RADIOGRAPHIC TESTING
Quiz ≠ 1
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1. Although there may be other reasons for using calcium tungstate screen in industrial radiography, they are most usually used to:

۱-صفحات تشدید کننده از جنس کلسیم تنگستات اغلب به منظور ..... استفاده میشوند .

a. improve definition and resolution in radiographic images
b. improve contrast in radiographic images
c. decrease exposure time
d. make films respond to multimillion volt radiation

2. An excellent radiograph is obtained under given conditions of exposure with the film located at a distance of 91 cm (36 in.) from the target of the X-ray tube. If the film is now placed only 46 cm (18 in.) from the target, and all exposure conditions except time are held constant, the new exposure time will be:

۲- در صورتی که ffd ، از 36 in به 18 in تغییریابد و سایر شرایط ثابت فرض شود ، زمان تابش چه تغییری خوهد کرد ؟

a. unchanged
b. longer by approximately 80 percent
c. shorter by approximately 55 percent
d. only about 25 percent as long as the original exposure time

3. An excellent radiograph is obtained under given exposure conditions with a tube current of 5mA and an exposure film of 12 minutes. If other conditions are not changed, what exposure time would be required if the X-ray tube current could be raised to 10mA?

۳- در صورتیکه میزان جریان تیوپ X-ray ، ۵ mA و زمان تابش ۱۲ دقیقه باشد ، حال با تغییر جریان به ۱۰ mA جهت رسیدن به شرایط مشابه چه تغییری در زمان تابش رخ خواهد داد ؟

a. 24 minutes
b. 12 minutes
c. 6 minutes
d. 3 minutes

4. In film radiography, penetrameters are usually placed:

۴- در رادیو گرافی IQI معمولا در چه محلی قرار می گیرد ؟

a. between the intensifying screen and the film
b. on the source side of the test object
c. on the film side of the test object
d. between the operator and the radiation source

5. The penetrating ability of an X-ray beam is governed by:

۵- قدرت نفوذ پرتوهای X به ..... بستگی دارد.

a. kilovoltage
b. time
c. milliamperage
d. source-to-film distance

6. Co-60 used in nondestructive testing emits:

۶- co - 60 چه پرتویی تولید میکند ؟

a. alpha particles
b. neutrons
c. gamma rays
d. X-rays

7. A densitometer is an instrument for measuring:

۷- دانسیتومتر وسیله ای است جهت اندازه گیری .....

a. X-ray intensity
b. film density
c. density of a material
d. tube current

8. Three liquids which are essential to process an exposed film properly are:

۸- سه مایع که به منظور عملیات ظهور و ثبوت فیلم های پرتو دیده ضروری می باشند عبارتند از :

a. stop bath, acetic acid, and water
b. developer, stop bath, and H_2O_2
c. developer, fixer, and water
d. acetic acid, fixer, and stop bath

9. The two most common causes for excessively high-density radiographs are:

۹- دو دلیل اصلی ایجاد دانسیته بیش از اندازه فیلم های رادیوگرافی ..... می باشد .

a. insufficient washing and over development
b. contaminated fixer and insufficient washing
c. overexposure and contaminated fixer
d. overexposure and over development

10. The time required for one-half of the atoms in a particular sample of radioactive material to disintegrate is called:

۱۰- مدت زمان لازم به منظور اینکه نیمی از اتمهای یک ماده رادیواکتیو و اپاشی کنند ، ..... نامیده میشود .

a. the inverse square law
b. a curie
c. a half-life
d. the exposure time

11. The ability to detect a small discontinuity or flaw is called:

۱۱- قابلیت تشخیص ناپیوستگی های ریز ..... نام دارد .

a. radiographic contrast
b. radiographic sensitivity
c. radiographic density
d. radiographic resolution

12. Movement, geometry, and screen contact are three factors that affect radiographic:

۱۲- حرکت در حین رادیوگرافی ، مسایل هندسی و تماس نامناسب صفحات تشدیدکننده با فیلم سه فاکتوری هستند که بر ..... تاثیر دارند .

a. contrast
b. unsharpness
c. reticulation
d. density

13. The difference between the densities of two areas of a radiograph is called:

۱۳- اختلاف دانسیته بین دو منطقه مجاور یکدیگر در فیلم های رادیوگرافی ..... می باشد .

a. radiographic contrast
b. subject contrast
c. film contrast
d. definition

14. The most widely used unit of measurement for measuring the rate at which the output of a gamma ray source decays is the:

۱۴- واحد متداول اندازه گیری میزان واپاشی چشمه های گاما ، ..... نامیده میشود .

a. curie
b. roentgen
c. half-life
d. MeV

15. The selection of the proper type of film to be used for the X-ray examination of a particular part depends on:

۱۵- انتخاب فیلم مناسب جهت انجام تست X-ray روی یک قطعه معین به چه فاکتوری بستگی دارد ؟

a. the thickness of the part
b. the material of the specimen
c. the voltage range of the available X-ray machine
d. all of the above

16. A Co-60 source has a half-life of:

۱۶- نیمه عمر چشمه co-60 چه میزان می باشد ؟

a. 1.2 years
b. 6 months
c. 5.3 years
d. 75 days

17. X-ray tube current is controlled by:

۱۷- مقدار جریان در تیوپ X-ray بوسیله ..... کنترل می شود .

a. the current passing through the filament
b. the distance from the cathode to the anode
c. the type of material used in the target
d. the voltage and waveform applied to the X-ray tube

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RADIOGRAPHIC TESTING
Quiz ≠ 2
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1. Lead foil in direct contact with X-ray film:

۱- فویل سربی در تماس مستقیم با فیلم رادیوگرافی .....

a. intensifies the scatter radiation more than the primary radiation
b. decreases the contrast of the radiographic image
c. intensifies the primary radiation more than the scatter radiation
d. should not be used when gamma rays are emitted by the source of radiation

2. Radiographic sensitivity, in the context of the minimum detectable flaw size, depends on:

۲- حساسیت فیلم رادیوگرافی به مفهوم قابلیت تشخیص عیوب ریز به ..... بستگی دارد .

a. graininess of the film
b. the unsharpness of the flaw image in the film
c. the contrast of the flaw image on the film
d. all of the above

3. In order to decrease geometric unsharpness:

۳- به منظور کاهش عدم وضوح هندسی (UG) .....

a. radiation should proceed from as small a focal spot as other considerations will allow
b. radiation should proceed from as large a focal spot as other considerations will allow
c. the film should be as far as possible from the object being radiographed
d. the distance from the anode to the material examined should be as small as is practical

4. As the kilovoltage applied to the X-ray tube is raised:

۴- با افزایش کیلو ولتا ژ تیوپ X ، .....

a. X-rays of longer wavelength and more penetrating power are produced
b. X-rays of shorter wavelength and more penetrating power are produced
c. X-rays of shorter wavelength and less penetrating power are produced
d. X-rays of longer wavelength and less penetrating power are produced

5. In order to increase the intensity of X-radiation:

۵- به منظور افزایش شدت پرتوهای X .....

a. the tube current should be increased
b. the tube current should be decreased
c. the test specimen should be moved farther from the film
d. a lower kilovoltage should be applied to the tube

6. X-ray exposure may be due to:

۶- پرتودهی با X-ray ممکن است از طریق ..... صورت گیرد .

a. the direct beam from the X-ray tube target
b. scatter radiation arising from objects in the direct beam
c. both a and b
d. both a and b plus residual radiation that exists for the first few minutes after the X-ray machine has been returned to the "off" position

7. A general rule often employed for determining the kilovoltage to be used when X-raying a part is that:

۷- به عنوان یک قاعده کلی برای تعیین کیلو ولتاژ مورد استفاده جهت عملیات X-ray یک قطعه .....

a. the kilovoltage should be as high as other factors will permit
b. the kilovoltage should be as low as other factors will permit
c. the kilovoltage is always a fixed value and cannot be changed
d. the kilovoltage is not an important variable and can be changed over a wide range without affecting the radiograph

8. Excessive exposure of film to light prior to development of the film will most likely result in:

۸- قرار دادن بیش از اندازه فیلم در معرض نور قبل از عملیات ظهور ، اغلب باعث ..... می شود .

a. a foggy film
b. poor definition
c. streaks
d. yellow stain

9. If an exposure time of 60 second was necessary using a 1.2m (4 ft) source-to-film distance for a particular exposure, what time would be necessary if a 0.6m (2 ft) source-to-film distance is used and all other variables remain the same?

۹- در صورتیکه زمان تابش ۶۰ ثانیه و SFD ، ۱/۲ m باشد . درصورت کاهش SFD به ۰/۶ m ، با فرض ثابت بودن سایر متغیرها ، چه تغییری در زمان تابش رخ می دهد ؟ (برای رسیدن به شرایط مشابه)

a. 120s
b. 30s
c. 15s
d. 240s

10. One of the general rules concerning the application of geometric principles of shadow formation to radiography is:

۱۰- یک قاعده کلی مرتبط با مسایل هندسی د رخصوص تشکیل سایه عبارت است از .....

a. the X-rays should proceed from as large a focal spot as other considerations will allow
b. the film should be as far as possible from the object being radiographed
c. the distance between the anode and the material examined should always be as great as possible
d. all of the above

11. As a check on the adequacy of the radiographic technique, it is customary to place a standard test piece on the source side of the specimen. This standard test piece is called a:

۱۱- به منظور کنترل کیفیت تکنیک رادیوگرافی از یک وسیله استاندارد روی قطعه تحت تست استفاده می شود که به آن ..... می گویند .

a. reference plate
b. lead screen
c. penetrameter
d. illuminator

12. The duration of an exposure is usually controlled by:

۱۲- مدت زمان تابش معمولا از طریق ..... کنترل می شود .

a. controlling the milliamperage
b. a timer
c. controlling the source-to-film distance
d. a choke coil in the filament transformer

13. A penetrameter is used to indicate the:

۱۳- از IQI به منظور تعیین ..... استفاده می شود .

a. size of discontinuities in a part
b. density of the film
c. amount of film contrast
d. quality of the radiographic technique

14. A fluorescent intensifying screen will:

۱۴- صفحات تشدید کننده فلوئور سنتی .....

a. transform X-ray energy into visible or ultraviolet light
b. result in reticulation
c. decrease the graininess of the image when using gamma rays
d. increase the definition in a radiograph

15. The three main steps in processing a radiograph are:

۱۵- سه مرحله اصلی عملیات ظهور و ثبوت فیلم عبارت است از :

a. developing, frilling, and fixation
b. developing, fixation, and washing
c. exposure, developing, and fixation
d. developing, reticulating, and fixation

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RADIOGRAPHIC TESTING
Quiz ≠ 3
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1. Kilovoltage, exposure time, and source-to-film distance are three of the most important X-ray exposure factors that can be controlled. A fourth such exposure factor is:

۱- کیلو ولت ، زمان تابش و sfd سه فاکتور مهمی هستند که در رادیو گرافی با اشعه x قابل کنترل می باشند . فاکتور چهارم عبارتست از :

a. focal point size
b. temperature
c. filament-to-focal spot distance
d. milliamperage

2. Static marks, which are black tree-like or circular marks on a radiograph, are often caused by:

۲ – Static Mark که به صورت نشانه های تیره شاخه شاخه یا گرد روی فیلم دیده می شود اغلب به دلیل ..... رخ می دهد .

a. film being bent when inserted in a cassette or holder
b. foreign material or dirt imbedded in screens
c. scratches on lead foil screens
d. improper film handling techniques

3. The purpose of agitating an X-ray film during development is to:

۳- هدف از تکان دادن فیلم در حین عملیات ظهور ..... می باشد .

a. protect the film from excessive pressure
b. renew the developer at the surface of the film
c. disperse unexposed silver grains on the film surface
d. prevent reticulation

4. The activity of the developer solution is maintained stable by:

۴- فعالیت محلول ظهور از طریق ..... ثابت باقی می ماند .

a. constantly agitating it
b. maintaining processing solutions within the recommended temperature range
c. avoiding contamination from the wash bath
d. adding replenisher

5. The purpose of fixation is:

۵- هدف از انجام عملیات ثبوت ..... می باشد .

a. to remove all the undeveloped silver salts of the emulsion
b. to leave the developed silver as a permanent image
c. to harden the gelatin
d. all of the above

6. For best results when manually processing film, solutions should he maintained within a temperature range of:

۶- برای دستیابی به بهترین نتایج در عملیات ظهور و ثبوت دستی ، درجه حرارت محلولها باید در محدوده ..... باشد .

a. 18 to 24 ºC (65 to 75 ºF)
b. 65 to 75 ºC (149 to 167 ºF)
c. 24 to 29 ºC (75 to 85 ºF)
d. 75 to 85 ºC (167 to 185 ºF)

7. Water spots on films can be minimized by:

۷- لکه های آب روی فیلم رادیوگرافی توسط ..... به حداقل می رسد .

a. the rapid drying of wet film
b. using a wetting agent solution
c. using a fresh fixer solution
d. cascading water during the rinse cycle

8. The small area in the X-ray tube from which the radiation emanates is called the:

۸- منطقه کوچکی در تیوپ اشعه x که پرتوها از آن ساطع می شوند .....

a. diaphragm
b. focal spot
c. focusing cup
d. cathode

9. The radiation quality of a gamma ray source is:

۹- کیفیت پرتوها در چشمه گاما .....

a. determined by the size of the focal spot
b. determined by the isotope involved
c. varied by the operator
d. greater in Ir-192 than in Co-60

10. The most common material used to provide protection against X-rays is:

۱۰- ماده ای که معمولا به عنوان حفاظ در برابر پرتوهای x مورد استفاده قرار می گیرد ..... می باشد .

a. high-density brick
b. an alloy of 70 percent steel and 30 percent copper
c. tungsten
d. lead

11. A curie is the equivalent of:

۱۱- یک curie معادل ..... است .

a. 0.001 mCi
b. 1 000 mCi
c. 1 000 MCi
d. 1 00 MCi

12. With a given exposure time and kilovoltage, a properly exposed radiograph is obtained with a 6 mA-minutes exposure at the distance of 51cm (20 in.). it is desired to increase the sharpness of detail in the image by increasing the source-to-film distance to 102cm (40 in.). the correct milliamperage-minutes exposure to obtain the desired radiographic density at the increased distance is:

۱۲- در صورتیکه با میزان Exposure ، ۶ میلی آمپر – دقیقه در sfd ۲۰ اینچ ، تصویری با دانسیته مطلوب ایجاد گردد حال با افزایش sfd به ۴۰ اینچ ، Exposure چه تغییری خواهد کرد؟

a. 12 mA-minutes
b. 24 mA-minutes
c. 3 mA-minutes
d. 1.7 mA-minutes

13. Very short wavelength electromagnetic radiation produced when electrons traveling at high speeds collide with matter is called:

۱۳- پرتوهایی با طول موج کوتاه که در اثر برخورد الکترونهای پر سرعت با یک ماده ، تولید می شوند ..... نام دارند .

a. X-radiation
b. beta radiation
c. gamma radiation
d. none of the above

14. Assuming that a good radiograph is obtained at a setting of 10mA in 40s, how much time will be necessary to obtain one equivalent radiograph if the milliamperage is changed to 5mA (all other conditions remaining constant)?

۱۴- با m A ۱۰ جریان و ۴۰ ثانیه زمان تابش فیلمی با کیفیت مطلوب ایجاد می گردد . حال در صورتیکه جریان به m A ۵ تغییر یابد ، زمان تابش چه تغییری خواهد کرد ؟

a. 20s
b. 10s
c. 80s
d. 160s

15. A graph showing the relation between material thickness, kilovoltage, and exposure is called:

۱۵- نموداری که نشانگر ارتباط میان ضخامت ، کیلو ولتاژ و Exposure است ، .....می باشد .

a. a bar chart
b. an exposure chart
c. a characteristic curve
d. an H & D curve

16. A graph which expresses the relationship between the logarithm of the exposure applied to a photographic material and the resulting photographic density is called:

۱۶- نموداری که بیانگر ارتباط میان لگاریتم Exposure نسبی و دانسیته فیلم می باشد ، عبارت است از .....

a. a bar chart
b. an exposure chart
c. the characteristic curve
d. a logarithmic chart

17. Short wavelength electromagnetic radiation produced during the disintegration of nuclei of radioactive substances is called:

۱۷- پرتوهای الکترومغناطیس با طول موج کوتاه که در اثر واپاشی هسته مواد رادیواکتیو تولید می شود ..... نام دارد .

a. X-radiation
b. gamma radiation
c. scatter radiation
d. backscatter radiation

18. A photographic image recorded by the passage of X-or gamma rays through a specimen onto a film is called a:

۱۸- تصویری که در اثر عبور پرتوهای x یا گاما از قطعه کار روی فیلم ایجاد می شود ، ..... نام دارد.

a. fluoroscopic image
b. radiograph
c. isotopic reproduction
d. none of the above

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RADIOGRAPHIC TESTING
Quiz ≠ 4
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1. The normal development time for manually processing X-ray film is:

۱- زمان معمول عملیات ظهور دستی کدام گزینه می باشد ؟

a. 12-18 minutes in processing solutions at 24 ºC (75 ºF)
b. 3-8 minutes in processing solutions at 16 ºC (60 ºF)
c. 12-18 minutes in processing solutions at 68 ºC (154 ºF)
d. 5-8 minutes in processing solutions at 20 ºC (68 ºF)

2. In order to achieve uniformity of development over the area of an X-ray film during manual processing:

۲- به منظور دستیابی به ظاهر شدن یکنواخت فیلم در حین عملیات ظهور و ثبوت می باید.....

a. the film should be placed in a dryer after being developed
b. the developer should be agitated by using mechanical stirrers or circulating pumps
c. the film should be agitated while in the developer
d. the film should be transferred directly from the developer to the fixer

3. Two X-ray machines operating at the same nominal kilovoltage and milliamperage settings:

۳-دو دستگاه X که با ولتاژ و میلی آمپر اسمی یکسان کار می کنند .....

a. will produce the same intensities and qualities of radiation
b. will produce the same intensities but may produce different qualities of radiation
c. will produce the same qualities but may produce different intensities of radiation
d. may give not only different intensities but also different qualities of radiation

4. The density difference between two selected portions of a radiograph is known as:

۴- اختلاف دانسیته میان دو منطقه از یک فیلم رادیوگرافی ..... نام دارد .

a. unsharpness
b. radiographic contrast
c. specific activity
d. subject density

5. When producing radiographs, if the kilovoltage is increased, the:

۵- هنگام رادیوگرافی در صورتیکه کیلو ولتاژ افزایش یابد ، .....

a. subject contrast decreases
b. film contrast decreases
c. subject contrast increases
d. film contrast increases

6. The accidental movement of the specimen or film during exposure or the use of a focus-film distance that is too small will:

۶- حرکت قطعه یا فیلم در حین رادیوگرافی یا استفاده از sfd کم باعث ، .....

a. produce a radiograph with poor contrast
b. make it impossible to detect large discontinuities
c. result in unsharpness of the radiograph
d. result in a fogged radiograph

7. A properly exposed radiograph that is developed in a developer solution at a temperature of 14ºC (58ºF) for 5 minutes will probably be:

۷- در صورتیکه یک فیلم Expose شده تحت شرایط استاندارد ، در مایع ظهور در دمای ۱۴°c به مدت ۵ دقیقه قرار گیرد ، ممکن است فیلم .....

a. overdeveloped
b. underdeveloped
c. fogged
d. damaged by frilling

8. Lead screens in contact with the film during exposure:

۸- صفحات تشدید کننده سربی در تماس مستقیم با فیلم سبب .....

a. increase the photographic action on the film largely by reason of the electron emission and partly by the secondary X-rays generated in the lead
b. absorb the shorter wavelength scattered radiation more than the long wavelength primary radiation
c. intensify the photographic effect of the scatter radiation more than that of the primary radiation
d. none of the above

9. The sharpness of the outline in the image of the radiograph is a measure of:

۹- وضوح مرزهای تصویر در فیلم رادیوگرافی عبارتست از .....

a. subject contrast
b. radiographic definition
c. radiographic contrast
d. film contrast

10. Which has the shortest wavelengths ?

۱۰- در کدام گزینه طول موج کوتاه تر است ؟

a. visible light
b. microwaves
c. 100 kV peak X-rays
d. infrared radiation

11.Beta particles are:

۱۱- ذرات بتا ..... هستند.

a. neutrons
b. protons
c. electrons
d. positrons

12.A radioactive source with an activity of 1 Ci has:

۱۲- یک چشمه رادیواکتیو با اکتیویته یک کوری .....

a. 1 000 disintegrations per second taking place
b. 1 000 000 disintegrations per second taking place
c. 1 000 000 000 disintegrations per second taking place
d. 3.7×10^{10} disintegrations per second taking place

13.The metal that forms the image on an X-ray film is:

۱۳- فلزی که باعث شکل گیری تصویر روی یک فیلم x می شود ، ..... می باشد .

a. tin
b. silver
c. tungsten
d. iron

14. The lead symbol "B" is attached to the back of the film holder to determine:

۱۴- حرف سربی B که پشت فیلم رادیوگرافی نصب می شود ، به منظور تعیین ..... می باشد .

a. sensitivity
b. whether excessive backscatter is present
c. radiographic contrast
d. density

15. The purpose of a dated decay curve is to:

۱۵- هدف از استفاده از Decay chart چیست ؟

a. determine the source size at any time
b. calculate shielding requirements
c. determine the source strength (activity) at any time
d. mark the date and length of time for exposure

16. Why is Co-60 used as a radiation source for medium-weight metals of thickness ranges from 38 to 229mm (1.5 to 9 in.)?

۱۶- چرا CO-60 به عنوان چشمه پرتوزا در رادیوگرافی قطعات ضخیم mm (38-229) استفاده می شود ؟

a. because of its short half-life
b. because of the limited amount of shielding required
c. because of its penetrating ability
d. none of the above

Best Regards
AAS Training Center