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**Bs (MLT) 2nd Section B**

**ID. 15805**

**Paper. Hematology**

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 **Answer no 1**

**Erythropoiesis :.**

 **It is derived from a Greek word ‘’ erytro ‘meaning “red” and poiesis means “to make” is the process which produces red blood cells (erythrocyte) which is the development from erythropoietic stem cell to mature red blood cell.**

**The bone marrow of essentially all the bone produced red blood cells until a person is around five years old.**

 **Developmental stage of Erythropoiesis :.**

**Proerythroblast :.**

 **\*Earlist erythroid elements**

 **\*Basophilic cytoplasm with a perinuclear halo**

 **\*Cytoplasm bulges to form Ear shaped processe.**

**\* Nuclear chromatin is not homogenous and nucleolus is seem**

**Early normoblast :.**

 **Smaller than Proerythroblast**

 **Nuclear chromatin show sharp contrast between light and dark areas**

 **Cytoplasm is Basophilic reflecting protein and RNA content**

**Intermediate normoblast**

 **Polychromasia means having many colors**

**Nucleas mature and condensed.**

**Cytoplasm has a gray hue derived from Hb (homogulobine).**

**Reticulocyte as seem under the SEM ( scanning Electronic Microscope).**

**Mature non nucleated erythrocyte.**

**\*Reddish, circular, biconcave cells**

**\* 7\_8 micrometer.**

**\* No visible internal structure**

**\* High Hb Content**

**\* Bright at center due to biconcave shape.**

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 **Answer no 2.**

 **Drop of to large or to small. Spreader slide pushed across the horizontal slide in a jerky manner. Failure to keep the entire edge of the spreader slide against the horizontal slide while making the smear. Failure in using appropriate angle for the spreader slide.**

**Failure keep the spreader at a 30 angle with the slide.**

**Failure to push the spreaders slide completely across the slide**

**Irregular spread with ridge and long tell. Edge of spreader dirty or chipped, dusty slide.**

**Hole in film Slide contaminated with fat or grease.**

**Cellular degenerative change delay in fixing, inadequate fixing time or methanol contaminated with water.**

**Causes and correction :.**

**\*To acid stain**

**\*insufficient staining time**

**\*prolonged buffering or washing**

**\*old stain**

**Correction :.**

**\*lengthen staining time**

**\*check stain and bitter PH**

**\*shorter buffering or washing time.**

 **Answer no 3 :.**

**Granulupoiesis :.**

 **It is a process by which committed hemopoietic progenitor cells develop into granulocytes under the influence of various growth factors and cytokines.**

**This composite image shows the different stage of granulopoiesis for a neutrophil. Granulupoiesis begin when the myeloblast difference into a neutrophilic promyelocyte that is irreversibly committed to the neutrophilic cell line. Promyelocyte develop into myelocytes that are characterize by the prences of smaller specific or secondary granule.**

**During the stage of the numbers of specific granules per cell increase and the number of azuropallic granules per cell decrease,resulting in the lose of Cytoplasmic basepalia. Granules producetion ceases at the end of mylocyte stage and the remaining stage are characterize primery by a reduction in cell size.**

**Myeloblast**

**Promyelocyte**

**Mylocyte**

**Metamyelocyte**

**Netrophil**

**Band cell.**

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 **Answer no 4:.**

 **Anemia :.**

**A decrease in haemoglobin level (or total circulating red cell mass) for the age and sex of person is called as Anemia.**

 **Causes :.**

**Iron deficiency :.**

**Iron deficiency can range from sub clinical state to severe iron deficiency Anemia.**

**Different stage are identified by clinical finding and lab test.**

**Chronic blood loss.**

**Uterine**

**Gastrointestinal eg peptic ulcer, oesophageal varices, aspirin, partial gastrectomy, colitis piles, haemosiderosis and self blood loss.**

**Clinical symptoms (fatigue, dizziness, palpitations etc)**

**Laboratory**

**Stainable iron in bone marrow**

**Response to iron supplements.**

 **Answer no 5:.**

**Anemia:.**

**A decrease in haemoglobin level (or total circulating red cell mass) for the age and sex of a person is called as anemia.**

**CLASSIFICATION**

**On the basis of morphology and with regard of red cell indices we can classify the anemia into following .**

**1. Microcytic Hypochromic Anaemia**

**In this type of anaemia individual RBCs are smaller in size than normal and contain a subnormal amount of haemoglobin.**

**This type of anaemia is commonly seen in following**

** Iron deficiency**

** Thalassaemia**

** Sideroblastic anaemia**

** Anaemia of chronic disorders**

**2. Macrocytic Anaemia**

**In this type of anaemia individual RBCs are larger than normal, but the amount of haemoglobin in each cell is usually below normal.**

**Examples are.**

** Megaloblastic anaemia**

** Aplastic anaemia**

** Haemolytic anaemia**

** Liver disease**

** Myxoedema**

** Hypopituitarism**

** Pregnancy**

** Alcoholism**

**3. Normocytic Normochromic Anaemia**

**In this type of anaemia, although the haemoglobin concentration in the blood is reduced, the individual RBCs appear normal and absolute values are also within normal limits.**

**Examples are.**

** Acute blood loss**

** Leukaemia**

** Bone marrow infiltration**

** Chronic renal failure**

** Chronic infections (chronic disorders)**

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