LECTURE 1

1. Mucocutaneous hemorrhage is typical of:
   a. Acquired hemorrhagic disorder
   b. Localized hemorrhagic disorder
   c. Defects in primary hemostasis
   d. Defects in fibrinolysis
2. Which of the following assays is used to distinguish vitamin k deficiency from the liver disease?
   a. PT
   b. Protein C assay
   c. Factor V assay
   d. Factor VII assay
3. What is the typical treatment for vitamin k deficiency when the patient is bleeding?
   a. Vitamin k and PCC
   b. Vitamin K and plasma
   c. Vitamin K and platelet concentrate
   d. Vitamin K and Factor XIII concentrate
4. What is the most important application of the quantitative D-dimer test?
   a. Diagnose primary fibrinolysis
   b. Diagnose liver and renal disease
   c. Rule out deep venous thrombosis
   d. Diagnose acute myocardial infarction
5. What therapeutic agent may occasionally cause DIC?
   a. Factor VIII
   b. Factor VIIa
   c. Antithrombin concentrate
   d. Activated prothrombin complex concentrate
6. What is thrombophilia?
   a. Predisposition to thrombosis secondary to a congenital or acquired disorder
   b. Inappropriate triggering of the plasma coagulation system
   c. A condition in which clots form uncontrollably
   d. Inadequate fibrinolysis
7. What is the most common heritable thrombosis risk factor in Caucasians?
   a. APC resistance (factor V leiden mutation)
   b. Prothrombin G20210A mutation
   c. Antithrombin deficiency
   d. Protein S deficiency
8. Which of the following conditions causes a prolonged thrombin time?
   a. Antithrombin deficiency
   b. Prothrombin deficiency
   c. Hypofibrinogenemia
   d. Warfarin therapy
9. How does lipoprotein (a) cause thrombosis?
   a. It causes elevated factor VIII levels
   b. It coats the endothelial lining of arteries
   c. It substitutes for plasminogen or TPA in the forming clot
   d. It contribute additional phospholipid in vivo for formation of the Xase complex
10. What acquired thrombosis risk factor is assessed in the hemostasis laboratory?
    a. Smoking
    b. Immobilization
    c. Body mass index
    d. Lupus anticoagulant
11. What is not a fibrinolysis control protein?
    a. Thrombin-activatable fibrinolysis inhibitor
    b. Plasminogen activator inhibitor-1
    c. A2-antiplasmin
    d. D-dimer
12. If a patient has anatomic soft tissue bleeding and poor wound healing, but the PT, PTT, thrombin time, platelet count, and platelet functional assay results are normal, what factor deficiency is indicated?
    a. Fibrinogen
    b. Prothrombin
    c. Factor XII
    d. Factor XIII
13. In most LA profiles, what screening test is primary because it detects LA with the fewest interferences?
    a. Low-phospholipid PTT
    b. DRVVT
    c. KCT
    d. PT
14. What factor deficiency has the speediest effect on the prothrombin time?
    a. Prothrombin deficiency
    b. Factor VII deficiency
    c. Factor VIII deficiency
    d. Factor IX deficiency
15. What therapy may be used for a hemophilic boy who is bleeding and who has a high titer of factor VII inhibitor?
    a. rFVIIa
    b. Plasma
    c. Cryoprecipitate
    d. Factor VIII concentrate
16. A patient with venous thrombosis is tested for protein S deficiency. The protein S activity, antigen, and free antigen all are less than 65%, and the C4bBP level is normal. What type of deficiency is likely?
    a. Type I

b. Type II
c. Type III
d. No deficiency is indicated, because the reference range includes 65%.

17. In what subtype of VWD is the RIPA test result positive when ristocetin is used at a concentration of less than 0.5 mg/mL?
a. Subtype 2A
b. Subtype 2B
c. Subtype 2N
d. Type 3
18. An elevated level of what fibrinolytic system assay is associated with arterial thrombotic risk?
a. PAI-1
b. TPA
c. Factor VIIa
d. Factor XII
19. What is the most prevalent form of VWD?
a. Type 1
b. Type 2A
c. Type 2B
d. Type 3
20. What is the most common acquired bleeding disorder?
a. Vitamin k deficiency
b. Liver disease
c. ACOTS
d. VWD

LECTURE 2

1. An immunologic platelet disorder common in children after a viral disease
a. Acute ITP
b. Chronic ITP
c. Neonatal isoimmune thrombocytopenia
d. Secondary autoimmune thrombocytopenia
2. Characterized by severe neonatal thrombocytopenia and congenital absence or extreme hypoplasia
a. Fanconi anemia
b. May-hegglin anomaly
c. Tar syndrome
d. Wiskott-aldrich syndrome
3. Thrombocytopenia is related to abnormal cells crowding out or replacing normal marrow elements.
a. Generalized bone marrow suppression
b. Selective suppression of megakaryocytes
c. Myelophthisic process
d. Ineffective thrombopoiesis
4. Activates coagulation system leading to intravascular thrombin generation:
a. ITP
b. TTP
c. HUS
d. DIC
5. Thrombi present in DIC is composed of
a. Platelet and fibrinogen
b. Platelet and vWF
c. Platelet and all coagulation factors
d. Platelet only
6. Thrombocytopenia caused by mutation of GATAA 1 gene
a. Fanconi anemia
b. May-hegglin anomaly
c. Tar syndrome
d. Wiskott-aldrich syndrome
7. Mutation of RBM8A gene cause
a. Fanconi anemia
b. May-hegglin anomaly
c. Tar syndrome
d. Wiskott-aldrich syndrome
8. Develops when a mother lacks platelet specific antigen
a. Neonatal alloimmune thrombocytopenia
b. Neaonatal autoimmune thrombocytopenia
c. Thrombotic thrombocytopenic purpura
d. Incident thrombocytopenia of pregnancy
9. Characterized by a triad of microangiopathic anemia, thrombocytopenia and neurologic disorder:
a. ITP
b. TTP
c. HUS
d. DIC
10. Small pinpoint hemorrhages about 1mm in diameter
a. Pupura
b. Ecchymoses
c. Petechiae
d. Bruising
11. Abnormal distribution of platelets can be caused by splenic sequestration.
a. True
b. False
12. Thrombopoietin stimulates megakaryocytes maturation and platelet production
a. True
b. False

13. Platelet in PNH possess a membrane defect that results in abnormal sensitivity to complement and various antibodies.
    a. True
    b. False
14. Chronic ITP may be treated with splenectomy to remove a major site of platelet storage.
    a. True
    b. False
15. This condition is characterized by failure to achieve adequate increments in the circulating platelet after transfusion.
    a. Post transfusion purpura
    b. Neonatal isoimmune thrombocytopenia
    c. Patients refractory to platelet transfusion
    d. Primary autoimmune thrombocytopenia
16. Vomiting and diarrhea are the most common symptoms preceding the anemia and renal failure characteristics of TTP.
    a. True
    b. False
17. An increased platelet count is a common feature of rapid blood regeneration.
    a. True
    b. False
18. Spontaneous bleeding is common when platelet count is less than $60x10^9$/L.
    a. True
    b. False
19. CNS is the most serious site for spontaneous bleeding.
    a. True
    b. False
20. Reactive thrombocytosis is characteristic of the myeloproliferative disorder.
    a. True
    b. False

LABORATORY

1. Which ratio of anticoagulant to blood is correct for coagulation procedure?
    a. 1:4
    b. 1:5
    c. 1:9
    d. 1:10
2. What reagents are used in the PT test?
    a. Thromboplastin and sodium chloride
    b. Thromboplastin and potassium chloride
    c. Thromboplastin and calcium
    d. Actin and calcium chloride
3. Which test would be abnormal in a patient with stuart-prower factor deficiency?
    a. PT
    b. aPTT
    c. PT and aPTT
    d. Thrombin time
4. Which clotting factor is not measured by PT and APTT tests?
    a. Factor VIII
    b. Factor IX
    c. Factor V
    d. Factor XIII
5. Which coagulation test would be abnormal in a vitamin K-deficient patient?
    a. PT
    b. PT and aPTT
    c. Fibrinogen level
    d. Thrombin time
6. Which of the following is correct regarding the international normalized ratio (INR)?
    a. It uses international sensitivity ratio (ISR)
    b. Standardizes PT results
    c. Standardizes the APTT results
    d. Used to monitor heparin therapy
7. In the APTT procedure the time taken for clot formation is measured after addition of.
    a. Tissue thromboplastin
    b. Calcium chloride
    c. Phospholipid
    d. Activator
8. Which results are associated with hemophilia A?
    a. Prolonged APTT, normal PT
    b. Prolonged PT and APTT
    c. Prolonged PT, normal APTT
    d. Normal PT and APTT
9. Normal PT and APTT results in a patient with poor wound healing may be associated with:
    a. Factor VII deficiency
    b. Factor VIII deficiency
    c. Factor XII deficiency
    d. Factor XIII deficiency
10. What test is used to monitor heparin therapy
    a. INR
    b. aPTT
    c. PT
    d. All are correct
11. The lupus anticoagulant is directed against:
    a. Factor VIII

b. Factor IX
c. Factor X
d. Phospholipid

12. What test is commonly used to monitor warfarin therapy?
a. INR
b. aPTT
c. thrombin time
d. BT

13. The prothrombin time will detect deficiencies in which pathways?
a. Extrinsic
b. Extrinsic and common
c. Intrinsic
d. Intrinsic and common

14. Which of the following is vitamin K dependent?
a. Factor XII
b. Fibrinogen
c. Antithrombin III
d. Factor VII

15. Coagulation factors affected by coumarin drugs are:
a. VIII, IX AND X
b. I, II, AND VII
c. II, VII, IX AND X
d. II, V, AND VII

16. The international normalized ratio (INR) is useful are:
a. Determining coagulation reference ranges
b. Monitoring heparin therapy
c. Monitoring thrombolytic therapy
d. Monitoring warfarin therapy

17. A patient has a history of mild hemorrhagic episodes. Laboratory results include a prolonged prothrombin time and activated partial thromboplastin time. The abnormal prothrombin time was corrected by normal and adsorbed plasma, but not aged serum. Which of the following coagulation factors deficient?
a. Prothrombin
b. Factor V
c. Factor X
d. Factor VII

18. aPTT measures all factors except for:
a. I and V
b. VII and IX
c. V and VIII
d. VII and XIII

19. The most concentrated coagulation factor in the blood is:
a. XII
b. IX
c. X
d. Fibrinogen

20. The aPTT will detect deficiencies in which pathways?
a. Extrinsic
b. Extrinsic and common
c. Intrinsic
d. Intrinsic and common

QUIZ 1

1. Number of platelet stages
a. 6
b. 7
c. 8
d. 5

2. Stage in the megakaryocytic series where thrombocytes are visible.
a. Megakaryocyte
b. Megakaryoblast
c. Metamegakaryocyte
d. Promegakaryocyte

3. A. In adhesion glycoprotein 1b binds to exposed collagen
B. In adhesion it require von Willebrand factor

a. All statements are true
b. All statements are false
c. 1st statement is false, 2nd statement is true
d. 1st statement is true, 2nd statement is false

4. A. aggregation are stimulated by ADP to undergo shape change.
B. The platelet changes its shape from a sphere to disc shape

a. both are true
b. both are false
c. 1st statement is false, 2nd statement is true
d. 1st statement is true, 2nd statement is false

5. Participate in the initial phase of intrinsic system and It is not consumed during clotting.
   a. Prothrombin proteins
   b. AOTA
   c. Contact proteins
   d. Fibrinogen proteins

6. Role of blood vessels and platelets in the formation of platelet plug.
   a. Primary hemostasis
   b. Fibrinolysis
   c. Secondary hemostasis
   d. Tertiary hemostasis

7. Activated either by injuries to blood vessels or desquamation of damaged cells
   a. Primary hemostasis
   b. Fibrinolysis
   c. Secondary hemostasis
   d. Tertiary hemostasis

8. Secondary hemostasis
   a. Rapid and short-lived response
   b. Delayed and long term response
   c. Delayed and short-lived response
   d. Rapid and long term response

9. Activated by large injuries to blood vessels and surrounding tissues.
   a. Primary hemostasis
   b. Fibrinolysis
   c. Secondary hemostasis
   d. Tertiary hemostasis

10. Final event of hemostasis wherein there is a slow digestion and removal of the fibrin clot as healing occurs.
    a. Primary hemostasis
    b. Fibrinolysis
    c. Secondary hemostasis
    d. Tertiary hemostasis

11. All are true about tunica intima, except:
    a. Has anti-thrombotic property
    b. AOTA
    c. NOTA
    d. Innermost layer

12. Occurs when plasminogen is converted to plasmin
    a. Primary hemostasis
    b. Fibrinolysis
    c. Secondary hemostasis
    d. Tertiary hemostasis

13. Primary group affected by coumarin.
    a. AOTA
    b. Fibrinogen group
    c. Contact group
    d. Prothrombin group

14. Only group that acts as substrates for the fibrinolytic enzyme plasmin
    a. Contact group
    b. Fibrinogen group
    c. Prothrombin group
    d. Clotting group

15. Also known as prethrombin
    a. VII
    b. IV
    c. V
    d. II

16. Stable factor
    a. Proconvertin
    b. Antihemophilic factor
    c. Tissue factor
    d. HMWK

17. Activated in vivo by contact of coagulation protein with subendothelial tissue
    a. Primary hemostasis
    b. Secondary hemostasis
    c. Intrinsic pathway
    d. Extrinsic pathway

QUIZ 2- Laboratory

1. What phase in hemostasis involves the vascular and platelet response to a vessel damage?
   a. Both
   b. Secondary hemostasis

c. Primary hemostasis
d. Neither

2. The pathway that collagen exposure initiates
   a. Neither
   b. Intrinsic coagulation pathway
   c. Extrinsic coagulation pathway
   d. Both

3. Platelets vital role included the following, except:
   a. No exception
   b. Adhesion to the injured vessel
   c. Promote coagulation on their surface
   d. Release reaction

4. During aggregation, platlets release their granular contents which include the following clotting factors, except:
   a. No exception
   b. Factor VIII
   c. Fibrinogen
   d. Factor XI

5. Coagulation happens when there is an interaction of plasma protein with what factor?
   a. Tissue factor
   b. Neither
   c. Both
   d. Calcium

6. What factor is stuart factor?
   a. Factor III
   b. Factor XIII
   c. Factor X
   d. Factor IX

7. It is also called as labile factor
   a. Proconvertin
   b. Proaccelerin
   c. Hageman factor
   d. Prekallikrein

8. These factor are included in intrinsic pathways, except:
   a. IX
   b. XI
   c. HMWK
   d. VII

9. The what factor is found in common pathways?
   a. II
   b. XII
   c. XI
   d. IX

10. The process that dissolves blood clots
    a. Fibrinolysis
    b. Coagulation
    c. Primary hemostasis
    d. Secondary hemostasis

11. Glass surfaces activate these factors, except:
    a. Factor XI
    b. Factor XII
    c. Prekallekrein
    d. Factor II

12. Hemolysis is usually caused by these technical problems, except:
    a. Frothing of blood sample due to entry of air
    b. Prolonged application causing excessive statis
    c. Use of needles with too large bore
    d. Expelling blood from the syringe through the needle

13. Venous occlusion or stasis results when the tourniquet is applied to tightly or too long.
    a. True
    b. False

14. What needle gauge is most commonly used in collecting blood for coagulation test?
    a. 19
    b. 20
    c. 21
    d. 18

15. What needle gauge is preferred for pediatric patients?
    a. 18
    b. 21
    c. 20

d. 19

16. An anticoagulant that is used in silicone-coated tubes when citrated plasma is needed.
    a. EDTA
    b. Trisodium citrate
    c. Heparin
    d. Fluoride oxalate

17. What factor are preserved by citrated plasma?
    a. Factor V and IX
    b. Factor X and XII
    c. Factor X and XI
    d. Factor V and VIII

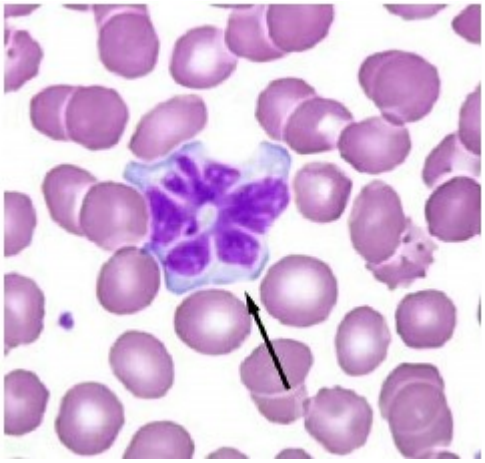
18. Standard ration for citrate
    a. 10:1
    b. 9:1
    c. 11:1
    d. 8:1

19. Anticoagulant of choice for platelet retention test
    a. Citrate
    b. Heparin
    c. EDTA
    d. Fluoride oxale

20. Samples for coagulation test can be frozen if testing can be performed within 2 hours after collection.
    a. False
    b. true
21. What phase in hemostasis involves the vascular and platelet response to a vessel damage?
    e. Both
    f. Secondary hemostasis
    g. Primary hemostasis
    h. Neither
22. The pathway that collagen exposure initiates
    e. Neither
    f. Intrinsic coagulation pathway
    g. Extrinsic coagulation pathway
    h. Both
23. Platelets vital role included the following, except:
    e. No exception
    f. Adhesion to the injured vessel
    g. Promote coagulation on their surface
    h. Release reaction
24. During aggregation, platlets release their granular contents which include the following clotting factors, except:
    e. No exception
    f. Factor VIII
    g. Fibrinogen
    h. Factor XI
25. Coagulation happens when there is an interaction of plasma protein with what factor?
    e. Tissue factor
    f. Neither
    g. Booth
    h. Calcium
26. What factor is stuart factor?
    e. Factor III
    f. Factor XIII
    g. Factor X
    h. Factor IX
27. It is also called as labile factor
    e. Proconvertin
    f. Proaccelerin
    g. Hageman factor
    h. Prekallikrein
28. These factor are included in intrinsic pathways, except:
    e. IX
    f. XI
    g. HMWK
    h. VII
29. The what factor is found in common pathways?
    e. II
    f. XII
    g. XI
    h. IX
30. The process that dissolves blood clots
    e. Fibrinolysis
    f. Coagulation
    g. Primary hemostasis
    h. Secondary hemostasis
31. Glass surfaces activate these factors, except:
    e. Factor XI
    f. Factor XII
    g. Prekallekrein
    h. Factor II

32. Hemolysis is usually caused by these technical problems, except:
    e. Frothing of blood sample due to entry of air
    f. Prolonged application causing excessive statis
    g. Use of needles with too large bore
    h. Expelling blood from the syringe through the needle
33. Venous occlusion or stasis results when the tourniquet is applied to tightly or too long.
    c. True
    d. False
34. What needle gauge is most commonly used in collecting blood for coagulation test?
    e. 19
    f. 20
    g. 21
    h. 18
35. What needle gauge is preferred for pediatric patients?
    e. 18
    f. 21
    g. 20
    h. 19
36. An anticoagulant that is used in silicone-coated tubes when citrated plasma is needed.
    e. EDTA
    f. Trisodium citrate
    g. Heparin
    h. Fluoride oxalate
37. What factor are preserved by citrated plasma?
    e. Factor V and IX
    f. Factor X and XII
    g. Factor X and XI
    h. Factor V and VIII
38. Standard ration for citrate
    e. 10:1
    f. 9:1
    g. 11:1
    h. 8:1
39. Anticoagulant of choice for platelet retention test
    e. Citrate
    f. Heparin
    g. EDTA
    h. Fluoride oxale
40. Samples for coagulation test can be frozen if testing can be performed within 2 hours after collection.
    c. False
    d. true
1. Relative Changes in lymphocytes include cell enlargement increased basophilic cytoplasm and morphologic heterogeneity.
    a. True
    b. False
2. Associated with the mutation of nonmuscle myosin heavy-chain II-A
    a. Pelger-huel anomaly
    b. May hegglin anomaly
    c. Chediak higashi anomaly
    d. Alder-reilly anolmaly

3. Associated with the mutation in STAT 3 gene:
    a. Alder-reilly anolmaly
    b. Job's syndrome
    c. Double-amato bodies
    d. Auer rods
4. _____ is seen in patient's with acute promyelocytic leukemia
    a. Auer rods
    b. Faggol cell
    c. Smudge cell
    d. Hairy cell
5. The morphological characteristics associated with chedial-higashi syndrome is:
    a. Pale blue cytoplasmic inclusion
    b. Small, dark staining granules
    c. Nuclear hyposergmentation
    d. Giant lysosomal granules
6. Globules may become tight;y packed as to give honeycomb appearance:
    a. Tart cell
    b. Mott cell
    c. Russel bodies
    d. sezary
7. Associated wiith the mutation in the lamin-beta receptor
    a. Pelger-huel anomaly
    b. May hegglin anomaly
    c. Chediak higashi
    d. Dohle bodies

8. 
    a. Flame cell
    b. Sezary cell
    c. Hairy cell
    d. Morula cell
9. Associated with an incomplete degradation of mocupolysaccharides:
    a. Auer rods
    b. Alder-reilly anomaly
    c. LE cell
    d. Tart cell
10. Abnormal lymphocytes characterized by a large mass f chromatin, Ballerina skirt appearance:
    a. Type I classification
    b. Type II classification
    c. Type III classification
    d. All of the choices
11. Monocyte with ingested lymphocytes, appears rough and unevenly stained:
    a. LE cell
    b. Sezary cell
    c. Tart cell
    d. Hairy cell
12. Cell found in chronic lymphocytic leukemia
    a. Smudge cell
    b. Sezary cell
    c. Tart cell
    d. Hairy cell
13. Lipid storage disease associated with a deficiency in beta glucoccerebrosidase
    a. Gaucher's disease
    b. Niemann-pick
    c. Tay-sacs
    d. Sandhoff
14. Characterized by the accumulation of sphingomyelin with foamy cytoplasm in appearance:
    a. Gaucher's disease
    b. Niemman-pick disease
    c. Tay-sac's
    d. sandhoff
15. Anomaly with aggressive of free ribosomes of rough endoplasmic reticulum
    a. Alder-reilly
    b. Toxic granulation
    c. May-hegglin
    d. Dohle bodies
16. Hypersegmented neutrophils can be also be seen in the myelodysplastic syndromes and represent a form of myeloid dysplasia
    a. True
    b. False
17. Eosinopenia is defined as an absolute eosinophil count of less than 0.15 x 10^9 /L
    a. True
    b. False
18. Viral infection like EBV can cause monocytosis
    a. True
    b. False
19. The reference range for relative lymphocytes is approximately 20% to 40%
    a. True
    b. False
20. Lupus erythematosus can cause neutrophilia
    a. True
    b. False
21. Relative changes in lymphocytes include cell enlargement, increased basophilic cytoplasm and morphologic heterogeneity.
    a. True
    b. False
22. Lipid storage disease are a group of disorders, each of which is associated with a mutation of genes necessary for the degradation of lipids
    a. True
    b. False
23. Degranulation is common finding in inactivated neutrophil and eosinophils
    a. True
    b. False

24. Pyknotic nuclei In neutrophils generally indicate imminent cell death.
    a. True
    b. False
25. Leukomoid reaction refers to a reactive leukocytosis above 50 x 10^9 / L with neutrophilia and marked left shift.
    a. True
    b. False
26. Clonal disorder characterized by proliferation of the granulocytic and monocytic cell lines and affects children from 11 month to 14 years of age
    a. Chronic myelomonocytic leukemia
    b. Atypical chronic myeloid leukemia, BCR/ABL1 negative
    c. Juvenile myelomonocytic leukemia
    d. Myelodysplastic/myeloproliferative neoplasm, unclassified.
27. Complication of ET include all of the following except:
    a. Thrombosis
    b. Hemorrhage
    c. Seizure
    d. Infection
28. The myelofibrosis associated with PMF is a result of
    a. Apoptosis resistance in the fibroblast of the bone marrow
    b. Impaired production of normal collagenase by the mutated cells
    c. Enhance activity of fibroblast owing to increase cytokinase
    d. Increased numbers of fibroblast owing to cytokine stimulation of the pluripotential stem cells.
29. The most common mutation found in patient's with primary PV is
    a. BCR/ABL
    b. Philadelphia chromosomome
    c. JAK2V617F
    d. T(15;17)
30. The patient has a platelet count of 800x10^9 /L with abnormalities in size, shape and granularity of platelet; a WBC count is 12.5 x 10^9 /L and hemoglobin of 11 g/dL. The Ph1 is not present. The most likely diagnosis is.
    a. PV
    b. ET
    c. CML
    d. Leukemoid reaction
31. What is a major indication of MDS in the peripheral blood and bone marrow
    a. Dyspoiesis
    b. Leukocytosis with left shift
    c. Normal bone marrow with abnormal peripheral blood feature
    d. thromobocytosis
32. MDS are most common in which are group
    a. 2 to 10 year
    b. 15 to 20 years
    c. 25 to 40 years
    d. Older than 50 years
33. It is the hall mark of MDS which shows a dimorphic red cell population
    a. Dyserythropoiesis
    b. Dysmyelopoiesis
    c. Dysmegakaryopoisis
    d. Erythropoiesis
34. Leukocyte count: normal to decrease
    - Blast in bone marrow: 5-20
    - Dysgranulopoiesis: positive
    - Ringed sideroblast: negative

    a. RA
    b. RAEB
    c. CMML
    d. RAEB-t
35. Manifested by a left shift in granulocytic maturation with an increase in myeloblast:
    a. Dyserythropoiesis
    b. Dysmyelopoiesis
    c. Dysmegakaryopoisis
    d. Leukopoiesis
36. The clonal origin of hematopoietic cell in ____ has been verified in studies of females heterozygous for glucose 6-phosphate dehygenase.
    a. CML
    b. PV
    c. ET
    d. PMF

37. Treatmeny involves prevention or early alleviation of hemorrhagic or vasoocclusive complication
    a. CML
    b. PV
    c. ET
    d. PMF
38. Hepatosplenomegally is the most common finding but 25% to 30% of patient report bleeding from mucocutaneous sites like the gastrointestinal tract.
    a. Chronic myelogenous leukemia
    b. Chronic neutrophilic leukemia
    c. Chronic eosinophil leukemia
    d. Mastocytosis
39. All of the following are preseny in the peripheral blood of patient with PMF, except:
    a. Nucleated RBC
    b. Giant platelets
    c. Micromegakaryocyte
    d. Agranular neutrophil
40. Supported by studies of X linked restriction fragment-length DNA polymorphism:
    a. CML
    b. PV
    c. ET
    d. PMF
41. What MPNs have sustained platelet count >450 x10^ 9/ L ; bone marrow biopsy showing proliferation mainly of the megakaryocytic lineage; with normal hematocrit and absence of PH1
    a. CML
    b. ET
    c. PV
    d. PMF
42. The most common genetic mutations in patients with ____ involve codon 816 in the KIT gene.
    a. MPN-U
    b. Chronic neutrophilic leukemia
    c. Mastocytosis
    d. HES
43. Broad term referring to a clonal neoplastic proliferation of mast cells, which accumulate in one or more sytem
    a. Chronic neutrophilic leukemia
    b. Chronic eosinophil leukemia
    c. Mastocytosis
    d. MPN-U
44. Treatment for patients suffering from severe PV?
    a. EPO administration
    b. IV fluid administration
    c. Water therapy
    d. Phlebo- therapy
45. Associated with hyperuricemia and uricosuria from increased cell turnover.
    a. CML
    b. PV
    c. ET
    d. PMF
46. Parvovirus B19 and some chemotherapeutic agents may give rise to dysplasia similar to that in MDS.
    a. True
    b. False
47. Categorized by one or more cytopenia, dysplasia in two or more myeloid cell lines, less han 1% blast in peripheral blood, and less than 5% blast in the bone marrow.
    a. RCUD
    b. RARS
    c. RCMD
    d. RAEB
48. The term epigenetics describes changes in gene expression that occur without altering the DNA sequence.
    a. True
    b. False
49. According to the WHO classified of MDS, what percentage of the blast would constitute transformation to an acute leukemia?
    a. 5%
    b. 10%
    c. 20%
    d. 30%
50. Charaterized by a persistent monocytosis of the more than 1.0 monocyte 3 x10 ^9/ L absence of the BCR/ABL1 fusion gene, less than 20% blasts and promonocytes in the peripheral blood and

bone marrow, and dysplasia in one or more myeloid cell lines

a. Chronic myelomonocytic leukemia

b. Atypical chronic myeloid leukemia, BCR/ABL1 negative

c. Juvenile myelomonocytic leukemia

d. Myelodysplastic/myeloproliferative neoplasm unclassified.

51. Treatment of MDS depends on the prognosis . If the prognosis os favorable, patients may receive only supportive therapy.

a. True

b. False

52. Ruddy cyanosis may be seen in patients suffering from severe PV.

a. True

b. False

53. In the bone marrow, dysmyelopoiesis may be represented by nuclear-cytoplasmic asynechrony.

a. True

b. False

54. The peripheral blood is suspected when there is a persistence of pasophilia in the cytoplasm of otherwise mature white blood cells, indicating nuclear-cytoplasmic asynchrony

a. Dyserthropoiesis

b. Dysmyelopoiesis

c. Megakaryopoiesis

d. Leucopoiesis

55. Clonal disorder characterized by proliferation of the granulocytic and monocytic cell line and affctes children from 1 month to 14 years of age:

a. Chronic myelomonocytic leukemia

b. Atypical chronic myeloid leukemia, BCR/ABL1 negative

c. Juvenile myelomonocytic leukemia

d. Myelodysplastic/ myeloproliferative neoplasm, unclassifiable

56. Patients with CML progress from a chronic phase through an accelerated phase into transformation to acute leukemia

a. True

b. False

57. Bone marrow transplantation has been successful in CML, and imatinib mesylate, a tyrosine kinase inhibitor, produces remission in most cases.

a. True

b. False

58. PV manifest with panmyelosis in the bone marrow with increase in erythrocytes, granulocytes and platelets.

a. True

b. False

59. The JAK2 V617F is mutation is observed in 50% to 60% of patients with ET and PMF and contributes to the pathogenesis of the disorders

a. True

b. False

60. CNL is a slow, smoldering condition and patient survival ranges from as short as 6 months to longer than 20 years.

a. True

b. False

61. Cutaneous mastocytosis in children has favorable prognosis and may regress spontaneously around puberty

a. True

b. False

62. Treatment of PMF include a variety of approaches tp include transfusion, hydroxyuria, INF-g1, busulfan, androgens, erythropoietin and others.

a. True

b. False

63. Complications of ET include thromboembolism and hemorrhage

a. True

b. False

64. JAK inhibitors improve splenomegaly and constitutional symptoms in patients with PMF to a greater degree than in ET or PV.

a. True

b. False

65. The peripheral blood in PV typically manifest

a. Erythrocytosis only

b. Erythrocytosis and thrombocytosis

c. Erythrocytosis, thrombocytosis and granulocytosis

d. Anemia and thrombocytopenia

1. What is the stain used for reticulocyte count?
   a. Wright stain
   b. Sudan black b
   c. Oil red O
   d. Brilliant cresyl blue
2. Type of WBC that has a ground-glass appearancecytoplasm
   a. Neutrophil
   b. Eosinophil
   c. Lymphocyte
   d. Monocyte
3. The stage of WBC maturation where the first appearance of the secondary granules are seen:
   a. Myelobalst
   b. Promyelocyte
   c. Myelocyte
   d. Metamyelocyte
4. The mixture of sample and reagents for reticulocytes count is incubated for how many hours/minutes?
   a. 3-10 minutes
   b. 10-20 minutes
   c. 20-30 minutes
   d. 30-1 hour
5. Highly condensed chromatin with pink to rose violet granules. Identify the cell.
   a. Neutrophil
   b. Eosinophil
   c. Basophil
   d. All of the choices
6. How many RBCs are counted in performing reticulocyte count:
   a. 100 RBCs in one field
   b. 500 RBCs in one field
   c. 1000 RBCs in one field
   d. It will depend on the number of RBCs in one field
7. How many days that reticulocytes will mature from bone marrow to peripheral blood?
   a. 1 day
   b. 2 day
   c. 3 days
   d. 4 days
8. The type of WBC has a diurnal variation that is usually high at night
   a. Neutrophil
   b. Eosinophil
   c. Basophil
   d. Lymphocyte
9. What is the reference value of the reticulocyte count for adults
   a. 0.5%-1.5%
   b. 1.5%-3.0 %
   c. 2.5% - 6.5%
   d. 6.5% - 10%
10. The first sign of recovery from an acute overwhelming infection
    a. Neutrophilia
    b. Neutropenia
    c. Monocytosis
    d. Monocytopenia
11. If the patient has <25% hematocrit, what is the reference interval for corrected hematocrit count?
    a. 2-3%
    b. 3-5%
    c. 5.8%
    d. 8-10%
12. Reticulocytes that are released from the bone marrow prematurely are called shift reticulocytes.
    a. True
    b. False
13. What is the correct maturation time of the reticulocytes when the patient has 35-39% hematocrit?
    a. 1
    b. 1.5
    c. 2
    d. 2.5
14. Which of the following is an example of WBC diluting fluid.
    a. Dacie's fluid
    b. NSS
    c. 2% sodium
    d. 1% HCl
15. Calibration present in WBC pipette
    a. 0.5,1.0,10
    b. 0.5,1.0.11

c. 0.5,1.0,100
d. 0.5,1.0,101

16. EBV can cause monocytopenia
    a. True
    b. False
17. WBCs are counted in four corner large squares
    a. True
    b. False
18. Allergic rhinitis can cause basopenia
    a. True
    b. False
19. Monocytosis is a good prognosis for tuberculosis
    a. True
    b. False
20. Steven-johnson syndrome is an acquired infection than can cause lymphocytopenia
    a. True
    b. False

QUIZ 1

18. Number of platelet stages
    e. 6
    f. 7
    g. 8
    h. 5

19. Stage in the megakaryocytic series where thrombocytes are visible.
    e. Megakaryocyte
    f. Megakaryoblast
    g. Metamegakaryocyte
    h. Promegakaryocyte

20. A. In adhesion glycoprotein 1b binds to exposed collagen
    B. In adhesion it require von Willebrand factor

    e. All statements are true
    f. All statements are false
    g. 1st statement is false, 2nd statement is true
    h. 1st statement is true, 2nd statement is false

21. A. aggregation are stimulated by ADP to undergo shape change.
    B. The platelet changes its shape from a sphere to disc shape

    e. both are true
    f. both are false
    g. 1st statement is false, 2nd statement is true
    h. 1st statement is true, 2nd statement is false

22. Participate in the initial phase of intrinsic system and It is not consumed during clotting.
    e. Prothrombin proteins
    f. AOTA
    g. Contact proteins
    h. Fibrinogen proteins

23. Role of blood vessels and platelets in the formation of platelet plug.
    e. Primary hemostasis
    f. Fibrinolysis
    g. Secondary hemostasis
    h. Tertiary hemostasis

24. Activated either by injuries to blood vessels or desquamation of damaged cells
    e. Primary hemostasis
    f. Fibrinolysis
    g. Secondary hemostasis
    h. Tertiary hemostasis

25. Secondary hemostasis
    e. Rapid and short-lived response
    f. Delayed and long term response
    g. Delayed and short-lived response
    h. Rapid and long term response

26. Activated by large injuries to blood vessels and surrounding tissues.
    e. Primary hemostasis
    f. Fibrinolysis
    g. Secondary hemostasis
    h. Tertiary hemostasis

27. Final event of hemostasis wherein there is a slow digestion and removal of the fibrin clot as healing occurs.
    e. Primary hemostasis

f. Fibrinolysis
g. Secondary hemostasis
h. Tertiary hemostasis

28. All are true about tunica intima, except:
    e. Has anti-thrombotic property
    f. AOTA
    g. NOTA
    h. Innermost layer

29. Occurs when plasminogen is converted to plasmin
    e. Primary hemostasis
    f. Fibrinolysis
    g. Secondary hemostasis
    h. Tertiary hemostasis

30. Primary group affected by coumarin.
    e. AOTA
    f. Fibrinogen group
    g. Contact group
    h. Prothrombin group

31. Only group that acts as substrates for the fibrinolytic enzyme plasmin
    e. Contact group
    f. Fibrinogen group
    g. Prothrombin group
    h. Clotting group

32. Also known as prethrombin
    e. VII
    f. IV
    g. V
    h. II

33. Stable factor
    e. Proconvertin
    f. Antihemophilic factor
    g. Tissue factor
    h. HMWK

34. Activated in vivo by contact of coagulation protein with subendothelial tissue
    e. Primary hemostasis
    f. Secondary hemostasis
    g. Intrinsic pathway
    h. Extrinsic pathway

QUIZ 2- Laboratory

41. What phase in hemostasis involves the vascular and platelet response to a vessel damage?
    i. Both
    j. Secondary hemostasis
    k. Primary hemostasis
    l. Neither

42. The pathway that collagen exposure initiates
    i. Neither
    j. Intrinsic coagulation pathway
    k. Extrinsic coagulation pathway
    l. Both

43. Platelets vital role included the following, except:
    i. No exception
    j. Adhesion to the injured vessel
    k. Promote coagulation on their surface
    l. Release reaction

44. During aggregation, platlets release their granular contents which include the following clotting factors, except:
    i. No exception
    j. Factor VIII
    k. Fibrinogen
    l. Factor XI

45. Coagulation happens when there is an interaction of plasma protein with what factor?
    i. Tissue factor
    j. Neither
    k. Both
    l. Calcium

46. What factor is stuart factor?
    i. Factor III
    j. Factor XIII
    k. Factor X
    l. Factor IX

47. It is also called as labile factor
    i. Proconvertin

j. Proaccelerin
k. Hageman factor
l. Prekallikrein

48. These factor are included in intrinsic pathways, except:
    i. IX
    j. XI
    k. HMWK
    l. VII

49. The what factor is found in common pathways?
    i. II
    j. XII
    k. XI
    l. IX

50. The process that dissolves blood clots
    i. Fibrinolysis
    j. Coagulation
    k. Primary hemostasis
    l. Secondary hemostasis

51. Glass surfaces activate these factors, except:
    i. Factor XI
    j. Factor XII
    k. Prekallekrein
    l. Factor II

52. Hemolysis is usually caused by these technical problems, except:
    i. Frothing of blood sample due to entry of air
    j. Prolonged application causing excessive statis
    k. Use of needles with too large bore
    l. Expelling blood from the syringe through the needle

53. Venous occlusion or stasis results when the tourniquet is applied to tightly or too long.
    e. True
    f. False

54. What needle gauge is most commonly used in collecting blood for coagulation test?
    i. 19
    j. 20
    k. 21
    l. 18

55. What needle gauge is preferred for pediatric patients?
    i. 18
    j. 21
    k. 20
    l. 19

56. An anticoagulant that is used in silicone-coated tubes when citrated plasma is needed.
    i. EDTA
    j. Trisodium citrate
    k. Heparin
    l. Fluoride oxalate

57. What factor are preserved by citrated plasma?
    i. Factor V and IX
    j. Factor X and XII
    k. Factor X and XI
    l. Factor V and VIII

58. Standard ration for citrate
    i. 10:1
    j. 9:1
    k. 11:1
    l. 8:1

59. Anticoagulant of choice for platelet retention test
    i. Citrate
    j. Heparin
    k. EDTA
    l. Fluoride oxale

60. Samples for coagulation test can be frozen if testing can be performed within 2 hours after collection.
    e. False
    f. true

BLEEDING AND CLOTTING TIME

1. This method is more difficult to perform but it preferred method because it can be standardized to a certain extent.

a. Duke bleeding time
b. Neither
c. Ivy method
d. Both

2. Reproducibility of the results is difficult to obtain because of problems in the standardization of the procedure.
    a. Duke bleeding time
    b. Neither
    c. Ivy method
    d. Both

3. It is performed by making a puncture in the earlobe and the time required for the bleeding to stop is measured.
    a. Duke bleeding time
    b. Neither
    c. Ivy method
    d. Both

4. An incision kon the volar surface of the arm is made.
    a. Both
    b. Duke bleeding time
    c. Ivy method
    d. Neither

5. In the ivy method, at what pressure shoud the sphygmomanometer is maintained
    a. 50 mmHg
    b. 30 mmHg
    c. 40 mmHg
    d. 20 mmHg

6. What is the interval from the first drop of blood appears and is blotted with filter paper?
    a. 40 seconds
    b. 20 seconds
    c. 50 seconds
    d. 30 seconds

7. What is the reference value for duke bleeding time?
    a. 1-3 minutes
    b. 2-4 minutes
    c. 2-5 minutes
    d. 1-4minutes

8. What is the reference value for the ivy method?
    a. 1-5 minutes
    b. 2-10 minutes
    c. 1-8 minutes
    d. 2-9 minutes

9. When do you remove the sphygmomanometer in ivy method?
    a. After first drop of blood
    b. When the bleeding stops
    c. None of the above
    d. After making a puncture

10. The incision site should not be touched by the filter paper
    a. True
    b. False

11. In the clot retraction test, the clot retraction is observe at:
    a. 48 hours, by which the clot occupies about ¼ original blood volume
    b. 48 hours, by which time the clot occupies about ½ the original blood volume
    c. 24 hours, by which time the clot occupies about ¼ the original blood volume
    d. 24 hours, by which time the clot occupies about ½ the original blood volume

12. What condition can have an abnormal clot retraction time?
    a. Paraproteinemias
    b. Glanzmann's thrombasthenia
    c. All of the above
    d. Dysfribrinogenemia

13. Clot retraction is recorded as:
    a. Partial
    b. Poor
    c. All of the above
    d. Normal retraction
    e. Very poor

14. Anticoagulant that the partial thromboplasmin time is sensitive to.
    a. None of the above
    b. Citrate
    c. Edta
    d. Heparin

15. What volume of the whole blood is used in activated clotting time?
    a. 3 mL
    b. 10mL
    c. 2 mL
    d. 5 mL

16. Known as clotting time
    a. Capillary blood method
    b. Both
    c. Neither
    d. Lee and white clotting time method

17. Uses three test tubes
    a. Neither
    b. Both
    c. Lee and white clotting time method
    d. Capillary blood method

18. How many mL are needed in the lee and white clotting time method?
    a. 2 mL
    b. 3 mL
    c. 4 mL
    d. 1 mL

19. What is the reference value for the lee and white clotting time method?
    a. 5-10 minutes
    b. 5-15 minutes
    c. 2-5minutes
    d. 2-10 minutes

20. What is the reference value for capillary blood method?
    a. 5-10 minutes
    b. 2-5 minutes
    c. 5-15 minutes
    d. 2-4 minutes