2014 RSM

Q1.The most important quantity for the assessment of the internal exposure in the human body is:

1. Surface contamination
2. Intake
3. Skin contamination
4. Personal dose Hp(10)

Q2.Radiation levels naturally decrease due to radioactive:

1. Decay
2. Decontamination
3. Equilibrium
4. Absorption

Q3.What is the international unit for absorbed dose?

1. rad
2. kerma
3. Gy
4. Sv

Q4.The three factors which are important to protect individuals from radiation are:

1. Time, shielding, and dose rate
2. Dose rate, time, and gender
3. Time, shielding, and distance
4. Distance, time, and dose rate

Q5.Which of the following organizations is NOT a United Nations (UN) agency?

1. UNSCEAR
2. IAEA
3. ICRP
4. WHO

Q6.Which of the following is not a gas detector used for measurement of radioactivity in the working environment?

1. ionization surveymeter
2. proportional counter
3. GM surveymeter
4. scinitillation surveymeter

Q7.Which of the following is considered for the Build-up factor in photon shielding?

1. Dose contribution by the electron generation
2. Compton scattering by the electron generation
3. Bremsstrahlung by the electron generation
4. Secondary electron by the electron generation

Q8.Which of the following is correct to shield a high energy beta(β) ray?

1. Shield beta and X-ray
2. Shield beta and gamma ray
3. Shield beta and alpha(α) ray
4. Shield only beta ray

Q9.There are Film badge, Thermo luminescence dosimeter(TLD), and so on in the individual monitoring of radiation workers. These types of individual dosimeters use a filter, then chooses NOT a right role of the filter.

1. Tissue-equivalent correction
2. Background correction
3. Distinction of radiation type
4. Correction for energy dependence of radiation

Q10.Which of the following is NOT included in Radiation Protection System?

1. Minimization stochastic effect
2. Optimization of protection
3. Dose limit for individual
4. Justification of actions

Q11.If one made a detailed operation plan, and managed a work effectively from mock exercise and proficiency, which is the applied item in the following radiation protection.

1. Reduction internal exposure
2. Maintain the concentration of radioactive substances
3. Reduction exposure time
4. Protection of outside exposure for containing radioactive substances

Q12.Which of the following is NOT concerned with a preventive measure of unnecessary radiation exposure?

1. Sticking a signs for high level radioactive area
2. Wearing a film badge or thermo luminescence dosimeter(TLD)
3. Sticking a safety regulation
4. Sticking a warning light

Q13.Which is the WRONG combination concerning the measurement of surface combination?

1. direct method-use of survey meter
2. direct method-background measurement
3. indirect measurement-removal efficiency
4. indirect method-detection of fixed contamination

Q14.Which of the following is the case which is subjected to the dose limit?

1. Affected dose of an attending physician during giving a radiation treatment in the hospital
2. Affected dose of bodily tissue without diseased area when one is exposed to radiation for treating cancer
3. Affected dose of an air crew
4. Affected dose of inhabitant who live on the ground with higher natural background radiation level

Q15.Which of following is NOT suitable for a principle of detecting radiation?

1. Chemical activity
2. Biological activity
3. Structural defect induced activity
4. Radio-transparency

Q16.Which makes a patient’s exposure dose increase when an X-ray image is taken?

1. Use of filters
2. Use of the high resolution X-ray intensifying screen
3. Practice protection of the genital gland
4. Use of the short focus skin distance

Q17.Which interaction is the highest level of contribution in measuring of gamma ray?

1. Compton effect
2. Pair electron creation
3. Photoelectric effect
4. Ionization

Q18.Which of the following is not included in the quality inspection before using radiation dosimeter?

1. Calibration check
2. Radiation source responsiveness(sensitivity) check
3. Power supply(battery) check
4. Radiation source characteristics check

Q19.Which of the following is suitable for a reason for choosing a semiconductor detector for measuring gamma ray?

1. It is for the convenience of use
2. Maintenance and conservation expenses are relatively low
3. Gamma ray measuring efficiency is relatively high
4. Energy resolution is relatively superior

Q20.Which is NOR relevant about specialty of radiation accidents?

1. The pollution is long lasting.
2. Waste materials produced in the cleanup operations can be disposed of as general waste.
3. A race amount of radioactive pollutants create problems.
4. Cleanup operations require special equipment and other devices.

Q21.Which of the following is false?

1. The nuclear force is the force which is responsible for binding two or more nucleons into atomic nucleus
2. The sum of mass of the proton and neutron is greater than the total mass of the nucleons
3. The phenomenon called “Mass defect” is where in nucleons, the protons and neutrons that are being fused together to make up an atomic nucleus, each give up a little mass
4. The amount of mass defect is the binding energy of atomic nucleus

Q22.Which is the NOT right about emergency action principles of radiation accidents?

1. principle of ensuring safety
2. principle of report
3. principle of preventing expansion
4. principle of underestimation

Q23.Which of the following explanations is WRONG about radiation protection?

1. The principle of the justification of practice is that no practice involving exposures

to radiation should be adopted unless it produces at least a sufficient benefit to offset the radiation detriment it causes.

1. The principle of the optimization of protection is that an individual dose and risk

limits should be kept as low as reasonably achievable.

1. Dose limits have been legislated for public, occupational and medical exposures.
2. The dose limit refers to the allowable upper value prescribed for the protection of

occupational workers and public from radiation exposure.

Q24.Radiation is emitted from atomic nucleus or electron orbit. Which of the following is NOT a radiation emitting from atomic nucleus?

1. Alpha particle
2. X-ray
3. Beta particle
4. Gamma ray

Q25.In gamma rays interact with matter, which effect is occurred at low energy?

1. Photoelectric effect
2. Compton effect
3. Electron pair creation
4. Photonuclear reaction

Q26.Which of the following has the greatest specific ionization in the air?

* 1. 1 MeV alpha ray
  2. 1 MeV neutron
  3. 2 MeV beta ray
  4. 2 MeV gamma ray

Q27.Which of the following is a correct specification of an output pulse at ionization in a gas filling detector?

* 1. It is inverse proportion to incident radiation
  2. It is equal to energy of incident radiation
  3. Pulse does not change with voltage area.
  4. It is without regard to a type of charged gas

Q28.What is the reason why output pulse amplitude is important in proportional counter?

* 1. Sensitivity of detector
  2. Direction dependence of radiation
  3. Selection of detector type
  4. Distinction of radiation type

Q29.What is the primary reason why GM counter is inappropriate to measure radiation dose?

* 1. Using gas is difference with air
  2. Output pulse is not relevant to radiation type or energy
  3. There is low possible that gas and radiation were reacted
  4. Dead time is long

Q30.As the result of measurement in a state opened and closed cover of compensated GM survey meter, doses were 100 µSv/h and 30 µSv/h, respectively. Which radiation fields were you exposed by?

* 1. Gamma radiation field
  2. Beta radiation field
  3. Beta and gamma mixed radiation field
  4. Gamma and x-ray mixed radiation field

Q31.Which is WRONG about the characteristics of radiation accidents?

1. The extent of the calamities changes with the type and amount of the radioactive materials involved, the weather conditions of the site of the accident, and so forth.
2. Radiation accidents are unlikely to cause social disruption.
3. Management of the radiation accidents requires the dispatch of experts.
4. Radiation accidents, even though their magnitude is small, may cause significant damage through harmful rumors.

Q32.Which of the following would be the most effective X-ray shielding material?

* 1. Wood
  2. Paper
  3. Plastic
  4. Lead

Q33.When the distance from the source of radiation is doubled, the amount of radiation received will be :

* 1. Doubled
  2. Tripled
  3. Reduced by 1/2
  4. Reduced by 1/4

Q34.Which of the following is the most sensitive to radiation?

* 1. Liver
  2. Breast
  3. Vessel
  4. Bone

Q35.Radiation produces biological effects indirectly by production of free radicals in :

* 1. Water
  2. Glucose
  3. Carbohydrate
  4. Protein in the body

Q36.Which description is WRONG about radiation skin damages?

1. The severity skin damage caused by radiation exposure depends on the dose and affected surface area.
2. Ulceration of the skin occurs when it is exposed to a dose of about 10 Gy.
3. Radiation exposure of the extremities is likely to disturb blood circulation.
4. The signs and conditions of the exposed individuals differ according to the type of radiation.

Q37.What is the established annual occupational dose-equivalent limit for the lens of the eye?

* 1. 10 mSv
  2. 50 mSv
  3. 150 mSv
  4. 250 mSv

Q38.Which of the following is NOT true for the bioassay method?

* 1. Measure using the excretion of human body
  2. Can measure α radiation for internal exposure
  3. It is easy to take a specimen but complicated to handling
  4. Measuring is simple and assessment is accurate

Q39.Which of the following is NOT correct distinguishing the differences at radiation accidents and other accidents?

* 1. Radiation exposure is hard to feel with the five senses
  2. It is hard to distinguish between psychological symptoms and radiation exposure symptoms
  3. It mostly brings on an external wound
  4. It brings on radiation fatigue

Q40.Which of the following is correct about radiation accident?

* 1. A damage from a prejudice and a rumor hardly occur
  2. It is easy to distinguish between psychological symptoms and radiation exposure symptoms
  3. Radiation is invisible and insensible
  4. The scale of radiation accident will be different by the type of radiation material, the amount of radiation, the climate condition of the accident time, a place of the accident, and the accident time

Q41.Which of following is NOT correct in describing the natural radiation exposure?

* 1. The amount of natural radiation exposure dose is immaterial to neglect
  2. The natural radiation exposure dose is not a subject to manage because it is not controllable by human
  3. Some artificially increased natural radiation exposure is subject to control
  4. The most problematic matter is an internal exposure from radon

Q42.Which is NOT right about the effect of radiation on the human body?

1. late effects
2. nonspecific symptoms
3. simplicity of clinical outcome
4. unawareness of exposure to radiation

Q43.Which description is WRONG right about the internal exposure dose estimation?

1. Human counter is used for the whole body distribution estimation.
2. Bioassay methods provide measurement of radiological monitoring from outside of the body to inside of the body.
3. It can be estimated by the contamination level of the air and operation hour.
4. Running a swab the internal surface of the nostril and intake passage pf radioactive materials is called the anti-smear method.

Q44.Which of the following increase exposure dose during taking an X-ray?

* 1. Using a compensating filter
  2. Using a high sensitivity screen
  3. Shield the gonad
  4. Using a short focus-skin distance

Q45.Which of the following is NOT true for protect the exposure from radiation dose rate in space ?

* 1. Attain proficiency by Mock-up Training
  2. Isolate radiation substances or maintain the concentration
  3. Attain proficiency by Cold-up Training
  4. Increase number of the workers in order to prevent the concentrated exposure for one worker

Q46.When a photon interacted with an atom, the total energy of the photon was absorbed by an electron of the atom. It will be:

* 1. Pair production
  2. Photoelectric effect
  3. Compton effect
  4. Annihilation.

Q47.Which is correct about the public dose limits?

1. Public dose limits are based on radiation levels that have been found to increase health risks.
2. Public dose limits are expressed in effective dose.
3. Public dose limits are expressed in equivalent doses.
4. Radiation levels above the dose limits have been found to increase cancer risks.

Q48.Choose the wrong statement about the plateau characteristic of GM counters.

* 1. The wider and more horizontal the plateau, the better the characteristic.
  2. The starting voltage should be constant.
  3. The plateau gradient should be less than 5% per 100 V.
  4. The operating voltage of the plateau is within the one-third range from the upper limit toward the lower limit.

Q49.Select the information that accident victims will NOT seek immediately after the radiation accident.

1. safety of their family and their close associates
2. future life planning
3. somatic effects of radiations and radioactive material
4. status of the radiation accident

Q50.Which material is the best for neutron beam shielding?

1. Pb
2. concrete
3. water
4. air

Q51.Which of the following is the right exposure dose to make the radiation damage of the human body equal to LD100 ?

* 1. 100 cGy
  2. 200 cGy
  3. 400 cGy
  4. 700 cGy

Q52.Choose the correct arrangement of items in descending order of organ/tissue absorbed doses in the 18F-FDG-PET examination (in the case of urination every two hours).

* 1. Brain > Heart > Kidney > Lung > Red marrow
  2. Brain > Kidney > Heart > Red marrow > Lung
  3. Kidney > Heart > Brain > Lung > Red marrow
  4. Kidney > Brain > Heart > Red marrow > Lung

Q53.Which of the following is false for the principle of emergency measure at the radiation accident?

* 1. Principle of safety maintenance
  2. Principle of reporting
  3. Principle of prevention of expansion
  4. Principle of underestimation

Q54.Which of the following is correct about a consultation of radiation exposure for the responsible person on the radiation safety?

* 1. Magnify the explanation items about exposure in a consultation
  2. Explain an equal content to everybody in a consultation
  3. Consult with technical terms as much as practicable
  4. Must put the point across him/her during the consultation

Q55.Which of the following is NOT correct about a consultation of radiation exposure for the responsible person on the radiation safety?

1. Listen to a consultation of a person carefully
2. Construct the relationship of mutual trust
3. Access with a position of expropriation to other person
4. Go through with original idea with a ignoring other unnecessary opinion

Q56.In case of radiation exposure, 50% of the exposed population with a half lethal dose is killed. What is the main cause of death?

1. skin disorders
2. small intestine disorders
3. blood forming organ disorders
4. heart disorders

Q57.Which of following is correct explanation of Carrier Free?

1. A radioisotope of elements, undiluted with a non-radioisotope carrier.
2. A radioisotope of elements, undiluted with a radioisotope carrier.
3. A radioisotope of an element, undiluted with a non-radioisotope carrier.
4. A radioisotope of an element, undiluted with a radioisotope carrier.

Q58.Which statement is the correct answer about the consultation for a radiation exposure?

* 1. Consultation of a radiation exposure is a persuasion
  2. It is important to understand what the other want to know
  3. Radiation exposure consultation is a correspondence of a discontent from the victim
  4. It is insane to feel uneasy about radiation exposure

Q59.Choose an incorrect answer about a radiation protection.

* 1. Cannot restrict an act attendant upon a radiation exposure inappropriately
  2. Prevent a definite effect, lower a probable effect to approvable level in a radiation exposure
  3. A justification of radiation protection means to maintain exposure reasonably achieve as low as possible in consider of economic and social factor in plan and act
  4. Nobody can exceed the limitation of a radiation dose about the exposure management

Q60.Which of the following is NOT true about a principle of radiation protection?

* 1. Justification of performance
  2. Optimization of a protection
  3. Highest priority of safety
  4. Prohibition of dose limitation

Q61.Which is NOT right about mental health problems caused by a radiation disaster?

1. heart disease, cerebral infraction
2. demotivation
3. decline in concentration and memory
4. insomnia, loss of appetites

Q62.What is the correct feature about semiconductor detector?

1. W-value of Ge is about 30 eV
2. Si surface barrier semiconductor detector is suited for measuring gamma ray
3. Compare to other detector, resolution time is very short
4. Poor energy resolution

Q63.Which of following measuring instrument is suitable for measuring the alpha ray?

1. Si surface barrier semiconductor detector
2. Thermo luminescence dosimeter
3. GM counter
4. NaI(Tl) scintillation crystal

Q64.Which is suitable match for detector and principle of detector?

1. Semiconductor detector and excitation
2. Proportional counter and radiation damage
3. GM counter and fluorescence
4. Pocket dosimeter and gas ionization

Q65.Which of the dose that does NOT include radiation weighting factor in dose evaluation process?

1. Equivalent dose
2. Committed dose
3. Effective dose
4. Absorbed dose

Q66.In case of internal exposure, which is practicable for evaluating exposure dose during long hours?

* 1. Committed dose
  2. Equivalent dose
  3. Absorbed dose
  4. Effective dose

Q67.Which is NOT included in the nuclear power plant security measures?

1. anti-earthquake design criteria
2. investigation on the presence/absence of the active faults
3. quake-absorbing structure design
4. plant construction underneath the regular airline flight path

Q68.Which is incorrect explanation about factor that occurs radiation damage?

* 1. Biological effect of radiation can be affected by temperature
  2. Generally, relative biological effectiveness (RBE) of high energy positron is much bigger than that of alpha ray
  3. By-stander effect means in case endow a specific cell with dose among a group of cell, it also exert influence on the neighboring cells which are not exposed
  4. Compare to adult, child is more sensitive to radiation because cell division of a child is more prosperous than an adult

Q69.Threshold effect means effects show above certain level of dose. Which of following is NOT related to the threshold effect?

* 1. Muddiness of crystalline lens
  2. Hematogenous function damage
  3. Erythema 4) Gene mutation

Q70.Which radiation has a fear of erythema on radiation worker?

* 1. Alpha particle
  2. Beta particle
  3. Gamma particle
  4. Neutron

Q77.Which of following is incorrect answer for characteristics of stochastic effects in human body by cause of radiation?

1) Take much time from exposure to symptoms occurrence

2) No radiation specificity

3) Easy to occur by low dose long time exposure

4) Occurs by high dose short time exposure

Q78.Threshold effect means effects show above certain level of dose. Which of following is NOT related to the threshold effect?

1) Muddiness of crystalline lens

2) Hematogenous function damage

3) Erythema

4) Gene mutation

Q79.Which of following in incorrect about chronic damage?

1) Leukemia

2) Variation of the blood

3) Malignant cancer

4) Genetic damage

Q80.What is correct answer for the impediment of cell annihilation?

1) Carcinogenesis

2) Leukemia

3) Sterility

4) Mutation