

Test Bank

CHAPTER 1

Multiple Choice

1. Who was awarded the first Nobel Prize for physics in 1901, for his experimental work with radiation?
 - a. W. J. Morton
 - b. O. Walkhoff
 - c. W. D. Coolidge
 - d. W. C. Roentgen
2. Who is credited with introducing the bitewing radiograph?
 - a. F. W. McCormack
 - b. H. R. Raper
 - c. G. M. Fitzgerald
 - d. C. E. Kells
3. Who developed the hot cathode ray tube?
 - a. W. D. Coolidge
 - b. W. A. Price
 - c. H. R. Raper
 - d. W. H. Rollins
4. The development of radiation protection as a science is credited to:

- a. A. Cieszyński.
 - b. W. D. Coolidge.
 - c. W. H. Rollins.
 - d. F. Mouyen.
5. What New Orleans dentist first made practical use of x-rays in the treatment of dental patients?
- a. H. R. Raper
 - b. G. M. Fitzgerald
 - c. F. Mouyen
 - d. C. E. Kells
6. Early researchers working in the field of radiography were not aware that continued exposure to x-rays produced accumulations of radiation effects in the body *because* x-rays are invisible.
- a. Both the statement and reason are correct and related.
 - b. Both the statement and reason are correct but NOT related.
 - c. The statement is correct, but the reason is NOT.
 - d. The statement is NOT correct, but the reason is correct.
 - e. NEITHER the statement NOR the reason is correct.
7. The most significant advancement in the early days of radiography came in 1913 when W. D. Coolidge:
- a. became the first to alert the profession of the dangers of radiation exposure and advocated for the science of radiation protection.

- b. exposed a prototype of a dental radiograph, setting the stage for preventive oral health care.
 - c. developed a variable, high kilovoltage x-ray machine compatible with the paralleling technique.
 - d. introduced an x-ray tube that allowed for an x-ray output that could be predetermined and accurately controlled.
8. The first dental radiograph was produced using an exposure time of:
- a. 0.5 second.
 - b. 1 minute.
 - c. 5 minutes.
 - d. 25 minutes.
 - e. 1 hour.
9. What component of the dental x-ray machine best limits the size of the x-ray beam to the approximate size of the image receptor?
- a. A pointed cone
 - b. An open round cylinder
 - c. A rectangular PID
 - d. A slit collimator
10. Panoramic radiology became popular in the:
- a. 1930s.
 - b. 1940s.
 - c. 1950s.
 - d. 1960s.

e. 1970s.

11. Which of the following is NOT true regarding cone beam volumetric imaging?

- a. It images a single selected plane of tissues.
- b. It is based on computed tomography.
- c. It uses less radiation than a panoramic radiograph.
- d. It is designed specifically for imaging dental applications.
- e. It is purported to become the gold standard for imaging certain oral conditions.

12. Early dental film required long exposure times because:

- a. it was hand-wrapped.
- b. the emulsion was only on one side.
- c. glass plates were used as the base.
- d. the packets were not moisture resistant.

13. Each of the following is an advantage of digital imaging EXCEPT one. Which one is the EXCEPTION?

- a. It reduces radiation over film-based radiography.
- b. It eliminates the need for the darkroom and processing chemistry.
- c. It allows the use of pointed cones without radiation hazards.
- d. It avoids the need for disposal of hazardous materials such as lead foils from film packets.
- e. It produces enhanced two- and three-dimensional images.

14. The bisecting technique was the first and earliest radiographic technique for exposing intraoral radiographs *because* the bisecting technique is based on the rule of isometry.

- a. Both the statement and reason are correct and related.

- b. Both the statement and reason are correct but NOT related.
 - c. The statement is correct, but the reason is NOT.
 - d. The statement is NOT correct, but the reason is correct.
 - e. NEITHER the statement NOR the reason is correct.
15. The paralleling technique is taught in all dental assisting, dental hygiene, and dental schools *because* it is the technique of choice for imaging intraoral radiographs.
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 - b. Both the statement and reason are correct but NOT related.
 - c. The statement is correct, but the reason is NOT.
 - d. The statement is NOT correct, but the reason is correct.
 - e. NEITHER the statement NOR the reason is correct.
16. The rule of isometry is the basis for what dental radiographic technique?
- a. Bisecting
 - b. Paralleling
 - c. Panoramic
 - d. Digital
 - e. Computed tomography
17. Each of the following is a potential use of dental radiographs EXCEPT one. Which one is the EXCEPTION?
- a. Diagnosing dental caries
 - b. Evaluating development of dentition
 - c. Detecting missing teeth
 - d. Assessing patient self-care

- e. Evaluating trauma to teeth and supporting bone

18. Producing radiographs of the teeth and/or the oral cavity is called:

- a. Radiation producing.
- b. Radiology.
- c. Roentgenograph.
- d. X-raying.
- e. Radiography.

19. Dental assistants and dental hygienists meet an important need by providing each of the following EXCEPT one. Which one is the EXEPTION?

- a. Exposing radiographs
- b. Processing radiographs
- c. Mounting radiographs
- d. Prescribing radiographs
- e. Interpreting radiographs

20. The positioning indicating device (PID) is sometimes called a “cone” *because* the PID of early dental x-ray machines was of a pointed shape.

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- b. Both the statement and reason are correct but NOT related.
- c. The statement is correct, but the reason is NOT.
- d. The statement is NOT correct, but the reason is correct.

e. NEITHER the statement NOR the reason is correct.

True/False

1. William Herbert Rollins was awarded the first Nobel Prize for physics.
2. C. Edmund Kells encouraged the practical use of radiographs in dentistry.
3. The radiographer should help the patient hold the image receptor in place during exposure.
4. In the early 1900s dental patients would have to be sent to hospitals or a physician's office to have a dental radiograph exposed.
5. Early dental x-ray machines were an electrical hazard.
6. Pointed cones should be used to direct radiation from the x-ray tube to the patient.
7. Dental x-ray film available today is coated with emulsion on both sides.
8. The bisecting technique is the technique of choice for intraoral radiography.
9. Dental radiography supplements visual and physical examination to provide a quality evaluation of a patient.
10. Digital imaging systems can reduce radiation dosage more than film-based radiography.
11. A radiograph is an image produced by exposure to x-rays.
12. Computed tomography eliminates the use of radiation to produce an image.
13. Digital imaging replaces the conventional dental x-ray machine.

14. The paralleling technique is based on the rule of isometry.
15. The PID is used to direct the useful beam of radiation.
16. X-radiation was discovered when Roentgen was working with a Crookes tube.
17. Roentgen named his discovery the roentgen ray.
18. The x-radiation output of the Crookes tube (named after the English chemist William Crookes) could be predetermined and accurately controlled.
19. Early scientists and researchers working in the field of radiography were not aware that continued exposure produced accumulations of radiation effects in the body.
20. In the early 1900s, it was common practice for the radiographer to help the patient hold the film in place while making the exposure.

Short Answer

1. Who first determined that x-rays would play a role in dentistry?
2. Who is considered to be the first advocate for the science of radiation protection?
3. Who developed the hot cathode ray tube?
4. Which radiograph displays the entire dentition and surrounding structures?
5. What is the technique of choice for intraoral radiography?
6. In dental digital imaging systems, what replaces film?
7. What medical imaging modality records a selected plane of tissues?
8. What is the name of the device that functions to direct the x-ray beam toward the patient?

9. What is the purpose of studying the history of radiography and dental radiography?
10. What are the two techniques for exposing intraoral dental radiographs?