

1. The most suitable method to protect occupational personnel from the radiation emission of brachytherapy sources is to provide: 14:38
 - A. Structure shielding
 - B. Local shielding
 - C. Source encapsulation
 - D. Protective aprons
2. The oldest material that has been used for radiation therapy implants is: 8:354
 - A. Technetium-99m
 - B. Cobalt-60
 - C. Iodine-121
 - D. Radium-226
3. Which of the following are examples of non-collimated sealed sources?
 1. Radium needle
 2. Cesium ribbon
 3. Technetium filled syringe
 - A. 1 & 2 only
 - B. 1 & 3 only
 - C. 2 & 3 only
 - D. 1, 2, & 3
4. According to the Manchester system, the point located 2cm superior to the external cervical OS and 2cm lateral to the cervical canal is called the: 9:118
 - A. G spot
 - B. Point A
 - C. M spot
 - D. Tandem point
5. The best system for determining the dose distribution to the target volume for brachytherapy is by the use of the: 9:118
 - A. Manchester system
 - B. Quimby system
 - C. Paterson-Parker system
 - D. ICRU system
6. A source which contains 10 mg. of radium filtered by (1mm. Pt) will produce an air kerma rate at a 1 meter distance of: 9:118
 - A. 67 micro Gy/hour
 - B. 8.3 micro Gy/hour
 - C. 10 micro Gy/hour
 - D. 23 micro Gy/hour
7. During a transplant therapy of the uterus the anterior-posterior dose reference points are at the 9:119
 - A. Vagina and ovary
 - B. Uterus and sigmoid colon
 - C. Bladder and rectum
 - D. Urethra and ureter
8. The type of radium needles that have a higher activity at both ends of the needles are termed 8:356
 - A. Weighted sources
 - B. Dumbell sources
 - C. ISO balance source
 - D. Flip-flop sources
9. The strength of a brachytherapy source may be specified in all of the following ways EXCEPT 8:361
 - A. Exposure rate at specified distance
 - B. Equivalent mass of radium
 - C. Filtration material
 - D. Activity
10. The rate of decay of a brachytherapy source is affected by changes in 8:45
 - A. Chemical bonding
 - B. Temperature
 - C. Barometric pressure
 - D. None of the above

11. During planer and volume implants, a three-dimensional reconstruction of the source geometry can be accomplished by: 8:379
1. *Orthogonal imaging* 2. *Magnification imaging* 3. *Stereo-shift imaging*
- A. 1 & 2 only C. 2 & 3 only
B. 1 & 3 only D. 1, 2, & 3
12. The use of external applicators or molds are most commonly employed in the treatment of: 8:383
- A. Intra-abdominal tumors C. Vaginal tumors
B. Superficial tumors D. Intrathoracic tumors
13. The main advantage that Cesium 137 has over radium for intercavitary and interstitial brachytherapy is: 8:359
- A. A longer half-life C. Its higher effective energy
B. It's reduced shielding requirements D. Its increased penetration
14. A tracheostomy is normally required to relieve the edema which may be associated with interstitial irradiation techniques of the: 9:125
1. *Glossopalatine sulcus* 2. *Vallecula* 3. *Base of the tongue*
- A. 1 & 2 only C. 2 & 3 only
B. 1 & 3 only D. 1, 2, & 3
15. Radium sources must be double encapsulated to prevent the release of potentially dangerous alpha-emitting gas called: 8:357
- A. Krypton C. Radon
B. Xenon D. Ozone
16. A common means of brachytherapy treatments include the application of: 8:354
1. *Interstitial sources* 2. *Intercavitary placement* 3. *Radionuclide therapies*
- A. 1 & 2 only C. 2 & 3 only
B. 1 & 3 only D. 1, 2, & 3
17. The dominant factor that influences dose distribution in brachytherapy is the: 9:113
- A. Source half-life C. Source shape
B. Equilibrium D. Inverse square law
18. The use of an ovoid or vaginal cylinder serves to: 9:113
1. *Decrease the range of treatment*
2. *Increase the isodose distribution*
3. *Increase the fall-off range*
- A. 1 only C. 3 only
B. 2 only D. 1, 2, & 3
19. A Paterson-Parker system which is used for planar implants will deliver a dose of about _____ to the implanted volume. 9:114
- A. 1 % C. 5 %
B. 3 % D. 10 %
20. Which of the following radionuclides is most often employed for permanent interstitial implants? 3:112
- A. Radium needles C. Iridium ribbons
B. Gold seeds D. Colbalt seeds

21. The uniform distribution which characterizes the Quimby system is in large part accomplished by the use of (a): 9:115
 A. Curved source C. Multi-plane sources
 B. 1cm intersource spacing D. None of the above
22. In the Manchester system, Point B is located: 9:118
 A. 3cm medial to Point A C. 3cm above the G spot
 B. 3cm lateral to Point A D. 3cm lateral to the M point
23. A platinum filter with a .5mm thickness is provided around a radium 226 source to absorb the _____ emitted by the daughter nuclides. 8:355
 1. Alpha 2. Beta 3. Brems radiation
 A. 1 & 2 only C. 2 & 3 only
 B. 1 & 3 only D. 1, 2, & 3
24. The most appropriate method for determining the strength of a brachytherapy source is by determining its: 8:356
 A. Peak energy C. Exposure rate constant
 B. Half-life D. Energy spectrum
25. The ideal brachytherapy source should possess a: 8:359
 1. Monochromatic emission spectrum 2. Long half-life 3. High speed activity
 A. 1 & 2 only C. 2 & 3 only
 B. 1 & 3 only D. 1, 2, & 3
26. When the highest exposure rate constant is required for a therapeutic implant, the most desirable source is: 8:359
 A. Ir-192 C. Ra-226
 B. Cs-137 D. Au-188
27. In the case of a planer impiant the uniformity of dose is achieved in a _____ plane at .5 cm from the implanted plane: 8:374
 A. Perpendicular C. Oblique
 B. Parallel
28. The advantage(s) of iridium-192 over radium needles for many brachytherapy techniques is (are) its: 9:175
 A. Greater flexibility C. Smaller cross section diameter
 B. Variability in lengths available D. All of the above
29. The use of plaque brachytherapy has found to be useful in the management of: 9:197
 A. Cervical cancers C. Lymph node metastasis
 B. Choroidal melanoma D. Testicular cancer
30. Which of the following brachytherapy sources has an effective photon energy of about .66 MeV? 8:358
 A. Au-198 C. Rn-222
 B. Co-60 D. Cs-137
31. The expansion of the cervical opening and measurement of the length of the uterine cavity can be accomplished by: 9:278
 A. Gynecological template C. Dome cylinders
 B. Uterine cervix dialators D. Vaginal colpostate

