when in heating cabinet

Q5. What is <u>incorrect</u> answer for prevent side effect?
  1) check a patient history
  2) don't use contrast media for high risk patients
  3) patients who have side effect is needed pre medication (steroids and antihistamine)
  4) under kidney function patients take the exam in case of below Cr(creatine) figure 2.7

Q6. Which of following is the <u>incorrect</u> about contrast media?
  1) as an non –iodine contrast media is first using Amnipaque
  2) viscosity of contrast media is as possible as adjacent body fluid.
  3) the side effect of the viscosity is more higher hypertonic than hypotonic
  4) the number of iodine atom/ iodine atom number ↑=osmolity density ↓

Q7. Which of the following is correct answer for cardiopulmonary resuscitation?
  1) The chest compressions point for cardiac arrest is the middle of left chest.
  2) adult cardiac arrest is 30 times Chest compression and artificial respiration Repeat
  3) in case of the adult cardiac arrest is Chest compress the chest at the speed of 50 times per minute
  4) fully cover patient mouth and for a second and check the patient's chest.

Q8. Where is point of electrode paddle at deflbrillation?
  1) Inferior Both clavicles
  2) Besides both clavicles.
  3) Inferior left clavicle and right outer inferior clavicle
 4) Inferior right clavicle and left outer inferior clavicle

Q9. What is the correct answer about the pulse of vital sign?
  1)   the number of pulse gating (measure) during 2 min calls pulse rate
  2)   tachycardida is below 60 times per min in adults
  3)   bradycardia is below 100~180 times per min in adults
  4)   the point of the pulse measure is radial artery and brachial artery

Q10. metformin ingredients of diabetes medicine is denied during 48 hours in CT exam . What is the
   Reason ?
  1)   it makes high blood preasure
  2)   diabete figure is high
  3)   it makes arrhythmia when using the contrast media.
  4)   in case of lower kidney function patients have a risk lactacidemia.

Q11. Which one is <u>incorrect</u> statement for the following images?
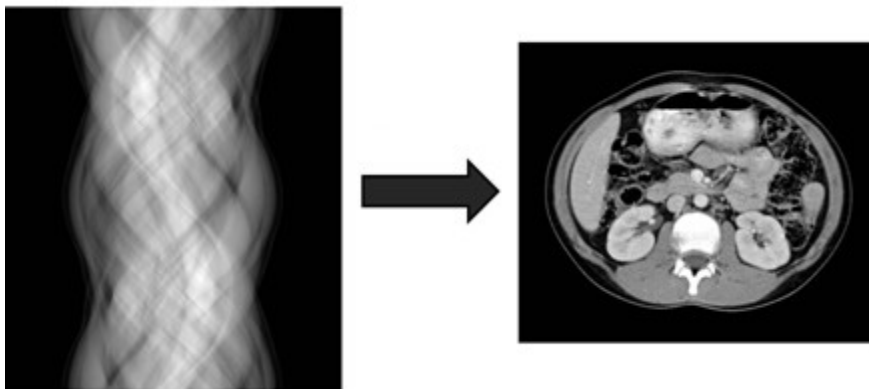
  1)   Back projection was used in the first EMI CT scanner.
  2)   Projection is a sum of rays from one direction.
  3)   A sinogram is composed of data from all projection.
  4)   Projection continuously projects anatomic structure by rotating 360 degrees.

Q12. What is the correct answer in the following images?
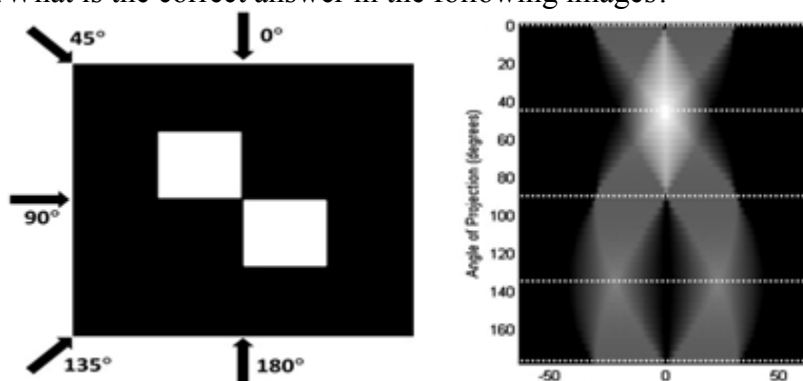
  1)   A is sonogram   3)   A is projection
  2)   B is image of raysum   4)   B is scout image

Q13. What is the correct answer in the following images?

35	40	41	45	50
40	40	42	46	52
42	46	50	55	55
48	52	56	58	60
56	60	65	70	75

X

0	1	0
0	0	0
0	0	0

=

	42	
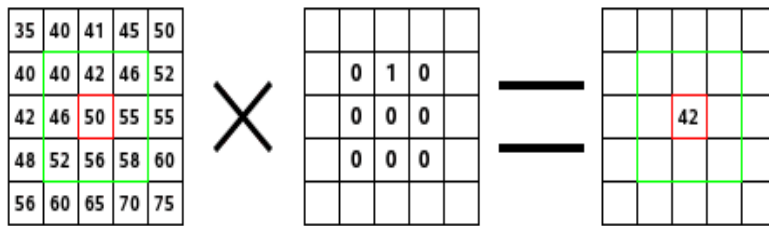
1) This is back projection image
2) This is Convolution technique
3) This is sonogram
4) Repeated an approximate value reconstruction method

Q14. What is true about A, B, C,D in the following image?

A   B   C   D   Display
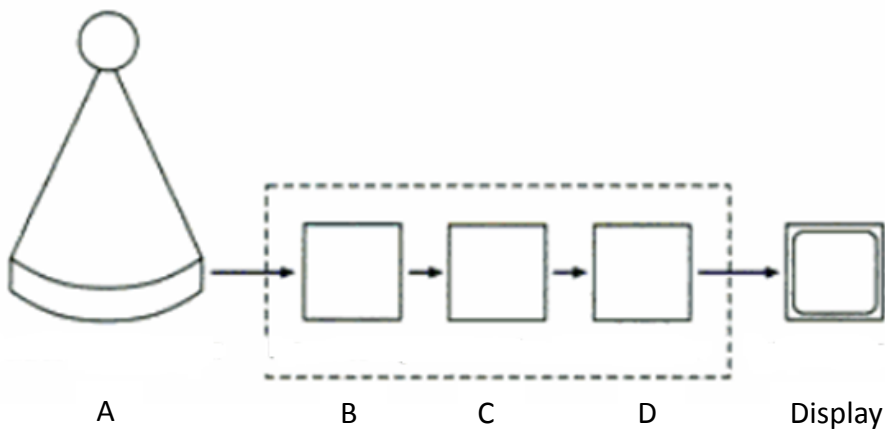
1) A converts analog data to digital data in DAS.
2) B is process of image reconstruction
3) C is process of preprocessing.
4) D is process of convolution.

Q15. Which one is the most related to spatial resolution in evaluation of image quality?
1) PSF　　　　　　　2) LSF　　　　　　　3) MTF　　　　　　　4) CTF

Q16. What is the correct answer in the following images?
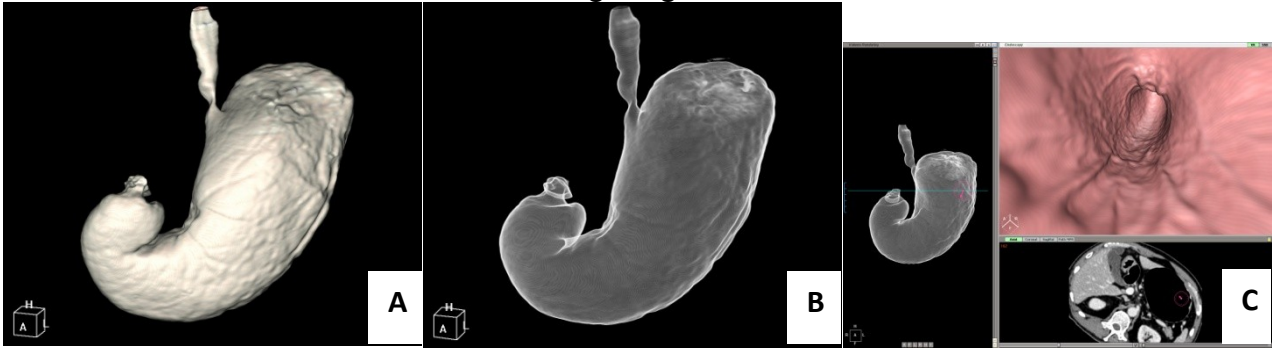
1) This is esophagus image
2) A image is raised opacity not given change contrast
3) B image ia lowered opacity and change contrast
4) C image is virtural endoscopy image and fly through tecnique

Q17. Which of the following is correct about algorithm in filtered back projection?
1) Soft algorithm is used in region where shows big difference of attenuation coefficient in tissue
2) Standard algorithm has a spatial resolution of 0.75mm and it has general image reproducibility.
3) Bone/Ultrahigh algorithm is excellent in resolution and is mostly used in brain or lung.
4) Standard algorithm is filtered-free and has a general characteristics.

Q18. Which is reconstruction type of using analysis method?
1) SIRT   2) ILST   3) ART   4) FBP

Q19. This is using the volume rendering technique images.
        Which of the following is correct method to make right image?

1) A, widen SFOV
2) B thicker slice thickness reconstruction
3) C. fixation of patients hands
4) d. it makes to overlapping image using thinner than slice thikness

Q20. What is the correct answer is component of bowtie filter?
1) Teflon   2) tungsten   3) Rhenium   4) molybdenum

Q21. What is the reason of after sinogram When reconstruction image filtered back projection
1) x –ray exposure rotation angle   3) long x-ray exposure time
2) geometric errors of x-ray beam   4) low energy x-ray filter

Q22. Which of the following is <u>incorrect</u> answer for AEC system of CT ?
  1) Noise value
  2) kV value according to Attenuation
  3) Reference mA value of size normal patiens.
  4) prior acquired Noise of Reference image

Q23. What is the reason of the different energy x-ray ?
  1) difference of photon absortion
  2) difference of x-ray
  3) dirrence of detect efficiency
  4) dffrence of Compton scatter

Q24. X-ray procedure DAS(data acquisition system)
   light energy to electic energy change section
   x-ray tube -> penetrate -> scntilator-> semi-conductor diode -> DAS
                A   B   C   D
  1) A,B   2) B,C   3) C,D   4) B.D

Q25. This is procedure attenuated x-ray signal to digit. what is correct?
  1) scanning->cording->Quantization->Sampling
  2) scanning-> Quantization->Sampling->cording
  3) scanning-> Quantization->coding->Sampling
  4) scanning->sampling->Quantization->coding

Q26. Which of the following is correct term and function of indicated arrow in the following image?
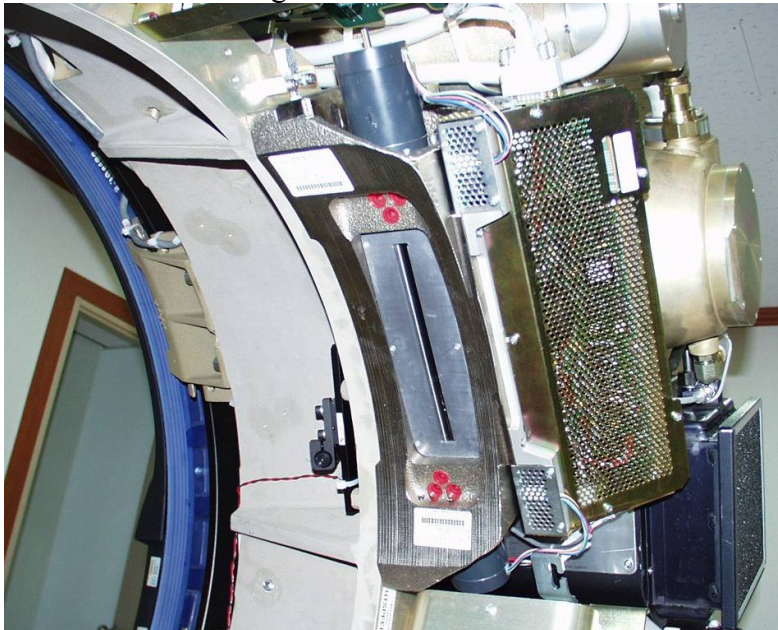
  1) Detector crollimator– reduce the scatter
  2) tube Collimator – reduce the penumbra
  3) High voltage generator - maximize dectection efficiency of detector
  4) Generator- high voltage

Q27. When IV site selection at lower extremity which is mainly caution disease?
  1) SVC syndrome
  2) carotid stenosis
  3) Aortic arch dissection
  4) Pulmonary embolism

Q28. Which of the following is correct answer following image?

1) Do not NPO
2) Hand injection of Contrast media
3) Contrast media use iodine contrst media
4) To get subtraction images, needs before and after enhance image

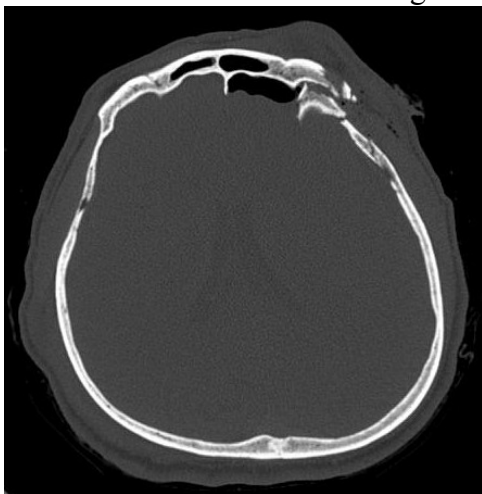Q29. Which is the correct answer regarding following picture?

1) epidural hemorrhage
2) subdural hemorrhage
3) intra cerebral hemorrhage
4) subarachnoid hemorrhage

Q30. This is Brain CT image patient who traffic accident.
Which is the correct answer regarding following picture?

1) Contast media image.
2) There is Frontal bone fracture
3) There is acute subdural hemorrhage
4) window setting value applied width 80 ~ 120, level 20 ~40.

Q31. Which is artifact following picture?

1) Ring artifact
2) Bloom artifact
3) Streak artifact
4) Beam hardening artifact

Q32. This is Follow up CT image Patient who infarction operation. What is diagnosis in Right frontal lobe of following picture?

1) cerebral cyst
2) meningitis
3) brain abscess
4) hydrocephalus

Q33. This is brain CT image of 60-years- women who have a headache . what is correct diagnosis?
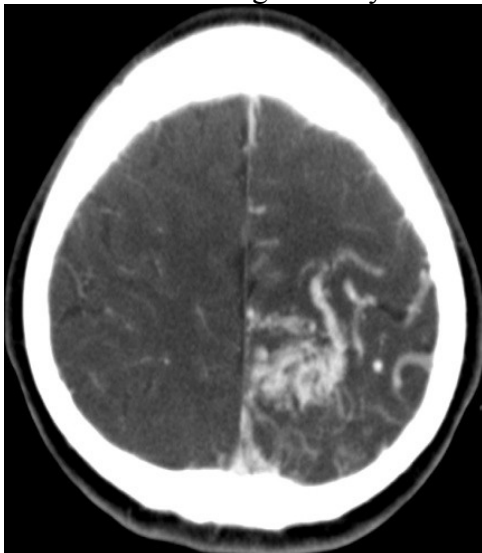
1) tumor
2) abscess
3) aneurysm
4) arteriovenous malformation

Q34. Which of the following is correct regarding following picture?
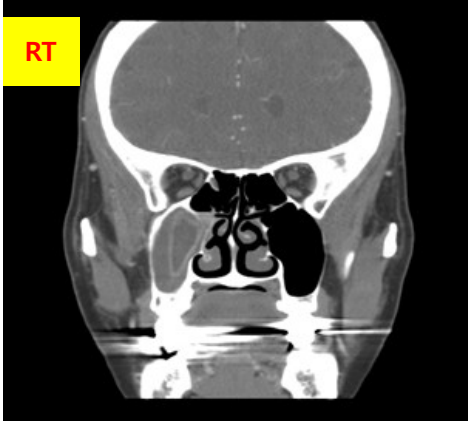
1) It shows Frontal sinus
2) It shows sublingual gland inflammation
3) It shows fracture of right maxillary bone
4) it shows low density lesion of the right maxillary sinus

Q35. Which of the following is correct answer about salivary gland CT exam?
1) Normal salivary is well-enhancing
2) This exam cover the Lower Maxillary sinus to hyoid bone
3) It finding is Tumor, stone, inflammation in salivary gland
4) To find soft tissue is Window width 1000, window level is 40

Q36. What is the anatomic term of indicated arrow in the following image?
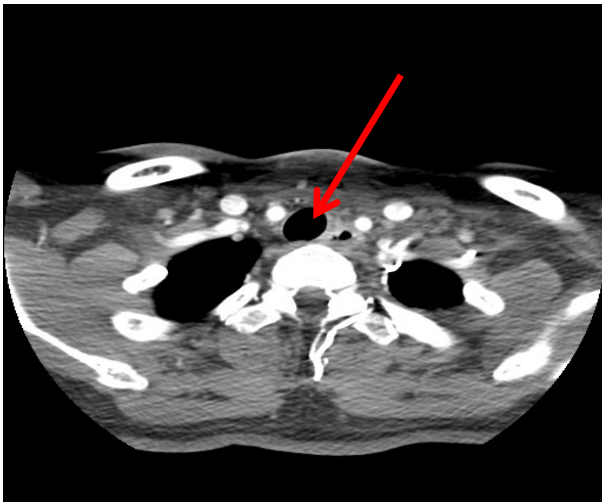
1) esophagus
2) trachea
3) bronchus
4) thyroid

Q37. Which of the following is correct regarding CT exam?
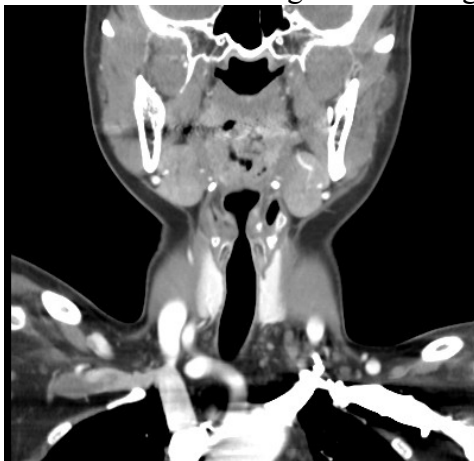
1) Patient Don't swallow during the scan.
2) open mouth and pronouncing 'Ah-' for reducing artifact
3) After Helical axial scan using the thin slice data makes coronal reformation image
4) contrast media slowly inject for reducing artifact of Subclavian vein

Q38. Which of the following is correct regarding following picture?
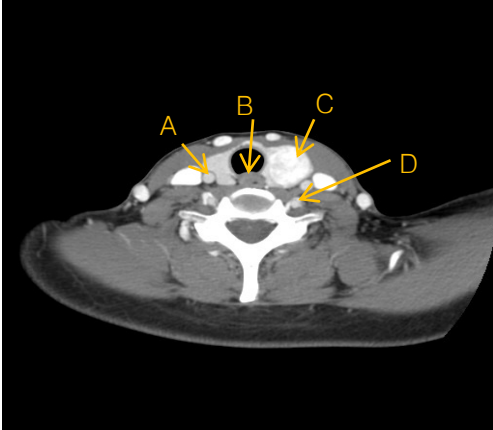
1) A: Internal carotid artery
2) B: Esophagus
3) C: Thyroid cancer
4) D: Basilar artery

Q39. Which of the following is correct regarding following picture?

1. it shows narrowing of trachea distal portion
2. it takes Inspiration and expiration scan
3. Pronouncing 'e-' for liquidity of vocal cord during scan
4. Apply -650 to 230 threshold and reconstruction SSD technique.

1) 1,2   2) 1,3   3) 2,3   4) 3,4

Q40. Which of the following is correct regarding following picture?

1) OMU CT image
2) arrow is parotid gland
3) arrow is submandibular gland
4) proper image acquired large SFOV better than Small SFOV

Q41. What is diagnosis following picture?

1) Muscle rupture
2) Varicose vein
3) Muscle tumor
4) Lower extremity edema

Q42. Which of the following is correct regarding following picture?
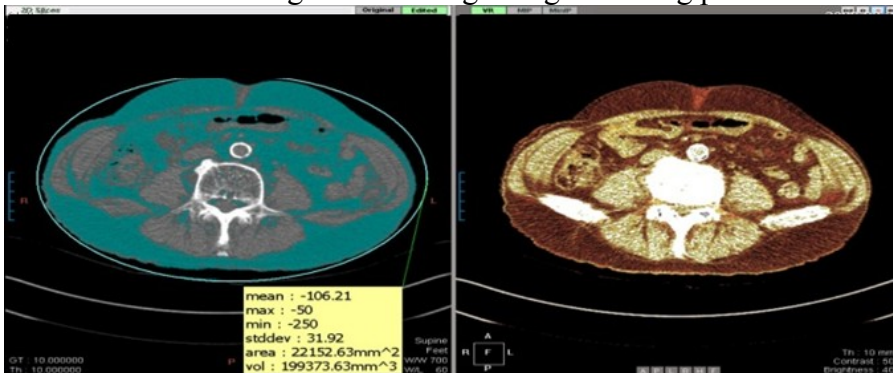
1. This is Fat CT images
2. contrast media is not influence the image
3. This exam is using Bone algorithm
4. Threshold is   -200 ~ -50

1) 1, 2   2) 2, 3   3) 3, 4   4) 1, 4

Q43. Which of the following is correct regarding following picture?

1) it shows inter cerebral hemorrhage
2) it shows Subarachnoid hemorrhage
3) contrast media inject for needle puncture at disk space
4) it takes for diagnosis about leaked CSF disease

Q44. Which of the following is correct regarding following picture?

1) Abscess drainage
2) Artery embolization
3) CT guided biopsy
4) Pulmonary thromboembolectomy

Q45. Which of the following is correct regarding following picture?

1) Pneumothorax
2) Pulmonary emphysema
3) Pulmonary fibrosis
4) Pulmonary nodule

Q46. What is the pathologic state of indicated arrow in the following image
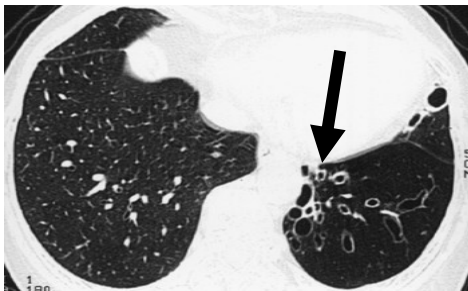
1) pneumonia
2) pneumothorax
3) bronchiectasis
4) Pulmonary tuberculosis

Q47. Which of the following is correct regarding following scout image?
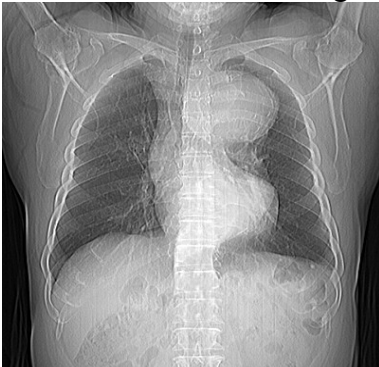
1) Heart shadow is increased
2) It suspended solid pattern In right upper quderent lobe
3) it suspended Aortic aneurysm
4) Well penetrated mass in aortic arch

Q48. Which is the diagnosis in the following image?

1) Hemoptysis
2) Broncho pneumonia
3) Metastatic lung cancer
4) diffuse interstinal lung disease

Q49. What is the structure of indicated arrow in the following image?
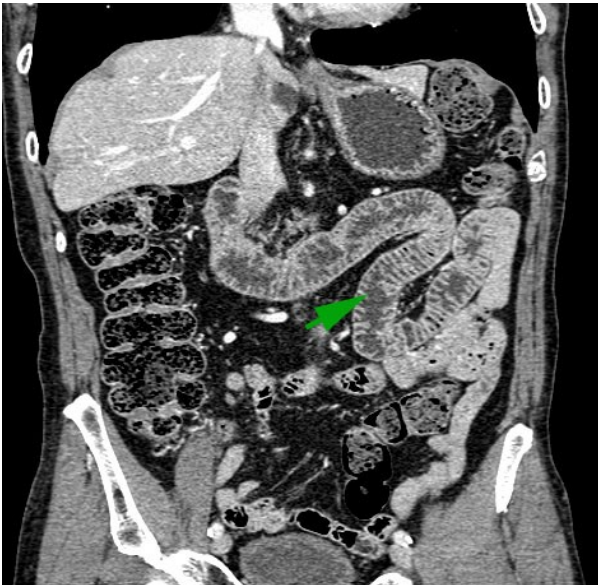
1) Ileum
2) Duodenum
3) Jejunum
4) Colon

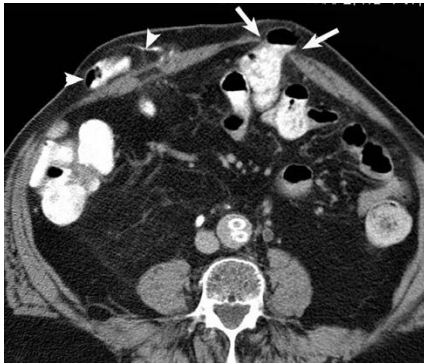Q50. What is the structure of indicated arrow in the following image?
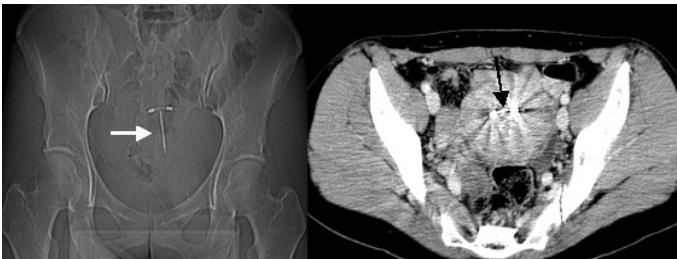
1) D-J catheter
2) stent
3) bladder stone
4) intrauterine contraceptive devices

Q51. What is the pathologic state of indicated arrow in the following image?

1) volumetry method for livertransplantaion
2) it needs hand-tracing technique
3) it using the arterial phase
4) Volumetry Divide into left segment and right segment by Couinaud segment

Q52. What is the correct answer about indicated arrow in the following image?

a. inguinal hernia
b. ventral hernia
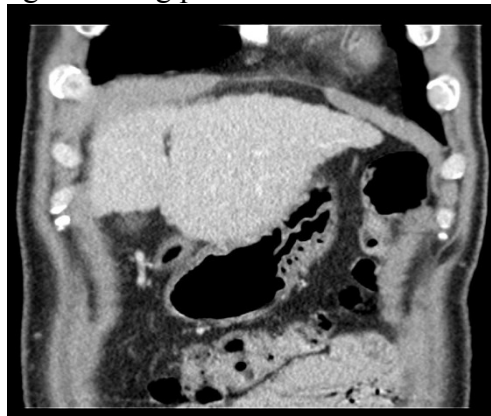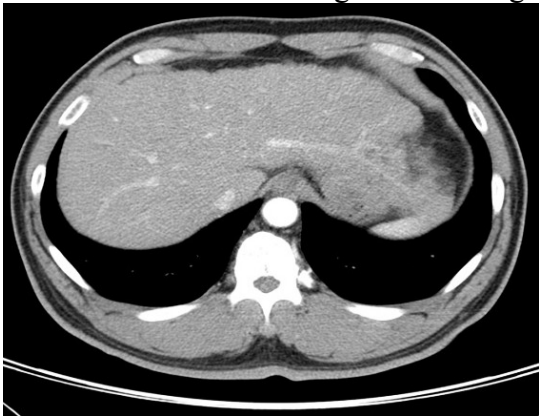c. hiatal hernia
d. linea alba is tear fat and bowel is defect

1) a,b   2) b.c.   3) c.d   4) b.d

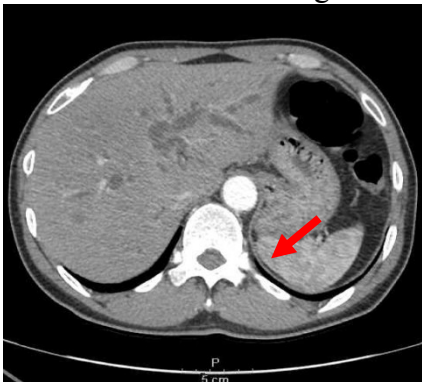Q53. What is the pathologic state of indicated arrow in the following image

Fig.1
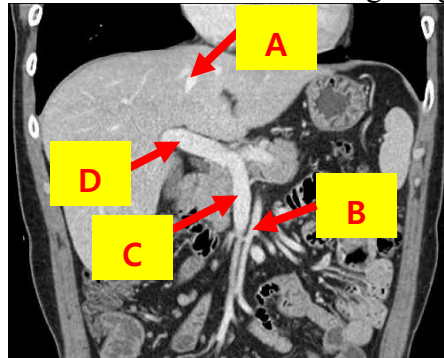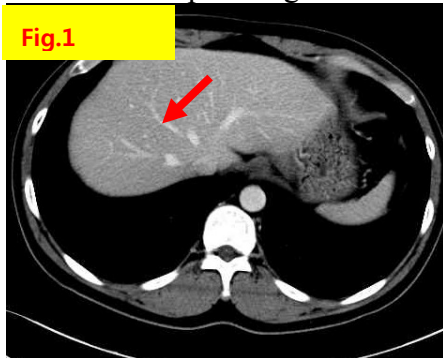
1) A   2) B   3) C   4) D

Q54. This image is A 68-year-old man who have jaundice disease.
Which of the following is correct regarding following picture?


1) Fatty liver
2) Liver cirrhosis

3) Hepatocellular carcinoma
4) Focal nodular hyperplasia

Q55. Which of the following is correct regarding following picture?

1) it shows dilatated Cystic duct
2) it shows dilatated Common bile duct
3) it shows dilatated Intrahepatic bile duct
4) it shows dilatated Bile duct For using the minIP technique

Q56. What is the structure of indicated arrow in the following image?

Fig.1

A
B
D
C
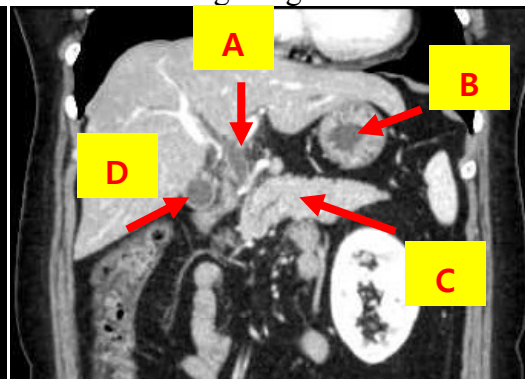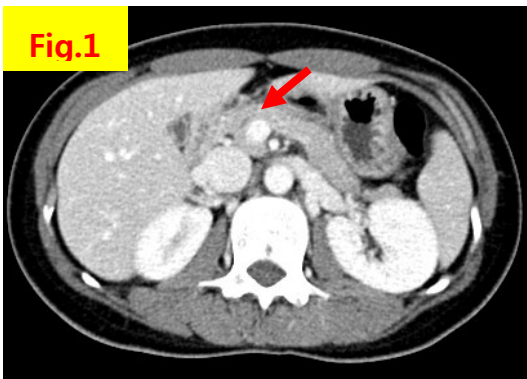
1) A   2) B   3) C   4) D

Q57. These are A 45-year-old man who upper qurdent abdomen pain in CT image.
Which of the following is correct regarding following picture?
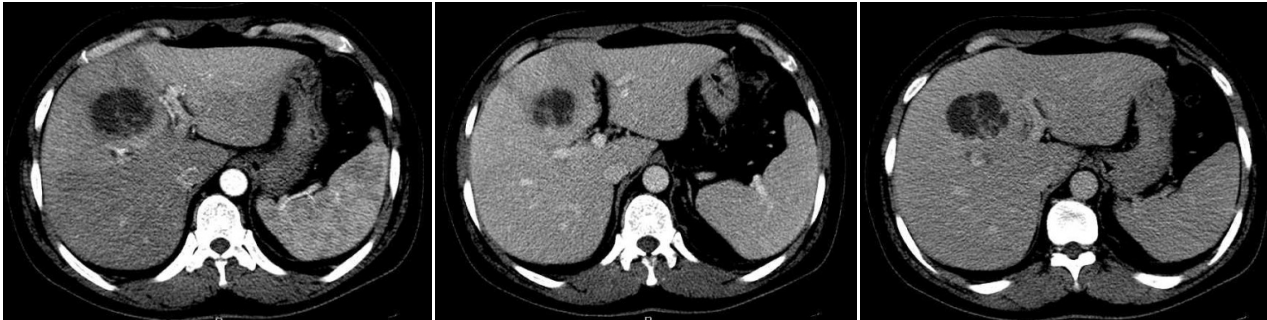
1) Cyst
2) Abscess
3) Hemangioma
4) Hepatocellular carcinoma

Q58. What is the pathologic state of indicated arrow in the following image

1) Renal infarction
2) Renal artery disection
3) ARF (Acute Renal Failure)
4) ADPKD (autosomal dominant polycystic kidney disease)

Q59. This is Bladder CT image. What is correct answer of bladder CT exam?

1) Don't need bladder filling
2) Selaine pushing in patinets IV
3) Bladder filling according to Water fully drinking
4) Pre contrast image and need Only exam arterial phase

Q60. This is Renal stone patient image.
Which of the following is <u>incorrect</u> regarding following picture?
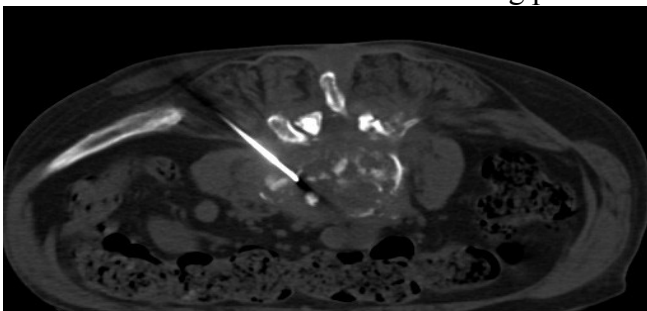

1) long scan range cover the pelvis level
2) non- enhance image for stone
3) CT exam for urinary tract calcucli
4) Dilrectly inject to bladder woth poly catheter

Q61. What is the anatomical structure of indicated arrow in the following image?
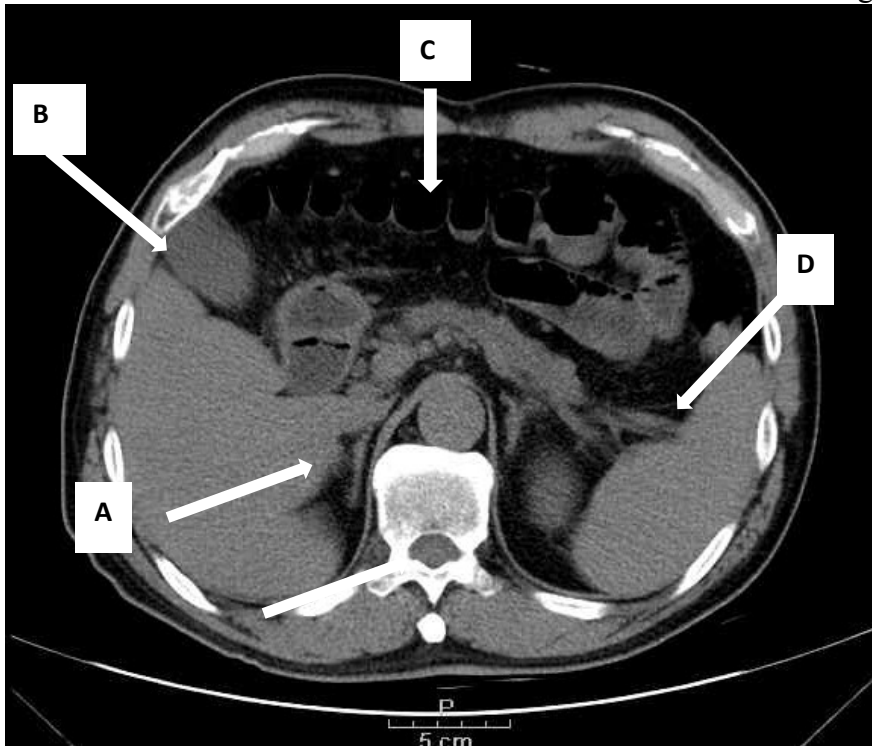
1) A : adrenal gland
2) B : ascending colon
3) C : jejunum
4) D : kidney

Q62. What is correct answer the following picture?

1. bone biopsy
2. developing window width and window level
3. metal artifact
4. tumor in spinal cord

1) 1,2
2) 1,2,3
3) 1,3,4
4) 1,2,3,4

Q63. What is the anatomical structure of indicated arrow in the following image?

1) Clavicle
2) acromion
3) scapular spine
4) Coracoid process

Q64. Which of the following is correct regarding following picture?

1) Scaphoid
2) Capitate
3) Trapezium
4) Trapezoid

Q65. Patient who car accident. What is correct answer?

1) enhanced image
2) fracture in spinous process of C 7th
3) fracture in (transverse process of C 7th)
4) fracture in spinous process of T 1th

Q66. Which of the following is correct regarding following picture?

1) Lateral mass of C1
2) posterior arch of C1
3) anterior arch of C1
4) odontoid process of C2

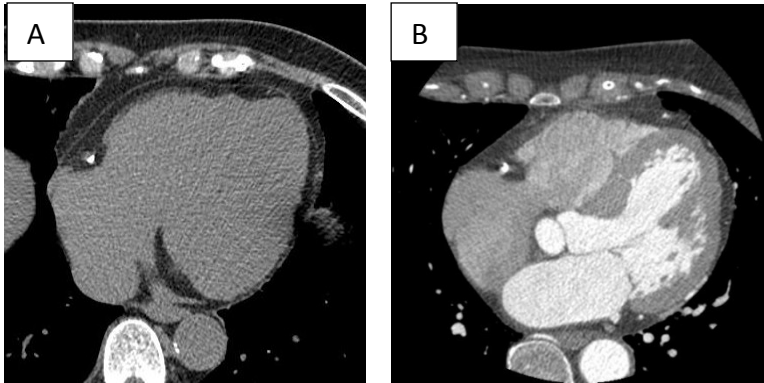Q67. This is Post- processing image in Coronary CT exam. What is correct answer?
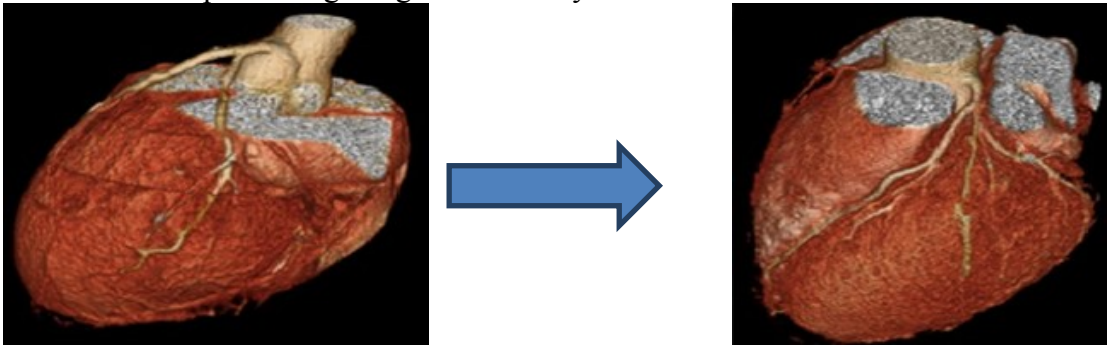
1) Curved reformation image
2) artifact is beam hardening effect
3) reconstruction is in best phase
4) given NTG don't make that artifact

Q68. Which of the following is correct answer Examination order?
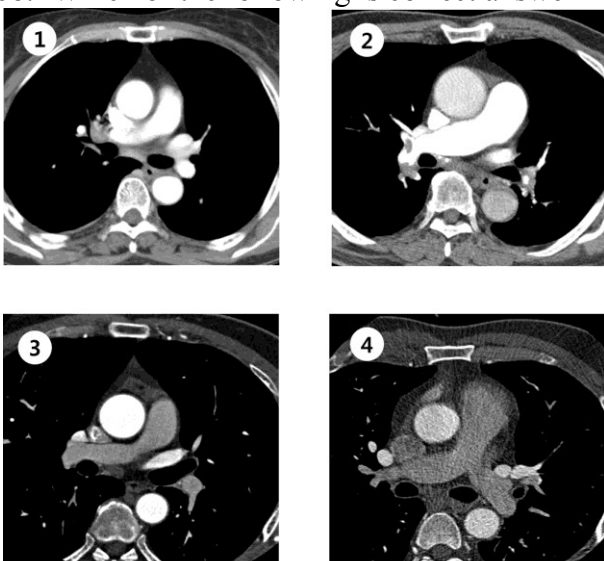
1) 1→2→3→4
2) 2→1→3→4
3) c)2→3→1→4
4) d) 3→2→1→4

Q69.What is the <u>incorrect</u> following images?


1) A image is coronary artery Ca scoring (B) image is coronary CT contrast image
2) A image   is related with athreroscolerosis
3) B image is narrowing coronary artery
4) A is using   dripping method B is blus tracking method

Q70. What is symptom and diagnosis of this image?
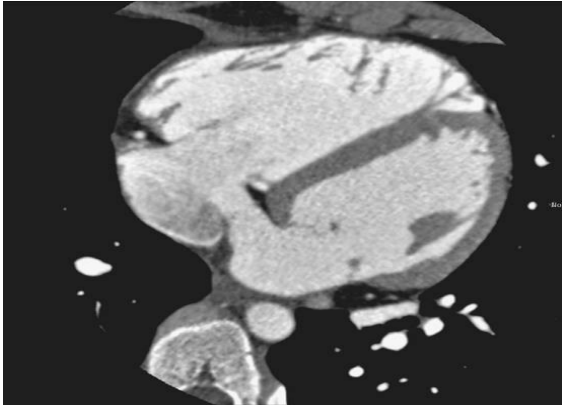
1) Atrial Septal Defect
2) Tricuspid insufficiency
3) Pulmonary stenosis
4) Teralogy of Fallot

Q71. This is Coronary CT image of Coronary artery bypass graft(CABG)
       Which is Not related with following images?
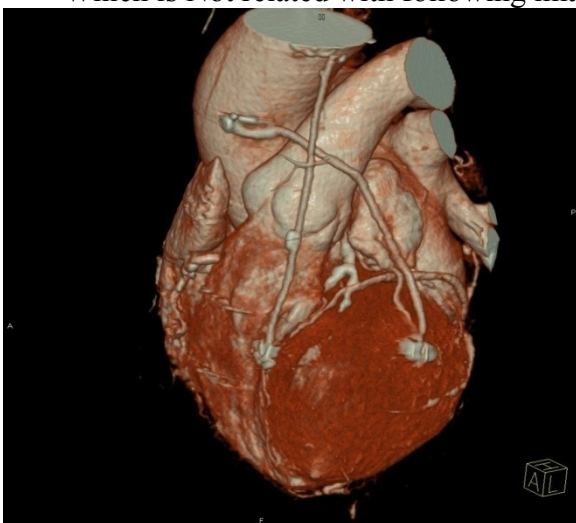
1) Greater saphenous vein
2) Internal thoracic artery
3) Radial artery
4) Hepatic vein

Q72. Computed tomography examination   low dose radiation examination Stochastic effects?
1) Generation of tumor   3) Infertility
2) Generation leukemia   4) Skin diseases

Q73.Which element is Increase patient's radiation dose others ?
   1) Use of high pitch
   2) Decrease of MSAD
   3) Use of filter
   4) Use of Wide scan FOV

Q74. Which is radiation effect of Fertilization(8weeks~birth) at the fetus?
   1) teratogenesis
   2) development disability
   3) all of them

Q75. Effect of radiation Next generation mutation?
   1) malignat tumor
   2) generative power
   3) leukemia
   4) change of chromosome number

Q76.Which one is the Category of stochastic effect at radiation dose?
   1) 20mGy   2) 200mGy   3) 2mGy   4) 2Gy

Q77.Which one is the most related to organ dose?
   1) CTDI
   2) DLP
   3) Effective
   4) Dose efficiency

Q78. During CT scanning of the head, calculate effective radiation dose conversion factor   in EUR?
   1) 0.0023   2) 0.0054   3) 0.015   4) 0.017

Q79.z-axis geometry radiation efficiency raise method?
   1) Use of AEC
   2) Use of the low voltage
   3) Use of beam collimation
   4) Use of the bow tie filter

Q80. This is about CTDI(computed tomography dose index) of the computed tomography what is correct answer?
   (T: slice thickness, D(z): dose of z-axis at 1x-ray tube rotation, I: movibg distance of table)

   1) $\int_{-\infty}^{+\infty} D(z)dz$
   2) $\frac{1}{T}\int_{-\infty}^{+\infty} D(z)dz$
   3) $\frac{1}{I}\int_{-\infty}^{+\infty} D(z)dz$
   4) $\frac{1}{TI}\int_{-\infty}^{+\infty} D(z)dz$

Q81.Given below about method usually using DLP(Dose lengh product) indicate the computed tomography dose what is correct answer?
      $DLP = \sum_i CTDIw$ x T x N
   1) T is slice thickness
   2) $CTDI_W$ is Computed tomography Dose Index
   3) N is spiral CT slice number
   4) N is conventional CT rotaion number

Q82. Which of the following is correct answer for indicate Relation radiation dose with noise for in CT exams?
   1) noise = exposure dose
   2) noise = exposure dose)^2
   3) noise = $\sqrt{\frac{1}{(\text{exposure dose})}}$
   4) noise = $\sqrt{\frac{1}{(\text{exposure dose})^2}}$

Q83. Which of the following is related to decrease patient dose for user in CT exams?
1) Electric noise decrease
2) micro source x ray development
3) Use of the dose modulation fuction
4) X-ray beam hardening surface dose decrease

Q84. What is the _incorrect_ answer in the following image?
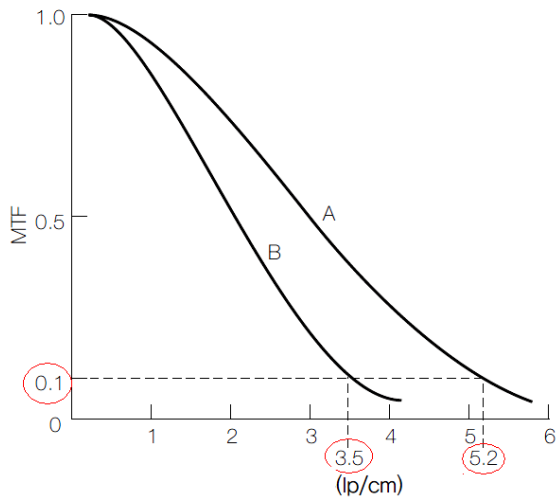
1) MTF which indicate Spatial resolution
2) Spatial resolution of the A equipment is better than B
3) A is enable to make image 5.2lp/cm at the 0.1MTF
4) contrast resolustion is better than A with B

Q85. What is the correct answer about the Phantom assessment method of indicated arrow in the following image?
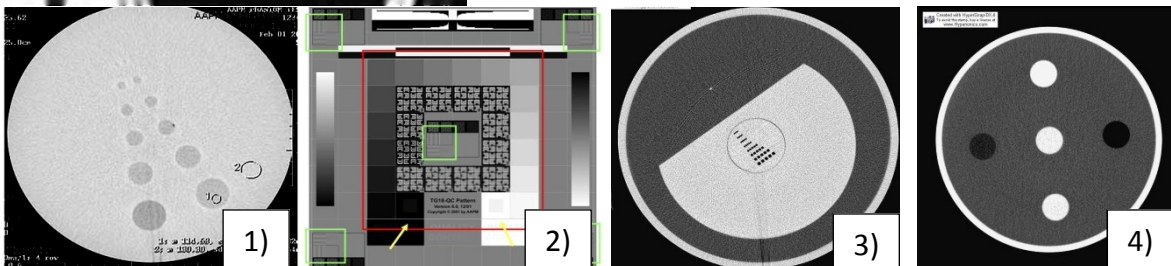
Q86. What is correct about reducing method artifact in the following images?

1) mA
2) slice thickness
3) fixation of patient head
4) hight resolution algorithm

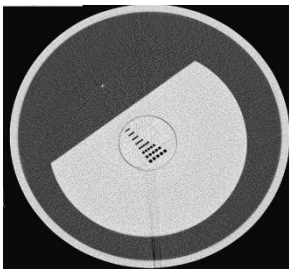Q87. What is correct answer expain for linearity which is Image qulity assesments
1) distingh of high constrast material which is adjacent
2) small variation concentration
3) in CT number variation ROI   uniform material
4) relation with imaged object CT number and linear attenuation coefficient

Q88. What is the reason of the variation of image quality In Sequential CT and spiral CT ?
1) Window width
2) Reconstruction algorithm,
3) Scanner geometry
4) Z-interpolation processing

Q89. What is measure Given below phantom image assessment in CT exam?

1) spatial resolustion
2) contast resolustion
3) noise
4) linearity