OPSC Assistant Professor

Previous Year Paper

2019 (Super Special)

Clinical Hematology

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

Test Booklet Series

A

T. B. C. : AP(CH) – 1-18/19

TEST BOOKLET

ASSISTANT PROFESSOR
(SUPER SPECIALITY)
CLINICAL HEMATOLOGY

Sl. No. 1035

Time Allowed : 3 Hours

Maximum Marks : 200

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D**, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. **YOU ARE REQUIRED TO FILL UP & DARKEN ROLL NO., TEST BOOKLET / QUESTION BOOKLET SERIES IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET / QUESTION BOOKLET SERIES AND SERIAL NO. AND ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
5. This Test Booklet contains **200** items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by **using BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There will be no negative marking for wrong answer.**
8. Before you proceed to mark (darken) in the Answer Sheet the responses (answers) to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

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SEAL

1. In pregnancy, Von Willebrand factor :
   (A) Decreases
   (B) Increases
   (C) Remain unchanged
   (D) Increases in the first trimester and decreases subsequently

2. A 25-years-old lady is ten weeks pregnant presents to the emergency department with shortness of breath and is diagnosed to have a pulmonary embolism. The obstetric PG rings for advice regarding anti-coagulation. What will you advise her ?
   (A) Start Warfarin
   (B) Start Aspirin
   (C) Start treatment dose low molecular weight heparin
   (D) Start direct oral Anticoagulants like Dabigatran or Rivaroxaban

3. Warfarin in 1st-trimester causes :
   (A) Warfarin embryopathy
   (B) Increases rate of miscarriage and stillbirth
   (C) Neonatal neurological problems
   (D) All of these

4. Factor deficiency that can cause thrombotic episodes :
   (A) Factor 8
   (B) Factor 10
   (C) Factor 11
   (D) Factor 9

5. The factor with the shortest half-life is :
   (A) Factor 2
   (B) Factor 5
   (C) Factor 7
   (D) Factor 10

6. The following are the components of Prothrombin Concentrate Complex except :
   (A) Protein S
   (B) Factor 2
   (C) Factor 9
   (D) Factor 8

7. A patient with abruptio placentae begins to have multiple bleeding manifestations such as epistaxis, gum bleeds and haematuria. Her BP at the time of examination is noted to be 170/100 mm of Hg. The mechanism of her DIC is most likely due to :
   (A) Release of tissue factor from the injured placenta
   (B) Amniotic fluid leak into the maternal circulation
   (C) Uterine rupture and activation of the coagulation pathway due to intra-abdominal bleeding
   (D) Infection of the hematoma between the placenta and uterine wall

8. The reversal agent of choice for warfarin-induced bleeding :
   (A) Fresh Frozen Plasma
   (B) Prothrombin complex concentrate
   (C) Cryoprecipitate
   (D) Whole blood transfusion

9. A 2-years-old boy is referred to you for persistent epistaxis. ENT surgeons have already seen him for recurrent sinus infection, and they don't think epistaxis has a local nasal pathology. The investigation done showed :

Hb – 14.2g/dl, Total count – $13*10^3$/ microlitre and platelet – 108*103/ microlitre.

Peripheral smear shows aniso-poikilocytosis with MPV of 6FI.

INR, APTT, Fibrinogen are normal. PFA-100 is prolonged for both ADP and adrenaline. VWAg-66 iu/dl, RICOF-77 iu/dl.

What is the diagnosis ?

(A) ITP

(B) Bernard Soulier Syndrome

(C) Wiskott Aldrich Syndrome

(D) Congenital Macrothrombo-cytopenia

10. A 26-weeks-old pregnant lady on therapeutic low molecular heparin comes with a severe GI bleed. Her last dose of injection was about 6 hours ago. How will you manage this patient ?

(A) Administer Protamine

(B) Administer Tranexamic acid and Fresh Frozen Plasma

(C) Administer Vitamin-K and Protamine

(D) Administer Tranexamic acid and Protamine

11. FEIBA contains :

(A) Factor 2, 9, 10 and activated Factor 7

(B) Factor 2, 7, 9, 10

(C) Factor 2, 8, 10, 11

(D) Factor 5, 7, 9, 10

12. A 56-years-old male was brought to the emergency with fever altered and extensive bruises. He had no previous bleeding history. His hemogram showed a Hb : 9g/dl, TC :$13*10^3$/microlitre and platelet counts of $75*\ 10^3$/microlitre. His aPTT was prolonged, which was not corrected on mixing studies and a normal PT. The most likely cause for his bleeding is :

(A) Congenital Haemophilia A

(B) Disseminated intravascular coagulation

(C) Hypofibrinogenemia

(D) Acquired Haemophilia A

13. A young lady has been referred in view of recurrent abortions. She has no significant other history except recurrent post-procedural delayed bleeding. Her platelets, PT and aPTT are within normal limits with urea solubility test being positive and thrombin time mildly prolonged. Her factor XIII antigen assay and fibrinogen levels were normal. What is the probable diagnosis ?

(A) Inhibitors to factor XIII

(B) Dysfibrinogenemia

(C) Use of heparin

(D) Hereditary Haemorrhagic Telangiectasia

14. A 25-years-old male with no previous history of drug intake presents to you with abdominal pain, distention and icterus since the last three months. He was evaluated outside and found to have mild anaemia. USG abdomen shows hepato-splenomegaly. CECT reveals hepatic vein thrombosis. The patient was started on warfarin and referred for further evaluation. Blood picture shows mild normocytic normochromic anaemia and platelet count of 1.25 lakhs/mm^3. Which investigation is least likely to provide you with any further diagnostic or therapeutic benefit ?

(A) Homocysteine levels
(B) APLA
(C) JAK2
(D) Protein C

15. Which of the following is the appropriate dose and frequency of romiplostim ?

(A) 5-10mcg/kg every 72 hours
(B) 1-3mcg/kg every week
(C) 3-5mcg/kg once daily
(D) 1-3mcg/kg once in 72 hours

16. A 6-years-old child presents five days after about of chickenpox with severe purpura fulminans. What is the most likely underlying abnormality ?

(A) TTP
(B) Acquired protein C deficiency
(C) DIC
(D) Acquired protein S deficiency

17. A patient with haemophilia-A, presents with an intramuscular hematoma. His inhibitor level is more than 5 Bethesda units. What is the treatment of choice ?

(A) A loading dose of 10,000 units of Factor VIII concentrate followed by 1000 units per hour
(B) 50-100 Ukg of FEIBA every 8-12 hours
(C) 90-120mcg/kg of Recombinant Factor VII every 8 hours
(D) A standard dose of Factor VIII concentrate

18. A young female patient with quiescent SLE on HCQS comes with a history of fever for four days, dyspnoea for three days and decreased urine output with seizures since 12 hours. Further evaluation reveals ARDS, rapidly progressive renal failure and skin rashes. She is initiated on antibiotics, antiepileptics and renal replacement therapy. Her PS is reported as showing schistocytes with prolonged PT and aPTT. What is the most likely diagnosis ?

(A) TTP-HUS spectrum
(B) Sepsis with MAHA
(C) Catastrophic APLA syndrome
(D) SLE flare

19. A patient on rivaroxaban comes for follow up, which is the best test to measure the anticoagulant activity ?

(A) PT

(B) aPTT

(C) LMWH calibrated anti-factor Xa activity assays

(D) Factor Xa levels

20. The Prothrombin Complex Concentrate contains :

(A) Factors 2, 7, 9, 10

(B) Factors 2, 7, 8, 11

(C) Factors 2, 8, 9, 11

(D) Factors 5, 8, 9, 13

21. A 30-years-old male is posted for elective appendicectomy. As a part of pre-op work up coagulation screen is done which shows isolated prolonged PT with normal aPTT. His liver function is normal, and he has no other co-morbidities. The likely cause of isolated prolonged PT is :

(A) Factor 1 deficiency

(B) Factor 5 deficiency

(C) Factor 7 deficiency

(D) Factor 10 deficiency

22. Which of the following is secreted by the dense body of a platelet ?

(A) Factor V

(B) Serotonin

(C) vWF

(D) Platelet factor 4

23. Ethanol-induced thrombocytopenia resolves in how many days post ethanol cessation ?

(A) 1 week

(B) 2 weeks

(C) 3 weeks

(D) 4 weeks

24. A 36-years-old lady 30 weeks pregnant with metallic heart valve presents with Valve thrombosis. The treatment involves :

(A) Intensive anti-coagulation with unfractionated Heparin and Warfarin

(B) Thrombolysis

(C) Urgent cardiac surgery

(D) Any of the above depending on clinical presentation

25. The new investigational siRNA molecule targeting antithrombin is :

(A) Midostaurin

(B) Fitusiran

(C) Ruxolitinib

(D) Caplacizumab

26. In activated Protein C resistance due to a Leiden mutation on Factor V, the missense substitution is :

(A) Arginine to lysine

(B) Glutamine to arginine

(C) Lysine to glutamine

(D) Arginine to glutamine

27. New FDA approved Factor 10a inhibitor (Rivaroxaban, Apixaban) reversal medication is :

(A) Obinutuzumab

(B) Andexanet Alfa

(C) Pembrolizumab

(D) Ivosidenib

28. The reversal agent for Dabigatran is :

(A) Idarucizumab

(B) Andexanet Alfa

(C) Rituximab

(D) Ivosidenib

29. A patient under evaluation of a bleeding disorder has the reports as normal platelet count, normal VWF assay, abnormal aggregation study to collagen alone. What is his diagnosis ?

(A) Glycoprotein VI deficiency

(B) Bernard-Soulier syndrome

(C) Glanzmann's thrombasthenia

(D) Platelet vWD

30. Which of the following is a feature of hereditary haemorrhagic telangiectasia ?

(A) Good response to oestrogen therapy

(B) Cerebral arteriovenous malformations

(C) GI haemorrhage as the usual presenting feature

(D) The tendency of lesions to become less obvious with age

31. Luciferase or luciferin reagent is used to diagnose which platelet disorder ?

(A) Delta storage pool disorder

(B) Grey platelet syndrome

(C) MYH9 disorders

(D) Hermansky Pudlak syndrome

32. c-MPL is the genetic defect for which of the following diseases ?

(A) Dyskeratosis congenita

(B) Congenital amegakaryocytic thrombocytopenia

(C) Pure red cell aplasia

(D) Pearson syndrome

33. A patient underwent cardiopulmonary bypass surgery and developed an acute onset left lower limb DVT on day 6 post-surgery. His platelet count was found to be $60*10^3$/microlitre. What is the agent of choice for his DVT ?

(A) Bivalirudin

(B) LMWH

(C) Rivaroxaban

(D) Argatroban

34. Which of the following diseases show increased activity on a RIPA test ?

(A) vWD Type 2A

(B) vWD Type 2B

(C) vWD Type 2M

(D) vWD Type 2N

35. Major Post-partum obstetric Haemorrhage is defined as blood loss greater than :
(A) > 1000 ml
(B) > 500 ml
(C) > 100 ml
(D) > 500 ml and < 1000 ml

36. During Post-partum Haemorrhage, Platelets should be transfused when the platelet count is less than :
(A) $150*10^3/\mu l$
(B) $100*10^3/\mu l$
(C) $50*10^3/\mu l$
(D) $75*10^3/\mu l$

37. The ABO antigen is made up of (37) :
(A) Glycoprotein
(B) Glycolipid
(C) Carbohydrate
(D) Lipid

38. The ABO blood group is is coded by genes located on (38) :
(A) Chromosome 1p36
(B) Chromosome 7q34
(C) Chromosome 9q34
(D) Chromosome 19p13

39. The most immunogenic blood group antigen after ABO and Rh is (39) :
(A) Duffy
(B) Kell
(C) Lewis
(D) MNS

40. TRALI occurs :
(A) During or within 24 hours of transfusion
(B) 48 hours after transfusion
(C) Week after transfusion
(D) 72 hours after transfusion

41. Which blood product is most associated with bacterial contamination ?
(A) FFP
(B) Platelet concentrate
(C) PRBC
(D) Whole Blood

42. The Bombay Phenotype lacks :
(A) A, B and H Antigens
(B) A, B and O Antigens
(C) H Antigen
(D) A and B Antigens

43. Transfusion-Associated Graft Vs Host disease is characterised by :
(A) Fever, rash, liver dysfunction, diarrhoea and pancytopenia
(B) Fever, rash, renal impairment, constipation and normal counts
(C) Fever, no rash, heart failure, diarrhoea and pancytopenia
(D) Fever, no rash, liver dysfunction, diarrhoea and normal counts

44. Which blood group system is the most frequent cause of Haemolytic diseases of Foetus and new born ?
(A) Rh
(B) ABO
(C) Kell
(D) MNS

45. In the Kleihauer-Betke test, which of the following is true ?

(A) Foetal and maternal cells degraded

(B) Foetal cells degraded, maternal cells intact

(C) Foetal cells and maternal cells intact

(D) Foetal cells intact, maternal cells degraded

46. Mechanism of action of plerixafor is :

(A) CXCR4 agonist

(B) CXCL12 agonist

(C) CXCR4 antagonist

(D) CXCL12 antagoinst

47. Platelet transfusion refractoriness is defined as :

(A) Corrected Count Increment of less than 10×10^9/L 2 hours after transfusion

(B) Corrected Count Increment of less than 5×10^9/L 1 hour after transfusion

(C) Corrected Count Increment of less than 5×10^9/L 2 hours after transfusion

(D) Corrected Count Increment of less than 1×10^9/L 1 hour after transfusion

48. A 46-years-old male presents 30 days after an HSCT with a rash involving less than 50% of the skin, bilirubin of 2.1 mg/dl and diarrhoea more than 500ml/day. What is the functional GVHD grade ?

(A) Grade I

(B) Grade II

(C) Grade III

(D) Grade IV

49. The most common secondary neoplasms after HSCT are :

(A) Breast cancer

(B) Skin cancer

(C) Head and neck cancers

(D) Leukaemia

50. Antibodies to which blood group system is most commonly associated with pre-transfusion incompatibility ?

(A) Duffy

(B) Kidd

(C) Lewis

(D) Kell

51. A new-born presents with refractory status epilepticus 6 hours after delivery. Investigation reveals massive intracerebral haemorrhage ; the platelet count is $11*10^3$/microlitre with normal haemoglobin, WBC counts and coagulation parameters. Her mother's platelet counts were normal prior to delivery. What is the likely diagnosis ?

(A) Immune thrombocytopenia secondary to maternal ITP

(B) Neonatal Alloimmune Thrombocytopenia

(C) Congenital TTP

(D) Neonatal sepsis

52. A 14-years-old boy comes with a history of sudden onset of left-sided hemiparesis following an episode of fever. MRI brain shows acute infarct in the right MCA territory. Blood workup showed normal coagulation parameters with a Hb of 6g/dl, WBC of $16*10^3$/microlitre, platelets of $24*10^3$/microlitre. His LDH was 3500 with PS showing schistocytes. What is the diagnosis ?

(A) APLA syndrome

(B) Atypical HUS

(C) Sepsis with DIC

(D) Congenital TTP

53. The commonly involved antibody delayed haemolytic transfusion reaction is :

(A) Anti-Jk^a

(B) Anti-Jk^b

(C) Anti-Kell

(D) Anti-Fy^a

54. The Rh_{null} syndrome is due to the lack of :

(A) C Antigen

(B) DCE Antigen

(C) DE Antigen

(D) D Antigen

55. A young male presents with a history of fever, sore throat and cervical adenopathy. His Hb is 5g/dl, TC is $8*10^3$/microlitre with atypical lymphocytes and PS suggestive of a hemolytic process. His DAT is positive for anti-complement reagents. Which is the target surface RBC antigen ?

(A) D antigen

(B) I antigen

(C) i antigen

(D) d antigen

56. RBC engraftment time is shortest with which source of haematopoietic progenitor cells ?

(A) Apheresis

(B) Marrow

(C) Umbilical cord

(D) All are equal

57. A recipient of a bone marrow transplant presents with haemorrhagic cystitis, interstitial nephritis and rapidly progressive renal failure. What is the treatment of choice ?

(A) Reducing immunosuppression

(B) IVIg

(C) Leflunomide

(D) Cidofovir

58. A young male presents with hepatitis B induced immune thrombocytopenia. Which of the following drugs is contraindicated ?

(A) Rituximab

(B) Immunosuppressants

(C) Steroids

(D) IVIg

59. A patient with Sickle cell disease and on Hydroxycarbamide, planning for pregnancy comes to your outpatient clinic for advise. What will you advise regarding Hydroxycarbamide ?

(A) To stop Hydroxycarbamide at least 3 months before conception

(B) To stop Hydroxycarbamide at least 2 months before conception

(C) To stop Hydroxycarbamide at least 1 month before conception

(D) To continue Hydroxycarbamide

60. The first parameter to normalise once Iron supplementation is initiated in iron deficiency anaemia is :

(A) Reticulocyte haemoglobin

(B) Reticulocyte count

(C) Microcytic to Normochromic picture

(D) Reduction of thrombocytosis to normal levels

61. A 45-years-old male with no previous co-morbidities presented to the emergency with a history of progressive generalised weakness, loin pain and decreased urine output. His laboratory values in the emergency are as : Hb : 7 g/dl, platelet : 1,00,000 cells/mm^3, LDH-1000 IU/L, Indirect bilirubin : 6.7 mg/dl. Urine hemosiderin : positive. Serum Creatinine : 4.5 mg dl. CD55 deficient clones are noted on the FLAER test. Your next line of management will be :

(A) Blood transfusion with PRBC

(B) FFP transfusion with plasma-pheresis

(C) Eculizumab and haemodialysis

(D) Bone marrow transplant

62. Which one of the following is true of IgE ?

(A) Is present in plasma in the same concentration as IgG

(B) Is increased acutely in an asthmatic attack

(C) Crosses the normal placenta

(D) Is increased in the serum of patients with Type 1 hypersensitivity

63. A patient had been evaluated with blood works in the last few months for anaemia. The consistent features was a mean corpuscular volume well over 100fL. Despite the adequate therapeutic trial of vitamin B12 and folic acid supplements, he continued to have macrocytosis. Which of the following is least likely to explain his condition ?

(A) Therapy with immunosuppressants

(B) Aplastic anaemia

(C) Myelodysplastic syndrome

(D) Alcohol use without liver disease

64. The components of Heparin-induced thrombocytopenia(HIT) score includes :

(A) Thrombocytopenia, Timing of onset, Thrombosis, Other causes of thrombocytopenia

(B) Thrombocytosis, Bleeding, Timing of onset, Other causes of thrombocytopenia

(C) Thrombocytopenia, Bleeding, Timing of onset, Other causes of thrombocytopenia

(D) Thrombocytopenia, Bleeding, Timing of onset, Thrombo-prophylaxis

65. The preferred anticoagulant to use for blood count estimation is :

(A) EDTA

(B) Heparin

(C) Trisodium citrate

(D) All of these

66. In which type of von Willebrand's disease does the vWD level fail to increase during pregnancy ?

(A) Type 3

(B) Type 2

(C) Type 1

(D) None of these

67. Platelet satellitism may be eliminated using which reagent lined vacutainer ?

(A) EDTA

(B) Sodium heparin

(C) Lithium heparin

(D) Sodium citrate

68. Acute onset megaloblastic anaemia is seen in which setting :

(A) Nitrous oxide anaesthesia

(B) Rapid folate replacement

(C) Post ileal resection

(D) Alcoholic binge

69. Investigation of choice to diagnose hereditary spherocytosis is ?

(A) Osmotic fragility test

(B) Hb electrophoresis

(C) Eosin 5' – maleimide flow cytometry test

(D) SDS-PAGE

70. A 24-years-old male presents after developing a bluish discolouration of the body, lips and nails. He denies any relevant past medical history. Examination reveals central cyanosis and a grey complexion. Investigation revealed :

Haemoglobin 17.0 g/dL (13.0 – 18.0)

PaO_2 13.0 kPa (11.3 – 12.6)

SaO_2 (using an oximeter) 85% (>95)

What is the most likely diagnosis ?

(A) Argyria

(B) Cyanotic congenital heart disease

(C) Methemoglobinemia

(D) Methylene blue poisoning

71. The minimum daily requirement of folic acid for a normal adult is :

(A) 50 mcg

(B) 100 mcg

(C) 6 mg

(D) 1.3 mg

72. Hepcidin is produced by :
(A) Small Intestine
(B) Bone marrow
(C) Large intestine
(D) Liver

73. Factitious Anaemia is a form of :
(A) B12 deficiency
(B) Iron deficiency
(C) Folate deficiency
(D) Copper deficiency

74. The gold standard diagnostic test for iron deficiency is :
(A) Bone marrow biopsy
(B) Serum Ferritin
(C) Serum Iron
(D) Serum Transferrin

75. Erythrocyte Zinc Protoporphyrin assay is sensitive for :
(A) B12 deficiency
(B) Folate deficiency
(C) Zinc deficiency
(D) Iron deficiency

76. The commonest HFE gene mutation involved in Hereditary Haemochromatosis is :
(A) H63D
(B) C282Y
(C) H66D
(D) S65C

77. The Sout-East Asian ovalocytosis is due to :
(A) Abnormal Band 3
(B) Spectrin deficiency
(C) Protein 4.2 deficiency
(D) None of these

78. The commonest monogenic disease is :
(A) Thalassemia
(B) Sickle cell disease
(C) G6PD deficiency
(D) Pyruvate kinase deficiency

79. The Beta globin gene is found on which chromosome ?
(A) Long arm of chromosome 11
(B) Short arm of chromosome 11
(C) Short arm of chromosome 16
(D) Long arm of chromosome 16

80. Sickle cell(HBSS) disease is :
(A) Qualitative Beta globin chain defect
(B) Quantitative Beta globin chain defect
(C) Qualitative Alpha globin chain defect
(D) Quantitative Alfa globin chain defect

81. Based on which study was Transcranial doppler was recommended in children with sickle cell disease ?
(A) SWITCH study
(B) STOP study
(C) PRIMA study
(D) ROCKET study

82. Iron chelation in patients with beta-thalassemia major is started in all of the following scenarios except :
(A) Hepatic iron concentration >3mg Fe/kg dry weight
(B) 20-25 PRBC transfusions
(C) Ferritin more than 3000 microgram/dl
(D) Age between 2 and 4 years

83. Target antigen in Paroxysmal Cold Hemoglobinuria is :
(A) Rh antigen
(B) I/i antigen
(C) Glycophorin
(D) Both (B) and (C)

84. Hupoplastic MDS and aplastic anaemia may be differentiated on bone marrow examination by all of the following except :
(A) Abnormally localized immature myeloid precursors
(B) Higher frequency of CD34 + cells
(C) Increased expression of PCNA
(D) Marrow fibrosis

85. All of the following cause basophilic stippling except :
(A) Thalassemia
(B) G-6-PD deficiency
(C) Lead intoxication
(D) Pyrimidine-5'-nucleotidase deficiency

86. Splenectomy is contraindicated in :
(A) Hereditary spherocytosis
(B) Hereditary elliptocytosis
(C) HbE disease
(D) Hereditary stomatocytosis

87. Anticoagulant of choice in HIT :
(A) Aspirin
(B) Low molecular weight heparin
(C) Warfarin
(D) Argatroban

88. Which of the following statements about Cyclical Neutropenia(CN) is false ?
(A) All congenital CN cases are characterised by mutations in the genes coding for neutrophil elastase (ELANE)
(B) Cyclical neutropenia tends to occur every 21 days, but cycles are known to recur as frequently as 12 days and as long as 36 days
(C) Cyclical neutropenia responds to G-CSF injections
(D) Cyclical neutropenia is known to be associated with leukemic transformation in a small population of patients (5%)

89. A woman with Sickle disease and 6 weeks pregnant is referred to you by your obstetric colleague. What measures will you advise to reduce pre-eclampsia ?
(A) Start Aspirin at 75 mg from 12 weeks gestational age
(B) Start Aspirin at 150 mg from 12 weeks gestational age
(C) Start Aspirin straight away
(D) Reassure patient and do nothing

90. A 45-years-old patient is diagnosed with very severe Aplastic Anaemia in another hospital is referred to you for further management. What would you advise ?

(A) Sibling Allogeneic bone marrow transplant

(B) Unrelated Allogeneic bone marrow transplant if no matched sibling available

(C) Anti-Thymocyte globulin + Ciclosporin

(D) Ciclosporin + Danazol

91. Very severe aplastic anaemia is defined as a patient with :

(A) Bone marrow cellularity < 30% with atleast 2 of the following peripheral blood count criteria :

(i) Neutrophil count < $0.5*10^3$/microlitre.

(ii) Platelet count < $50*10^3$/microlitre.

(iii) Reticulocyte count < $20*10^3$/microlitre.

(B) Bone marrow cellularity <50% with atleast 2 of the following peripheral blood count criteria :

(i) Neutrophil count < $0.5*10^3$/microlitre.

(ii) Platelet count < $20*10^3$/microlitre

(iii) Reticulocyte count < $20*10^3$/microlitre.

(C) Bone marrow cellularity < 25% with atleast 2 of the following peripheral blood count criteria :

(i) Neutrophil count < $0.2*10^3$/microlitre.

(ii) Platelet count < $20*10^3$/microlitre.

(iii) Reticulocyte count < $20*10^3$/microlitre.

(D) Bone marrow cellularity < 25% with atleast 2 of the following peripheral blood count criteria :

(i) Neutrophil count < $0.2*10^3$/microlitre.

(ii) Platelet count < $50*10^3$/microlitre.

(iii) Reticulocyte count < $20*10^3$/microlitre.

92. A young male presents with multiple recurrent soft tissue abscesses. Culture and sensitivity reveal Staphylococcus Aureus growth. A normal hemogram is noted. Further evaluation shows deficient NADPH oxidase levels in polymorphonuclear cells. What diseases is the patient most likely to have ?

(A) Chronic Granulomatous disease

(B) Leucocyte Adhesion Deficiency

(C) Chediak Higashi Syndrome

(D) Myeloperoxidase Deficiency

93. Which of the following statement is incorrect with respect to neutropenia ?

(A) The neutrophil count may be falsely low if estimated long after the blood has been drawn

(B) Spironolactone can cause agranulocytosis

(C) Immune-mediated neutropenia can manifest within 1-2 days of commencing a culprit drug

(D) The most common cause of acquired neutropenia is an autoimmune disease

94. A young female patient has been on treatment for rheumatoid arthritis for 2 years. She has now been hospitalized with the 3rd fever episode in 6 months, on this occasion with a pneumonia. Clinical exam revealed nodular painless skin lesions over her right olecranon, with posterior cervical lymph nodes and a clinically palpable spleen.

Her blood counts were as follows : Hb : 10g/dL WBC : 2500 cells/mm^3 PMN 30%. Which of the following would not be a therapeutic option in her ?

(A) Weekly Methotrexate
(B) Splenectomy
(C) Hydroxychloroquine
(D) Cyclosporine

95. A 45-years-old male presents with fatigue, severe abdominal pain and yellowish discolouration of his eyes following a febrile illness to the emergency department. During a similar episode a few months ago he had passed cola coloured urine but it had settled spontaneously, and he did not seek medical attention. He denies the use of any drugs. There's no family history of hemolytic anaemia. His blood tests show Pancytopenia. Contrast CT abdomen points to a hepatic vein thrombosis. There is no Hepatosplenomegaly. False statement regarding the disease condition in question is :

(A) The propensity to thrombosis is proportional to the size of the abnormal clone
(B) Unusual sites of thrombosis include dermal veins
(C) 25% of patients are first diagnosed in pregnancy
(D) The most common cause of death is transformation to AML

96. All of the following can be seen in the peripheral blood smear of a patient post-splenectomy except :

(A) Cabot rings
(B) Pappenheimer bodies
(C) Acanthocytes
(D) Burr cells

97. The embryonic haemoglobin before 5 weeks of age contains which globin chain ?

(A) Alpha and epsilon
(B) Alpha and zeta
(C) Zeta and epsilon
(D) Zeta and gamma

98. An 8 months infant presents with new-onset severe anaemia. Peripheral smear shows normocytic RBC's with the absence of reticulocytes. Bone marrow has markedly reduced RBC precursors with the other cell lines unaffected. Erythrocyte ADA levels and HbF are normal. What is the diagnosis ?

(A) Diamond Blackfan syndrome
(B) Transient aplastic crisis
(C) Iron deficiency anaemia
(D) Transient erythroblastopenia of childhood

99. Swiss cheese appearance of the nucleus of erythroblasts is seen in which condition ?

(A) Parvovirus B19 induced PRCA

(B) Congential Dyserythropoeitic Anemia Type 1

(C) Diamond-Blackfan syndrome

(D) Myelodysplastic syndrome

100. A young female patient with a history of 2 previous abortions before 10 weeks of gestational age and a recent packed cell transfusion presents with acute Budd-Chiari syndrome. Her blood tests reveal pancytopenia, normal coagulation parameters and a high LDH. Which of her following tests is most likely to yield the diagnosis ?

(A) Anticardiolipin IgM antibodies

(B) Protein C and 5 levels

(C) FLAER analysis

(D) Flow cytometry for CD55, CD59 on neutrophils

101. The best predictor of stroke risk in paediatric patients with sickle cell disease is :

(A) Transcranial doppler ultrasonography velocity > 200 cm/s

(B) Percentage of sickle cells more than 50%

(C) Leukocytosis more than 20,000 cells/mm^3

(D) Non-atherosclerotic occlusion at the circle of Will is

102. Which of the following is associated with Erythropoietin therapy ?

(A) Benign intracranial hypertension

(B) Myositis

(C) Seizures

(D) Osteoporosis

103. Which of the following is an oncogene ?

(A) The N-Myc gene

(B) The WT1 gene

(C) The Retinoblastoma gene

(D) The WT2 gene

104. A 42-years-old man being investigated for diabetes and importance is noted to have the following results :

SGOT 30 U/L (5-35)

SGPT 22 U/L (1-31)

Fasting plasma glucose 200mg/dl

Ferritin 500 ug/L (915-300)

Which one of the following would be the next most appropriate investigation ?

(A) Bone marrow smear and iron stain

(B) Liver biopsy

(C) Red cell protoporphyrin

(D) Transferrin saturation

105. Which of the following haematological disorders is inherited as an autosomal recessive condition ?

(A) Antithrombin III deficiency

(B) Protein 5 deficiency

(C) Glucose-6-phosphate dehydrogenase deficiency

(D) Pyruvate kinase deficiency

106. In a patient with recurrent attacks of abdominal pain, nausea and diarrhoea associated with the passage of port wine colour urine who has a Blood Pressure of 160/90 mm Hg ; which of the following is least likely to precipitate an acute attack ?

(A) Menstruation

(B) Aspirin

(C) Phenytoin

(D) Thiopentone

107. A patient is referred to your OPD in view of polycythaemia. On further evaluation, he is found to be obese with a history of snoring and excessive daytime sleepiness. His elevated haematocrit and haemoglobin is due to hypoxia of which organ ?

(A) Lungs

(B) Heart

(C) Bone marrow

(D) Kidneys

108. Which of the following structural protein abnormalities are not associated with hereditary spherocytosis ?

(A) Spectrin

(B) Protein 4.2

(C) Protein 4.1 R

(D) Both (B) and (C)

109. Which of the following is not a cause of erythropoietin failure in patients of chronic kidney disease with anaemia ?

(A) Iron Deficiency

(B) Secondary Hyperparathyroidism

(C) Angiotensin-Converting enzyme inhibitors

(D) Magnesium toxicity

110. Fetal erythropoietin is derived from :

(A) Fetal Kidney

(B) Amniotic fluid

(C) Maternal circulation

(D) Placenta

111. Lymphomatoid granulomatosis is an angiocentric angiodestructive disease of B cells characterised by which viral infection ?

(A) HHV-3

(B) HHV-4

(C) HHV-5

(D) HIV

112. The process of development of cells for adaptive immunity first begins in which of the foetal organs ?

(A) Spleen

(B) Foetal Liver

(C) Placenta

(D) Bone Marrow

113. The mode of inheritance of Congenital Dyserythropoietic AnaemiaType – II is :

(A) Autosomal Dominant

(B) Autosomal Recessive

(C) X-linked

(D) Autosomal Dominant or Recessive

114. The mechanism of action of Eculizumab is by binding to :

(A) JAK-2

(B) Complement 5

(C) Complement 9

(D) CD 20

115. A competitive marathon runner presents to your OPD with generalised weakness and easy fatiguability. There is no history of weight loss or GI blood loss. He consumes a mixed diet that is high in protein. On examination, he has pallor. What is the peripheral smear likely to show ?

(A) Megaloblastic with macro-ovalocytes

(B) Normocytic normochromic picture

(C) Microcytic hypochromic blood picture

(D) Polychromatophils and teardrop cells

116. Runner's anaemia is a form of :

(A) Steroid-responsive anaemia

(B) Iron deficiency

(C) Testosterone induced Epo deficiency

(D) Haemolytic anaemia

117. The G6PD gene is present on the x chromosome. Based on the principle of lyonisation, which of the following statements is the most accurate ?

(A) Degree of haemolysis doesn't vary in Men and Women.

(B) Women are more likely a to have a severe haemolytic reaction as compared to men.

(C) Women have variable degrees of haemolytic reaction.

(D) Women have a lesser degree of haemolysis as compared to men.

118. A 35-years-old male was admitted with a history of recurrent skin infections. On further evaluation, multiple pneumatoceles were noted. The wound culture grew Staphyloccocus. He had elevated IgE level with diminished IgG, IgM and IgA. There was no significant family history. Which of the following primary immunodeficiencies does the patient have ?

(A) Wiskott-Aldrich syndrome

(B) Jobs syndrome

(C) DOCK8 deficiency

(D) CD40 ligand deficiency

119. The principal chemokine ligand, which facilitates HSC homing to the sinusoidal bone marrow is :

(A) CXCL11

(B) CXCL12

(C) CXCL13

(D) CXCL16

120. p53 acts as a checkpoint regulator at which step of the cell cycle ?

(A) G1-S checkpoint

(B) G2-M checkpoint

(C) Intra S checkpoint

(D) All of these

121. Triradial and quadriradial chromosomal breakages are the characteristics of which disease ?

(A) Dyskeratosis congenital

(B) Congenital amegakaryocytic thrombocytopenia

(C) Fanconi's Anemia

(D) Schwamann-Diamond syndrome

122. The missense mutation in HbE disease is :

(A) GAG → AAG codon 6 of the beta chain

(B) GAG → AAG codon 26 of the beta chain

(C) AAG → GAG codon 6 of the beta chain

(D) AAG → GAG codon 26 of the beta chain

123. A 4-years-old male presents with recurrent sinopulmonary infections and skin abscesses for two years. He also has frequent bleeding manifestations and photosensitivity with silvery hair. Investigation reveal anaemia, neutropenia, prolonged bleeding time but normal platelets. PS shows giant peroxidase positive neutrophilic granules. What is his diagnosis ?

(A) Wiskott-Aldrich syndrome

(B) Hermansky-Pudlak syndrome

(C) Chronic Granulomatous Disease

(D) Chediak-Higashi disease

124. The receptor defective in Imerslund-Grasbeck syndrome is :

(A) Cubam

(B) Cubilin

(C) Haptocorrin

(D) Transcobalamin

125. Which is the most common complement factor defect in atypical HUS ?

(A) CFH

(B) Anti CFH antibody

(C) CFI

(D) MCP

126. The cytokine that causes cachexia and muscle wasting associated with malignancies is :

(A) TNF alpha

(B) TGF beta

(C) IL-3

(D) Interferon Alpha

127. The following porphyria's associated with skin lesions except :

(A) Acute Intermittent porphyria

(B) Erythropoietic protoporphyria

(C) X-Linked protoporphyria

(D) Congenital erythropoietic porphyria

128. P. falciparum causes disseminated microthrombi by adhering to which cell surface antigen ?

(A) CD 36

(B) CD 34

(C) CD 11

(D) CD 44

129. The most specific finding in the peripheral smear of patient's with hyposplenism is :

(A) Pappenheimer bodies

(B) Howell Jolly bodies

(C) Pitted RBC surface

(D) Target cells

130. All of the following cause inappropriate EPO secretion and polycythaemia except :

(A) Cerebellar hemangioblastoma

(B) Hepatocellular carcinoma

(C) Uterine leiomyoma

(D) Pheochromocytoma

131. Which of the following drugs is known to cause sideroblastic anaemia ?

(A) Valproate

(B) Phenytoin

(C) Ketoconazole

(D) Isoniazid

132. The anti-IL5 antibody used in Hypereosinophilic syndrome is :

(A) Mepolizumab

(B) Omalizumab

(C) Tocilizumab

(D) Basiliximab

133. DIPSS-PLUS score is used in prognostication of :

(A) Myelofibrosis

(B) Myelodysplasia

(C) MPN/MDS

(D) Lymphoma

134. A pathological ring sideroblast is defined as :

(A) Sideroblasts with iron granules surrounding 1/4th of the nucleus

(B) Sideroblasts with iron granules more than 1/2 of the nucleus

(C) Sideroblasts with iron granules more than 1/3rd of the nucleus

(D) Sideroblasts with iron granules encircling the whole nucleus

135. A 75-years-old man has a history of Chronic Lymphocytic Leukaemia. He has had treatment with several courses of chemotherapy and has now been admitted to hospital with pneumonia. His past medical history revealed that he had suffered several previous lower respiratory tract infections for the last six months.

Which of the following components of his immune system is likely to be deficient ?

(A) Complement

(B) Immunoglobulin G

(C) Macrophages

(D) Mast cells

136. Which of the following drugs forms the cornerstone for the treatment of Hyper-Eosinophillic Syndrome (HES) ?

(A) Interferon alpha

(B) Anthracycline based chemo-therapy

(C) Buslphan

(D) Corticosteroids

137. A 38-years old male presents with fatigue and gum bleeds. He has hepatomegaly and a blood count performed shows pancytopenia. Prothrombin time is 19 seconds which is above the lab reference range. The bone marrow aspirate is hypercellular with 8% myeloblasts. Several large cells with bilobed nuclei and azurophilic granules make up the large majority of the cell population. Auer rods are seen abundantly. Which of the following is an appropriate step towards confirming the diagnosis ?

(A) FISH for t(14 ; 18)

(B) FISH for balanced t(15 ; 17) translocation

(C) Testing for FLT3ITD

(D) Flowcytometry for CD117

138. Follicular cell lymphoma is associated with the over expression of gene :

(A) Bcl-2

(B) N-myc

(C) C-myc

(D) KRAS

139. Urine for Bence Jones protein is a measure for which of the following ?

(A) IgM

(B) IgG

(C) Heavy chains

(D) Light chains

140. Amyloidosis is a condition characterised by amyloid deposition and subsequent organ dysfunction. Which organ involvement is most predictive of mortality from the disease ?

(A) Renal

(B) Nervous System

(C) Cardiac

(D) Skin and soft tissue

141. A patient with lymphoplasmacytic lymphoma presents to you with cardiac amyloidosis. Protein immunofixation studies are likely to show an elevation in which monoclonal antibody ?

(A) Kappa light chain

(B) Lambda light chain

(C) IgM

(D) IgA

142. A 50-years-old male with mild proteinuria is evaluated and found to have an increased FLC ratio 3.0 in the absence of absent heavy chains on immunofixation. Bone marrow is shown to have clonal bone marrow plasma cells of < 10%. Normal haemoglobin, calcium and creatinine levels are noted with no bony lytic lesions. The patient most likely has :

(A) Smouldering Myeloma

(B) MGUS

(C) Light Chain MGUS

(D) Systemic amyloidosis

143. Which of the following is considered as high-risk cytogenetics for multiple myeloma ?

(A) Del17p

(B) t(11 ; 14)

(C) t(6 ; 14)

(D) Hyperdiploid

144. t(9 ; 22) is ALL is associated with :

(A) Good prognosis

(B) Adverse prognosis

(C) Intermediate prognosis

(D) Doesn't have any prognostic value

145. One of the following is an unfavourable prognostic tactor in ALL :

(A) Female sex

(B) MLL gene rearrangement

(C) Hyperdiploidy

(D) WBC count > 30,000 × 10^6/mL

146. Which of the following are considered as major criteria required for the diagnosis of POEMS syndrome ?

(A) Endocrinopathy

(B) Sclerotic bone lesions

(C) Skin manifestations

(D) Polyradiculoneuropathy

147. A patient who is undergoing induction chemotherapy for AML. He has a temperature of 100.8° F, a pulse of 110bpm and BP-100/60 mmHg. Clinically there appears no focus of infection. What would your choice of therapy be ?

(A) Get blood cultures, start antipyretics

(B) Get blood cultures, start antipyretics and a quinolone and reassess at the earliest

(C) Get blood cultures, start ceftazidime, vancomycin and antipyretics

(D) Get blood cultures, start ceftazidime, vancomycin and fluconazole

148. Which of the following proteins is the single most powerful predictor of survival in multiple myeloma ?

(A) Haemoglobin

(B) Monoclonal protein

(C) Beta2 microglobulin

(D) Plasma cell percentage

149. The factors used in the International Prognostic Scoring System (IPSS) includes :

(A) Bone marrow blasts, Karyotype and number of cytopenias

(B) Bone marrow blasts, Immunophenotyping and number of cytopenias

(C) Karyotype, Immune-phenotyping and number of cytopenias

(D) Karyotype, LDH and number of cytopenias

150. A 30-years-old male presents to you with easy bruising and gum bleeding. His peripheral blood shows Hb – 6.2g/dl, Total count - $2*10^3$/microlitre and platelet – $20*10^3$/microlitre, peripheral smear shows abnormal promyelocyte with blasts. He has deranged clotting with raised PT(18 Seconds) and APTT (45 Seconds) with raised D-Dimer. What will be your initial management ?

(A) Give PRBC, Platelet, FFP and start Hydroxycarbamide

(B) Give PRBC, Platelet, FFP and start Daunorubicin and Cytarabine

(C) Give PRBC, Platelet, FFP and start ATRA

(D) Wait for bone marrow biopsy results to confirm the diagnosis

151. All of the following are the causes for Erythrocytosis but not Polycythemia Vera except :

(A) High Oxygen Affinity Haemoglobin

(B) HIF-2alpha mutations

(C) Proline Hydroxylase Mutations

(D) JAK2 V617F mutation

152. All the following may be used to differentiate mantle cell lymphoma from CLL except :

(A) CD 10

(B) FMC – 7

(C) CD 23

(D) Cyclin D1

153. CD5 positive tumours are :

(A) CLL and Mantle cell

(B) CLL and Follicular lymphoma

(C) DLBCL and Follicular lymphoma

(D) CLL and Waldenstroms

154. A case of CLL with 17p deletion now requires treatment. What treatment would you offer him ?

(A) Rituximab and Bendamustine

(B) Rituximab and chlorambucil

(C) Fludarabine and Cyclophosphamide

(D) Ibrutinib

155. All of the following criteria were included recently as an indication for treatment in Smouldering Myeloma except :

(A) Bone marrow plasma cell percentage >60%

(B) The ratio of involved to univolved light chain > 100

(C) MRI lesion > 1 focal lesion

(D) Bone marrow plasma cell percentage > 80%

156. The choice of treatment in a fit patient (Performance state – 0) with no co-morbidities with Intermediate-II and High-risk MDS :

(A) Palliative treatment

(B) Best supportive treatment

(C) Chemotherapy and Bone marrow transplant

(D) Chemotherapy only

157. In a young patient with AML in CR1,

HSCT is offered if he has which of the following mutations ?

(A) t(8 ; 21)

(B) Del (5q)

(C) Inv(16)

(D) Mutated NPM1

158. A patient presents with a mediastinal mass diagnosed on biopsy as NHL. Immunophenotyping reveals CD10 weak positive, BCL6 positive, MUM-1 negative lymphoid cells. What is the most likely diagnosis ?

(A) Primary mediastinal large B cell lymphoma

(B) Activated B cell-like DLBCL

(C) T cell/histocyte rich large B cell lymphoma

(D) Germinal centre B cell-like DLBCL

159. A 26-years-old male patient with diagnosed limited disease, favourable classical Hodgkin's lymphoma has completed two cycles of ABVD, and his interim PET-CT shows Deauville score of 2. What is the next step in his treatment ?

(A) 2 more cycles of ABVD

(B) 2 more cycles of ABVD plus involved-field RT

(C) Switch to BEACOPP regimen

(D) No further chemotherapy

160. A middle-aged male patient presents with pancytopenia and massive splenomegaly. Bone marrow revealed moderate marrow fibrosis with hypocellularity with infiltrative mononuclear cells staining positive for CD11c, 20 and 123. Which mutation is he likely to have ?

(A) BCR-ABL

(B) BRAF V600E

(C) del13q14

(D) JAK 2 V617F

161. A middle-aged lady with high-grade follicular lymphoma has relapsed twice once after a rituximab based regimen and the second after an anthracycline-based regimen. She is currently unwilling for HSCT. What treatment would you offer her ?

(A) Radioimmunotherapy

(B) Idelalisib

(C) Interferon alpha

(D) Maintenance rituximab

162. Which of the following is not a feature of VGPR in patients with multiple myeloma ?

(A) Serum and urine M-protein detectable by immunofixation

(B) 90 or greater reduction in serum M-protein

(C) M band on serum or urine electrophoresis

(D) Urine M-protein < 100mg/24 hours

163. The most common mutation encountered in Waldenstrom's macroglobulinemia is :
(A) CXCR4
(B) MYD88
(C) IBTK
(D) NFkB

164. Which of the following is not considered an AIDS-defining illness ?
(A) Peripheral T cell lymphoma
(B) Burkitt's lymphoma
(C) Immunoblastic lymphoma
(D) Primary CNS lymphoma

165. The choice of treatment in low-risk MDS with deletion of chromosome 5q :
(A) Erythropoietin
(B) Thalidomide
(C) Lenalidomide
(D) Azacitidine

166. JAK2 kinase is a :
(A) Cytoplasmic tyrosine kinase
(B) Intrinsic tyrosine kinase
(C) Transcription activator
(D) GTPase

167. Good risk cytogenetics in Acute myeloid leukaemia include :
(A) t(15 ; 17), t(8 ; 21), inv 16, t(16 ; 16)
(B) +8, –y, del 12p, normal karyotype
(C) –5/del 5q, –7/del 7q, complex cytogenetics
(D) None of these

168. The likely immunophenotyping of T-Cell ALL is :
(A) CD3–, CD4+, tdt +ve
(B) CD3–, CD4+, mpo +ve
(C) CD3–, CD4+, mpo +ve, tdt +ve
(D) CD3–, CD4+, tdt -ve

169. The translocation in Burkitt's lymphoma is :
(A) t(8 ; 14)
(B) t(9 ; 22)
(C) t(14 ; 18)
(D) t(15 ; 17)

170. Treatment of choice for Hairy Cell Leukemia is :
(A) Fludarabine
(B) Cladribine
(C) Bendamsutine
(D) Carmustine

171. The biochemical abnormalities in Tumour Lysis syndrome include :
(A) Hyperkalemia, Hypophosphatemia, Hypocalcemia, Hyperuricemia
(B) Hypokalemia, Hypophosphatemia, Hypercalcemia, Hyperuricemia
(C) Hyperkalemia, Hypophosphatemia, Hypercalcemia, Hyperuricemia
(D) Hypokalemia, Hypophosphatemia, Hypocalcemia, Hyperuricemia

172. The most common treatment of choice for Diffuse large B cell lymphoma in a young fit patient is :

(A) R-CHOP

(B) R-CVP

(C) R-Bendamustine

(D) R-Chlorambucil

173. The treatment of choice in young fit CLL patient without P53 mutation is :

(A) FCR or R-Bendamustine

(B) R-CHOP

(C) Daunorubicin and Anthracycline

(D) Prednisolone

174. The typical immunophenotypic findings in Chronic Lymphocytic leukaemia is :

(A) CD5+, CD79b+, CD23+, FMC7-, Smlg weak+

(B) CD5–, CD79b+, CD20+, CD10+, Smlg+

(C) CD10+, CD19+, CD22+, CD79a +, TdT+

(D) CD11C+, CD13+, CD33+, HLA Dr +, MPO+

175. Criteria for Haemophagocytic Lympo-histiocytosis include all of the following except :

(A) Hepato-splenomegaly

(B) Soluble CD65 antigen >2400 IU/ml

(C) Ferritin >500 micrograms/dl

(D) Fasting Triglycerides >250mg/dl

176. A 55-years-old male presents with bone pain, easy fatiguability, weight loss and jaundice for 3 months. Clinically he has splenomegaly and tenderness over bony prominences of the hip and thigh. Investigation revealed pancytopenia with direct Coombs test positive. Peripheral blood immunophenotyping showed CD20+, CD11c+, CD25+ and CD103+. What is the most likely diagnosis ?

(A) Chronic Myeloid Leukemia

(B) Primary Myelofibrosis with transformation

(C) Mixed Connective Tissue Disease

(D) Hairy Cell Leukemia

177. Which is not a WHO diagnostic criterion for CMML ?

(A) Blasts < 20% in blood or bone marrow

(B) Peripheral blood monocytosis > 5 × 10^9/L

(C) Monocytosis persisting beyond 6 months after excluding other causes

(D) Presence of a chromosomal abnormality such as t(5 ; 12)

178. A patient with Chronic Myeloid leukaemia on therapy now develops a T315I mutation. It is decided to start the patient on Ponatinib. Which of the following adverse events is a dreaded complication of this drug ?

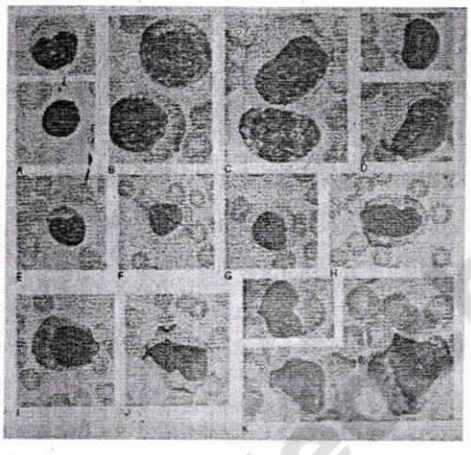
(A) Acute Coronary Syndrome

(B) Optic Neuropathy

(C) Fulminant hepatic failure

(D) PMLE

179. The following abnormal lymphocytes depicted in the pictures below are the examples of :



(A) Plasma Cells

(B) Hairy Cells

(C) Atypical lymphocytes of viral infections

(D) Blasts of Acute Leukemia

180. The Mayo staging system for amyloidosis does not incorporate which of the following parameters :?

(A) Beta2 microglobulin

(B) Free Light Chains difference

(C) Troponin – T

(D) NT – proBNP

181. A patient undergoing chemotherapy for CLL developed a rapid fall in haemoglobin in between cycles of treatment with reticulocytosis and raised LDH. He was started on prednisolone and azathioprine as a steroid-spring agent for probable autoimmune haemolytic anaemia Re-evaluation 2 weeks later showed pancytopenia. What is the most likely mechanism for the same ?

(A) Chemotherapy-induced pancytopenia

(B) Drug-Interaction

(C) Progression of the disease

(D) Secondary Myelofibrosis

182. A patient presents with fever and melena. Investigation shows anaemia, severe thrombocytopenia, a total count of 28000 cells/mm^3 and deranged coagulation parameters. His peripheral smear and bone marrow are suggestive of APML with PML-RAR alpha positive. Which induction regimen is preferred ?

(A) ATRA and Arsenic trioxide

(B) ATRA, Arsenic trioxide and Idarubicin

(C) Arsenic trioxide

(D) Daunorubicin and Cytosine arabinoside

183. In Polycythaemia vera, JAK-2 V617F mutation is present in :

(A) 95%

(B) 60%

(C) 30%

(D) 10%

184. Crizotinib may be offered to patients with which advanced relapsed/ refractory lymphoma ?

(A) ALK-positive ALCL

(B) GCB-DLBLC

(C) CLL with Richter's transformation

(D) ALK-negative ALCL

185. All the following are favourable characteristics in CLL except :

(A) CD38 < 30%

(B) Trisomy 12

(C) Unmutated IGHV

(D) Lymphocyte doubling time > 12 months

186. In Essential Thrombocythaemia patients, Calreticulin (CAL-R) mutation is positive in :

(A) 70%

(B) 90%

(C) 10%

(D) 30%

187. Midostaurin, a novel multi-target protein kinase inhibitor, is effective against :

(A) NPM1 mutated AML

(B) FLT-3 mutated AML

(C) Complex cytogenetics AML

(D) AML with inv 16

188. A fit 55-years-old patient with Follicular lymphoma needs treatment. The treatment of choice is :

(A) R-CHOP

(B) R-CVP

(C) R-CHOP/R-CVP with R-maintenance

(D) R-Chlorambucil

189. The parameters used in the Revised International System (R-ISS) include :

(A) Beta-2 microglobulin, Albumin, LDH, Cytogenetics

(B) Paraproteins, Albumin, LDH, Cytogenetics

(C) Serum-Free light chains, Albumin, Lactate, Cytogenetics

(D) Bence Jones proteins, LDH, ESR, Cytogenetics

190. In the management of Chronic Myeloid Leukemia if a patient has BCR-ABL is $\leq 10\%$ and Ph + $\leq 35\%$ at 3 months after starting treatment, the response is considered :

(A) Warning

(B) Optimal

(C) Failure

(D) None of these

191. The post-transfusion purpura usually occurs :

(A) Immediately after red cell/ platelet transfusion

(B) 5-12 days after red cell/platelet transfusion

(C) 3 days after red cell/platelet transfusion

(D) 1 month after red cell/platelet transfusion

192. Following a stem cell transplant, complications most likely to occur after 60 days post transplant include :

(A) Disseminated Candidiasis

(B) VZV

(C) Adenovirus

(D) Both (B) and (C)

193. A 25-years-old male presents with fever, diarrhoea and weight loss. Clinical examination reveals pallor and hepatosplenomegaly. His blood count shows Hb – 9g/dL, WBC – $4*10^3$/ microlitre with eosinophilia, Platelet count – $45*10^3$/microlitre. Shoulder X-ray done for severe pain in the left shoulder shows an osteolytic lesion and pathological fracture. Bone marrow shows chiefly spindle-shaped cells with basophilic granules and dumbbell-shaped nucleus. The cells are metachromatic with Toluidine blue. The most appropriate next step would be :

(A) Serum protein electrophoresis

(B) Serum tryptase level

(C) C1 esterase estimation

(D) Colonoscopic biopsy

194. Which of the following vectors has not been used in gene therapy for the treatment of haematological malignancies ?

(A) HIV Based Lentivirus

(B) Facilitated DNA

(C) Naked RNA

(D) Murine Retrovirus

195. Primary Myelofibrosis is characterised by diffuse bone marrow fibrosis and extramedullary haematopoiesis. The underlying pathogenesis of the disease occurs due to :

(A) Dysregulated Interleukin-2 secretion secondary to increased T-cell activity

(B) Increased NF-KB signalling pathway secondary to MYD-88 mutations

(C) Increased transforming growth factor-beta secretion secondary to clonal proliferation of megakaryocytes

(D) Decreased metalloproteinases activity and osteoprotegerin deficiency secondary to dysregulated osteoblastic activity

196. The key differentiation between the bone marrow of patients with essential thrombocythemia and patients with pre-fibrotic myelofibrosis is :

(A) Increased dysplastic giant and micro-megakaryocytes

(B) Degree of marrow fibrosis

(C) Hypolobated megakaryocytes

(D) Pseudo Pelger Huet anomaly

197. An elderly male patient presents with a Hb of 7g%, ANC of 950 cells/mm^3, platelets of 96000cells/mm^3. Bone marrow is suggestive of MDS – RCMD with 8% blasts. His karyotyping shows trisomy 8. What is his IPSS-R score ?

(A) 4

(B) 6

(C) 5.5

(D) 6.5

198. A case of relapsed B-cell ALL post HSCT is started on blinatumomab. Its mechanism of action is :

(A) Anti CD22 monoclonal antibody

(B) Anti CD19 CAR-T cell

(C) Bispecific T-cell engager

(D) PDL-1 checkpoint inhibitor

199. A patient, 40 days post allogeneic bone marrow transplant complains of haematuria. His bone marrow conditioning included cyclophosphamide. His urine culture shows no growth. His PSA is normal with normal prostate on USS. His blood counts are normal with normal coagulation profile. The most likely cause of haematuria is :

(A) Cyclophosphamide induced cystitis

(B) BK Virus infection

(C) CMV Virus infection

(D) All of these

200. The ABO antibodies :

(A) Are present at birth

(B) Naturally acquired around three months

(C) Develop around one year

(D) None of these

SPACE FOR ROUGH WORK