45 questions, allow 60 minutes

1. The human cell membrane:
   a) is a phospholipid trilayer
   b) has the fatty acid radicals on its outer edge
   c) is permeable to alcohol
   d) is permeable to glucose
   e) all of the above

2. The peripheral proteins of the cell membrane:
   a) act as ion channels
   b) act as enzymes
   c) act as cotransporters
   d) act as hormone receptor sites
   e) generate the negative charge of the cell membrane

3. The Golgi apparatus:
   a) is closely related to the endoplasmic reticulum
   b) form peroxisomes
   c) contain oxidases to form hydrogen peroxide
   d) contain a large number of ribosomes on their outer surface
   e) is contained within the ectoplasm

4. The nuclear membrane:
   a) allows molecules only of MW<1000 through its nuclear pores
   b) is continuous with the endoplasmic reticulum
   c) is lined with oxidative phosphorylation enzymes
   d) is impermeable to RNA
   e) consists of three distinct layers

5. ATP:
   a) is acetyl tetraphosphate
   b) supplies the energy for muscle contraction
   c) is largely formed in the endoplasmic reticulum
   d) contains no nitrogen
   e) stores energy in special sulphate bonds

6. Intracellular fluid:
   a) contains phosphate in similar concentrations to extracellular fluid
   b) has a lower PCO_2 than extracellular fluid
   c) has a potassium concentration of 110meq/L
   d) has a pH of 7.5
   e) contains more magnesium than extracellular fluid

7. Oedema can be caused by:
   a) raised capillary hydrostatic pressure
   b) reduced colloid osmotic pressure
   c) vitamin C deficiency

d) elevated Angiotensin II levels
e) all of the above

8. The process of blood coagulation involves:
a) prothrombin activator converting fibrinogen to fibrin
b) the removal of peptides from each fibrinogen molecule
c) the action of plasmin on fibrin
d) alpha $_2$ macroglobulin
e) the action of antithrombin III to promote clotting

9. T lymphocytes:
    a) are involved in humoral immunity
    b) are derived from the fetal liver and bone marrow
    c) release performed antibodies
    d) are the precursors of plasma cells
    e) form memory cells

10. With regard to blood types:
    a) group A is the most common
    b) anti A and anti B agglutinins increase into the sixth decade
    c) there are 6 possible ABO genotypes
    d) group AB persons have both anti A and anti B agglutinins
    e) group O positive is the universal recipients blood type

11. Apoptosis:
    a) is usually stimulated by hypoxia
    b) produces a moderate degree of inflammation
    c) features chromatin aggregates
    d) is the underlying process in caseous necrosis
    e) is stimulated by decreased cytosolic calcium

12. All of the following are endogenous antioxidants EXCEPT:
    a) glutathione
    b) transferin
    c) superoxide dismutase
    d) catalase
    e) ferrous sulphate

13. Irreversible cell injury is characterised by:
    a) dispersion of ribosomes
    b) cell swelling
    c) lysosomal rupture
    d) cell membrane defects
    e) nuclear chromatin clumping

14. Dystrophic calcification can be caused by:
    a) sarcoidosis
    b) multiple myeloma
    c) advanced renal failure
    d) advanced atherosclerosis
    e) all of the above

15. Metaplasia:
    a) is an increase in the number and size of cells in a tissue
    b) is the process that occurs in Barretts oesophagitis
    c) is typically an irreversible process
    d) in the respiratory tract preserves mucus secretion
    e) can be caused by vitamin B12 deficiency

16. The first vascular response to injury is:
    a) slowing of the circulation
    b) arteriolar vasoconstriction
    c) capillary engorgement

d) recruitment of vascular beds
e) venular dilation

17. The classic cardinal signs of acute inflammation include all the following EXCEPT:
a) tumor
b) calor
c) laesor
d) rubor
e) dolor

18. Leukocytes move into the tissues from the vasculature
a) by the actions of actin and myosin
b) in response to the Fc fragment of IgG
c) in response to C3b
d) largely in the arterioles
e) predominantly as monocytes in the first day post injury

19. Regarding chemical mediators of inflammation:
a) histamine is derived from plasma
b) serotonin is preformed in mast cells
c) nitric oxide is preformed in leukocytes
d) the kinin system is activated in platelets
e) C3B is within macrophages

20. Pain during an inflammatory process is mediated by:
a) nitric oxide
b) C3B
c) C5A
d) PAF
e) bradykinin

21. Macrophages are derived from:
a) monocytes
b) T lymphocytes
c) B lymphocytes
d) eosinophils
e) plasma cells

22. Granulomatous inflammation can be induced by:
a) syphilis
b) foreign body
c) cat-scratch disease
d) silicosis
e) all of the above

23. For an incised surgical wound strength would be 10% at:
a) 12 hours
b) 24 hours
c) 3 days
d) 1 week
e) 2 weeks

24. Heart failure will lead to increased levels of:

a) renin
b) aldosterone
c) ADH
d) atrial natriuretic factor
e) all of the above

25. Pulmonary embolism:
a) leads to pulmonary infarction in 15% of cases
b) requires 25% of the pulmonary circulation occluded to cause acute right heart failure
c) is generally symptomatic
d) is the cause of death in 40-45% of hospitalised patients
e) is most commonly due to hereditary hypercoagulable states

26. White infarcts occur in the:
a) small intestine
b) kidney
c) lung
d) sigmoid colon
e) oesophagus

27. Type II hypersensitivity reactions:
a) involve cell mediated immune responses
b) include serum sickness as an example
c) explain many transfusion reactions
d) involve IgE on mast cells
e) explain the tuberculin skin test

28. Which of the following can be considered autoimmune diseases:
a) rheumatoid arthritis
b) IDDM
c) myasthenia gravis
d) Hashimotos disease
e) all of the above

29. IgG is composed of:
a) a gamma globulin with four antigen binding sites
b) a gamma globulin of MW 900,000
c) two IgA molecules linked together
d) two heavy and two light chain types
e) two heavy chains and four light chain units

30. Passive immunity is achieved by administering:
a) live virus
b) attenuated virus
c) adsorbed toxin
d) activated T cells
e) all of the above

31. The majority of HIV/AIDS cases are reported from:
a) homosexual males
b) IV drug users
c) haemophiliacs
d) recipients of blood products

e) heterosexual contact

32. Following a needlestick from an HIV positive patient the risk of HIV seroconversion is:
    a) 1 in 5
    b) 1 in 10
    c) 1 in 50
    d) 1 in 250
    e) 1 in 1,000

33. The HIV virus:
    a) is a retrovirus
    b) primarily targets the CNS and haemopoietic systems
    c) binds to the CD4 molecule on T cells
    d) binds to the CD4 molecule on macrophages
    e) all of the above

34. The most common malignancy in patients with AIDS is:
    a) non Hodgkins lymphoma
    b) primary lymphoma of the brain
    c) Kaposis sarcoma
    d) histoplasmasis
    e) cervical carcinoma in women

35. With regard to tumours:
    a) dysplasia will always progress to cancer
    b) cystic teratomas are malignant
    c) squamous papillomas are benign
    d) the presence of mitoses indicates neoplasia
    e) hypochromasia is characteristic of anaplasia

36. Metastasis:
    a) unequivocally proves malignancy
    b) is proven by lymph node enlargement adjacent to a tumour
    c) of breast cancer is usually to supraclavicular nodes
    d) is the commonest presentation of melanoma
    e) all of the above

37. The most common cause of cancer death in women is:
    a) colorectal cancer
    b) lung cancer
    c) pancreatic cancer
    d) breast cancer
    e) lymphoproliferative tumours

38. The following viruses are considered to be oncogenic:
    a) hepatitis B
    b) hepatitis C
    c) Epstein Barr virus
    d) human papilloma virus
    e) all of the above

39. Bacterial endotoxin :
    a) is exemplified by streptokinase
    b) is the cause of the severe form of diphtheria
    c) is the cause of gas gangrene
    d) is from the outer cell wall of gram positive bacteria
    e) induces production of TNF

40. Exposure to benzene causes:
    a) mesothelioma
    b) bladder carcinoma
    c) stomach carcinoma
    d) liver angiosarcoma
    e) leukaemia

41. Endocarditis in IV drug users typically:
    a) involves the mitral valve
    b) is caused by candida albicans
    c) does not cause fever
    d) has a better prognosis than other causes of endocarditis
    e) is caused by staph aureus

42. All of the following are major risk factors for atherosclerosis EXCEPT:
    a) obesity
    b) hyperlipidaemia
    c) smoking
    d) hypertension
    e) diabetes

43. Regarding acute myocardial infarction all of the following are true EXCEPT:
    a) irreversible cell injury occurs after 3-4 hours
    b) hormone replacement therapy is protective against AMI

c) isolated right ventricular infarction is uncommon
d) the macroscopic changes of AMI are visible at 18 hours post AMI
e) coagulative necrosis will be observed at 6 hours post infarction

44. Regarding pancreatitis:
a) the second commonest cause is infectious agents
b) trypsin is implicated as an activator of the kinin system
c) elastase is the only pancreatic enzyme that acts to limit pancreatitis
d) the chronic form is usually due to gallstones
e) duct obstruction is not the mechanism of injury in alcoholic pancreatitis

45. Metabolic alkalosis can be caused by:
a) administering sodium gluconate
b) severe diarrhoea
c) uraemia
d) excess aldosterone
e) administering ammonium chloride

ANSWERS AND REFERENCES

1.	C	Guyton 8th	11
2.	B	Guyton 8th	11-12
3.	A	Guyton 8th	12-13
4.	B	Guyton 8th	15-16
5.	B	Guyton 8th	19-21
6.	E	Guyton 8th	39
7.	E	Guyton 8th	281-282
8.	B	Guyton 8th	391-396
9.	E	Guyton 8th	375-380
10.	C	Guyton 8th	385-387
11.	C	Robbins 5th	17-20
12.	E	Robbins 5th	11-13
13.	D	Robbins 5th	7
14.	E	Robbins 5th	30-31
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17.	C	Robbins 5th	52
18.	A	Robbins 5th	59-62
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20.	E	Robbins 5th	74
21.	A	Robbins 5th	77-78
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25.	A	Robbins 5th	111
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27.	C	Robbins 5th	182-183
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29.	D	Guyton 8th	377-378
30.	D	Guyton 8th	382
31.	E	Robbins 5th	219
32.	D	Robbins 5th	221
33.	E	Robbins 5th	221 - 222
34.	C	Robbins 5th	229
35.	C	Robbins 5th	243 - 247
36.	A	Robbins 5th	250 - 251
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38.	E	Robbins 5th	288 - 290
39.	E	Robbins 5th	318
40.	E	Robbins 5th	393
41.	E	Robbins 5th	395, 551-554
42.	A	Robbins 5th	474
43.	A	Robbins 5th	528-533
44.	B	Robbins 5th	899-903
45.	D	Guyton 8th	340-342