KGMC OSPES PRE-PROFF

BLOCK A

1. Which Vitamin is involved in carbon metabolism
2. Porphyria definition
3. **Hemoglobin definition**
   Hb is a protein containing heme which is iron containing porphyrin known as iron porphyrin IX. Porphyrin nucleus is formed by four pyrrole rings joined by methane bridges. Protein globin combines with heme to form hemoglobin

4. **Buffer definition**
   Buffer is a substance that has the ability to bind or release H^+ ions in solution, thus keeping pH of the fluid relatively constant despite addition of considerable quantities of base or acid

5. **Name buffer systems in body**
   Buffer systems of body are weak acids that exist as a mixture of pronated form and unpronated form in physiological pH range. Buffer systems are most immediate defences against pH changes
   Buffer systems present in blood are
   - Hemoglobin
   - Plasma proteins
   - Phosphate buffer – mainly act as a buffer in intracellular fluid because its concentration in extracellular fluid is less
   - Bicarbonate buffer

6. Name water soluble vitamins
7. Vitamin C functions
8. **Niacin deficiency**
   Pellagra characterized by 4 D's i.e. diarrhea, dermatitis, dementia, death

9. **Heme degradation steps**
   Macrophages break the Hb molecule into heme and globin. Iron released from it enters into circulation and is carried to bone marrow for utilization to other tissues for storage in form of ferritin.
   Porphyrin portion of heme is converted to bile pigment bilirubin which is released into the blood. Bilirubin entered in circulation is taken up by liver which is made soluble by binding it with glucuronic acid or sulphate and is excreted in bile. In the intestine it is converted into urobilinogen by the intestinal bacteria. Most of the part of urobilinogen is excreted in feces. It is oxidized to urobilin on exposure to air, or in feces it is altered to form stercobilin. Some part of urobilinogen is absorbed in blood and excreted in urine.

10. Porphyrin structure

11. **Immunoglobulin definition**
    Immunoglobulin is also called antibody. It has four peptide chains, two long chains called heavy chains and two small ones called light chains.
    Two heavy chains form Fc chain forming a constant portion.
    Two light chains form two prongs which form variable portion, different for each antibody. Thus antibody is highly specific

12. Bones types
13. Joints classification
14. Lymph node identification (from slide picture), clinicals and functions
15. **How lymph is formed**
    Lymph is derived from interstitial fluid and therefore it has almost the same composition as that of interstitial fluid of the tissue.

16. Types of acquired immunity
17. Benedicts test, Saliwinoff test, Barfoed test
18. WBC count determination by formula
19. Hb determination method, its pipette marking. Why it does not have bubble
20. Slides of neutrophil and epithelium
21. Bleeding time determination from filter paper
22. Placenta diagram identification
    Three main functions of placenta
    Umbilical cord and its functions
23. Erythroblastosis fetalis
24. Mesoderm, ectoderm and endoderm derivatives
25. Anemia classification based on morphology of RBC (microcytic, hypochromic, macrocytic) and their causes
26. Invert sugar
27. Hydrolysis products of diasaccharides
28. Normal WBC count and conditions in which it is increased
29. Condition in which bleeding time is increased while clotting time is normal
    Purpura
30. Condition in which clotting time is increased while bleeding time remains normal
    Hemophilia
31. **Conditions in which neutrophil count is increased**
    Increase in circulating neutrophils is called neutrophilia.
    Pathological causes of neutrophilia:
    - Acute bacterial infections
    - Certain acute viral infections e.g. small pox, chicken pox, poliomyelitis
    - Non-infective inflammatory conditions like gout, acute rheumatic fever, burns etc
    - Intoxication – uremia, diabetic ketoacidosis
    - Acute hemorrhage

32. **Hemostasis steps**

- Constriction of blood vessel
- Formation of a temporary platelet plug
- Activation of coagulation cascade
- Formation of fibrin plug or final clot

33. **Homeostasis definition and examples of each type**
    Homeostasis means maintenance of static or constant conditions in the internal environment of cells.
    The following factors must be maintained for hemeostasis
    - pH
    - temperature
    - Electrolyte concentrations
    - Supply of nutrients
    - Supply of oxygen
    - Hormone levels
    - Metabolic end products
    - Water content
34. Microscope operation full method to visualize the given slide under magnification
35. Perform practical of blood group
36. **Internal and external environment definition**
    Extracellular fluid is also called internal environment of body.
    The environment outside the body is called external environment.

37. Lymphangitis
38. Measles vaccine administration route
    Ans: Subcutaneous
39. From where is lymph derived
40. Volume of RBC square
    If RBC is 80 squares = y
    RBC in 1 square = $\frac{y}{80}$
    Area = $\frac{1}{25}$ X $\frac{1}{16}$ = $\frac{1}{400}$mm^2
    Volume of 1 RBC square = Area X depth = $\frac{1}{400}$ X $\frac{1}{10}$ = $\frac{1}{4000}$
    $\frac{1}{4000}$= $\frac{y}{80}$
    1 mm^3 = $\frac{y}{80}$ X 4000 X dilution factor
    1 mm^3 = $\frac{y}{80}$ X 4000 X 200
41. Volume of WBC square
    Depth of Neubauer's chamber
    Dilution fluid used for WBC count
    Dilution fluid used for RBC count
42. A patient presents in OPD with DLC values; N60, L25, E10, M5, B0. His TLC is 7000 per mm^3. Calculate the absolute count
43. Determin Hb by Sahli's method

44. **Normal WBC count**
    4000 – 11,00 /mm^3

45. Two identification points of WBC pipette
    Calibrations are 0.5, 1 and 11
    Bulb has a white bead
    Dilution is 1 in 20

46. Give the normal range of bleeding and clotting time
47. What is the principle of Sahli's method
48. Give two uses of Wintrobe's tube
49. What is normal RBC count
    5 million per 1 ml
50. It is best to count RBC under high power
51. What is the composition of Hayem's solution
52. What is the use of methyl alcohol in Leishman's stain
53. What is arneth count
54. **Buffy coat is formed of**
    Platelet and WBC

55. Causes of raised hematocrit are

BLOCK C

1. **Effects of X-Rays on pregnancy**
   Exposure to high-dose radiation two to eight weeks after conception might increase the risk of fetal growth restriction or birth defects. Exposure between weeks 8 and 16 might increase the risk of a learning or intellectual disability

2. **Types of shock**
   - **Cardiogenic shock** – results from diminished cardiac pumping ability
   - **Hypovolemic shock** – due to hemorrhage
   - **Neurogenic shock** – due to increased vascular capacity so much that even normal amount of blood is incapable of filling this circulatory system adequately. One of the major causes of vascular capacity is loss of vasomotor tone
   - **Septic shock** – refers to bacterial infection widely disseminated to many areas of the body, with the infection being carried through the blood from one tissue to another and causing extensive damage
   - **Anaphylactic shock** – allergic condition in which cardiac output and arterial pressure often decrease drastically

3. BP measurement
4. Cholesterol test

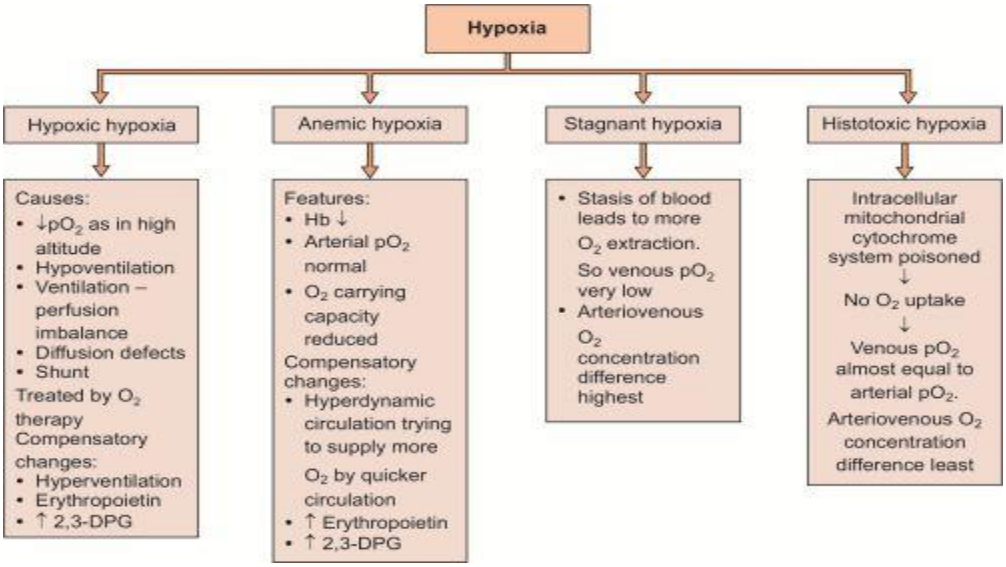
5. **Short term control of BP**
    - Autonomic nervous system
    - Baroreceptor response
    - Chemoreceptor response
    - CNS ischemic response

6. **Lungs blood supply**
   The blood supply to the tissues of the lung, its lymph nodes, bronchi and visceral pleura, comes from the bronchial arteries. The venous drainage of the alveoli and the small bronchi is provided by the pulmonary veins, whereas that of the larger bronchi is via the bronchial veins

7. Where are the lobes of lungs located in the body
   Three lobes in right lung
   Two lobes in left lung

8. **Types of eicosanoids**
   There are different types of eicosanoids, but the three most researched types are prostaglandins, thromboxanes, and leukotrienes

9. **Types of hypoxia**



10. Cardiac enzyme definition and their duration
11. Enzymes, their classification, factors affecting their activity, isozymes, lyases definition
12. Cardiac muscle, artery, vein slides identification
13. FEV1 and FVC ratio and their abnormality

14. First and second heart sound, their cause and pitch
    S1 – due to closing of AV valves
    S2 – due to closure of semilunar valves
    S2 have higher pitch than S1

15. Label the graph of JVP waveform
16. From given ECG, determine the heart rate
17. Effect of X-Ray in pregnancy and in which trimester the fetus will be most affected
18. Causes of atherosclerosis
19. Causes of pulmonary edema
20. Perform cholesterol detection test