

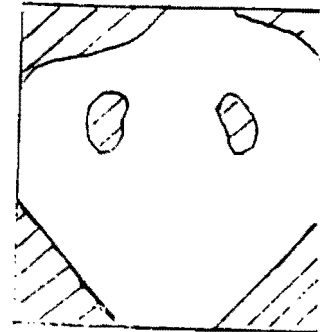
1. The preferred treatment position for the anterior and posterior field for total body irradiation is: 9:389
 - A. Erect
 - B. Prone
 - C. Seated
 - D. None of the above
2. During total body irradiation the principal organ(s) requiring shielding are the: 9:391
 - A. Testes
 - B. Lungs
 - C. Liver
 - D. Kidneys
3. The APPA "stop sign" field is most often used in the treatment of: 9:308
 - A. The prostate
 - B. Mediastinum
 - C. Liver
 - D. Pancreas
4. A four field box technique is most often employed for the treatment of: 3:165
 - A. Orbital tumors
 - B. Brain metastases
 - C. Gynecologic malignancies
 - D. Brochopulmonary lesions
5. In order to include the hypogastric nodes in a lateral field of the pelvis, the posterior margin should transect the: 3:161
 - A. Ischial tuberosity
 - B. Rectum
 - C. Urethra
 - D. Urinary bladder
6. When a combined therapy of external irradiation and brachytherapy is selected for carcinomas of the cervix, a shielding block is used with the AP/PA external beam fields to prevent excessive irradiation to the:
 1. Symphysis pubis
 2. Urinary bladder
 3. Rectal mucosa
 - A. 1 & 2 only
 - B. 1 & 3 only
 - C. 2 & 3 only
 - D. 1, 2, & 3
7. During radiotherapy of a pituitary tumor with the patient supine, the anterior field should enter: 3:294
 - A. Above and behind the eyes
 - B. Below and behind the eyes
 - C. At the nasion
 - D. At the coronal suture
8. A treatment designed to be given at 100cm SSD is mistakenly given at 94cm SSD. What is the error in dose delivered? 8:188
 - A. 13% overdose
 - B. 13% underdose
 - C. 6% overdose
 - D. 6% underdose
9. A dose of 5000 cGy is prescribed at axis in 25 fractions using a Co60 unit at an 80cm SAD. If a readout error resulted in a 75cm SAD, the actual delivered dose per fraction was: 3:41
 - A. 197 cGy
 - B. 243 cGy
 - C. 228 cGy
 - D. 269 cGy
10. During radiotherapy of the abdomen, the organ with the lowest dose tolerance is the: 3:193
 - A. Kidney
 - B. Stomach
 - C. Liver
 - D. Pancreas

11. For the radiotherapy of the spinal axis, calculate the minimum SSD required to include 60cm long field if the maximum field length is 32cm at 80 SSD. 3:286
- A. 98cm SSD
B. 120cm SSD
C. 150cm SSD
D. 170cm SSD
12. A patient was to have received 200 rads daily in 20 fractions at 80cm SSD. What is this patient's total if all treatments were received at a 70cm SSD? 3:41
- A. 3062 rads
B. 3500 rads
C. 4571 rads
D. 5224 rads
13. A treatment is prescribed at 80cm SAD. If the field size indicator is set for 14cm, what would the field size be at the surface of the patient if the SSD was 75cm.
- A. 12cm x 12cm
B. 13cm x 13cm
C. 14cm x 14cm
D. 15cm x 15cm
14. The production of a high quality, port film for a megavoltage unit can be accomplished by using a single emulsion film and a single: 8:249
- A. Lead screen
B. Zinc sulfide screen
C. Calcium tungstate screen
D. Rare earth screen
15. A Cobalt 60 treatment is to be 2.8 minutes. Calculate the time required for a timer that can only be set in minutes and seconds.
- A. 2 min. 12 sec.
B. 2 min. 36 sec.
C. 2 min. 48 sec.
D. 2 min. 56 sec.
16. The target volume for carcinoma of the prostate may include the following regional lymph nodes: 3:178
1. *Obturator* 2. *External iliac* 3. *Common iliac*
- A. 1 & 2 only
B. 1 & 3 only
C. 2 & 3 only
D. 1, 2, & 3
17. During the course of a treatment, a patient begins to sneeze vigorously. The radiation therapist should:
- A. Watch for more serious symptoms to appear
B. Continue the treatment but report the incident
C. Stop the treatment and check the field alignment
D. Increase treatment time by 10%
18. The purpose of total body irradiation of the bone marrow is to eradicate: 9:382
1. *Malignant cells* 2. *A defective immune system* 3. *Defective hematopoietic system*
- A. 1 & 2 only
B. 1 & 3 only
C. 2 & 3 only
D. 1, 2, & 3
19. During localization of gynecologic disease, a radiopaque marker is employed to determine the: 3:161
1. *Length of the uterine cavity* 2. *Location of the exocervix* 3. *Lowest aspect of the disease*
- A. 1 & 2 only
B. 1 & 3 only
C. 2 & 3 only
D. 1, 2, & 3
20. Because of the shape and location of the urinary bladder the preferred treatment is by way of: 3:185
- A. Rotational techniques
B. Single field techniques
C. 3 or 4 field techniques
D. Brachytherapy

29. If the field size indicator is set for 20cm x 20cm at a 80 cm SSD, what field size is produced at 84 cm?
- A. 18cm x 18cm
 B. 19cm x 19cm
 C. 21cm x 21cm
 D. 22cm x 22cm

Referring to the diagram, answer questions 30 and 31:

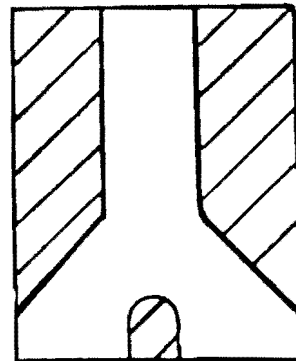
30. The blocked field is most likely used to treat: 11:114
- A. Whole abdomen
 B. Pelvis
 C. Lumbar spine field
 D. Sub-diaphragmatic lymphatics
31. The blocked areas for this field include: 11:114
1. Kidneys 2. Femoral heads 3. Mediastinum
- A. 1 & 2 only
 B. 1 & 3 only
 C. 2 & 3 only
 D. 1, 2, & 3



32. The treatment area for tumors of the nasopharynx should include: 3:246
1. Supraclavicular node 2. Optical canal 3. Cervical nodes
- A. 1 & 2 only
 B. 1 & 3 only
 C. 2 & 3 only
 D. 1, 2, & 3
33. A treatment designed to be given at 120cm SSD is mistakenly given at 100cm SSD. What is the error in dose delivered? 8:188
- A. 20% overdose
 B. 20% underdose
 C. 44% overdose
 D. 44% underdose
34. The most common treatment technique for carcinoma of the breast involves: 3:226
- A. Electron arc therapy
 B. Rotational therapy
 C. Tangential opposed fields
 D. Opposed AP-PA fields
35. The treatment of the para-aortic area is most likely for: 9:325
- A. Carcinoma of the gall bladder
 B. Squamous cell lung cancer
 C. Seminoma
 D. Cancer of the oral cavity
36. For treatment of the mediastinum, a fairly uniform dose distribution without exceeding lung and spinal cord tolerances can be achieved by: 3:205
- A. 4 field box
 B. Brachytherapy
 C. Parallel opposed AP/PA with oblique fields
 D. Parallel opposed lateral field
37. The use of a split beam technique in which half of the field is blocked has the advantage of: 3:226
- A. Preventing beam divergence
 B. Increasing the number of hot spots
 C. Avoiding areas of increased dose
 D. Decreasing the number of cold spots
38. The counter part of the timer setting of a cobalt radiotherapy unit is most similar to the _____ of a linear accelerator. 3:24
- A. Compensator
 B. Dose calibrator
 C. Monitor unit
 D. Pulse indicator

48. The mantle field for Hodgkin disease should include the lymph nodes located in the: 3:298
 1. *Cervical region* 2. *Mediastinum* 3. *Hilum*
 A. 1 & 2 only C. 2 & 3 only
 B. 1 & 3 only D. 1, 2, & 3
49. The purpose of using combined photon and electron beams to treat the internal mammary nodes is to: 3:237
 1. *Increase skin sparing* 2. *Spare deeper normal tissue* 3. *Increase dose to deeper tissues*
 A. 1 & 2 only C. 2 & 3 only
 B. 1 & 3 only D. 1, 2, & 3
50. The principal concern in localizations of breast lesions is the: 3:226
 A. Position of the axillary nodes C. Location of the nipple
 B. Position of the underlying lung D. Determination of the chest contour
51. Which of the following areas is normally irradiated using an irregular treatment field?
 1. *Mediastinum* 2. *Whole pelvis* 3. *Bronchopulmonary*
 A. 1 only C. 3 only
 B. 2 only D. 1, 2, & 3
52. A shifting field arrangement in the treatment of the brain and spinal cord is used primarily to: 18:75
 A. Reduce the possibility of hot spots C. Spare overlaying skin tissues
 B. Increase the tumor treatment volume D. Increase the back scatter factor
53. Radiotherapy is most often indicated for carcinoma of the _____ portion of the esophagus. 3:211
 1. *Upper* 2. *Middle* 3. *Lower*
 A. 1 only C. 3 only
 B. 2 only D. 1, 2, & 3
54. During the shrinking field technique for a supraglottic carcinoma, the sight that will receive the highest dose is the: 18:231
 A. Supraglottic region C. Base of the tongue
 B. Cervical lymph nodes D. Parotid gland
55. The most common form of pretransplant conditioning in a bone marrow transplant is: 9:382
 A. Chemotherapy alone C. Combination high dose chemotherapy and TBI
 B. Total body irradiation D. None of the above
56. Which shielding blocks must be in place in both the posterior and anterior treatment fields of a mantle?
 1. *Cervical spine* 2. *Thoracic spine* 3. *Humeral head*
 A. 1 only C. 3 only 9:370
 B. 2 only D. 1, 2, & 3
57. The preferred treatment of pituitary tumors with reduced dosage in the entrance - exit region can be obtained with: 3:295
 A. Parallel opposed lateral fields C. Anterior 180 arc (wedged)
 B. Lateral 180 arcs (wedged) D. Any of the above

68. During a radiotherapy of the uterus using a 4 field box technique which field includes the entire urinary bladder?
1. Anterior field 2. Lateral field 3. Posterior field
- A. 1 & 2 only C. 2 & 3 only 3:166
 B. 1 & 3 only D. 1, 2, & 3
69. A physicist calculates a Cobalt treatment to be 4.3 minutes. The Cobalt machine's thumbwheel timer can only be set in minutes and seconds. Calculate the time required to be used on the particular unit. 22:23
- A. 4 min. 3 sec. C. 4 min. 18 sec.
 B. 4 min. 12 sec. D. 3 min. 24 sec.
70. A field size of 40cm x 40 cm is required and a maximum field size of 28cm x 28cm is obtained at an 80cm SSD, what SSD is required to treat this patient? 3:51
- A. 83 cm C. 94 cm
 B. 89 cm D. 114 cm
71. During therapy of the esophagus, rotational and arc therapy is usually not possible because of the:
1. Movement of the heart 2. Curvature of the spine 3. Position of the esophagus
- A. 1 & 2 only C. 2 & 3 only 2:314
 B. 1 & 3 only D. 1, 2, & 3
72. Which of the following information should be recorded on a patient's daily treatment chart? 22:5
1. Total dose to date 2. Treatment time/MU's 3. Field size
- A. 1 & 2 only C. 2 & 3 only
 B. 1 & 3 only D. 1, 2, & 3
73. The verification for ensuring that radiation beams are inside the predetermined treatment volume is determined by: 8:249
- A. Visual inspection C. Taking a port film
 B. Fluoroscopic examination D. Light field coherence check
- Pertaining to the diagram, answer questions 74 to 76.
74. The following blocked field is used for the treatment of the: 11:104
- A. Mediastinal region
 B. Esophagus
 C. Subdiaphragmatic lymphatics
 D. Pelvis
75. The shielded areas in this technique include: 11:104
1. Testes 2. Liver 3. Spleen
- A. 1 & 2 only C. 2 & 3 only
 B. 1 & 3 only D. 1, 2, & 3
76. This field is most often referred to as a/an: 11:104
- A. Inverted Y C. Lower mantle
 B. Chimney D. Hockey stick



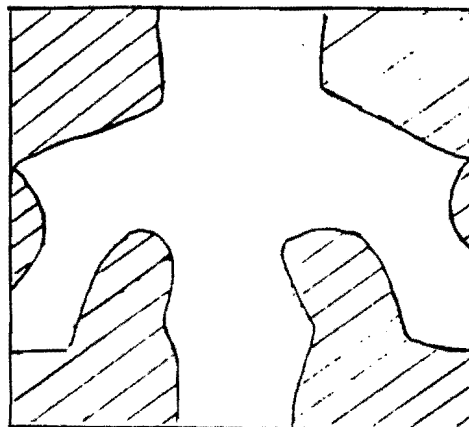
77. The patient is supine, upper arm abducted 90°, and the head turned toward the treatment "field" for which of the following? 3:229
- A. Esophagus
B. Breast
C. Lung
D. Head and neck
78. If a field size of 35 cm x 35 cm is required and a maximum field size of 28 x 28 is obtained at an 80 cm SSD, what new distance should be employed to provide the desired field size? 3:51
- A. 76 cm
B. 79 cm
C. 86 cm
D. 100 cm
79. During 360° rotational therapy an increase of 4% in treatment time is necessary to compensate for:
1. Inverse square law 2. Patient movement factor 3. Table rail attenuation factor
- A. 1 only
B. 2 only
C. 3 only
D. 1, 2, & 3
80. For the treatment of the nasopharynx, a midline block is used in the anterior field for shielding the:
1. Spinal cord and larynx 2. Cornea and TMJ 3. Tongue and parotid glands
- A. 1 only
B. 2 only
C. 3 only
D. 1, 2, & 3 3:246
81. Which of the following areas will normally be treated using a single field megavoltage beam? 8:218
- A. Mediastinum
B. Spinal cord
C. Pituitary fossa
D. Esophagus
82. In the treatment of gynecologic malignancies the lateral borders of the AP/PA fields are situated adjacent to the widest part of the pelvic rim to encompass the: 3:166
1. Internal iliac 2. External iliac nodes 3. Inguinal nodes
- A. 1 & 2 only
B. 1 & 3 only
C. 2 & 3 only
D. 1, 2, & 3
83. Which of the following structures should be shielded during a mantle field technique? 9:370
1. Supradiaphragmatic lymph nodes 3. Vocal cords 4. Thoracic spinal cord
- A. 1 & 2 only
B. 1 & 3 only
C. 2 & 3 only
D. 1, 2, & 3
84. If a field size of 35cm x 35cm is required and the maximum field size of 20cm x 20cm is obtained at an 80cm SSD, what SSD is necessary to provide the desired field size? 3:51
- A. 100cm
B. 120cm
C. 140cm
D. 160cm
85. A patient was to have received 200 rads daily in 20 fractions at 80cm SSD. What is this patient's total dose if the treatments were received at a 76cm SSD?
- A. 3610 rads
B. 3824 rads
C. 4432 rads
D. 4676 rads
86. A treatment designed to be given at 120cm SSD is mistakenly given at 112cm SSD. What is the error in dose delivered? 8:188
- A. 15% overdose
B. 15% underdose
C. 7% overdose
D. 7% underdose

87. When a 360 rotation technique is employed for malignancies of the head and neck an eye shielding can be provided by the use of a: 3:264
- A. Proimos shield
 B. Kenetic shield
 C. Skip scan shield
 D. Dumbbell shield

Pertaining to the diagram, answer questions 88-90

88. The following blocked field is used while treating the: 11:85

- A. Bones of the thorax
 B. Lungs and pericardium
 C. Lymphatics of the thorax
 D. Heart and great vessels



89. The principle areas requiring shielding for the technique are: 11:85

1. Esophagus 2. Lungs 4. Pericardium

- A. 1 & 2 only
 B. 1 & 3 only
 C. 2 & 3 only
 D. 1, 2, & 3

90. This diagram is most commonly known as a/an:

- A. Inverted Y
 B. Floating arch
 C. Mantle 11:85
 D. Lazy E

91. The irradiation of the extremities is most often accomplished by the use of: 3:297

- A. 90 arc field
 B. Parallel opposed fields
 C. 180 arc field
 D. Multiple field treatments

92. Which of the following patient records must be maintained for legal purposes? 8:249

1. Machine calibrations 2. Q.A. checks 3 Port films

- A. 1 only
 B. 2 only
 C. 3 only
 D. 1, 2, & 3

93. What will the finishing angle of an arc setup be if the starting angle is 270, the rotation direction is clockwise, MU/degree = 1.21, and MU setting = 205? 22:105

- A. 58
 B. 79
 C. 87
 D. 101

94. A dose of 7000 cGy is prescribed at axis in 35 fractions using a Co60 unit at 80cm SAD. If a readout error resulted in a 76cm SAD the actual dose delivered is:

- A. 2.22 Gy
 B. 2.39 Gy
 C. 2.46 Gy
 D. 2.76 Gy

95. When treating a mediastinum with parallel opposed 10 x 15 cm fields to the midline, which of the following structures is most likely to be at greatest risk first? 3:203

- A. Heart
 B. Sternum
 C. Spinal cord
 D. Skin