Specialty Certificate in Endocrinology and Diabetes Sample Questions

Question: 1

A 32-year-old Latin American woman had an oral glucose tolerance test in the 28th week of pregnancy. Her fasting plasma glucose was 6.0 mmol/L (3.0–6.0) and 2-hour plasma glucose was 11.3 mmol/L. Her current body mass index was 28 kg/m^2. Weight gain in the pregnancy was 5 kg. There was no past history of gestational diabetes and no family history of diabetes.

What is her approximate risk of developing type 2 diabetes mellitus by 5 years postpartum?

A 1%
B 5%
C 10%
D 40%
E 90%

Question: 2

A 45-year-old man was referred with a 6-week history of polyuria, polydipsia and 7-kg weight loss. One week previously, his general practitioner had diagnosed type 2 diabetes mellitus and had started treatment with metformin. He had made appropriate changes to his diet, but his fasting capillary blood glucose readings remained above 15 mmol/L (3–6). He was feeling tired but not otherwise unwell. He remained overweight with a body mass index of 34 kg/m^2.

Investigations:

serum sodium	142 mmol/L (137–144)
serum potassium	4.9 mmol/L (3.5–4.9)
serum bicarbonate	23 mmol/L (20–28)
serum creatinine	102 µmol/L (60–110)
fasting plasma glucose	19.7 mmol/L (3.0–6.0)
urinalysis	glycosuria 3+; ketonuria 2+

What is the most appropriate additional treatment?

A exenatide
B gliclazide
C intravenous insulin infusion
D pioglitazone
E subcutaneous insulin

Question: 3

A 55-year-old woman had previously been found to have a 4-cm papillary thyroid cancer. She had been treated with surgery and radio-iodine and subsequently had an undetectable thyroglobulin but a high titre of anti-thyroglobulin antibody.

What is the most appropriate investigation at annual follow-up?

A CT scan of neck
B PET scan of neck
C serum anti-thyroid peroxidase antibodies
D ultrasound scan of neck
E whole body iodine uptake scan

Question: 4

A 78-year-old woman was referred for bone density assessment after developing acute mid-thoracic bone pain. She had previously been found to have osteoporosis after fracturing her right wrist after tripping in the street. She had also experienced two previous episodes of severe back pain that were thought to have been caused by vertebral fractures. She had lost 12.5 cm in height. Her mother had developed a severe kyphosis in her seventies. She had been taking alendronic acid, calcium and vitamin D regularly for 3 years.

On examination, there was a mild thoracic kyphosis and tenderness over the T10 vertebra.

Investigations:

erythrocyte sedimentation rate	35 mm/1st h (<30)
serum creatinine	105 µmol/L (60–110)
serum corrected calcium	2.35 mmol/L (2.20–2.60)
serum alkaline phosphatase	95 U/L (45–105)
X-ray of thorax and lumbar spine	new crush fracture of T10, previously reported fractures of T8 and L1
DEXA scan of spine (L2–L4)	T score –3.8
DEXA scan of total hip	T score –3.4

What is the most appropriate treatment?

A continue alendronic acid
B hormone replacement therapy
C raloxifene
D strontium ranelate
E teriparatide

Question: 5

A 43-year-old woman with a 2-year history of secondary amenorrhoea was seen in clinic at the request of her general practitioner, following the finding of hyperprolactinaemia. She had a long-standing history of hypothyroidism treated with 100 µg of thyroxine, and depression treated with risperidone.

Investigations:

plasma prolactin	1800 mU/L (<360)
plasma thyroid-stimulating hormone	7.8 mU/L (0.4–5.0)
plasma free T4	9.0 pmol/L (10.0–22.0)
MR scan of pituitary	no abnormalities reported

What is the most likely cause of her hyperprolactinaemia?

A hypothyroidism
B microprolactinoma
C polycystic ovarian disease
D risperidone
E stress

Question: 6

A 77-year-old woman sustained a low trauma fracture of her right wrist. Two years previously, she had fractured her proximal humerus.

Investigations for secondary causes of osteoporosis revealed no abnormalities.

Investigations:

DEXA scan result:

	T-score
L1–L4	–3.9
L hip	–2.7

What cell type in bone primarily senses strain and microdamage?

A adipocyte
B lining cell
C osteoblast
D osteoclast
E osteocyte

Question: 7

A 36-year-old man of European descent was reviewed in the diabetes clinic. He had type 2 diabetes mellitus that had been diagnosed 6 months previously, He had been symptom free and had no family history of cardiovascular disease but was a smoker.

On examination, his blood pressure was 138/76 mmHg, his weight was 90 kg and his body mass index was 32 kg/m^2.

Investigations:

urinary albumin:creatinine ratio	0.6 mg/mmol (<2.5)
serum cholesterol	5.3 mmol/L (<5.2)
serum HDL cholesterol	0.9 mmol/L (>1.55)
fasting serum triglycerides	2.2 mmol/L (0.45–0.69)

According to NICE guidelines May 2009, what is the most appropriate management of his lipid profile?

A assess cardiovascular risk using UKPDS risk engine
B observe and repeat lipid profile in a few months
C start a fibrate
D start a statin
E start nicotinic acid

Question: 8

A 32-year-old woman presented to the outpatient department with a 1-year history of amenorrhoea that began after stopping her oral contraceptive pill. She had experienced two successful pregnancies and was otherwise well.

On examination, there was an upper outer quadrantanopia.

Investigations:

serum sodium	138 mmol/L (137–144)
serum potassium	3.8 mmol/L (3.5–4.9)
plasma follicle-stimulating hormone	2 U/L (2.5–10.0)
plasma luteinising hormone	2 U/L (2.5–10.0)
plasma prolactin	8450 mU/L (<360)
MR scan of pituitary	2-cm adenoma with suprasellar extension

What is the most appropriate management?

A cabergoline
B conformal pituitary radiotherapy
C octreotide
D refer for pituitary surgery
E stereotactic pituitary radiosurgery

Question: 9

A 26-year-old woman was admitted with diabetic ketoacidosis. After 24 hours of treatment with intravenous fluids, potassium and insulin, her normal subcutaneous insulin regimen was resumed. However, she felt nauseated and there was a concomitant increase in urine ketones (3+).

On examination, her pulse was 118 beats per minute and her blood pressure was 106/66 mmHg.

Investigations:

serum sodium	136 mmol/L (137–144)
serum potassium	4.4 mmol/L (3.5–4.9)
serum bicarbonate	15 mmol/L (20–28)
serum creatinine	78 µmol/L (60–110)
random plasma glucose	7.3 mmol/L

What is the most appropriate next step in management?

A increase subcutaneous basal insulin at bedtime
B increase subcutaneous bolus insulin with meals
C start glucose 5% with intravenous insulin
D start glucose 10% with intravenous insulin
E start intravenous insulin infusion with sliding scale

Question: 10

An 18-year-old woman was referred by her general practitioner for further investigation of ‘funny turns’ during which she developed palpitations, sweating, tremor, hunger, anxiety and paraesthesiae; all of these symptoms were relieved immediately by a sugary drink. She was otherwise well and was not taking any regular medication. There was a family history of diabetes mellitus. A spontaneous hypoglycaemic episode had not been captured and she was admitted to the diabetes/endocrine ward for a prolonged 72-hour fast. Her renal function was normal.

After a 12-h fast she experienced her typical symptoms. Urinalysis showed no urinary ketones.

Investigations after 12-h fast:

fasting plasma glucose	2.0 mmol/L (3.0–6.0)
plasma insulin (after hypoglycaemia)	56 pmol/L (<21)
serum C-peptide	514 pmol/L (180–360)

What is the most appropriate next step in management?

A coeliac axis angiography
B MR scan of abdomen and pelvis to localise a mesenchymal tumour producing insulin-like growth factor 2
C MR scan of pancreas to localise an insulinoma
D obtain a careful history looking for access to exogenous insulin
E request a urinary sulphonylurea screen

Answers:

1. D

2. E

3. D

4. E

5. D

6. E

7. D

8. A

9. D

10. E