

Candidate number.....



COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES

NSLS 405: HISTOPATHOLOGY

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL/MAY 2022

LECTURER: DR MAIBOUGE SALISSOU

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
 2. Answer **all** questions in sections A on the question paper.
 3. Answer **all** questions in section B on separate answer sheets provided.
 4. Answer any **3** questions in section C on separate answer sheets provided
 5. Credit will be given for logical, systematic and neat presentations in sections B and C
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Sections A (40 marks)

Answer all questions by indicating T for TRUE or F for FALSE in front of each of the statements (a) to (d) in all the questions

1. Which of the following are endogenous mediators of increased vascular permeability?
 - A. Angiotensin.
 - B. C3a and C5a.
 - C. 5-hydroxytryptamine.
 - D. Kallikrein.
2. Which ONE of the following is not a useful effect of acute inflammation?
 - A. Dilution of toxins.
 - B. Formation of fibrin.
 - C. Stimulation of immune response.
 - D. Swelling of tissues.
3. Which ONE of the following is not an acceptable characteristic of a granuloma.
 - A. Composed of altered macrophages.
 - B. Composed of fused macrophages (giant cells).
 - C. Composed of a mixture of chronic inflammatory cells.
 - D. Composed of polymorphonuclear leucocytes, cellular debris and fibrin.
4. Which ONE of the following does not impair healing of a wound?
 - A. Deficiency of galactosamine.
 - B. Deficiency of vitamin C.
 - C. Excess of adrenal glucocorticoid hormones.
 - D. Good vascular supply.

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5. The pathogenicity of the tubercle bacillus is due to the following?
 - A. Ability to multiply within macrophages.
 - B. Delayed hypersensitivity reaction against the bacteria.
 - C. Direct toxic effect on host cells.
 - D. Effective antibody response.

6. Which ONE of the following is not a cause of secondary hyperaldosteronism?
 - A. Adrenocortical adenoma.
 - B. Hepatic cirrhosis with ascites.
 - C. Nephrotic syndrome.
 - D. Renal artery stenosis.

7. . Which ONE of the following does not predispose to dystrophic calcification?
 - A. Active phagocytosis of debris.
 - B. Fat necrosis.
 - C. Hyaline change in fibrous tissue.
 - D. Inspissated material in salivary ducts.

8. Which ONE of the following is not associated with EB virus infection?
 - A. Burkitt's lymphoma.
 - B. Carcinoma of the cervix uteri.
 - C. Infectious mononucleosis.
 - D. Nasopharyngeal carcinoma.

9. Which ONE is the fourth commonest organ site of metastasis at autopsy in patients with carcinoma?
 - A. Adrenal.
 - B. Bone.
 - C. Brain.
 - D. Liver.

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10. Which of the following is not a predisposing factor for atheroma?
- A. Cigarette smoking.
 - B. High level of serum high density lipoprotein.
 - C. High level of serum low density lipoprotein (LDL).
 - D. Male sex.
11. Which are histological features of chronic bronchitis?
- A. Calcification of bronchial cartilages.
 - B. Goblet cell metaplasia.
 - C. Hypertrophy of smooth muscle.
 - E. Squamous metaplasia of respiratory epithelium.
12. Which of the following are usually features of acute viral hepatitis in a liver biopsy?
- A. Acidophilic degeneration of hepatocytes.
 - B. Ballooning degeneration of hepatocytes.
 - D. Lymphocytic infiltrates in parenchyma and portal tracts.
 - E. Mallory bodies
13. Which of the following are features of osteosarcoma?
- A. Fifty per cent of tumours occur around the knee.
 - B. Lung secondaries common.
 - C. May be associated with Paget's disease of bone..
 - E. Usually metastasize to lymph nodes
14. Which ONE of the following are true of prostatic carcinoma?
- A. Acid phosphatase level raised in serum.
 - B. Alkaline phosphatase detected in tumour cells.
 - C. Metastases are osteoplastic.
 - D. Microacinar adenocarcinoma.

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15. . Which one of the following is least likely to lead to metastases by the blood stream?
- A. Follicular carcinoma of thyroid.
 - B. Giant cell carcinoma of thyroid.
 - C. Medullary carcinoma of thyroid.
 - D. Papillary carcinoma of thyroid.
16. Swelling of mitochondria represents a reversible change. Irreversible changes include the following:
- A. Rupture of double membrane
 - B. Fragmentation
 - C. Myelin figures
 - D. Calcification
17. .What are the causes of pathologic atrophy?
- A. Disuse
 - B. Denervation
 - C. Lack of trophic hormones
 - D. Ischemia
18. What are the common and important causes of endothelial cell injury or loss that initiate thrombosis?
- A. Hemodynamic injury
 - B. Atherosclerosis
 - C. Infection
 - D. Autoimmune diseases
19. Which tumors have been linked to exposure to ionizing radiation? :
- A. Leukemia/lymphoma
 - B. Thyroid cancer
 - C. Osteogenic sarcoma
 - D. Lung cancer

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20. Essential features of paraneoplastic syndromes are as follows:

- A. Unrelated to the mechanical effects of the tumor mass or distant metastases
- B. May result from substances released from tumor cells but not found in the normal cells from which the tumor has originated
- C. May result from a series of immunologic and other host reactions to tumor
- D. May have a complex and not fully understood pathogenesis

Section B

Answer all questions in this section. Each question carries 5 marks.

1a) For each effect numbered (i,ii,iii) you should select the most appropriate pituitary lesion from the list below(A,B,C,D,E).(5 Marks)

- i. Acromegaly.
- ii. Cushing's syndrome.
- iii. Sheehan's syndrome.

- A. Craniopharyngioma.
- B. Auto-immune disease.
- C. Hyaline-change in pituitary basophils.
- D. Post-partum necrosis.
- E. Rathke's cyst.

b) Justify your answers.(15pts)

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Section C

Answer any 3 cases on separate answer sheets provided. Each case carries 20 marks.

Case 1

1. An 8-year-old African boy presents with swelling in his jaw and massive facial disfiguration. Biopsy reveals a tumor invading the bone marrow of the jaw.

a) The pathogenesis of this malignant neoplasm is associated with a virus that exhibits a tropism for which of the following cells? (10 marks)

- (A) Chondrocytes
- (B) Fibroblasts
- (C) Lymphocytes
- (D) Macrophages
- (E) Osteocytes



b) Justify your answer (10 marks)

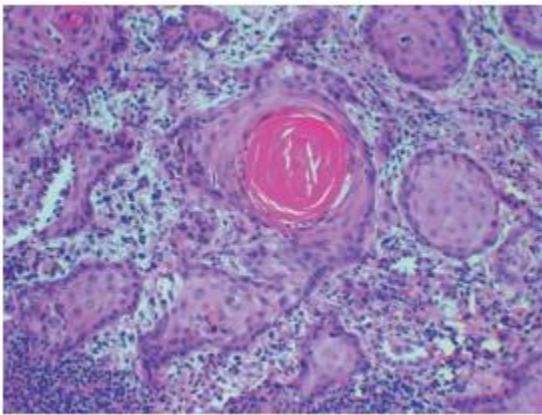
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Case 2

2. A 60-year-old man presents with a 4-month history of increasing weight loss, wheezing, and shortness of breath. He has smoked two packs of cigarettes a day for 40 years. His past medical history is significant for emphysema and chronic bronchitis. A chest X-ray shows a 10-cm mass in the left lung. Bronchoscopy discloses obstruction of the left main stem bronchus. A biopsy is obtained (shown in the image).

a) Immunohistochemical studies of this biopsy specimen would most likely show strong expression of which of the following tumor markers? (10 marks)

- (A) Alpha-fetoprotein
- (B) Calretinin
- (C) Carcinoembryonic antigen
- (D) Cytokeratins
- (E) Synaptophysin

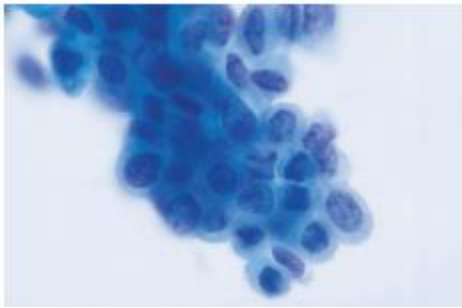


2b) Justify your answer (10 marks)

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Case3

A 59-year-old man presents with a 3-week history of painless hematuria. Physical examination is unremarkable. Urinalysis shows 2+ hematuria. A CT scan of the abdomen reveals an exophytic mass in the renal pelvis. Cytologic examination of a fine-needle aspiration of the renal pelvis is shown in the image.



3a) These cells show which of the following patterns of arrangement? (10 marks)

- (A) Follicular configuration
- (B) Glandular structures
- (C) Papillary configuration
- (D) Pearls
- (E) Rosettes

3b) Justify your answer (10 marks)

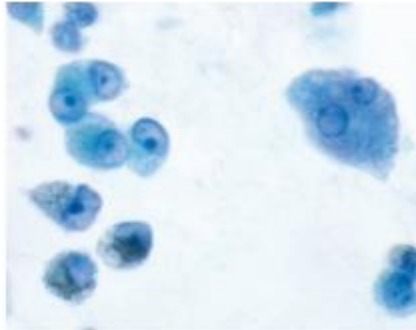
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Case 4

A 64-year-old man presents with a history of weight loss and progressive yellowing of the skin and sclera. Ultrasound examination of the liver shows multiple lesions. A fine needle aspiration is performed under ultrasound guidance. The smear discloses numerous round cells, with poorly defined cytoplasm, eccentric nuclei, and prominent nucleoli. The cytoplasm of these cells contains pigmented granules (shown in the image).

4a) Immunohistochemical stains are positive for the HMB-45 antigen. What is the appropriate diagnosis?

- (A) Hepatic adenoma
- (B) Hepatocellular carcinoma
- (C) Metastatic adenocarcinoma
- (D) Metastatic melanoma
- (E) Metastatic squamous cell carcinoma(10 marks)



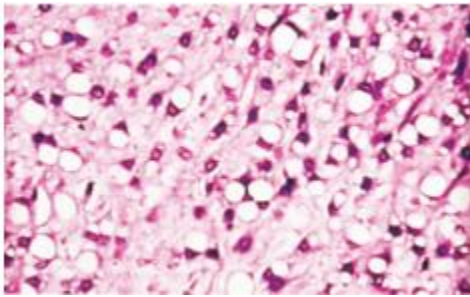
4b) Justify your answer (10 marks)

CASE 5

A 40-year-old woman presents with 6 months of increasing abdominal girth. Gynecologic examination reveals large bilateral ovarian masses. The patient undergoes bilateral oophorectomy.

5a) The pathology report reads “Krukenberg tumor,” and the histopathologic findings are shown in the image. Which of the following tests would likely provide the highest diagnostic yield?(**10 marks**)

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- (A) Serum AFP level
- (B) Biopsy of the cervix and endometrial curettage
- (C) Laparoscopy
- (D) Serum hCG level
- (E) Gastric endoscopy

5b) Justify your answer (10 marks)