Question 1
A 63 year old woman is 8 years status post lumpectomy and radiation therapy for a 1.5 cm, estrogen receptor positive, node negative breast cancer for which she had received 5 years of tamoxifen, stopped 3 years ago. She presents to your office with severe, localized back pain. Physical examination is normal including the neurologic exam. The alkaline phosphatase is 330 (elevated) and the CA27.29 is 156 (elevated). A bone scan is positive in several areas of the thoracic and lumbar spine, as well as in several ribs. The course of action at this point should be:

A. Combination chemotherapy  
B. Tamoxifen therapy  
C. MRI scan of the spine  
D. Radiation therapy to areas of localized disease  
E. Stem cell transplantation

Question 2
A 68 year old man presents with back pain, anemia and fevers. The patient has no lymphadenopathy or splenomegaly. Laboratory evaluation reveals an Hct = 34%, platelet count = 89,000, and a total protein of 9.8 gm/dl. The serum creatinine is 3.2 mg/dl, and the serum calcium is 12.3 mg/dl. Plain x-rays of the spine show generalized osteoporosis, without focal defects. The following best explains the situation:

A. Fever is a worrisome sign and infection is a life threatening risk  
B. Renal failure is uncommon and not likely to worsen  
C. Myeloma cannot be the diagnosis because lytic bone lesions are not seen  
D. Waldenstrom’s is never associated with lymphadenopathy and/or splenomegaly  
E. IgA and IgG paraproteins have similar serum viscosities

Question 3
A 46 year old woman presents to your office for routine health care. She is concerned about the possibility of developing breast cancer, and asks you about her risk factors. Which statement is most correct:

A. A previous bx which revealed LCIS does not substantially increase her risk of developing breast cancer  
B. Presence of a BRCA-1 germ line mutation will substantially increase her risk of developing breast cancer  
C. A maternal aunt with post-menopausal breast cancer will substantially increase her risk of developing breast cancer  
D. The majority of women with breast cancer have identifiable risk factors for the development of breast cancer  
E. Duration and degree of estrogen (endogenous and exogenous) exposure is not associated with increased of developing breast cancer

Question 4
A 67 year old man brought to the emergency room by his family is complaining of headaches, forgetfulness, and poor coordination. Several times over the past few weeks he has had periods of confusion and urinary incontinence. He has a history of heavy smoking and hypertension, for which he takes atenolol. You perform an emergency CT scan of the head which reveals multiple round enhancing lesions. Chest x-ray shows a 2 cm lesion in the right mid lung field. The most likely diagnosis is:

A. Prostate cancer metastatic to lung and brain  
B. Pneumonia with brain abscesses  
C. Colon cancer with lung and brain metastases  
D. Adenocarcinoma of the lung with brain metastases  
E. Gastric cancer with lung and brain metastases

Question 5
A 26 year old woman with Hodgkin’s Disease and a large mediastinal mass is treated with ABVD (doxorubicin, bleomycin, vinblastine, dacarbazine) and radiation to the mediastinum. Which of the following is most true:

A. She is more likely to die of causes other than HD  
B. She is not at increased risk of breast cancer  
C. She has an increased risk of leukemia  
D. She is not likely to remain fertile after treatment  
E. She is not at increased risk for heart disease
Question 6
A 46 year old woman, who never smoked, is diagnosed with stage IV non-small cell lung cancer, metastatic to liver and bone. Which of the following is most correct:
A. She is potentially curable with intensive modern chemotherapy
B. The likelihood of responding to an EGFR kinase inhibitor is related to the presence of a mutation in the kinase region
C. The likelihood of having a mutation of the kinase region of EGFR is random and not related to gender or ethnic background
D. Cytotoxic chemotherapy is the only potentially beneficial treatment
E. Tumors initially sensitive to kinase inhibitors do not develop resistance to them

Question 7
A 22 year old man, previously well, is found to have a left supraclavicular mass, and an otherwise normal physical examination. Chest x-ray shows bilateral paratracheal adenopathy. Aspiration cytology of the supraclavicular mass demonstrates undifferentiated carcinoma. The next clinical action should be:
A. Institution of multi-agent chemotherapy
B. MRI scan of the chest
C. Mediastinoscopy and biopsy of the para-tracheal nodes
D. Testicular ultrasound
E. Institution of radiation therapy to the mediastinum and supraclavicular areas

Question 8
Which of the following is most true about the epidemiology of lung cancer:
A. Adenocarcinoma has become the most common histologic subtype of lung cancer.
B. Women who smoke, develop lung cancer with a similar incidence and at a similar age as men who smoke.
C. Asbestos does not add to the risk of developing lung cancer in smokers
D. Cigarette filters reduce the carcinogenic effect of cigarettes.
E. 90% of patients diagnosed with stage I non-small cell lung cancer will survive their cancer.

Question 9
A 28 year old man is admitted to the hospital with newly diagnosed acute lymphoblastic leukemia. Which of the following clinical characteristics would convey the worst prognosis:
A. Peripheral blood blast count of 200,000/mm³
B. T-cell phenotype
C. Mediastinal mass
D. Philadelphia chromosome (t9;22)
E. Thrombocytopenia

Question 10
A 51 year old man is discovered to have a rectal cancer which is then surgically resected. On pathology evaluation the tumor penetrates the serosa of the bowel and one regional lymph node shows involvement with metastatic carcinoma. There is no evidence of distant metastases. Optimal therapy should include:
A. No post-operative therapy
B. Re-resection of pelvic tissue surrounding the area of the original tumor
C. Radiation therapy to the pelvis
D. Systemic chemotherapy
E. Both radiation to the pelvis, and chemotherapy

Question 11
A 46 year old woman is found to have epithelial ovarian cancer and is taken to the operating room for surgical debulking. At the time of surgery, a 6 cm. left ovarian mass and a 3 cm. right ovarian mass are found. Multiple peritoneal nodules and omental nodules are seen, as well as ascitic fluid. All tumor that can be removed is removed, but tumor masses of 2-3 cm. remain. There is no evidence of disease outside of the peritoneal cavity. Postoperatively, the patient is treated with paclitaxel and carboplatin for six cycles of therapy. Which best describes the probable outcome:
A. A very low chance of response to chemotherapy and a very low chance of cure.
B. A high chance of complete clinical response, but a low chance for cure.
C. A high chance of response and a high chance for cure.
D. The need for radiation therapy delivered to the whole abdomen.
E. The need for localized radiation therapy to the pelvis.
Question 12
A 72 year old man presents with hematuria. Cystoscopy reveals multiple bladder nodules which are biopsied and reveal transitional cell carcinoma. The likelihood of developing metastatic bladder cancer is most closely related to:

A. The size of the tumors in the bladder.
B. The number of tumors in the bladder.
C. History of smoking.
D. Family history.
E. Bladder wall muscle invasion by the tumor.

Question 13
A 32 year old man presents with acute myelogenous leukemia. Allogeneic bone marrow transplantation will most likely be recommended if a suitable donor can be found if:

A. His initial blast count > 100,000/mm3
B. He is septic at presentation
C. He has M3/Acute promyelocytic leukemia and has DIC
D. His leukemic blasts have a 7q- chromosomal deletion
E. His leukemic blasts have a t(8;21) chromosomal translocation

Question 14
You are evaluating a 52 year old man with newly diagnosed non-small-cell carcinoma of the right lung. Which of the following findings would not make him unresectable.

A. Contralateral (N3) mediastinal adenopathy.
B. Enlarged (4 cm) left adrenal gland.
C. Ipsilateral pleural effusion.
D. Ipsilateral (N2) mediastinal adenopathy.
E. Enlarged supraclavicular lymph nodes.

Question 15
In regard to potential effects of tamoxifen and raloxifene the following is most true:

A. Raloxifene is a bone strengthening agent but tamoxifen is not
B. Both increase the risk of endometrial cancer.
C. Both decrease the risk of developing a future breast cancer
D. Tamoxifen increases risk of hot flashes, but raloxifene doesn’t

Question 16
A 42 yo woman is diagnosed with a 3 cm poorly differentiated breast cancer with 5 involved axillary lymph nodes. The cancer is negative for estrogen receptors and positive for HER2. Which of the following is most true:

A. The presence of HER2 on breast cancer cells does not affect prognosis
B. Adjuvant chemotherapy is not effective in reducing the risk of her subsequently developing metastatic breast cancer
C. Trastuzumab, when added to chemotherapy, substantially reduces the risk of developing metastatic disease in the future.
D. Letrozole, an aromatase inhibitor, would further improve the cure rate for this patient.
E. The addition of trastuzumab to chemotherapy is safe, without short and long-term complications.

Question 17
A 56 yo man, with a history of a primary melanoma on the right forearm 3 years ago, presents with hepatomegaly and is found to have metastatic melanoma in the liver. Which of the following is the best treatment option

A. Dacarbazine and tamoxifen administered for 4 months
B. No therapy is effective or warranted and the patient should be place in hospice care
C. Dacarbazine plus ipilimumab.
D. Prophylactic brain irradiation
Question 18
A 64 yo woman has a routine CBC showing a WBC = 14,500/mm³ with 75% mature-appearing lymphocytes, Hct 41%, and Plt Ct = 180,000/mm³. She has no adenopathy or splenomegaly and feels well. Which of the following are most correct:
A. The diagnosis of CLL can only be made on a bone marrow aspirate and biopsy
B. She is at increased risk for infection
C. She is in need of urgent chemotherapy
D. She is likely to die of CLL before her 70th birthday
E. Splenomegaly is rare in patients such as this one

Questions 19-23
19. Stabilization of microtubule assembly
20. Inhibition of HER2
21. Inhibition of VEGF
22. Alkylation of DNA
23. Intercalation of DNA

A. Bevacizumab
B. Cyclophosphamide
C. Paclitaxel
D. Trastuzumab
E. Doxorubicin

Questions 24-28
24. After 9 months of therapy, the patient develops congestive heart failure.
25. After the 4th dose of therapy, the patient develops significant hypertension requiring medication intervention.
26. After 6 months of therapy, the patient presents short of breath, with a large cardiac silhouette on chest x-ray.
27. During drug administration the patient becomes hypotensive and develops bronchospasm.
28. In the last day of a 5 day course of administration, the patient develops hematuria

A. Bevacizumab
B. Cyclophosphamide
C. Paclitaxel
D. Trastuzumab
E. Doxorubicin