Miniboard Exam 2011 General Pathology

1. Pre-miRNA is processed to miRNA by which enzyme:
A. RNA protease
B. Dicer
C. DNA protease
D. mRNA ligase
E. Donner

2. An error in mitosis or meiosis that results in a cell with a chromosome number which is not an exact multiple of the haploid number is called:
A. Euploidy
B. Polyploidy
C. Diploidy
D. Aneuploidy
E. Megaploidy

3. The complement component binds to what portion of the B-cell receptor complex to generate Signal 2 which promotes B cell activation?
A. CD 21
B. IgM
C. CD 28
D. CD 4
E. CD 3

4. Which cytokines induce the proliferation of Thelper17 (TH17) cells?
1. IFN-γ
2. IL-4
3. TGF-β
4. IL-6
5. IL-12

A. 1 and 4
B. 1 and 3
C. 3 and 4
D. 2 and 3
E. 1 and 5

5. Phosphorylation of RB protein is mediated by which complex?
A. Cyclin B-CDK1
B. Cyclin A-CDK1
C. Cyclin A-CDK2
D. Cyclin E-CDK1
E. Cyclin D-CDK6

6. All are ligands for toll-like receptor 2 (TLR2) EXCEPT:
A. Zymosan
B. Peptidoglycan
C. Lipoarabinomannon
D. Double-stranded RNA
E. Phosphatidylinositol dimannoside

7. T lymphocyte anergy can be mediated by blocking IL-2 production when B7 is bound by which molecule?

A. CTLA-4
B. CD28
C. CD3
D. CCL2
E. SHPS-1

8. Which inflammatory cell is considered part of the first line of defense against cancer cells?
A. Dendritic cells
B. CD8 T lymphocytes
C. CD4 T lymphocytes
D. Natural Killer (NK) cells
E. B lymphocytes

9. Glanzmann's thrombasthenia is caused by mutation of a Ca^{+2} - binding domain of:
A. GPIb
B. GPIa
C. GPIIb
D. GPIIa
E. GPIIIb

10. All are true for platlet activating factor (PAF) EXCEPT:
A. Produced by mast cells
B. Inhibited by PAF acetylhydrolase
C. Is a product of cycylooxygenase enzymes
D. Lysophosphatdylcholine is an intermediate form
E. Is derived from cytoplasmic phospholipase A2 activity

11. All are free radical scavengers EXCEPT:
A. Superoxide dismutase
B. Ceruloplasmin
C. Vitamin C
D. Catalase
E. Iron

12. Which increases in sepsis?
A. Plasminogen-activator inhibitor 1
B. Tissue factor-pathway inhibitor
C. Antithrombin III
D. Protein C
E. Protein S

13. All of the following help induce endothelial proliferation except:
A. Hypoxia
B. TGF-β
C. PDGF
D. Endostatin
E. TGF- α

14. Which of the following point within the cell cycle is responsible for monitoring the integrity of DNA prior to replication:
A. G0 phase
B. G1/S checkpoint

C. G2
D. G2/M checkpoint
E. M phase

15. Which of the following is the correct sequence for the leukocyte adhesion cascade:
A. Tethering > Margination > Rolling > Slow rolling > Activation by chemokines > Firm adhesion > migration through endothelium
B. Tethering > Margination > Rolling > Slow rolling > Firm adhesion > Activation by chemokines > migration through endothelium
C. Margination > Tethering > Rolling > Slow rolling > Activation by chemokines > Firm adhesion > migration through endothelium
D. Margination > Tethering > Rolling > Activation by chemokines > Slow rolling > Firm adhesion > migration through endothelium
E. Margination > Tethering > Activation by chemokines > Rolling > Slow rolling > Firm adhesion > migration through endothelium

16. Basophils lack which of the following:
A. Heparin
B. Histamine
C. LTC4
D. LTD4
E. LTE4

17. All of the following are true concerning Delta-like ligand 4, EXCEPT:
A. It is expressed in arteries
B. It is expressed in capillaries
C. It is expressed in veins
D. It interacts with NOTCH
E. Blockade of Delta-like ligand 4 results in increased vessel sprouting

18. Superantigens are:
A. Monoclonal T-lymphocyte activators
B. Polyclonal T-lymphocyte activators
C. Monoclonal B-lymphocyte activators
D. Polyclonal B-lymphocyte activators
E. Monoclonal T- and B-lymphocyte activatiors

19. The alternative pathway within the complement cascade is activated by:
A. IgG
B. IgM
C. IgE
D. Mannose-binding lectin
E. LPS

20. Gradual cooling of the cadaver is referred to as:
A. Livor mortis
B. Algor mortis
C. Rigor mortis
D. Softening
E. Anthropogenic cooling

21. All of the following are cytomorphologic changes characteristic of irreversible cell injury except:
A. Plasma membrane damage
B. Calcium entry into the cell
C. Detachment of ribosomes
D. Mitochondrial swelling and vacuolization
E. Large amorphous densities in the mitochondria
F. Lysosomal swelling

22. All of the following are major cytosolic antioxidants except:
A. Catalase
B. Superoxide dismutase (SOD)
C. Vitamin C
D. Glutathione peroxidase
E. Ceruloplasmin

23. Which of the following is NOT a procoagulant mediator in hemostasis?
A. Thromboxane A2
B. Tissue Factor Pathway Inhibitor
C. Adenosine Diphosphate (ADP)
D. von Willebrand's factor
E. Plasminogen activator inhibitor-1 (PAI-1)

24. Antithrombin III degrades all of the following activated coagulation factors except:
A. Factor X
B. Factor XII
C. Factor II
D. Factor VII
E. Factor III

25. Which of the following is an initiator caspase?
A. Caspase 6
B. Caspase 9
C. Caspase 1
D. Caspase 7
E. Caspase 3

26. All of the following are proapoptotic except:
A. Cytochrome c
B. Tumor Necrosis Factor (TNF)
C. Mcl-1
D. Bax
E. Bak

27. Which of the following cytokines does NOT contribute significantly to acute inflammation?
A. Tumor Necrosis Factor (TNF)
B. IL-1
C. IL-17
D. IL-6
E. C5a

28. Which of the following is classified as a CX3C chemokine?

A. Lymphotactin
B. Fractalkine
C. Eotaxin
D. RANTES
E. Monocyte chemoattractant protein (MCP-1)

29. Which of the following tissues does not have fenestrated capillaries?
A. Liver
B. Intestinal villi
C. Choroid plexus
D. Ciliary body
E. Glomeruli

30. Which of the following is able to pass freely through endothelial pores?
A. Complement molecules
B. Albumin
C. Amino acids
D. Kinin molecules
E. Coagulation proteins

31. Which of the following is not an increased hydrostatic pressure mechanism of edema?
A. Portal hypertension
B. Lymphatic obstruction
C. Left sided heart failure
D. Visceral torsion
E. Iatrogenic fluid overload

32. Which of the following coagulation factors is not part of the interdependent contact group?
A. Factor IX
B. Factor XI
C. Factor XII
D. Prekallikrein
E. HMWK

33. Platelet binding to which of the following forms the strongest bond?
A. Collagen
B. GpIb/VWF
C. Fibronectin
D. Glycoprotein
E. Proteoglycan

34. As tumors progress to malignancy, macrophages facilitate tumor progression by which of the following:
A. Stimulate angiogenesis
B. Enhance tumor cell migration, invasion, and intravasation
C. Suppress antitumor immunity
D. Potentiate seeding and establishment of metastatic cells
E. All of the above

35. Cytokines produced by tumor-infiltrating immune cells predominately activate which of the following key transcriptions factors:
A. c-Myc

B. Bcl-6
C. STAT3
D. STAT5
E. l-Myc

36. All of the following are considered classes of the Pattern Recognition Receptors(PRR) family EXCEPT:
A. Toll-like receptors (TLR)
B. C-type lectin receptors (CLR)
C. Retinoic acid-inducible gene like receptors (RLRS)
D. F-type lectin receptors (FLR)
E. NOD-like repectors (NLRs)

37. Pyroptosis is mediated by which of the following caspases:
A. Caspase 6
B. Caspase 9
C. Caspase 3
D. Caspase 1
E. Caspase 11

38. The inflammasome's primary role involves cytokine processing and regulation of inflammation via cleavage and activation of which of the following:
A. IL-3 and IL-15
B. IL-1C and IL-22
C. IL-1B and IL-18
D. IL-3 and IL- 6
E. IL-4 and IL-10

39. Loss of function in which of the following is necessary for epithelial-to-mesenchymal transition:
A. Epidermal growth factor receptor
B. Insulin-like growth factor
C. SRC kinases
D. E-Cadherin
E. Vascular endothelial growth factor

40. All TLR family members use the MYD88 EXCEPT:
A. TLR5
B. TLR3
C. TLR9
D. TLR7
E. TLR4

41. Which of the following is a recently described type of cell death that is considered non-apoptotic and has been reported to occur in neurodegenerative diseases and is characterized by extensive cytoplasmic vacuolization and progressive swelling of mitochondria and ER?
A. Entosis
B. Anoikis
C. Pyroptosis
D. Paraptosis
E. Autophagy

42. In the biogenesis of miRNA which of the following is the correct general sequence of events:
A. Transcription>Exportin 5>pre-miRNA>Drosha>Dicer>miRNPs with AGO>repress protein synthesis

B. Transcription>pre-miRNA>Drosha>Exportin5>Dicer>miRNPs with AGO>repress protein synthesis
C. Transcription>pre-miRNA>Exportin 5>Drosha>Dicer>miRNPs with AGO >repress protein synthesis
D. Transciption>Drosha>pre-miRNA>Dicer>Exportin 5>miRNPs with AGO>stimulate protein synthesis
E. Transcription>Dicer>pre-miRNA>Drosha>Exportin5>miRNPs with AGO>stimulate protein synthesis

43. Which of the following illustrations of stepwise tumor development is correct:
A. Initiation (Irreversible), Promotion (Reversible), Progression
B. Initiaion (Reversible), Promotion (Revesible), Progression
C. Promotion (Reversible), Progression, Initiation (Irreversible)
D. Initiation (Irreversible), Progression, Promotion (Irreversible)
E. Initiation (Irreversible), Progression, Promotion (Reversible)

44. All of the following are types of genetic alteration in cancer cells EXCEPT:
A. Translocation
B. Mutation
C. Deletion
D. DNA Methylation
E. Amplification

45. All of the following are components of innate immunity EXCEPT:
A. Lymphocytes
B. Neutrophils
C. Macrophages
D. Dendritic cells
E. Natural killer cells

46. All of the following are surface molecules present on naïve B lymphocytes EXCEPT:
A. IgM
B. IgD
C. CD21
D. CD40
E. CD28

47. All of the following statements are true regarding natural killer cells EXCEPT:
A. They are active in antibody dependent cell-mediated cytotoxicity (ADCC)
B. Natural killer cells require exposure to antigen via MHC II molecules
C. CD 16 and CD 56 are two of the cell surface molecules
D. They are also know as large granular lymphocytes because of their abundant azurophilic granules
E. Natural killer cells are important in defense against tumor cells

48. Which caspase is activated by the Fas-associated death domain?
A. Caspase 3
B. Caspase 6
C. Caspase 8
D. Caspase 9
E. Caspase 10

49. Which of the following is an executioner Caspase?
A. Caspase 8
B. Caspase 9
C. Caspase 10
D. Caspase 3
E. C and D

50. Which of the following is a mechanism for hepatic lipidosis:
A. Decreased β-oxidation of fatty acids
B. Impaired apoprotein synthesis
C. Excessive free fatty acid delivery
D. Impaired lipoprotein release
E. All of the above