

## GENERAL PATHOLOGY EXAMINATION PAPER I (MCQs)

**MULTIPLE CHOICE QUESTIONS (MCQs). Answer all questions in this paper by indicating true (T) or false (F). Marks will be deducted for wrong answers**

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### 1. Hypertrophy

- a) causes shrinkage in size of the organ
- b) Is always a pathological process
- c) May predispose to cancer
- d) May results from denervation
- e) Is always accompanied by calcification

### 2. Atrophy

- a) Is a hallmark of cancer
- b) Is a decrease in the number of cells
- c) Is an increase in the metabolic activity of the cell
- d) Is always a pathological response
- e) Is the main cause of decrease in brain size in patients with Alzheimer disease

### 3. Hyperplasia

- a) Is an increase in cell size
- b) Does not occur in stable cells
- c) Is a hallmark of benign neoplasia
- d) Maybe caused by thrombosis
- e) Is a decrease in cell number

### 4. Which of the following may cause Metaplasia

- a) Decreased workload,
- b) Denervation,
- c) Diminished blood supply
- d) Inadequate nutrition,
- e) Chronic irritation of the epithelium

### 5. Which of the following are features of irreversible injury

- a) Nuclear chromatin clamping
- b) Formation of cytoplasmic blebs
- c) Mitochondria swelling
- d) Disruption of cell membrane
- e) Nuclear pyknosis

6. Coagulative necrosis

- a) Is caused by bacterial infection **F**
- b) Has a cheese-like gross appearance **F**
- c) May be caused by thrombosis **T**
- d) Occurs in all solid organs except the heart **F**
- e) Is a reversible change **F**

7. Gangrenous necrosis

- a) Is common in the upper extremities of the body **F**
- b) Is due to vascular occlusion **T**
- c) Has a characteristic black color on gross appearance **T**
- d) Is due to deposition of immune complexes in the blood vessels **F**
- e) Is an adaptive response to stress **F**

8. Which of the following is not an intracellular accumulation

- a) Sarcoidosis **T**
- b) Dystrophic calcification **T**
- c) Metastatic calcification **T**
- d) Fatty change **F**
- e) Iron overload **F**

9. Calcification

- a) Is an adaptive response **F**
- b) Is a characteristic features of metaplasia **F**
- c) Occurs only in dead cells **F**
- d) is an extracellular accumulation **T**
- e) may cause organ dysfunction **T**

10. Mechanisms of cellular Aging

- a) Increasing DNA damage, **T**
- b) Decreased cellular replication **T**
- c) Reduced regenerative capacity of tissue stem cells **T**
- d) Accumulation of metabolic damage **T**
- e) Increased replicative potential **F**

11. Acute inflammation

- a) May be insidious in onset **F**
- b) Longer duration (days to years) **F**
- c) Typified by influx of lymphocytes and macrophages **F**
- d) Associated with vascular proliferation and fibrosis **F**
- e) Always results in organ injury **F**

12. Chronic inflammation

- a) Is Rapid in onset **F**
- b) Has a Short duration **F**
- c) Characterized by fluid and plasma protein exudation **T**
- d) A predominantly macrophage accumulation. **T**
- e) Is a non-reversible process **F**

13. Causes of acute inflammation

- a) Persistent infections by microbes that are difficult to eradicate. **F**
- b) Immune-mediated inflammatory diseases **F**
- c) Prolonged exposure to potentially toxic agents. **F**
- d) Trauma **T**
- e) Radiation **T**

14. Which of the following is not a cellular event in acute inflammation

- a) Edema **T**
- b) Thrombosis **T**
- c) Cellular transmigration **F**
- d) Phagocytosis **F**
- e) Margination **F**

15. Which of the following may culminate into chronic inflammation

- a) Fibrosis **F**
- b) Healing **F**
- c) Resolution **F**
- d) Persistent injury **T**
- e) Calcification **F**

16. The following are chronic inflammatory diseases except

- a) Tuberculosis **F**
- b) Atherosclerosis **F**
- c) Sarcoidosis **F**
- d) Hypertension **T**
- e) Diabetes Insipidus **T**

17. Which of the following mediators of inflammation are responsible for pain?

- a) Serotonin **T**
- b) Histamine **F**
- c) Anaphylotoxins **T**
- d) Prostaglandins **T**
- e) C5a protein **T**

18. Which of the following mediators of inflammation are produced by the liver?

- a) Cytokines
- b) Hageman factor
- c) Complement proteins
- d) Leukotrienes
- e) Serotonin

19. Dominant cells in acute inflammation

- a) Basophils
- b) Mast cells
- c) T-lymphocytes
- d) Macrophages
- e) Neutrophils

20. Granulomatous diseases are all of the following except

- a) Tuberculosis
- b) Malaria
- c) Sarcoidosis
- d) Hypertension
- e) Syphilis

21. Atrophy

- a) Is always a pathological response
- b) Is a decrease in the size of cells
- c) Is characterised by calcification of the organs
- d) Occurs in labile cells only
- e) Is an increase in the cell size

22. Metaplasia

- a) Is an increase in the number of cells
- b) Is synonymous with cancer
- c) Is an irreversible adaptive response
- d) Arise by genetic reprogramming of stem cells
- e) Is caused by hypoxia

23. Which of the following is a characteristic cell in chronic inflammation?

- a) Gaucher cell **T**
- b) Macrophage **T**
- c) Erythrocyte **F**
- d) Neutrophil **F**
- e) platelet **F**

24. The following are morphological patterns of acute inflammation EXCEPT:

- a) Catarrhal inflammation **F**
- b) Fibrinous inflammation **T**
- c) Granulomatous inflammation **T**
- d) Purulent inflammation **T**
- e) Haemorrhagic inflammation **F**

25. Pathological calcification

- a) Implies the normal deposition of calcium salts in living tissues. **F**
- b) May cause organ dysfunction **T**
- c) Is an adaptive change in labile tissues **F**
- d) Occurs in dead or dying tissues **T**
- e) Is common in apoptosis **F**

26. Necrosis

- a) Is an adaptive response to tissue injury **F**
- b) Is a reversible change **F**
- c) Is characterized by pathological calcification **T**
- d) Occur in dead bodies. **F**
- e) Is synonymous with apoptosis **F**

**27. Hyperplasia**

- a) Is an increase in cell number in an organ T
- b) Exemplified by proliferation of the glandular epithelium of the female breast at puberty is an example of compensatory hyperplasia T
- c) Is always a pathological response
- d) In a pathologic state may be caused by hypo secretion and stimulation of growth hormones.
- e) May cause the decrease in organ size

**28. The following may cause cell injury EXCEPT:**

- a) Carbon monoxide deprivation
- b) Household insecticides
- c) Epstein-Barr virus.
- d) Autoimmune reactions
- e) Viral infection

**29. Apoptosis**

- a) Is a tightly regulated suicide program of the cell
- b) Involves deactivation of caspase enzymes
- c) Does not occur in cells incapable of replicating
- d) Is characterized by pathological calcification
- e) Is synonymous with necrosis

**30. Permanent tissues**

- a) Have cells which are considered to be terminally differentiated and nonproliferative in prenatal life
- b) Can be found in the epidermis of the skin
- c) Are more likely to undergo metaplastic changes
- d) Are typically dominated by scar formation during repair
- e) Constitutes 80% of liver parenchyma

**31.** Which of the following does NOT affect wound healing?

- a) Nutrition status
- b) Age
- c) Tissue perfusion
- d) Dysplasia
- e) Intensity of tissue injury

**32.** Edema

- a) Signifies increased blood in the interstitial tissue spaces.
- b) Involves decreased vascular permeability.
- c) Is an adaptive response
- d) Is the accumulation of fluid in the interstitial spaces
- e) Is a characteristic feature of chronic inflammation

**33.** Which of the following is NOT a feature of the Virchow`s triad?

- a) Endothelial injury
- b) Hypercoagulability
- c) Abnormal blood flow
- d) Angiogenesis
- e) Turbulent flow of blood

**34.** Autosomal dominant disorders

- a) Are manifested in the homozygous state
- b) Affects males more than females
- c) Are also called sex linked disease
- d) Can be transmitted by both males and females.
- e) May also be acquired in an immune compromised host

**35. Marfan syndrome**

- a) Is an autosomal recessive disorder of connective tissues
- b) Is a sex-linked disorder of muscle tissues
- c) Is associated with the biochemical abnormalities which affects fibrillin 1.
- d) Principally affects the Nervous system, the eyes, and the urinary system.
- e) Is an acquired disease

**36. Which of the following regarding hypersensitivity Diseases is CORRECT?**

- a) Type I results from the activation of the TH2 subset of CD4+ helper T cells by environmental antigens.
- b) Type IV is also called antibody-mediated hypersensitivity disorders
- c) Type III hypersensitivity disorders are caused by antibodies that bind to fixed tissue.
- d) Type III disorders are cell-mediated immune responses in which T lymphocytes cause tissue injury.
- e) They are always triggered by host antigens

**37. Malignant neoplasms**

- a) Are more likely to remain localized
- b) Are also called teratomas
- c) Arising from the epithelial tissue are called carcinomas
- d) Cannot spread to other sites
- e) Are always well differentiated

**38. Benign tumours**

- a) Can remain localized
- b) Are collectively referred to as cancers
- c) Can invade and destroy adjacent structures
- d) Can metastasize to cause death.
- e) Are poorly differentiated

**39.** The following are aspects of a disease process that form the core of pathology EXCEPT

- a) Aetiology
- b) Pathogenesis
- c) Morphologic changes
- d) Clinical significance
- e) Prognosis

**40.** The following are subdivisions of pathology EXCEPT

- a) Immunology
- b) Haematology
- c) Public Health
- d) Medical Microbiology
- e) Toxicology

**41.** Atrophy is caused by

- a) Increased workload
- b) innervation
- c) increased blood supply to an organ
- d) adequate nutrition
- e) loss of endocrine stimulation

**42.** The following are patterns of chronic inflammation except

- a) Serous inflammation
- b) Fibrinous inflammation
- c) Suppurative inflammation
- d) Granuloma
- e) Haemorrhagic inflammation



**43. Causes of edema**

- a) Decreased hydrostatic pressure
- b) Increased plasma osmotic pressure
- c) Lymphatic dilation
- d) Increased sodium and water retention
- e) Hepatic vein thrombosis

**44. Hyperplasia**

- a) Is a decrease in cell size
- b) Is an increase in cell size
- c) Is an increase in the number of cells
- d) Is a decrease in the number of cells
- e) Is always a physiological response

**45. Acute inflammation**

- a. Is always triggered by histamine
- b. Is a rapid response specific to the nature of the injury
- c. Leads to the formation of an exudate composed of fluid, fibrin, and eosinophils.
- d. Always heals by resolution.
- e. Is characterised by macrophages

**46. Necrosis**

- a) Is a physiological process.
- b) Is a characteristic feature of acute inflammation
- c) is a well-controlled form of cell death.
- d) Of the coagulative type is the commonest form.
- e) Of the caseous type typically follows infarction.

**47. Chronic inflammation**

- a) May be triggered by histamine
- b) Is a rapid response specific to the nature of the injury.
- c) can cause the formation of an exudate composed of fluid, fibrin, and eosinophils.
- d) always heals by resolution.
- e) is a characteristic feature of apoptosis

**48. Impairment to wound healing**

- a) can be due to healing by first intention
- b) can be due to healing by second intention
- c) can be caused by prolonged infection
- d) can be accelerated by the presence of fibroblasts
- e) can predispose to cancer

**49. Malignant neoplasms**

- a) can invade and destroy adjacent structures
- b) cannot spread to distant sites
- c) always cause death
- d) remain localised
- e) are also called cancers

**50. Which of the following is NOT true about hypertrophy?**

- a) It refers to an increase in size of cells in a tissue or organ
- b) is always pathological
- c) of the left ventricle occurs in patients with systemic hypertension
- d) is the principle underlying cause of prostate cancer
- e) is a non-reversible change

**51. Metaplasia**

- a) almost exclusively occurs in epithelial cells
- b) is irreversible
- c) commonly occurs in the ectocervix
- d) is always a premalignant state
- e) may predispose to malignancy

**52. Necrosis characterized by the `ghostly` appearance of acidophilic opaque cells under light microscopy is known as:**

- a) Caseous
- b) Liquefactive
- c) Coagulative
- d) Gangrenous
- e) Fibrinoid

**53. Granulomatous inflammation**

- a). it is defined by the presence of granulomas.
- b). has no epithelioid histiocytes
- c). is a characteristic feature of salmonellosis
- d). is a characteristic feature of tuberculosis.
- e) is almost always due to bacterial infection

**54. Proliferation of the glandular epithelium of the female breast at puberty is an example of**

- a) Metaplasia
- b) Hypertrophy
- c) Hyperplasia
- d) Atrophy
- e) Dysplasia

**55. Apoptosis**

- a) Elicits an inflammatory response.
- b) is associated with denaturation of caspase enzymes.
- c) causes loss of integrity of the cell membrane.
- d) is always a physiological process.
- e) is always a pathological response

**56. Which of the following is true regarding cellular hypertrophy**

- a) It is a decrease in the number of cells
- b) It is an increase in the number of cells
- c) It is always a physiological response
- d) It is caused by either increased functional demand or by specific hormonal stimulation
- e) It causes shrinkage of organs involved

**57. Which of the following is not a feature of necrosis**

- a) Pyknosis
- b) Karyolysis
- c) Autophage
- d) Karyorrhexis
- e) Inflammation

**58. Autophage**

- a) Is a Lysosomal digestion of the cells` own components
- b) Is a process by which a cell ingest substances from the outside for intracellular destruction
- c) Does not signal cell death
- d) Is common in young cells
- e) Causes hypertrophy of cells

**59. Which of the following mechanisms is not responsible for cellular aging**

- a) Decreased cellular replication
- b) Reduced regenerative capacity of tissue stem cells
- c) Decreased DNA damage
- d) Autophage
- e) Calcification



**60. Necrosis**

- d) Is a physiological process.
- e) is a well-controlled form of cell death.
- c) Of the coagulative type is the commonest form.
- d) Of the caseous type typically follows infarction.
- e) is a reversible change

**61. Which of the following is not a cellular event during acute inflammation**

- a) Leukocyte recruitment
- b) Adhesion and transmigration
- c) Increased vascular permeability
- d) Chemotaxis
- e) Edema

**62. Mediators of acute inflammation**

- a) Induce their effects by binding to specific receptors on target cells
- b) May stimulate target cells to release secondary effector molecules
- c) The actions of most mediators are not tightly regulated
- d) May act on only one or a very few target cells
- e) Are specific

**63. Which of the following is not a dominant cell of chronic inflammation**

- a) Macrophage
- b) Neutrophil
- c) Plasma cell
- d) Eosinophils
- e) Platelets

**64. Regarding Proliferative capacities of tissues**

- a) Labile tissues Cells are continuously being lost and are never replaced by maturation from stem cells and by proliferation of mature cells.
- b) Labile tissue cannot readily regenerate after injury.
- c) Permanent tissue Cells have only minimal replicative activity in their normal state.
- d) Permanent tissues cells are considered to be terminally differentiated and nonproliferative in postnatal life.

- e) Neurons readily regenerate after injury
65. The following are classical features of Virchow`s triad except
- a) Endothelial Injury
  - b) Hyperemia
  - c) Blood hypercoagulability
  - d) Stasis
  - e) Congestion
66. Which of the following is **TRUE** regarding atrophy
- a) It is always pathologic
  - b) It is caused by reduced functional demand of the cell
  - c) Occurs in cells which are incapable of dividing
  - d) It is an increase in the number of cells
  - e) Is a decrease in cell size
67. Which of the following is **TRUE** regarding cellular hypertrophy
- a) It is a decrease in the number of cells
  - b) It is an increase in the number of cells
  - c) It is always a physiological response
  - d) It is caused by either increased functional demand or by specific hormonal stimulation
  - e) Is an increase in cell number
68. Which of the following is true regarding Metaplasia
- a) It is a decrease in the size of cells
  - b) It is an increase in the size of cells
  - c) It is always a pathological response
  - d) It is caused by either increased functional demand or by specific hormonal stimulation
  - e) Is a non-reversible adaptation
69. Which of the following is **NOT** a contributing factor to cell injury
- a) Oxygen enrichment
  - b) Immunological reactions
  - c) Genetic defects
  - d) Nutrient deprivation
  - e) Radiation



70. Which of the following is **NOT** a morphological consequence of ATP deprivation in cellular injury

- a) Detachment of ribosomes
- b) Clamping of nuclear chromatin
- c) Efflux of calcium ions
- d) Cellular swelling
- e) Influx of sodium ions

71. Which of the following is **NOT** a feature of apoptosis

- a) Pyknosis
- b) Karyolysis
- c) Autophagy
- d) Karyorrhexis
- e) Disruption of cell membrane

72. Regarding Necrosis

- a) Coagulative necrosis is characteristic in all solid organs except the kidneys
- b) Liquefactive necrosis is seen in focal bacterial infections
- c) Caseous necrosis is most often seen in tuberculosis infection
- d) Fibrinoid necrosis is usually seen in immune reactions of the blood vessels
- e) Is synonymous with apoptosis

73. The following are subcellular responses to injury **EXCEPT**

- a) Induction hypertrophy
- b) Mitochondrial alteration
- c) Apoptosis
- d) Autophagy
- e) Necrosis

74. Which of the following is **NOT** true regarding Apoptosis

- a) It is always a physiological response
- b) It elicits an inflammatory reaction
- c) Plasma membrane of apoptotic cells remains intact
- d) It is always seen in pathological conditions
- e) Is a feature in tumours



75. Which of the following processes may lead to Intracellular accumulations:
- a) When a normal substance is produced at a normal or an increased rate, but the metabolic rate is inadequate to remove it.
  - b) When a normal endogenous substance accumulates because of genetic defects in its transport, or secretion.
  - c) When an inherited defect in an enzyme may result in failure to degrade a metabolite.
  - d) When an abnormal exogenous substance is deposited and accumulates because the cell has neither the enzymatic machinery to degrade the substance nor the ability to transport it to other sites.
  - e) Calcification

76. Regarding pathological calcification

- a) Dystrophic calcification occurs in living tissues
- b) Dystrophic calcification is a common in atherosclerosis
- c) Amyloidosis is an example of metastatic calcification
- d) It may cause organ dysfunction
- e) Does not occur in dead cells or tissues

77. Which of the following mechanisms is not responsible for cellular aging

- a) Decreased cellular senescence
- b) Reduced regenerative capacity of tissue stem cells
- c) Decreased DNA damage
- d) Autophagy
- e) hypertrophy

78. Which of the following is not part of sequence of events in cellular recruitment during an acute inflammation

- a) Margination
- b) Adhesion
- c) Tissue fibrosis
- d) Transmigration
- e) Diapedesis

79. The most common causes of defective inflammation are

- a) bone marrow suppression caused by tumors
- b) metabolic diseases such as diabetes
- c) Defects in leukocyte adhesion
- d) Defects in microbicidal activity
- e) Defects in cellular diapedesis

**80.** Mediators of acute inflammation

- a) Induce their effects by binding to specific receptors on target cells
- b) May stimulate target cells to release secondary effector molecules
- c) The actions of most mediators are not tightly regulated
- d) May act on only one or a very few target cells
- e) are tissue specific

**81.** Which of the following is not a dominant cell of chronic inflammation

- a) Macrophage
- b) Neutrophil
- c) Plasma cell
- d) Eosinophils
- e) Basophils

**82.** Which of the following is **NOT** a morphological pattern of acute inflammation

- a) Serous inflammation
- b) Granulomatous inflammation
- c) Purulent inflammation
- d) Catarrhal inflammation
- e) Fibrinous inflammation

**83.** Which of the following is **NOT** a cell-derived mediator of acute inflammation

- a) Histamine
- b) Serotonin
- c) Factor XIII
- d) Prostaglandins
- e) Complement proteins

**84.** Which of the following diseases is characterized by chronic inflammation

- a) Crohn`s disease
- b) Ulcerative colitis
- c) Tuberculosis
- d) Sarcoidosis
- e) Syphilis

- 85.** Which of the following is not a systemic effect of inflammation
- a) Reduce plasma levels of acute phase proteins
  - b) Fever
  - c) Leukocytosis
  - d) Neutrophilia
  - e) Thrombosis
- 86.** Which of the following processes controls normal size of cell populations
- a) Proliferation
  - b) Apoptosis
  - c) Differentiation
  - d) Necrosis
  - e) Calcification
- 87.** Extensive deposition of collagen that occurs in the organs as a consequence of chronic inflammation is known as
- a) Repair
  - b) Regeneration
  - c) Fibrosis
  - d) Organization
  - e) Metaplasia
- 88.** Hypertrophy
- a) causes shrinkage in size of the organ
  - b) Is always a pathological process
  - c) May predispose to cancer
  - d) May result from denervation
  - e) Is always accompanied by calcification
- 89.** Metaplasia
- a) Is a hallmark of cancer
  - b) Is a decrease in the number of cells
  - c) Is an increase in the metabolic activity of the cell
  - d) Is always a pathological response
  - e) Is the main cause of decrease in brain size in patients with Alzheimer disease

**90. Hyperplasia**

- a) Is an increase in cell size
- b) Does not occur in stable cells
- c) Is a hallmark of benign neoplasia
- d) Maybe caused by thrombosis
- e) Is a decrease in cell number

**91. Which of the following may cause Metaplasia**

- a) Decreased workload,
- b) Denervation,
- c) Diminished blood supply
- d) Inadequate nutrition,
- e) Chronic irritation of the epithelium

**92. Features of Healing by second intention**

- a) A larger clot or scab rich in fibrin and fibronectin forms at the surface of the wound.
- b) Inflammation is less intense
- c) A small amounts of granulation tissue are formed
- d) Scar formation
- e) Wound contraction.

**93. Features of Healing by first intention**

- a) Small clot formation
- b) Inflammation is more intense
- c) Much larger amounts of granulation tissue are formed.
- d) Scar formation
- e) Wound contraction.

**94. Which of the following factors affects wound healing**

- a) Presence of foreign bodies
- b) Steroids
- c) Poor tissue perfusion
- d) Nutrition
- e) Size of the wound

**95. Repair by connective tissue deposition consists of the following processes:**

- a) Angiogenesis
- b) Migration of macrophages
- c) Proliferation of fibroblasts
- d) Scar formation
- e) Remodeling

- 96.** Which of the following is a component of extracellular matrix
- a) Collagen
  - b) Proteoglycans
  - c) Elastin
  - d) Fibroblasts
  - e) Integrins
- 97.** Which of the following tissues have a large proportion of labile cells
- a) Brain tissue
  - b) Cervical epithelia
  - c) Myocardial tissues
  - d) Skin epithelia
  - e) Bone marrow
- 98.** Which of the following tissues have a large proportion of stable cells
- a) Brain tissue
  - b) Cervical epithelia
  - c) Myocardial tissues
  - d) Skin epithelia
  - e) Bone marrow
- 99.** Which of the following tissues have a large proportion of permanent cells
- a) Brain tissue
  - b) Cervical epithelia
  - c) Myocardial tissues
  - d) Skin epithelia
  - e) Bone marrow
- 100.** Which phase of the cell does DNA replication takes place
- a) S
  - b) G1
  - c) G2
  - d) G0
  - e) M