Select the one that is best answer:

1) *The amount of plasma proteins (=P.P.) is near to:*

   (A) 10 gm %.
   
   (B) 7 gm %.
   
   (C) 1 gm %.
   
   (D) 30 gm%.

2) *The plasma proteins perform all the following functions except:*

   (A) They exert an osmotic force.
   
   (B) They have a buffering action.
   
   (C) They increase the capillary permeability.
   
   (D) They play a role in the body defense mechanisms.

3) *The normal osmotic pressure of the plasma is similar to:*

   (A) 0.9 % glucose solution.
   
   (B) 0.9 % NaHCO₃ solution.
   
   (C) 40 mmHg
   
   (D) 0.9% NaCl solution.

4) *The plasma albumin is specially needed for:*

   (A) Immunity.
   
   (B) Production of osmotic pressure.
   
   (C) Blood coagulation.
(D) All of the above.

5) **The A/G ratio is important clinically in detecting:**
   
   (A) Liver disease.
   (B) Cardiac disease.
   (C) Nervous disease.
   (D) Lung disease.

6) **The source of plasma proteins can be determined by:**
   
   (A) Electrophoresis.
   (B) Plasmapheresis.
   (C) The Dye-Dilution technique. (D) None of the above.

7) **The plasma gamma globulins are synthesized mainly in the:**
   
   (A) Liver.
   (B) Heart
   (C) Lungs.
   (D) Reticuloendothelial system.

8) **The Viscosity produced by plasma proteins is mainly due to:**

   (A) Prothrombin.
   (B) Albumin.
(C) Fibrinogen.

(D) All of the above.

9) About the following abnormalities and their reasons, all are true except:

(A) The A/G ratio is reduced in liver disease due to decreased synthesis of albumin.

(B) Tissue fluid formation increases in cases of hypoproteinaemia due to decreased oncotic (osmotic) pressure of the plasma proteins.

(C) Pernicious anaemia occurs in cases of atrophy of the gastric mucosa due to lack of the intrinsic factor required for vitamin B12 absorption.

(D) The ESR is increased in inflammatory conditions due to increased synthesis of albumin.

10) All the following are major functions of the plasma except:

(A) Transport of hormones.

(B) Transport of CO₂.

(C) Transport of antibodies.

(D) Transport of O₂.

11) All the following are functions of the plasma proteins except:

(A) Control of the plasma volume.

(B) Control of erythropoiesis.

(C) Transport of hormones.

(D) Carriage of carbon dioxide.
12) **All the following about plasma albumin is true except:**

(A) It makes the greatest contribution to the plasma oncotic pressure.

(B) It is minimally filtered at the renal glomeruli.

(C) It behaves as an anion at the blood pH.

(D) It is involved in the production of immunity.

13) **In the plasma:**

(A) Water constitutes about 60 % of its total volume.

(B) The main cation is sodium at a concentration of 42 mEq /litre.

(C) The concentration of plasma proteins is about 7 gm %.

(D) The inorganic constituents’ concentration is 0.19 %.

14) **The colloidal osmotic pressure of the plasma is:**

(A) Mainly caused by the plasma fibrinogen content.

(B) Responsible for diffusion of water and solutes out of the capillaries.

(C) About 300 milliosmoles /litre.

(D) About 1-2 milliosmoles /litre (28 mmHg).

15) **Erythropoietin is essential for:**

(A) Leukopoiesis.

(B) Formation of prothrombin.

(C) Formation of red blood corpuscles.
16) **Blood cell destruction occurs mainly in the:**

(A) Bone marrow.
(B) Kidneys
(C) Heart.
(D) Spleen.

17) **The polypeptides in the globin part of normal adult Hb consists of:**

(A) 2 alpha and 2 beta chains.
(B) 2 alpha and 2 gamma chains.
(C) 2 alpha and 2 delta chains.
(D) 2 beta and 2 gamma chains.

18) **Increased R. B.Cs fragility occurs in all the following cases except:**

(A) Sickle cell anaemia.
(B) Glucose-6-phosphate dehydrogenase deficiency.
(C) Iron deficiency anaemia.
(D) Hereditary spherocytosis.

19) **Erythropoiesis in adult individuals occurs normally in the:**

(A) Liver.  (B) Red bone marrow.
(C) Yellow bone marrow.  (D) Spleen.
20) The red cells in iron deficiency anaemia are:

(A) Normocytic normochromic.
(B) Spherocytic cells.
(C) Microcytic hypochromic
(D) Macrocytic hyperchromic.

21) Improper maturation of the red blood corpuscles can be caused by:

(A) Vitamin B12 deficiency.
(B) Hypoxia.
(C) Iron deficiency.
(D) Bone marrow aplasia.

22) The main site of production of erythropoietin is the:

(A) Liver.
(B) Bone marrow.
(C) Spleen. (D) Kidneys.

23) The normal value of the:

(A) Packed cell volume (haematocrit) is 20 %.
(B) Blood pH is 6.6.
(C) Mean corpuscular volume is about 87 cubic microns.

(D) Plasma volume is about 5 litres.

24) **All the following are normal values except:**

(A) The ESR in adult males is 2-5 mm/hour.

(B) The mean corpuscular haemoglobin is 129 pg.

(C) The mean corpuscular Hb concentration is 33 %.

(D) The average R.B.Cs diameter is 7.5 microns.

25) **In the following, mark the wrong statement:**

(A) Some substances (e.g. thyroid hormones) circulate bound to plasma proteins to increase their buffering capacity.

(B) Hb is present inside the R.B.Cs to prevent its escape to the plasma and excretion in the urine.

(C) Erythropoiesis is increased in normal animals when injected with plasma obtained from hypoxic animals.

(D) The ESR is of little value in the diagnosis of diseases but is much helpful in prognosis.

26) **A haematocrit value of 45 % means that:**

(A) 45% of the Hb is in the plasma.

(B) 45 % of the total blood volume is made up of plasma.

(C) 45 % of the total blood volume is made up of blood cells.

(D) 45 % of the Hb is in the red blood cells.
27) **Haemolytic anaemia may be caused by all the following except:**

(A) Iron deficiency.
(B) Abnormal haemoglobin.
(C) Congenital spherocytosis.
(D) Deficiency of G-6-P dehydrogenase.

28) **Polycythaemia may occur in all the following conditions except:**

(A) Tumours of the kidney.
(B) Right to left shunts in the heart.
(C) Advanced liver disease.  (D) High altitudes.

29) **The intrinsic factor:**

(A) Is found in the liver.
(B) Is produced by the gastric parietal cells.
(C) Is secreted by the terminal ileum.
(D) Aids absorption of folic acid.

30) **Pernicious anaemia may be all the following except:**

(A) Sometimes the result of the malabsorption syndrome.
(B) Treated with iron.
(C) The cause of peripheral neuropathy.
(D) Associated with carcinoma of the stomach.

31) **About the active erythropoietic tissue, all the following is true except:**
(A) It is not found in the vertebrae of adults.

(B) It is present early in intrauterine life.

(C) It occupies the whole bone marrow at birth.

(D) It is replaced by fat in the shafts of long bones in healthy adults.

32) All the following substances are essential for the normal development of R.B.Cs except:

   (A) Folic acid.                          (B) Ascorbic acid.
   (C) Nicotinic acid.                    (D) Cyanocobalamine.

33) About iron metabolism in normal adults:

   (A) The human body contains about 20 gm of iron.

   (B) Iron deficiency anaemia is microcytic.

   (C) Iron absorption in the GIT does not require any proteins.

   (D) The solubility of iron is increased by platelets.

34) About iron deficiency anaemia:

   (A) It is more common in men than in women.

   (B) It is characterized by large pale erythrocytes.

   (C) It is typically found following chronic blood loss from the body.

   (D) It occurs in gastric diseases associated with lack of the intrinsic factor.
35) **The red blood corpuscles:**

(A) Haemolyze when placed in a hypertonic solution.

(B) In sickle cell anaemia contain haemoglobin A.

(C) Are smaller than normal in case of folic acid deficiency.

(D) Are normal in size in anaemia due to bone marrow depression.

36) **The production of erythrocytes:**

(A) Is decreased in high altitudes.

(B) Occurs in the spleen in normal adults.

(C) Is stimulated by an increase in the arterial PCO₂.

(D) Is decreased if the stomach loses the ability to produce a normal gastric juice.

37) **About erythrocytes:**

(A) They contain no enzymes.

(B) They are responsible for the major part of blood viscosity.

(C) Their life span is about 2 months.

(D) Their Hb content carries only O₂.

38) **About erythrocytes, all the following is true except:**

(A) The blood group antigens are part of their membranes.

(B) If a person has group B, his father might have group 0.
(C) Their breakdown releases iron most of which is stored.
(D) They secrete erythropoietin.

39) An anaemic subject has R.B.Cs count 3.5 million/mm$^3$, PCV42 % & Hb 14gm %, by using the blood indices this subject most probably has:

(A) Aplastic anaemia.
(B) Macrocytic hyperchromic anaemia.
(C) Normocytic normochromic anaemia.
(D) Microcytic hypochromic anaemia.

40) Severe depression of the bone marrow may result in:

(A) Microcytic hypochromic anaemia.
(B) Increased number of granulocytes.
(C) Aplastic anaemia, leucopenia, and thrombocytopenia.
(D) Increased coagulability of the blood.

41) All the following conditions cause anaemia except:

(A) Erythroblastosis fetalis.
(B) Vitamin B12 deficiency.
(C) Hypothyroidism.
(D) Living at high altitudes.

42) In pernicious anaemia:
(A) The life span of R.B.C.s is longer than normal.
(B) There is microcytic hyperchromic anaemia.
(C) The formation of macrocytes is decreased.
(D) Decreased absorption of vitamin B12 is suspected.

43) **The sedimentation rate:**

(A) Is essential for the diagnosis of certain diseases.
(B) Is decreased if the plasma globulins level increases.
(C) Is increased in pregnant and menstruating women.
(D) Has no value in the prognosis of diseases.

44) **The function of lymphocytes is:**

(A) Phagocytosis.
(B) Heparin formation.
(C) Antibody formation.
(D) Release of serotonin.

45) **The first line of defense against bacterial infections is the:**

(A) Monocytes.
(B) Eosinophils.
(C) Neutrophils.
(D) Basophils.
46) Neutrophils are attracted to infection areas by the process of:

(A) Phagocytosis.                           (B) Diapedesis.
(C) Opsonization.                           (D) Chemotaxis.

47) The enzyme in neutrophils that kills the ingested bacteria is:

(A) Carbonic anhydrase.                  (B) Myeloperoxidase.
(C) Histaminase.                              (D) G-6-P dehydrogenase.

48) The most important function of neutrophils & monocytes is:

(A) Phagocytosis.                      (B) Blood coagulation.
(C) Diapedesis.                          (D) Antibody production.

49) Microphages are characterized by all the following except:

(A) They are actively motile.
(B) They are actively phagocytic.
(C) They contain many lysosomal granules.
(D) They can produce immunoglobulins.

50) Leukopenia tends to occur in all the following conditions except:

(A) Starvation.                           (B) Trauma.
(C) Pernicious anaemia.
(D) When using drugs that depress the bone marrow.

51) **The tendency for a transplanted organ to be rejected is reduced by:**

(A) Stimulating erythropoiesis.
(B) Drugs that increase mitosis.
(C) Drugs that decrease the lymphocytic count.
(D) Enhancing blood coagulation.

52) **The antigen-antibody reactions may lead to all the following except:**

(A) Clumping of the cells carrying the antigen.
(B) Lysis of the cells carrying the antigen.
(C) Susceptibility of the antigen-carrying cells to phagocytosis.
(D) Enhanced blood coagulation.

53) **The neutrophil granulocytes:**

(A) Are immotile so they cannot leave the blood stream.
(B) Are the least numerous leukocytes in the blood.
(C) Contain lysosomes and oxidizing agents.
(D) Have a life span of about 120 days.

54) **Concerning the granulocytes:**

(A) The most abundant type is eosinophils.
(B) The eosinophils count increases in ascaris infections.

(C) The neutrophils phagocytize bacteria by a passive process.

(D) The basophils play no role in hypersensitivity reactions.

55) The defensive function of neutrophils is achieved by:

(A) Being macrophages which destroy large particles.

(B) Playing a major role in cellular immunity.

(C) Phagocytizing bacteria and killing them by H$_2$O$_2$ and superoxide.

(D) Releasing immunoglobulins.

56) the reticuloendothelial system performs all the following functions except:

(A) Defence action.

(B) Repair of injured tissues.

(C) Destruction of old blood cells.

(D) Synthesis of haemoglobin.

57) In adults, the spleen is important because of its:

(A) Blood-storage capacity.

(B) Power to form erythrocytes.

(C) Defensive action.

(D) Role in blood coagulation.
58) A group B Rh -ve person can receive blood for the second time from:

(A) Group AB Rh -ve.  
(B) Group O Rh -ve.  
(C) Group O Rh +ve.  
(D) Group B Rh +ve.

59) Blood type O persons are considered universal donors because:

(A) Type O blood has the commonest distribution.  
(B) Their R.B.Cs contain neither A nor B agglutinogens.  
(C) Their R.B.Cs may contain the Rh factor.  
(D) Their plasma contains both alpha and beta agglutinins.

60) Incompatible blood transfusion may cause all the following except:

(A) Haemolytic jaundice.  
(B) Anuria.  
(C) Capillary block.  
(D) Hypertension.

61) Erythroblastosis fetalis occurs with:

(A) Rh -ve mother and Rh + ve fetus.  
(B) Rh -ve mother and Rh - ve father.  
(C) Rh + ve mother and Rh - ve fetus.  
(D) Rh + ve mother and Rh - ve father.
62) If a man’s plasma agglutinates both A and B red cells, he is group:

(A) B.
(B) A.
(C) AB.
(D) O

63) The following antibodies are present in group A Rh -ve persons:

(A) Anti B.
(B) Anti A.
(C) Anti Rh.
(D) All of the above.

64) A child of a group A Rh +ve mother and group AB Rh -ve father could be any of the following except:

(A) A Rh +ve.
(B) B Rh +ve.
(C) AB Rh -ve.
(D) 0 Rh -ve.

65) Blood agglutination would occur in all the following cases except:

(A) If the donor is group 0 and the recipient group AB.
(B) If the donor is group AB and the recipient group 0.
(C) If the donor is group B and the recipient group 0.
(D) If the donor is group A and the recipient group B.

66) **All the following about erythroblastosis fetalis is true except:**

(A) It is common with Rh +ve fathers and Rh -ve mothers.
(B) It is treated by blood transfusion having an Rh characteristic as that of the mother.
(C) It can be avoided by giving the mother anti-Rh antibodies immediately after labour.
(D) It cannot affect the first baby of Rh -ve mothers.

67) **About haemolysis, all the following is true except:**

(A) It normally occurs after injecting hypertonic solutions.
(B) It is associated with jaundice.
(C) It leads to oliguria.
(D) It starts at a concentration of about 0.5 % NaCl solution.

68) **Before blood transfusion, which of the following should be done?**

(A) Erythrocyte sedimentation rate.
(B) Osmotic fragility of the R.B.Cs.
(C) Blood indices.
(D) Cross matching test.
69)  **The coagulation time is prolonged in:**

(A) Haemophilia.  (B) Anaemia.

(C) Polycythemia.  (D) Purpura.

70)  **The conversion of fibrinogen to fibrin is promoted by:**

(A) Factor X.  (B) Thrombin.

(C) Prothrombin.  (D) Platelets.

71)  **Purpura is caused by deficiency of:**

(A) Factor VIII.  (B) Prothrombin.

(C) Vitamin K.  (D) Platelets.

72)  **Dicumarol acts as an anticoagulant by:**

(A) Precipitation of Ca$^{2+}$.  
(B) Inhibition of vitamin K action.

(C) Inhibition of thrombin.  (D) Preventing activity of factor IX.

73)  **The platelets produce haemostasis by releasing all the following substances except:**

(A) ADP.  (B) Platelet factor 3 (PL).

(C) Thromboxane A2.  (D) Thrombopoietin.
74) *The activation of prothrombin into thrombin is achieved by:*

(A) Factor Xa.  
(B) Factor III.  
(C) Factor VIII.  
(D) Factor IXa.

75) *All the following about coagulation factor VII is true except:*

(A) It is synthesized in the liver.  
(B) It is activated by a tissue factor.  
(C) It is important for the intrinsic pathway of blood clotting.  
(D) When activated, it activates factor X.

76) *The clotting time is prolonged in all the following conditions except:*

(A) Haemophilia.  
(B) Hypoprothrombinaemia.  
(C) Excessive liver damage.  
(D) Hypercholesterolaemia.

77) *Prolongation of the bleeding time occurs in case of:*

(A) Decreased plasma fibrinogen.  
(B) Decreased platelet count.  
(C) Haemophilia.  
(D) Factor X deficiency.
78) About the action of anticoagulants, all the following is true except:

(A) Dicumarol interferes with the synthesis of prothrombin in the liver.
(B) Oxalates form insoluble salts with Ca$^{2+}$.
(C) Citrates and other chelating agents bind Ca$^{2+}$.
(D) Heparin blocks the action of antithrombin III.

79) About the coagulation mechanism all the following is true except:

(A) Platelet factor 3 is required for both the extrinsic and intrinsic systems.
(B) The intrinsic system occurs both in vivo and in vitro.
(C) Intravascular thrombosis occurs by the extrinsic system.
(D) The intrinsic system utilizes factors VIII, IX, XI and XII.

80) The haemorrhagic tendency in obstructive jaundice is due to:

(A) Deficiency of platelets.
(B) Increased serum bile salt concentration.
(C) Deficiency of factor VIII.
(D) Lack of factors II, VII, IX and X.

81) Reduction of the serum Ca$^{2+}$ level in vivo:

(A) Does not affect blood coagulation.
(B) Does not affect the neuromuscular excitability.
(C) Leads to muscle relaxation.
(D) Prolongs the bleeding time.
82) **The bleeding time:**

(A) Measures the rate of bleeding from a small puncture.

(B) Is significantly prolonged in haemophilia.

(C) Normally averages about 2-3 minutes.

(D) Is independent of the platelet count.

83) **About intravascular clotting, all the following is true except:**

(A) It occurs by the intrinsic system of coagulation.

(B) It is induced by a decrease in the blood flow rate.

(C) It is related to the clumping of platelets.

(D) It does not normally occur because Ca\(^{2+}\) is present.

84) **A female carrier of haemophilia married to a haemophilic male may produce any of the following except:**

(A) A normal daughter.

(B) A normal son.

(C) A haemophilic daughter.

(D) A carrier daughter.

85) **All the following about plasmin is true except:**

(A) It is formed from plasminogen by a tissue activator (TPA).

(B) It produces fibrinogen degradation products (FDP).

(C) It can be inhibited by an antiplasmin.
(D) It is responsible for the formation of fibrin.

86) The maintenance of blood fluidity depends on all the following factors except:
(A) The smooth intact vascular endothelium.
(B) The presence of heparin and antithrombin III.
(C) Absence of plasminogen.
(D) An intact fibrinolytic system.

87) About protein C, all the following is true except:
(A) Its activator is formed from thrombin by the action of thrombomodulin.
(B) It is a natural anticoagulant protein.
(C) It activates the inhibitor of TPA.
(D) It inactivates both factors V and VIII.

88) Blood coagulation can be delayed by all the following except:
(A) Deficiency of prothrombin.
(B) Deficiency of factor IX.
(C) Heparin.
(D) Serotonin.

89) A reduction of the blood level of coagulation factor VIII:
(A) Increases the bleeding time beyond the normal range.
(B) Is a hereditary disease due to an abnormal gene on the Y chromosome.

(C) Causes prolongation of the clotting time.

(D) Is commonly associated with petechial haemorrhages in the skin.

90) The treatment of patients suffering increased tendency of blood clotting is:

(A) Strict bed rest.

(B) I.V. heparin followed by vitamin K antagonists (e.g. dicumarol)

(C) I.V. administration of sodium citrate.

(D) Increasing the rate of erythropoiesis.

91) About bleeding from a small skin cut, all the following is true except:

(A) It ceases within about 4 minutes in normal people.

(B) It is prolonged if factor VIII is deficient.

(C) It is normally diminished by local vascular spasm.

(D) Its stoppage depends on the platelet count in the blood.

92) Concerning platelets, all the following is true except:

(A) Their membranes contain phospholipids that are involved in blood clotting

(B) They release 5-hydroxytryptamine and thromboxane A2.

(C) Their aggregation is inhibited by both thrombin and the Von Willebrand factor.

(D) They are concerned with formation of the primary haemostatic plug.
93) **The haemostatic disorder in obstructive jaundice is:**

(A) Due to deficiency of factor IV.

(B) Secondary to lack of platelets.

(C) Characterized by a longer bleeding time than normal.

(D) Characterized by a longer coagulation time than normal due to decreased vitamin K reabsorption.

94) **Thrombin is required for activation of all the following except:**

(A) Plasminogen.

(B) Fibrinogen.

(C) Clot retraction.

(D) Factor III.

**Which of the following statements is true and which is false:**

1) **Human plasma albumin:**

(A) Contributes more to plasma colloid osmotic pressure than globulin.

(B) Filters freely at the renal glomerulus.

(C) Is negatively charged at the normal pH of blood.

(D) Carries carbon dioxide in blood.

2) **Blood:**

(A) Makes up about 8% of body weight
(B) Volume can be calculated by multiplying plasma volume by the haematocrit (expressed as percentage)

(C) Volume rises after water is drunk

(D) Squeezes serum when it clots

3) **Breakdown of erythrocytes in the body.**

(A) Occurs when they are 6-8 weeks old.

(B) Takes place in the reticulo-endothelial system.

(C) Yields iron, most of which is excreted in the urine.

(D) Is required for the synthesis of bile salts.

4) **Erythrocytes:**

(A) Are responsible for the major part of blood viscosity.

(B) Contain the enzyme carbonic anhydrase.

(C) Metabolize glucose to produce CO₂ and H₂O.

(D) Swell to bursting point when suspended in 0.9% (150 mmol/litre) saline.

5) **Circulating red blood cells:**

(A) Are nucleated cells.

(B) Are distributed evenly across the blood stream in large blood vessels

(C) Travel at slower velocity in venules than in capillaries

(D) Deform as they pass through the capillaries
6) The specific gravity (relative density) of:

(A) Red cells is less than that of plasma
(B) Plasma is due more to its protein than to its electrolyte content
(C) Blood is higher on average in women than in men
(D) Plasma can fall below 1.000 after excess water ingestion.

7) Patients with moderate to severe anemia have a reduced:

(A) Cardiac output (B) Arterial PO$_2$
(C) 2:3-diphosphoglycerate blood level
(D) Capacity to raise oxygen consumption in exercise

8) Iron deficiency:

(A) Frequently follows persistent loss of blood from the body
(B) Is more common in men than in women
(C) May cause anaemia by inhibiting the rate of multiplication of RBC stem cells
(D) May cause large pale erythrocytes to appear in peripheral blood

9) The haematocrit (Packed cell volume):

(A) May be obtained by centrifugation of blood
(B) May be calculated by multiplying the mean cell volume by the red cell count in 100 ml blood.
(C) Rises following injections of aldosterone
(D) Rises in macrocytic megaloblastic anaemias such as pernicious (B$_{12}$ deficiency) anaemia

10) **Red cell formation is increased:**

(A) By giving vitamin B$_{12}$ injections to healthy people on a normal diet

(B) In blood donors 1 week after a blood donation

(C) In patients with haemolytic anaemia

(D) By giving injections of erythropoietin to nephrectomized patients

11) **Vitamin B$_{12}$ deficiency may:**

(A) Result from disease of the terminal part of the ileum

(B) produce microcytic anaemia.

(C) produce aplastic anaemia.

(D) Cause pathological changes in the central nervous system

12) **Monocytes:**

(A) Originate from precursor cells in lymph nodes.

(B) Can increase in number when their parent cells are stimulated by factors released from activated lymphocytes.

(C) Unlike granulocytes, do not migrate across capillary walls.

(D) Can transform into large multinucleated cells in certain chronic infections.

13) **Neutrophil granulocytes:**

(A) Are the most common leucocyte in normal blood.
(B) Contain proteolytic enzymes.

(C) Have a life-span in the circulation of 3-4 weeks.

(D) Are present in high concentration in pus.

14) **Blood eosinophils:**

(A) Have agranular cytoplasm

(B) Are about a quarter of all leucocytes

(C) Are involved in attacking the invading parasites.

(D) Increase in number in allergic conditions.

15) **Reduction in the neutrophil granulocyte count may be:**

(A) Caused by drugs suppressing bone marrow activity

(B) A consequence of tissue damage

(C) Associated with widespread bacterial infections

(D) Caused by high levels of circulating glucocorticoids

16) **Blood group antigens (agglutinogens) are:**

(A) Carried on the haemoglobin molecule.

(B) Equally Immunogenic.

(C) Beta globulins.  

(D) Present in fetal blood.
17) **A person with group A blood:**

(A) Has anti-B antibody in the plasma.

(B) May have the genotype AB.

(C) May have a parent with group O blood.

(D) May have children with group A or group O blood only.

18) **Antibodies (agglutinins) of the A and B red cell antigens (agglutinogens):**

(A) Are present in fetal plasma

(B) Cause haemolysis of RBCs containing the A and B antigens when added to blood

(C) Do not normally cross the placental barrier

(D) Its titre reaches maximum at 8-10 years of age.

19) **Haemolytic disease of the new-born:**

(A) Affects mainly babies of Rh-positive mothers

(B) Occurs mainly in babies who lack D agglutinogen

(C) Can be treated by transfusing the affected baby with Rh-positive blood

(D) Can be prevented by injecting the mother with anti-D agglutinins just after delivery

20) **Severe reactions are likely after transfusion of blood group:**

(A) A to a group B person

(B) O to a group AB person
(C) A to a group O person
(D) A to a group AB person

21) **Blood platelets assist in arresting bleeding by:**

(A) Releasing factors promoting blood clotting.
(B) Adhering together to form plugs when exposed to collagen.
(C) Liberating high concentrations of calcium.
(D) Releasing factors causing vasoconstriction.

22) **Bleeding from a small cut in the skin:**

(A) Is normally diminished by local vascular spasm.
(B) Ceases within about 5 min in normal people.
(C) Is prolonged in severe factor VIII (antihaemophilic globulin) deficiency.
(D) Is greater from warm skin than from cold skin.

23) **Normal blood clotting requires:**

(A) Inactivation of heparin
(B) Inactivation of plasmin (fibrinolysin)
(C) Calcium ions
(D) An adequate intake of vitamin K

24) **Blood platelets:**

(A) Are formed in the bone marrow
(B) Are normally more numerous than white cells  
(C) Have a small single-lobed nucleus  
(D) Alter shape when in contact with collagen

25) The conversion of fibrinogen to fibrin:  
(A) Is affected by prothrombin  
(B) Involves the disruption of certain peptide linkages by a proteolytic enzyme  
(C) Is followed by polymerization of fibrin monomers  
(D) Is inhibited by heparin

26) Deficiency of factor VIII (antihaemophilic globulin):  
(A) Increases the bleeding time  
(B) Is due to an abnormal gene on the Y chromosome  
(C) Causes small (petechial) haemorrhages into the skin to cause purpura  
(D) Affects the extrinsic, rather than the intrinsic, pathway for blood coagulation
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