Osteoporosis

1. Regarding the structure and function of the human skeleton:
   a) The bones serve as a reservoir for growth factors and cytokines
   b) The skeleton is a dynamic organ that is continually regenerating
   c) The outer part of all skeletal structures is made up of trabecular bone
   d) Cortical bone is composed of a porous sponge-like structure
   e) Each skeletal site is composed of different ratios of cortical and trabecular bone

2. Concerning the remodelling of bone:
   a) Loss of bone, the hallmark of osteoporosis, can be caused by an imbalance between bone formation and bone resorption
   b) Resorption of old bone is performed by osteoclasts
   c) Apoptosis of osteocytes produces signals that initiate remodelling of bone
   d) Parathyroid hormone decreases bone resorption
   e) Oestrogen deficiency reduces the rate of bone remodelling

3. The following factors can increase a person’s risk of developing osteoporosis:
   a) Smoking
   b) Poor nutrition
   c) Hypercalcaemia
   d) Corticosteroid use
   e) Rheumatoid arthritis

4. Osteoporotic fragility fractures:
   a) Cost the NHS £2.2bn in 2013
   b) Are associated with a significant risk of mortality and morbidity
   c) Can result from low level trauma that would not ordinarily result in fracture
   d) Typically occur in the vertebrae, wrist and hip
   e) To the vertebrae account for most of the health costs of osteoporosis

5. Regarding the assessment of fracture risk:
   a) The FRAX and QFracture assessment tools calculate the 20-year probability of hip, wrist or vertebrae fracture
   b) Incorporating a bone mineral density result into a FRAX assessment increases the accuracy of the prediction
   c) QFracture takes into account more risk factors than the FRAX assessment
   d) A dual-energy X-ray absorptiometry scan quantifies bone mineral density
   e) A T-score value of 2 standard deviations below the young adult reference mean is indicative of severe osteoporosis

6. According to the National Institute for Health and Care Excellence, second- or third-line treatment options for the primary prevention of osteoporosis can include:
   a) Alendronate
   b) Risedronate
   c) Strontium ranelate
   d) Teriparatide
   e) Raloxifene

7. Bisphosphonates:
   a) Are the most commonly prescribed medicines for osteoporosis
   b) Block the activity of osteocytes
   c) Must be taken after food
   d) Are frequently associated with gastrointestinal side effects
   e) Can provide a residual antiresorptive effect for some time after long-term treatment is stopped

8. A “drug holiday” from bisphosphonate therapy would not be recommended for a patient who:
   a) Has been taking alendronate for two years
   b) Has been receiving zoledronic acid treatment for four years and is at low risk of fracture
   c) Is 80 years old and has a history of hip fracture
   d) Has sustained a fragility fracture during treatment
   e) Has a bone mineral density T-score of –4

9. Regarding the medicines used in the prevention and treatment of osteoporosis:
   a) Denosumab affects the receptor activator of nuclear factor kappa B ligand (RANKL)
   b) Denosumab is contraindicated in patients with renal impairment
   c) Raloxifene blocks the effect of oestrogen on the skeletal system
   d) Teriparatide is reserved for patients who are at very high risk of fractures
   e) Strontium ranelate is not suitable for patients who have a history of stroke

10. Concerning vitamin D:
    a) Supplementation is recommended for all patients receiving treatment for osteoporosis
    b) Low levels impair the intestinal absorption of calcium
    c) Deficiencies can result from a lack of exposure to sunshine
    d) 25-hydroxy-vitamin D levels over 60ng/ml are considered optimum
    e) For patients who require rapid correction of levels, the National Osteoporosis Society recommend a loading regimen of 8,000iu of colecalciferol taken over six to 10 weeks