Q.1 A 30 year old fruit trader from Chaman, Balochistan presents to you with blurring of vision, bilateral knee pain and swelling and painful bruising on his legs. 
12 months ago he had been admitted with ‘meningitis’ and deep venous thrombosis of the left leg. 
On examination, he has bilateral hypopyon, bilateral knee arthritis, painful tender nodules over the shins and a few mouth ulcers. 
Investigations: Hb 12.5 g/dl; ESR 40 mm; Rheumatoid Factor negative; ANA negative; Chest X-ray normal.

a) What is the most likely diagnosis?
b) What is the most frequent serious manifestation?
c) What are the treatment options?

Q.2 A 13-year old girl presents to you with history of pain in her knees and lower legs for the past one year. The problem is constant and is not relieved by standard analgesics. Her mother mentions a general lack of energy in this child. She gives a history of intermittent diarrhea and some weight loss over the past one year. The patient is thin, there is no obvious synovitis or limitation of joint movements. There is mild tenderness over the lower legs, and rib cage. Rest of the systemic examination is unremarkable.

Her investigations are as follows:
Hb 9.1 g/dl TIC 6,200/mm³ Platelets 223,000  ESR 05 mm/1st hour
Serum ferritin 5 ng/ml
Calcium 8.4 mg/dl
Albumin 3.1 mg/dl
Alkaline phosphatase 935 u/ml
Creatinine 0.8 mg/dl
Phosphorus 3.1 mg/dl
25-hydroxyvitamin D 10 ng/ml
ALT 55 u/ml

a) What is the cause of her pains?
b) What is the most likely underlying diagnosis?
c) What further tests would you order?
d) What would be her main treatment?
Q.3 A 57-year-old man has had hepatitis C virus infection and is on ribavirin and interferon for two months. He continues to lose weight and develops a florid rash on his legs associated with left foot drop.

He has received three doses of intravenous cyclophosphamide, 1 g/m² monthly; is on prednisone, 60 mg daily; now, a right foot drop has developed.

Laboratory studies:
Hematocrit 31%
Leukocyte count 3200/cu mm
Platelet count 120,000/cu mm
Prothrombin time Normal
Serum aminotransferases
\[ \text{AST} \quad 362 \text{ U/L} \]
\[ \text{ALT} \quad 324 \text{ U/L} \]
Serum creatinine 1.6 mg/dL
Rheumatoid factor > 500 IU/mL
Hepatitis C virus antibody > 8

a) What one relevant investigation would you like to request to find the cause?

b) Which is the most appropriate course of treatment at this time?
Q.4 A 23 year old man is seen in the neurology out-patients department with an eight-week history of malaise and migratory pains in muscles and joints, persistent headaches and a recent left seventh nerve palsy. Two months prior to his presentation he returned from a camping holiday in America and had developed a generalized annular rash over his trunk, which had settled without treatment. Over the week prior to his attendance in the neurology outpatients, he noticed pain and swelling of the left knee.

Hb 11g/dl
WBC 6.0 x 10⁹/l
ESR 50 mm in the first hour
Rheumatoid factor negative
Antinuclear antibody negative
Biochemical profile normal

a) What is the diagnosis?
b) What is the skin rash over trunk?
c) What confirmatory test should be carried out?
d) How would you treat this patient?

Q.5 A 24 years old physiotherapy student presents with a three-year history of intermittent low back pain lasting 3-4 days with no radiation to legs. The only past history wrote was intermittent knee pains as a teenager diagnosed as patellar subluxation. On examination the blood pressure was normal and a soft late systolic apical murmur was heard. Spinal movements were full and painless, the patient being able to put both hands flat on the floor on forward flexion. Straight leg raise was 170 bilaterally. The reflexes in the limbs were present and symmetrical. Sensation in the legs was normal.

a) What is the diagnosis with justification?
b) What other joints should be examined to confirm the diagnosis?
c) How would you manage this patient?
Q.6 A 35 year old man is seen in the rheumatology clinic with joint pain of right knee, left ankle and diarrhoea for one week. He gave a six year history of intermittent arthritis affecting his knees and ankles. He also gave past history of having been investigated for intermittent, anterior chest pain and had also had intermittent diarrhea and steatorrhoea. Examination revealed finger clubbing with subcutaneous nodules over the elbows. There is no rash over the skin. Small effusions were noted in both knees. Spinal examination revealed a full range of movement with no tenderness of the sacro-iliac joints. Further investigations revealed normal X rays of the spine, pelvis and sacro-iliac joints. There was no evidence of an erosive arthritis. He was found to be positive for HLA B27 and RA factor is negative and a small bowel biopsy showed, on microscopy, an abundance of macrophages filled with PAS positive material in the lamina propria of the small intestine.

a) What is the most likely diagnosis? Give justification?
b) What are the differential diagnoses?
c) What treatment should be given for this gentleman’s arthritis?

Q.7 A 55-year old builder presents with a 4-month history of increasing difficulties with walking. He is now only able to walk about 1km before he develops tightness of the right buttock radiating down to the foot. He is forced to rest and sit for about 5 minutes, after which he can resume walking for a little further. Apart from an accident at work when he fell onto his back 9 months ago, he is a non-smoker, and has no significant past medical history. There is no night pain, or rest pain.

On examination no neurological abnormalities were found. Lumbar spine movements were reduced on extension. Peripheral pulses were present. There was no tenderness of palpation of the spine.

a) What is the most likely diagnosis with justification?
b) What are the differential diagnosis?
c) What is the treatment in this patient?
Q.8 A four year old child is referred to accident and emergency unwell with fever and not feeding for 6 days. On examination he has fever of 40°C, BP of 140/90, HR 100 bpm, RR 20/mm. He has palpable cervical lymph nodes, a red tongue and a truncal rash with desquamation of the hands and feet.

a) What is the most likely diagnosis and what is the diagnostic criteria?
b) What serious complications may occur with this disease?
c) How would you treat this child?

Q.9 A 65 year old lady is seen in the rheumatology out-patient department complaining of aching from her cervical spine to her dorso lumbar spine for approximately one year, associated with 30 minutes of early morning stiffness. Over the three months prior to her presentation she had noticed bruising of both lower legs.

Investigations showed:

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>9.0g/dl</td>
</tr>
<tr>
<td>WBC</td>
<td>4.0 x 10^9/l</td>
</tr>
<tr>
<td>Platelets</td>
<td>200 x 10^9/l</td>
</tr>
<tr>
<td>ESR</td>
<td>100 mm in the first hour</td>
</tr>
<tr>
<td>Plasma</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>140 mmol/l</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.9 mmol/l</td>
</tr>
<tr>
<td>Urea</td>
<td>60 mg%</td>
</tr>
<tr>
<td>Serum</td>
<td></td>
</tr>
<tr>
<td>Creatinine</td>
<td>2 mg%</td>
</tr>
<tr>
<td>Calcium</td>
<td>11 mg% (9-10)</td>
</tr>
<tr>
<td>Alkaline phosphatase</td>
<td>160 IU</td>
</tr>
<tr>
<td>LFT</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Protein electrophoresis showed a monoclonal spike.

X-ray of the cervical and thoracic spine showed generalized osteopenia.

a) What is the diagnosis with justification?
b) What other investigation should be performed?
c) What other differential diagnosis you suspect in this patient?
Q. 10 A 69 year old female patient is referred for evaluation of right hip pain and bilateral knee and thigh pain. The pain began about ten years ago and has been progressive. Thigh pain is worse at night and with weight bearing. The patient has had a limited response to celecoxib and tramadol for pain relief. Additional medications are metformin, 1000 mg twice daily, for diabetes mellitus, and Norvasc 10 mg daily, for hypertension. One year ago she took Risedronate, 35 mg weekly, for six months but discontinued taking it because she had reflux symptoms.

Physical examination reveals tenderness in the distal thighs. The knees are swollen and tender; crepitus is noted bilaterally. The patient is in pain with active range of motion in the right hip and has pain in the knees on standing.

Plain radiograph of the distal right femur is shown in Figure 1; Anteroposterior bone scan is shown in Figure 2.

<table>
<thead>
<tr>
<th>Laboratory studies:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukocyte count</td>
<td>8800/cumm (normal: 4000-11,000/cumm)</td>
</tr>
<tr>
<td>Platelet count</td>
<td>278000/cu mm (normal: 150,000-300,000/cumm)</td>
</tr>
<tr>
<td>Serum electrolytes</td>
<td>Normal</td>
</tr>
<tr>
<td>Serum creatinine</td>
<td>0.7 mg/dL (normal: 0.7—1.5 mg/dL)</td>
</tr>
<tr>
<td>Serum calcium</td>
<td>10.0 mg/dL (normal: 8.5—10.2 mg/dL)</td>
</tr>
<tr>
<td>Serum 25-hydroxyvitamin D</td>
<td>34 n/mL (normal: 15—40 ng/mL)</td>
</tr>
<tr>
<td>Serum parathyroid hormone (intact)</td>
<td>63 pg/mL (normal: 10—65 pg/mL)</td>
</tr>
<tr>
<td>Serum alkaline phosphatase</td>
<td>400 (normal: 30-120 U/L)</td>
</tr>
<tr>
<td>Dual-energy x-ray absorptiometry T-scores</td>
<td></td>
</tr>
<tr>
<td>Spine</td>
<td>-0.1</td>
</tr>
<tr>
<td>Left femoral neck</td>
<td>-2.4</td>
</tr>
<tr>
<td>Left femoral (total)</td>
<td>-0.7</td>
</tr>
</tbody>
</table>

a) What is the most likely diagnosis with justification?
b) List three complications of this disease.
c) What are the treatment options?