TUMOR AND INFECTION EXAMINATION
FEBRUARY 2008

Name__________________________________  Date________________

FOR ALL QUESTIONS PICK THE ONE BEST ANSWER.

1. Normal uptake of Ga-67 may be seen in the following organs:
   a. Thymus, liver, spleen, breast
   b. Tracheobronchial tree, liver, spleen
   c. Myocardium, thymus, spleen
   d. Breast, kidney, bone, myocardium
   e. Spleen, kidney, adrenal medulla

2. Normal uptake of Tl-201 is seen in:
   a. Adrenal cortex
   b. lacrimal glands
   c. gallbladder
   d. bowel

3. Concerning F-18 FDG:
   a. FDG is a glucose analog and is phosphorylated intracellularly by dextrokinase to FDG-6-phosphate
   b. Higher histologic grade tumors usually show lower F-18 FDG uptake.
   c. the bladder receives the highest radiation dose, about 4 rads/10 mCi
   d. the brain receives the highest radiation dose, about 5 rads/10 mCi

4. Regarding imaging with In-111 Octreoscan:
   a. The sensitivity for detecting insulinomas is generally very high, >90%
   b. the sensitivity for detecting medullary carcinoma of the thyroid is generally very high, >90%
   c. somatostatin receptors are found on lung cancer cells and malignant lymphoma cells
   d. In-111 Octreoscan is very slowly cleared by the kidneys and by 24 hours after injection 55% of the dose is still in circulation

5. Regarding In-111 ProstaScint imaging:
   a. The usual dose is 10 mCi In-111 ProstaScint intravenously
   b. In-111 Prostascint is slowly cleared and has a biological half-life of 24 hours
   c. The radiopharmaceutical is a murine Fab’ antibody fragment linked via a chelator with In-111
   d. Adverse reactions occur in 4% patients receiving ProstaScint
6. Regarding tumor PET imaging:
   a. Melanomas usually show avid uptake of F-18 FDG
   b. In the early post-radiotherapy assessment of primary malignant brain
tumors, increased uptake of FDG nearly always indicates residual disease
   c. The formula for standardized uptake value (SUV) = Mean ROI
      activity/Body weight
   d. F-18 FDG has similar accuracy to CT in the preoperative staging of non-
      small cell lung cancer

7. Regarding the use of the labeled leukocytes for infection:
   a. In-111 oxine is lipid soluble and readily diffuses through cell membranes
   b. In-111 oxine preferentially labels granulocytes
   c. With Tc-99m HMPAO labeling, the highest radiation dose is to the spleen
   d. In-111 labeled leukocytes are preferred over Tc-99m HMPAO-wbc in pediatric
      patients because the radiation dosimetry of In-111 wbc is more favorable.

8. Which of the following is a well-recognized cause of false-positive labeled white
   blood cell scans:
   a. Bone island
   b. Soft tissue tumor
   c. Reflex sympathetic dystrophy
   d. Uninfected surgical wound one year post-surgery
   e. Normal choroid plexus

9. Regarding the use of the bone scan for infection:
   a. Infection and loosening of a hip prosthesis will both show increased
      vascularity AND delayed uptake
   b. Increased activity surrounding a knee prosthesis one year after surgery
      nearly always signifies infection or loosening
   c. Cellulitis in an extremity does not cause increased uptake in the
      neighboring bone on delayed imaging
   d. Bone scans are less sensitive in detecting osteomyelitis in neonates
      because the foci of uptake are so small

10. Concerning infection imaging:
    a. The principal mechanism for polyclonal IgG antibody localization in
       infection is immunological
    b. Vertebral osteomyelitis is a described cause of a false negative scan
    c. Uptake of 111-In WBC in most of the nasal sinuses is normal
    d. Early lung uptake of 111 In WBC is highly specific for infection