



UNIVERSITY EXAMINATIONS
THIRD YEAR EXAMINATION FOR THE AWARD OF THE
DEGREE OF BACHELOR OF SCIENCE IN CLINICAL MEDICINE
AND COMMUNITY HEALTH
SECOND TERM 2022/2023
[JANUARY-APRIL, 2023]

PATH 143: PATHOLOGY

STREAM: Y3T2

TIME: 2 HOURS

DAY: WEDNESDAY, 9:00 – 12:00 PM

DATE: 19/04/2023

INSTRUCTIONS

1. Do not write anything on this question paper.

PATHOLOGY MULTIPLE CHOICE QUESTIONS

1. Programmed cell death is also called as:
A. Degeneration
B. Calcification
C. Apoptosis
D. Necrosis
E. Atrophy
2. Which of the following is a pathologic cause of hyperplasia?
A. Endometrial hyperplasia
B. Compensatory hyperplasia after partial hepatectomy
C. Hormonal stimulation seen in breast development at puberty
D. Antigenic stimulation seen in lymphoid hyperplasia
E. Cardiac muscle in hypertension
3. In pathology, what is the name given when there is a reversible change of one cell type to another?
A. Hyperplasia
B. Hypertrophy
C. Metaplasia
D. Dysplasia
E. Atrophy
4. Which of the following is the best statement for lipofuscin?
A. Perinuclear yellow-brown pigment
B. Black-brown pigment
C. Golden yellow-brown granular pigment
D. Protein
E. Lipid

5. Location of calcifications in interstitial tissues of the stomach, kidneys, lungs, and blood vessels is called as:
- A. Metastatic calcification.
 - B. Dystrophic calcification
 - C. Hyaline change
 - D. Cutaneous mycetoma
 - E. Molluscum contagiosum
6. Psammoma bodies belong to which type of pathologic form of calcification?
- A. Dystrophic calcification
 - B. Metastatic calcification
 - C. Calcifications in interstitial tissues of the stomach
 - D. Calcifications in the kidney
 - E. Calcifications in the blood vessels
7. A 49-year-old woman has hypertension untreated for years. Which of the following cellular alteration will be seen in the myocardium of this patient?
- A. Apoptosis
 - B. Atrophy
 - C. Hyperplasia
 - D. Metaplasia
 - E. Hypertrophy
8. In pathology, what is the name given to abnormal proliferation of cells that is characterized by changes in cell size, shape, and loss of cellular organization?
- A. Hyperplasia
 - B. Hypertrophy
 - C. Metaplasia
 - D. Dysplasia
 - E. Atrophy
9. Which type of necrosis is most characteristic of ischemia involving the heart or kidney?
- A. Coagulative
 - B. Liquefactive
 - C. Caseous
 - D. Fibrinoid
 - E. Enzymatic
10. Irreversible, uncontrolled cell death that occurs when antigen-antibody complexes are deposited in the walls of blood vessels along with fibrin is called as:
- A. Gangrenous necrosis
 - B. Fat necrosis
 - C. Fibrinoid necrosis
 - D. Caseous necrosis
 - E. Liquefaction necrosis
11. Degeneration and condensation of nuclear chromatin is defined as:
- A. Karyorrhexis
 - B. Karyolysis
 - C. Nuclear fusion
 - D. Nuclear fission
 - E. Pyknosis

12. In tumor metastasis, cancer cells spread from the place where they first formed to another part of the body. What is essential for tumor metastasis?
- A. Apoptosis
 - B. Inhibition of tyrosine kinase activity
 - C. Angiogenesis
 - D. Tumorigenesis
 - E. Ischemia
13. Decrease in cell size and functional ability is defined as:
- A. Atrophy
 - B. Apoptosis
 - C. Hypertrophy
 - D. Hyperplasia
 - E. Metaplasia
14. Granuloma is characterized by-
- A. Focal accumulation of activated macrophages
 - B. Collection of neutrophils
 - C. Newly formed vessels
 - D. Collection of eosinophils
 - E. Collection of basophils
15. Marked mitochondrial dysfunction, mitochondrial swelling and large densities within the mitochondrial matrix are seen in which type of cell injury?
- A. Cell death
 - B. Irreversible cell injury
 - C. Reversible cell injury
 - D. Necrosis
 - E. Apoptosis
16. Procalcitonin is considered as a marker for?
- A. Sepsis
 - B. Medullary carcinoma of thyroid
 - C. Vitamin D resistant rickets
 - D. Parathyroid adenoma
 - E. Hyperthyroidism
17. A 92-year-old man presents to his health care provider with a history of mild dementia, osteoarthritis, emphysema, cataract, and hypertension. What is the most likely diagnosis?
- A. Hypovitaminosis E
 - B. Werner syndrome
 - C. Natural aging
 - D. Progeria (Hutchinson-Gilford syndrome)
 - E. Alzheimer's disease
18. Kupffer cells are found in which system?
- A. Connective tissue
 - B. Lung
 - C. Liver
 - D. Bone
 - E. Brain

19. Virulent organism producing severe tissue damage and extensive cell death is defined as:
- A. Exudative inflammation
 - B. Necrotizing inflammation
 - C. Granulomatous inflammation
 - D. Interstitial inflammation
 - E. Cytopathic inflammation
20. Which of the following cell plays an important role in parasitic infections?
- A. Neutrophil
 - B. Macrophage
 - C. Lymphocyte
 - D. Eosinophil
 - E. Basophil
21. What is the effect of bradykinin?
- A. Pain
 - B. Bronchodilation
 - C. Vasoconstriction
 - D. Decrease vascular permeability
 - E. Platelet aggregation
22. Apoptosis is an active process regulated by genes and involves RNA and protein synthesis. Which of the following is a central organ in apoptosis?
- A. Ribosomes
 - B. Golgi body
 - C. Mitochondria
 - D. Nucleus
 - E. Lysosomes
23. For counting of CD4 + T cells in AIDS, the following technique is often employed:
- A. In situ hybridisation
 - B. Polymerase chain reaction
 - C. Flow cytometry
 - D. Electron microscopy
24. Immunohistochemistry is employed for the following purpose:
- A. To distinguish neoplastic from non-neoplastic lesion
 - B. To distinguish benign and malignant lesion
 - C. To localise the cell of origin of tumour
 - D. To detect autoantibodies in the serum
25. Besides nucleus, the only other place in the cell having DNA is:
- A. Ribosome
 - B. Golgi apparatus
 - C. Mitochondria
 - D. Endoplasmic reticulum
26. Out of various free radical species, the following radical is most reactive:
- A. Superoxide (O_2^-)
 - B. Hydrogen peroxide (H_2O_2)
 - C. Hydroxyl (OH^-)
 - D. Nitric oxide (NO)

27. Enzyme which prevents aging is:
- A. Catalase
 - B. Superoxide dismutase
 - C. Metalloproteinase
 - D. Telomerase
28. Diabetic foot is an example of:
- A. Dry gangrene
 - B. Wet gangrene
 - C. Gas gangrene
 - D. Necrotising inflammation
29. What is the karyotype of Klinefelter syndrome?
- A. 45 XO
 - B. 47 XXY
 - C. 46 XX
 - D. 47 XX
 - E. 47 XY
30. 13-year-old female patient presents with clinical features of failure to develop secondary sex characteristics, short stature, primary amenorrhea, infertility, cystic hygroma, and web neck. What is the diagnosis?
- A. Turner syndrome
 - B. Klinefelter syndrome
 - C. Edward syndrome
 - D. Cri du Chat syndrome
 - E. Patau syndrome
31. Which of the following is the most common chromosomal disorder because of trisomy 21?
- A. Edward syndrome
 - B. Patau syndrome
 - C. Cri du Chat syndrome
 - D. Down syndrome
 - E. Klinefelter syndrome
32. HIV contaminated waste products can be decontaminated by the following agents *except*:
- A. Sodium hypochlorite
 - B. Methanol
 - C. Formaldehyde
 - D. Glutaraldehyde
33. CD4 bearing subpopulation of macrophages are attacked by HIV and cause the following *except*:
- A. Cytopathic effects
 - B. Act as reservoir of HIV infection
 - C. Act as source of infection in nervous system
 - D. Defects in CD4+ T lymphocytes
34. A 35-year-old HIV positive male patient presents with nontender, firm, rubbery lymph nodes in the left side of the neck. Histologically, large Hodgkin–Reed-Sternberg cells with multiple nuclei and prominent nucleoli are present. What is the diagnosis?
- A. Nodular sclerosis cHL
 - B. Lymphocyte depleted cHL

- C. Lymphocyte rich cHL
- D. Non-Hodgkin lymphoma

35. Mediastinal tumors are rare neoplasms. The most common tumor of the mediastinum is:

- A. Lymphoma
- B. Mediastinal germ cell tumor
- C. Thymoma
- D. Mediastinal lymphangioma
- E. Mediastinal parathyroid adenomas

36. Naphthylamine is a chemical carcinogen responsible for which of the following carcinoma?

- A. Angiosarcoma of liver
- B. Squamous cell carcinoma of skin
- C. Bronchogenic carcinoma
- D. Carcinoma bladder
- E. Lymphoma

37. Malignant tumor of mesenchymal tissue is referred to as?

- A. Choristoma
- B. Carcinoma
- C. Hamartoma
- D. Teratoma
- E. Sarcoma

38. A 10-year-old male presents with a rapidly enlarging maxillary mass. Biopsy is done and the microscopic picture shows starry-sky appearance. What is the diagnosis?

- A. Follicular lymphoma
- B. Mantle cell lymphoma
- C. Hodgkin lymphoma
- D. Burkitt lymphoma
- E. Lymphoblastic lymphoma

39. Some benign tumors of the liver are typically discovered incidentally at laparotomy, autopsy, or during an imaging test performed for unrelated conditions. Which of the following is the most common benign tumor in the liver?

- A. Hepatoma
- B. Hemangioma
- C. Hepatic adenoma
- D. Cholangiosarcoma
- E. Focal nodular hyperplasia

40. Which of the following carcinoma shows increased expression of ERBB2 (HER2) gene?

- A. Carcinoma of the stomach
- B. Melanoma
- C. Astrocytoma
- D. Infiltrating ductal and intraductal carcinoma of the breast
- E. Ovarian carcinoma

41. Which of the following parasites is associated with megaloblastic anemia?

- A. Necator americanus
- B. Ancylostoma duodenale
- C. Diphyllbothrium latum

- D. Entamoeba histolytica
- E. Ascariasis

42. A 14-year-old male with sickle cell anemia presents with shortness of breath that has been getting worse over the past several days. Laboratory finding shows relatively low reticulocyte count (0.5%). Which of the following virus is most likely to produce these findings?

- A. Retrovirus
- B. Parvovirus B 19
- C. Adenovirus
- D. Epstein–Barr virus
- E. Calicivirus

43. A 28-year-old woman with HIV infection presents with symptoms of fever, sweats, malaise, and sore throat for the last 2 weeks. Physical examination shows swollen tender cervical lymph nodes. Endoscopic examination shows plaques throughout her esophagus. Which of the following is the diagnosis related to the sore throat?

- A. Disseminated pneumocystis carini
- B. Candida esophagitis
- C. Hairy leukoplakia
- D. Cytomegalovirus ulcers of the esophagus
- E. Lymphoma of the esophagus

44. The tissue of origin of Kaposi sarcoma is:

- A. Lymphoid
- B. Vascular
- C. Neural
- D. Muscular
- E. Bone

45. Most common cause of aortic dissection is:

- A. Hypertension
- B. Diabetes melitus
- C. Trauma
- D. Marfan's syndrome
- E. Myocardial infarction

46. Unilateral leg swelling, warmth, erythema Homan's sign are characteristics of which of the following vascular disease?

- A. Lymphangitis
- B. Deep vein thrombosis
- C. Cellulitis
- D. Septic thrombophlebitis
- E. Pulmonary embolism

47. An exaggerated vascular response to cold temperatures or emotional stress is seen in which of the following vascular disorder?

- A. Antiphospholipid syndrome
- B. Cryoglobulinemia
- C. Mixed connective tissue disease
- D. Scleroderma
- E. Raynaud's phenomenon

48. An increase in which of the following is most likely to increase the risk for the development of cardiovascular risk?
- A. Erythrocyte sedimentation rate (ESR)
 - B. White blood cell count
 - C. C-reactive protein (CRP)
 - D. Total protein
 - E. Cryoglobulin
49. Venous emboli are most often lodged in:
- A. Intestines
 - B. Kidneys
 - C. Lungs
 - D. Heart
50. Pathologic changes between sudden decompression from high pressure to normal levels and decompression from low pressure to normal levels are:
- A. More marked in the former
 - B. More marked in the latter
 - C. No difference between the two
 - D. Acute form is more marked in the latter
51. The infarct of following organ is invariably haemorrhagic:
- A. Infarct kidney
 - B. Infarct spleen
 - C. Infarct lung
 - D. Infarct heart
52. Grading of tumours depends upon the following *except*:
- A. Degree of anaplasia
 - B. Metastatic spread
 - C. Rate of growth of cells
 - D. Degree of differentiation
53. Laboratory findings of anemia, thrombocytopenia, and leukopenia are characteristic of which of the following type of anemia?
- A. Megaloblastic anemia
 - B. Iron deficiency anemia
 - C. Aplastic anemia
 - D. Sickle cell anemia.
 - E. β Thalassemia
54. Macro-ovalocytes and hypersegmented neutrophils are seen in which of the following type of anemia?
- A. Megaloblastic anemia.
 - B. Aplastic anemia
 - C. Iron deficiency anemia
 - D. Hereditary spherocytosis
 - E. Autoimmune hemolytic anemia

55. Red blood cells are prepared from whole blood by removing the plasma. Shelf life of whole blood is:

- A. 35 days
- B. 120 days
- C. 7 days
- D. 85 days
- E. 100 days

56. Which of the following viral infection is not known to produce any human tumour?

- A. Polyoma virus
- B. EBV
- C. HSV
- D. HTLV

57. Obesity is due to:

- A. Hyperplasia of adipocytes only
- B. Hypertrophy of adipocytes only
- C. Hyperplasia as well as hypertrophy of adipocytes
- D. Fatty change in liver only

58. Teratogens are defined as agents which induce:

- A. Mitosis
- B. Carcinogenesis
- C. Birth defects
- D. Fallot's tetralogy

59. Mutations affecting germ cells produce:

- A. Cancers
- B. Inherited diseases
- C. Congenital malformations
- D. Aneuploidy

60. For cytomorphological recognition of cancer, the following characteristics are used to determine the presence or absence of cancer *except*:

- A. Cytoplasmic content
- B. Nuclear size
- C. N:C ratio
- D. Mitoses

PATHOLOGY ESSAYS-ATTEMPT ALL

1. Explain necrosis. Compare and contrast the different types and how they may arise. (15 marks)
2. What are the benefits of inflammation? (5 marks)
3. Describe 5 different ways a cell can respond to non-lethal cell damage. (5 marks)
4. How do wounds heal by primary intention? Describe the pathological processes which occur from initial injury to complete resolution of injury. (15 marks)
5. Describe and explain granulomatous inflammation. (10 marks)
6. Discuss neoplasia in your answer include different types, classification, causes, grading, symptoms and defense mechanisms. (25 marks)
7. List 8 hallmarks of cancer. (10 marks)