THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF PATHOLOGY & MICROBIOLOGY

TEST 3 FOR ACADEMIC YEAR 2018/2019

TUESDAY 18 JUNE, 2019

SYSTEMIC PATHOLOGY (MB CHB) PTM 4210

PART I MCQS

PART II SHORT NOTES

COMPUTER NO:.....

TIME: 2 HOURS

INSTRUCTIONS

SECTION A

1. Mark **"T"** for True OR **"F"** for False besides each of the lettered choices.
2. Answer all questions.
3. Marks shall be deducted for wrong answers
4. Corrections should be made very clearly. Failure to do so may lead to loss of marks.
5. Make sure the question paper has 50 MCQ questions

SECTION B

1. Short notes / scenario questions – answer all the questions
2. Answer each question on a separate answer sheet
3. Each answer sheet should be clearly labelled with the question number and with your computer number.

SECTION A

1. **A young woman is found comatose, having taken an unknown number of sleeping pills an unknown time before. An arterial blood sample yields the following values: pH – 6.90, HCO3- 13 meq/liter, PaCO2 68 mmHg. This patient's acid-base status is most accurately described as**

F A. Uncompensated metabolic acidosis
T B. uncompensated respiratory acidosis
F C. simultaneous respiratory and metabolic acidosis
F D. respiratory acidosis with partial renal compensation
F E. none of the above

2. **Choose the incorrect statement about anion gap out of the followings**

A. In lactic acidosis anion gap is increased
B. Anion gap is decreased in Hypercalcemia
C. Anion gap is increased in Lithium toxicity
D. Anion gap is decreased in ketoacidosis.
E. All the above

3. **In renal handling of acids in metabolic acidosis**

A. Hydrogen ion secretion is increased
B. Bicarbonate reabsorption is decreased
C. Urinary acidity is increased
D. Urinary ammonia is increased.
E. All the above

4. **Causes of lactic acidosis include**

A. Acute Myocardial infarction
B. Hypoxia
C. Circulatory failure
D. Infections
E. None of the above

5. **Causes of metabolic alkalosis include the following.**

F A. Mineralocorticoid deficiency.
T B. Hypokalemia
T C. Thiazide diuretic therapy.
T D. Recurrent vomiting.
F E. None of the above

6. **Which of the following laboratory results indicates compensated metabolic alkalosis?**

A. Low p CO2, normal bicarbonate and, high pH
B. Low p CO2, low bicarbonate, low pH
C. High p CO2, normal bicarbonate and, low p H
D. High pCO2, high bicarbonate and High pH
E. All the above

7. **The healthcare provider is reviewing health data collected on a group of patients at risk for high-output heart failure. Which of the following problems increase a patient's risk for this disorder?**

A. Cirrhosis
B. Chronic anemia
C. Pericarditis
D. Hyperthyroidism
E. Beri beri

8. **A patient diagnosed with right ventricular failure presents to the clinic with bilateral pitting edema. Which of the following circulatory changes does the healthcare provider conclude are responsible for this patient's clinical presentation?**

A. venous valvular incompetence
B. increased right atrial pressure
C. increased plasma hydrostatic pressure
D. decreased lymphatic return to the heart
E. decreased plasma colloidal pressure

9. **A fourth year UNZA med student has been asked to teach a group of senior citizens about risk factors for heart failure. Which of these factors will the student include in the teaching?**

A. Increased high density lipoprotein
B. High sodium intake
C. History of preeclampsia
D. Hypertension
E. Obesity

10. **The healthcare provider is administering an angiotensin converting enzyme (ACE) inhibitor to a patient diagnosed with heart failure. Which of the following describe the ways in which the ACE inhibitor is therapeutic for the patient who has heart failure?**

A. Increases myocardial contractility
B. Decreases cardiac output
C. Increases peripheral resistance
D. Decreases myocardial remodelling

E. Decreases cardiac workload

11. The risk of developing high blood pressure can be reduced by:

A. Reducing salt intake
B. Eating a balanced diet
C. Avoiding harmful use of alcohol
D. Taking regular physical activity
E. Maintaining a healthy body weight

12. What can be the signs and symptoms of high blood pressure?

A. No symptoms
B. Headache
C. Shortness of breath
D. Dizziness
E. Chest pain

13. Which of the following does affect the serum creatinine concentration in chronic kidney disease?

A. Glomerular filtration rate
B. Tubular secretory function
C. Fluid overload
D. Skeletal muscle mass
E. Ethnic origin

14. In which of the following circumstances is the urea-to-creatinine ratio most likely to increase?

A. A malnourished patient with small muscle mass
B. A bodybuilder taking protein supplements
C. High blood pressure treated with vasodilator drugs
D. When the rate of flow of filtrate along the nephron is slowed
E. Trimethoprim therapy

15. Which of the following is a typical symptom of kidney failure?

A. Insomnia
B. Hallucinations
C. Itching
D. Restless legs
E. Nausea

16. Which of the following is a feature of the nephrotic syndrome?

A. Proteinuria greater than 5 g/ day
B. Hypercholesterolaemia
C. Microscopic haematuria
D. Peripheral oedema
E. Hypoalbuminaemia

17. Which of the following statements about treatment of renal acidosis is false?

A. Fruit and vegetable diet is effective
B. Sodium bicarbonate lowers angiotensin production in the kidney
C. Sodium bicarbonate reduces the rate of decline in GFR
D. Sodium bicarbonate increases muscle mass
E. Sodium bicarbonate causes high blood pressure

18. Which of the following statements about hypercalcaemia is TRUE?

A. It reduces GFR due to vasoconstriction
B. It impairs urinary concentration
C. It can be caused by loop diuretics
D. It is associated with raised alkaline phosphatase with metastatic carcinoma
E. It is associated with normal alkaline phosphatase in multiple myeloma

19. Pre-renal acute renal failure occurs in the setting of:

A. Acute myocardial infarction
B. Bums
C. NSAID use
D. Carbon tetrachloride poisoning
E. Sepsis

20. Renal acute renal failure does occur in the setting of:

A. cholesterol emboli
B. renal artery stenosis
C. acute tubular necrosis
D. ethylene glycol poisoning
E. malignant hypertension

21. In acute renal failure, the following occur:

A. Hypotension
B. Hyperkalaemia
C. Hyponatraemia
D. Metabolic acidosis
E. Hyperventilation

22. The most common cause of chronic renal failure is:

A. diabetes mellitus
B. hypertension
C. glomerulonephritis
D. excessive analgesia intake
E. polycystic kidney disease

23. Compensatory changes in chronic renal failure include:

T A. hypertrophy of surviving nephrons
B. systemic hypertension

C. reduced tubular reabsorption of water & solutes in the surviving nephrons
D. all of the above
E. none of the above

24. The plasma level of the following substance is first to increase in renal failure:

F A. potassium
T B. creatinine
F C. sodium
F D. hydrogen
F E. phosphate

25. Which of the following causes systolic hypertension?

A. Acromegaly
B. Thyrotoxicosis
C. renal artery stenosis
D. increased intracranial pressure
E. chronic renal failure

26. The leading causes of chronic liver failure include

A. chronic hepatitis B virus infection
B. chronic hepatitis C virus infection
C. non alcoholic fatty liver disease
D. alcoholic liver disease
E. alpha 1 antitrypsin deficiency

27. The risk factors for cholesterol (Gall) stones include

A. female gender
T B. obesity
C. haemolytic anemia
T D. gallbladder stasis
T E. advancing age

28. Concerning autoimmune cholangiopathies

A. Primary biliary cirrhosis is commoner in males
B. primary biliary cirrhosis serologically is positive for anti mitochondrial antibody
C. primary sclerosing cholangitis is associated with ulcerative colitis
D. primary biliary cirrhosis presents with the florid duct lesion
E. primary sclerosing cholangitis presents in the young (median age of 30 years)

29. Alpha 1 antitrypsin deficiency

A. is an autosomal dominant disorder
B. presents with low levels of circulating alpha 1 antitrypsin
C. is a cause of emphysema
D. cytoplasmic globular inclusions in hepatocytes can be demonstrated using periodic acid Schiff stain

E. is a cause of liver cirrhosis

30. Hemochromatosis

A. is caused by excessive iron absorption
B. patients may present with diabetes mellitus
C. patients may present with skin pigmentation
D. one of the mechanisms leading to liver cell injury is lipid peroxidation
E. patients are predisposed to cholangiocarcinoma

31. Concerning pyloric stenosis

A. Congenital hypertrophic pyloric stenosis is more common in females
B. Turner syndrome and trisomy 18 confer an increased risk for congenital hypertrophic pyloric stenosis
C. presents with projectile bilious vomiting
D. myotomy is curative
E. acquired pyloric stenosis may result from pancreatic cancer

32. Hirschsprung disease

A. is associated with Down syndrome
T B. is also known as congenital ganglionic megacolon
C. familial cases are associated with mutations in TP53
D. patients present with occult blood in stool
E. patients have demyelination of nerves

33. Barrett oesophagus

A. is a complication of chronic gastroesophageal reflux disease
B. it is characterised by gastric metaplasia
C. also occurs in the duodenum
D. confers an increased risk for adenocarcinoma
E. can only be identified through endoscopy and biopsy

34. Autoimmune gastritis is characterised by

A. antibodies to intrinsic factor
B. increased serum pepsinogen I concentration
C. endocrine cell hypoplasia
D. vit B12 deficiency
E. achlorhydria

35. Gastric carcinoma

A. adenomas are recognized precursor lesions
B. peptic ulcer disease imparts an increased risk of gastric carcinoma
C. overall reduction in gastric cancer is most closely linked to decreased Helicobacter pylori prevalence
D. linitis plastica is a gross presentation of intestinal type gastric adenocarcinoma of the stomach

E. depth of invasion and extent of nodal involvement are the most important prognostic indicators

36. The following are true about blood vessels:

A. The intima normally consists of a single layer of endothelial cells.
B. The intima is demarcated from the media by the external elastic lamina
C. The media of elastic arteries has high elastic content
D. Arterioles are the principal points of physiological resistance to blood flow
E. The adventitia lies external to the media

37. With regards to hypertensive vascular disease

A. No rigidly defined threshold of blood pressure identifies those who are at risk for cardiovascular disease
B. Prevalence and vulnerability to complications of hypertension increase with age
C. Hypertension increases the risk for atherosclerosis
D. Hypertension can cause cardiac hypertrophy
E. Hypertension is a cause of multi infarct dementia

38. Cause of hypertension include the following except:

A. Acute Glomerulonephritis
B. Polycystic Kidney Disease
F C. Pheochromocytoma
F D. Coarctation of the Aorta
F E. Thyrotoxicosis

39. Clinical features of Myocardial Infarction Include:

T A. Chest pain
B. Rapid weak pulse
C. Diaphoresis
D. Dyspnea
E. Hypertension

40. Rheumatic fever is characterized by a constellation of features which include the following except;

A. Sydenham Chorea
B. Septic Arthritis
C. Pancarditis

D. Erythema Marginatum

E. Buccal Nodules

41. With regards to Cardiomyopathies the following are correct;

A. They include hypertensive cardiomyopathy

B. Dilated cardiomyopathy is strongly associated with alcohol abuse

C. Dilated cardiomyopathy presents with slowly progressive signs and symptoms of congestive cardiac failure.

D. Hypertrophic cardiomyopathy is a cause of sudden death

E. Restrictive cardiomyopathy is characterized by a primary decrease in ventricular compliance

42. Primary tumors of the heart are rare. The most common primary cardiac tumors include;

A. Myxoma

B. Fibroma

C. Lipomas

D. Papillary fibroelastomas

E. Rhabdomyomas

43. Congenital Heart defects associated with right to left shunt include

A. Tetralogy of fallot

B. Transposition of great vessels

C. Patent ductus arteriosus

D. Atrial septal defect

E. Ventricular septal defect

44. Causes of lymphedema include the following:

A. Radiation

B. Axillary lymph node dissection in radical mastectomy

C. Filariasis

D. Post inflammatory scarring and thrombosis

E. Bacterial infection

45. The vasculitis that commonly occurs in Infants and children is:

A. Takayasu arteritis

B. Giant Cell arteritis

C. Infectious arteritis

D. Wegener's granulomatosis

E. Kawasaki Disease

46. The following are true about glomerular disease

A. Systemic lupus erythematosus is a systemic disease that presents with glomerular involvement

B. Minimal change disease presents with normal glomerulus at light microscopy

C. hypertension is a feature of nephrotic syndrome

D. Good pasture syndrome presents with recurrent hemoptysis

E. Minimal change disease is characterised by diffuse effacement of foot processes of visceral epithelial cells

47. Systemic diseases that may present with nephrotic syndrome include

A. Diabetes mellitus

B. Amyloidosis

C. Systemic lupus erythematosus

D. Infections like malaria

E. Malignant diseases like carcinomas

48. The following glomerular diseases present with the nephrotic syndrome

A. Membranous nephropathy

B. Postinfectious glomerulonephritis

C. Minimal change disease

D. Focal segmental glomerulosclerosis

E. Goodpasture syndrome

49. The following are obstructive lung diseases

A. Emphysema

B. Asthma

C. Bronchiectasis

D. Chronic bronchitis

E. Idiopathic pulmonary fibrosis

50. The four classic stages of the inflammatory response in lobar pneumonia include

T A. Red hepatization

T B. Gray hepatization

C. Congestion

T D. Resolution

E. Progression

SECTION B

1) Write short notes on the following
   a. Complications of liver cirrhosis (4marks)
   b. Primary Causes of nephrotic and nephritic syndromes (4 marks)
   c. Classification of vasculitis with examples (4 marks)
   d. Signs and symptoms of right sided heart failure (4 marks)
   e. Stages of lobar pneumonia. (4marks)

2) **A 55-year old woman presented to Casualty in a coma. On examination, she was noted to be jaundiced, and multiple spider naevi were present on her trunk. Her husband said that she was a heavy drinker, and had previously had "liver trouble". She had begun to vomit blood the previous day.**

Blood was taken for emergency investigations which showed:

- Na+ 129mmol/l (135-145), K+ 4.5mmol/l (3.5-5.0), urea 7.1mmol/l (1.7-6.7), creatinine 120µmol/l (50-100), Glucose 1.5mmol/l (3.9-5.6)
- acid-base: pH 7.54, pCO2 6.5kPa, SBC 35mmol/l
- ammonia 240µmol/l (<40), total protein 80g/l (60-80), albumin 23g/l (35-50), total bilirubin 345 µmol/l (<17), conj. bilirubin 290 µmol/l(<4), ALT 60U/l (1-41), Alk.Phos 445U/l (39-117), GGT 190U/l (7-49)

a. suggest any three (3) likely causes of this patients coma.

b. Explain the:
   I. hypoglycaemia. Does this require treatment?
   II. Acid-base disorder

III. Low albumin

IV. Low sodium

V. Increased Globulins

c. Would a lumbar puncture be informative (yes or no)? If it were done what would it show?

d. What life-threatening complications may occur?

(10mks)

3) **Mr. F.J. aged 45 was on haemodialysis for several years for end-stage renal failure due to glomerulonephritis. He developed bone pain, and X rays showed marked osteopaenia and multiple bone cysts.**

Biochemistry was as follows:

- Na+ 140 mM (135 – 145), K+ 5.3 mM (3.5 – 5.0), urea 35mM, creatinine 700 uM, Ca2+ 2.5 mM (2.2 – 2.5), albumin 37g/L, Pi 3.5mM (N 0.8-1.4), alk phos 400 units (30-115), PTH 65 pmol/L (1.6 - 6.9)

a. Comment on the Ca2+ level: Is this typical in chronic renal failure?

b. What factors are contributing to the pathogenesis of this man's bone disease?

c. What treatment options may be of benefit?

d. What is metastatic calcification? Do you think it might occur in this case? Why?

(10mks)

GOOD LUCK