Chapter 15

1. The mAs should be considered as the primary control for the:

a. intensity of the primary x-ray beam

b. subject contrast of the remnant x-ray beam

c. spatial resolution (sharpness) of the projected image

d. noise in the primary x-ray beam

e. contrast of the primary x-ray beam

2. The milliamperage is actually a unit for measuring the:

a. total electrical current used during a completed exposure

b. maximum electrical pressure applied during an exposure

c. rate of electrical current flowing during an exposure

d. x-ray beam intensity rate

e. total x-ray exposure

3. *Extremely* low mAs could result in all of the following *except*:

a. loss of exposure intensity

b. loss of subject contrast

c. visible quantum mottle

d. loss of sharpness of detail

4. If the mA is tripled, how must the exposure time be adjusted to maintain the original x-ray

beam intensity?

a. triple it

b. cut it to 1/3

c. increase it by 9 times

d. cut it to 1/9

e. cut it to ½

5. With an 80-kVp x-ray beam doubling the mA would double the number of which photons in

the primary x-ray beam?

a. those at 20 kV

b. those at 50 kV

c. those at 79 kV

d. all of these

e. none of these

6. If the mA is set at 300 and the total mAs produced is 15 mAs, the exposure time must be:

a. 1/20 second

b. 1/15 second

c. 0.2 second

d. 0.15 second

e. 0.5 second

7. Which of the following combinations is best to obtain 20 mAs on a small child:

a. 100 mA at 1/5 sec

b. 200 mA at 0.1 sec

c. 300 mA at 1/15 sec

d. 400 mA at 0.05 sec

e. 600 mA at 1/30 sec

8. With all other factors unchanged, if mAs is increased by 50%, subject contrast in the remnant

beam will:

a. increase as a direct result

b. decrease as a direct result

c. not change at all

d. may be affected indirectly, but is not directly controlled by it

9. During chest radiography, if the exposure time is decreased, image sharpness of detail will:

a. increase as a direct result

b. decrease as a direct result

c. not change at all

d. may be affected indirectly, but is not directly controlled by it

10. An exposure time of 1/8 second is equal to which decimal equivalent:

a. 0.8 sec

b. 0.08 sec

c. 0.125 sec

d. 0.0125 sec

e. 0.25 sec

11. The decimal exposure time 0.167 second is equal to which fractional time:

a. 1/5 sec

b. 1/6 sec

c. 1/7 sec

d. 1/8 sec

e. 1/9 sec

12. To obtain 240 mAs using the 300 mA station, use an exposure time of second:

a. 0.15

b. 0.167

c. 0.6

d. 0.8

e. 0.375

13. To obtain 70 mAs using the 200 mA station, use an exposure time of second:

a. 0.33

b. 0.7

c. 0.35

d. 0.375

e. 0.4

14. To obtain 20 mAs using the 400 mA station, use an exposure time of second:

a. 0.02

b. 0.2

c. 0.5

d. 0.05

e. 0.125

15. To obtain 30 mAs using the 75 mA station, use an exposure time of second:

a. 0.4

b. 0.43

c. 0.3

d. 0.13

e. 0.033

16. All other factors equal, when mAs is reduced, the photoelectric/Compton ratio will:

a. increase

b. decrease

c. remain unchanged

17. The fractional time 1/120 second is equal to milliseconds:

a. 120

b. 0.012

c. 0.083

d. 8.3

18. By selecting a particular mA station, one of a series of electrical in the x-ray machine

circuit is being engaged:

a. capacitors

b. resistors

c. thyristors

d. autotransformers

e. rectifiers

19. For a particular amount of x-ray exposure, mA and exposure time are to each other:

a. proportional

b. exponential

c. unrelated

d. inversely proportional

20. To minimize the probability of motion during an exposure, which mA station should be used:

a. the lowest available

b. a mid-range (optimum) station

c. the highest available with the needed focal spot

d. the highest available on the x-ray machine

21. Which of the following would be an appropriate application for a very low mA station:

a. computed tomography

b. breathing technique

c. soft-tissue technique

d. pediatrics

22. Especially for digital images, insufficient mAs can be a prime contributor to in the

image:

a. motion

b. poor contrast

c. quantum mottle

d. heel effect

e. tomography artifacts

23. In order to double the remnant x-ray beam signal reaching the image receptor, rather than

using kVp, if the mAs is doubled instead, patient exposure will:

a. decrease to about ½

b. decrease by about 15%

c. increase by 15%

d. increase by 35-40%

e. increase by double (100%)