INI CET Nov 2020 Recall Questions

PATHOLOGY

Q1. A female presented with Liver metastasis. On IHC, the report came out to be CK20 positive and CK7 negative. Most likely the site of primary is:

1. CA-Ovary
2. CA-Colorectum
3. CA-Pancreas
4. CA-Breast

Q2. Which clotting factor will not affect clotting in vivo?

1. 9
2. 12
3. 7
4. 5

Q3. Which of the following is incorrect regarding Peutz jeghers syndrome?

1. Arborising pattern of muscle
2. Loss of heterozygosity of STK11 gene
3. Multiple GI polyps seen
4. Autosomal recessive

Q4. Rees and Ecker Diluting Fluid is used in?

1. RBC pipette
2. WBC pipette
3. Hb
4. Westergren Tube

Q5. Which section demonstrates lipid in H&E?

1. Formalin fixed
2. Paraffin fixed
3. Frozen section
4. PAS stain

Q6. A patient has (11;14) translocation. What markers can be positive in this case (Multiple answers correct)?

a) CD10
b) CD200
c) SOX-11
d) Cyclin-D1

Options:

1) a,b,c,d
2) a,c,d
3) c,d
4) b,c

Q7. Match the following:

Column A	Column B
A. Silicosis	i) Basal lobes are involved
B. Caplan syndrome	ii) Malignant Pleural effusion without mediastinal shift
C. Asbestosis	iii) Initially demonstrated in coal workers
D. Mesothelioma	iv) Crazy pavement appearance

Options:

1) A-i B-ii C-iii D-iv
2) A-iii B-i C-ii D-iv
3) A-iv B-iii C-i D-ii
4) A-iv B-ii C-i D-iii

Q8. Which of the following will have least chances of dry tap on bone marrow aspiration?

1. Hairy cell leukemia
2. Follicular lymphoma
3. AML M7
4. Myelofibrosis

Q9. MPGN seen in?

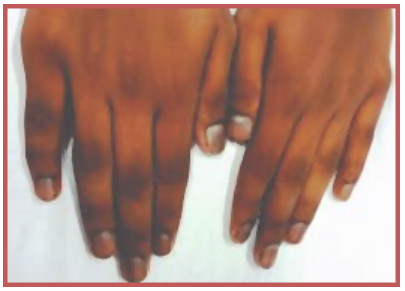
a) HIV
b) SLE
c) Hepatitis B
d) CLL

Options:

1) a,b,c,d
2) a,b,c
3) b,c,d
4) a,c

Q10. A 23-year-female came with complaints of easy fatigability and pallor, hyperpigmented knuckles. What is your likely diagnosis?

1. Aplastic anemia
2. Vitamin B12 deficiency
3. Iron deficiency anemia
4. Hypoalbuminemia



Q11. Most common sarcoma in the retroperitoneal region?

1. Rhabdomyosarcoma
2. Neurofibrosarcoma
3. Liposarcoma
4. Synovial sarcoma

Q12. A child with h/o blood transfusion at 2,6,10 months, features of maxillary prominence. Definitive diagnosis is done by?

1. BMA
2. Hb Electrophoresis
3. Parental HPLC
4. Globin chain assay

Q13. The cause of target cells:

1. Increased membrane
2. Loss of membrane
3. Denatured Hb
4. Fragmentation of rbc

Q14.Most common finding of Lung Injury in COVID?

1. Pulmonary infarction
2. Diffuse Alveolar Damage
3. Endothelial Injury
4. Fibrin clots

Q15. All are true about NLPHL except:

1. Has poor prognosis
2. EBV negative
3. CD 20 positive
4. CD 30 negative

Q16. A surgeon has to perform surgery in an emergency; which of the following tests is best to test all coagulation pathways and fibrinolysis?

1. aPTT
2. PT
3. BT
4. Thromboelastography

Q17. JAK2 mutation has most common association with:

1. Polycythemia vera
2. Essential thrombocythemia
3. PMF
4. CML

Q18. **A female presented with Increased TSH with very low T4 . What can be the** diagnosis ?

1. Grave's disease
2. Hashimoto disease
3. Pituitary adenoma
4. Hypoparathyroidism

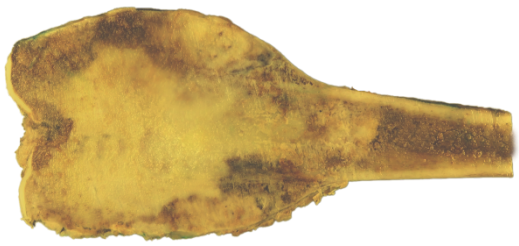
Q19. **About Telomerase, all are true except?**

1. Reverse Transcriptase
2. DNA repair
3. Only in eukaryotes
4. Maintain chromosome length

Q20. **Which of the following proteins does HPV vaccine target?**

1. E6,E7
2. E1, E2
3. L2
4. L1

Q21. **A pathological gross specimen of a bone tumor at lower end of femur in 10 year old child is shown below..What is your likely diagnosis?**



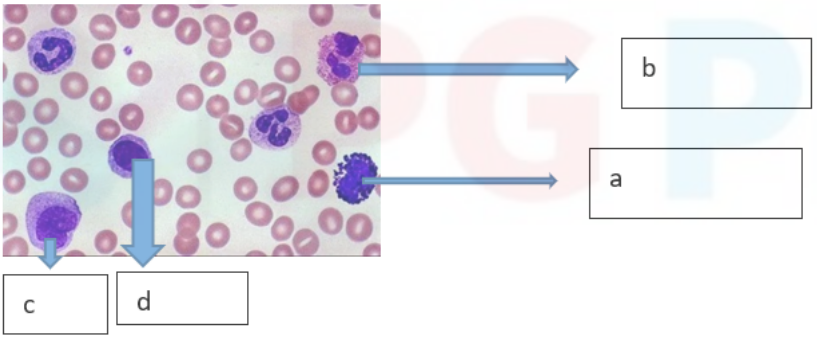
1. Osteosarcoma
2. GCT
3. Osteochondroma
4. Chondrosarcoma

Q22. Reticular fibers are not seen in the structural framework of?

1. Thymus
2. Spleen
3. Bone marrow
4. Lymph node

Q23.

Identify the cells marked?



1. a-Lymphocyte b-Basophil c-Monocyte d-Eosinophil
2. a-Basophil b-Eosinophil c-Monocyte d-Lymphocyte
3. a-Basophil b-Eosinophil c-Lymphocyte d-Monocyte
4. a-Monocyte b-Eosinophil c-Basophil d-Lymphocyte

Q24. Loss of the marked cells can be associated with all except:

1. Carcinoid syndrome
2. Zollinger Ellison syndrome
3. B12 deficiency
4. Pernicious anemia

Q25. PBF shows pancytopenia. All of the following can be the cause except:

1. APML
2. Megaloblastic anemia
3. Hairy cell leukemia
4. MDS

ANSWERS

1.Answer: 2

Explanation:

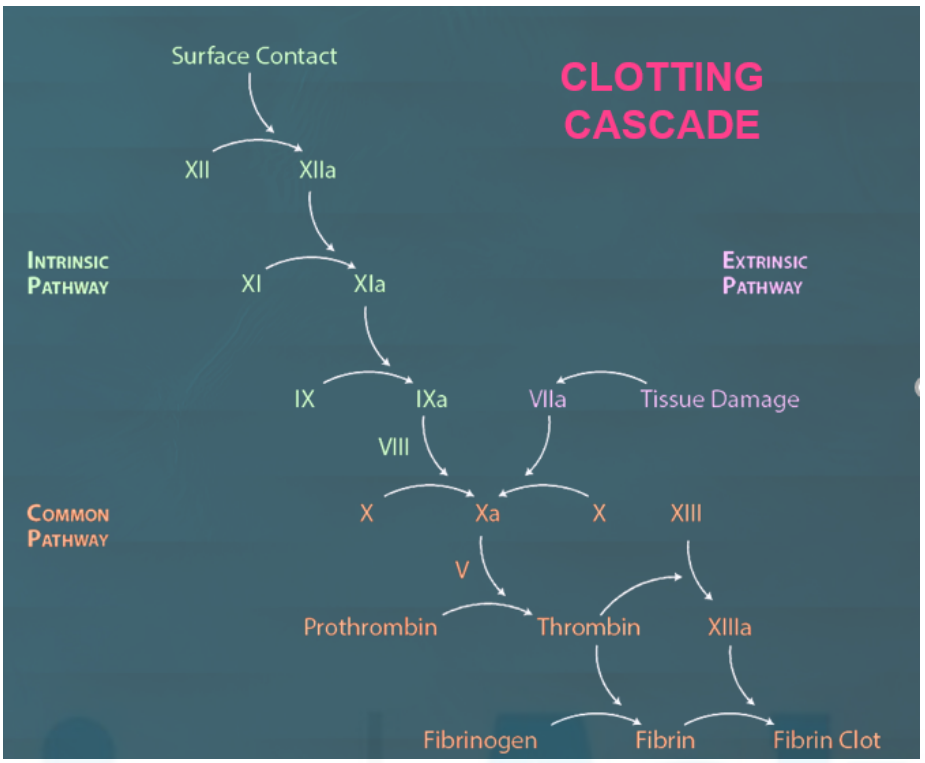
Do not get confused between CK and CD markers!!!

Easy way to remember primary site of origin:

CK 7 +ve CK20 +ve	Pancreas, biliary tract, stomach (Peri-diaphragmatic)
CK7 -ve CK 20 -ve	Liver, kidney, prostate
CK7 + CK20 -ve	Thyroid, Lung, breast (Above the diaphragm)
CK7 -ve CK20 +ve	Colorectal CA (Below the diaphragm), Merkel cell carcinoma

2.Answer: 2

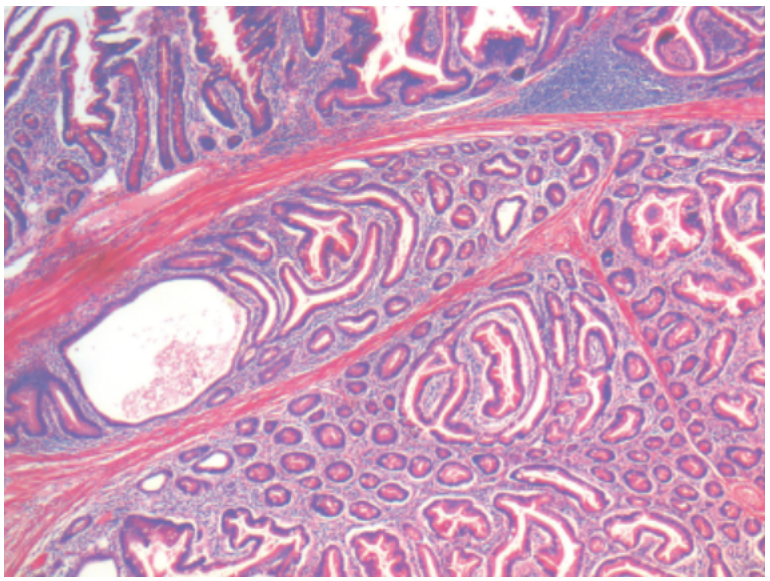
So simply have a look at the clotting pathway and we know that factor XII is not involved in vivo (but is involved in vitro) and is usually asymptomatic.. so the best option is factor 12



3.Answer: 4

Peutz jeghers syndrome:

- Hamartomatous polyp
- Autosomal dominant inheritance pattern
- Mean age at presentation: 10-15 years of age
- Loss of heterozygosity of STK11 gene
- Multiple GIT polyps seen. Small intestine>Colon>Stomach
- M/E: A characteristic arborizing network of connective tissue, smooth muscle, lamina propria, and glands lined by normal-appearing intestinal epithelium



Smooth muscle bundles cutting through the lamina propria grows in an **arborising pattern**. Also called as Christmas tree appearance

Juvenile polyposis:	Peutz Jeghers syndrome:
Age< 5 years	**Age: 10-12 years**
MC Site: Rectum	**STK -11 (AD)**
Smad-4 signalling	**Most common site: Small Intestine**
	Multiple hamartomatous polyp with mucocutaneous hyperpigmentation in buccal mucosa
	Characteristic Christmas tree appearance due to arborizing network of Lamina propria, smooth muscles

Tabulated differences between Juvenile polyposis and Peutz jeghers syndrome (commonly asked)

4.Answer

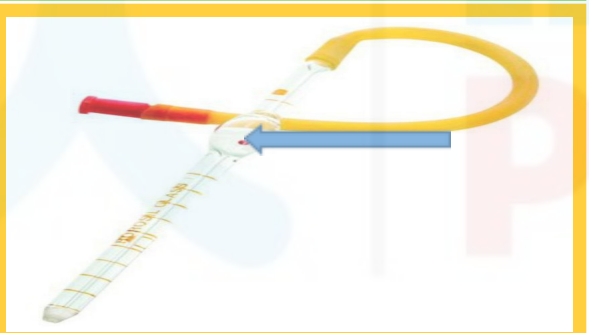
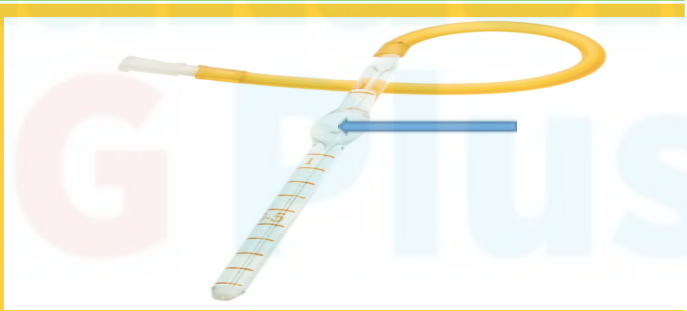
Answer: 1

Diluting fluids :

Rees and Ecker fluid	Platelets and **RBCs**
Hayems fluid	RBCs
Dacie fluid	RBCs

Turks fluid	WBC

If they would have shown the image of pipette; we can identify RBC pipette with help of Red bead and Red mouth piece

RBC Pipette	**WBC Pipette**
Used to measure RBC and Platelet count	**Used to measure WBC count**
Markings are from 1 to 101 **(Remember easy way :RBC count more;markings are more)**	**Markings are from 1 to 11** **(WBC count less; markings are less)**
Presence of red bead/red mouth piece	**Presence of white bead/white mouth piece**
	

5.Answer: 3

Explanation:

- Lipid is best demonstrated by frozen section.
- **Why not 1:** Lipid can be washed off during formalin fixed section
- **Why not 2:** Triglycerides are removed by solvents during preparation of paraffin tissues
- **Why not 4:** PAS stain: used to stain mucin, glycogen, fungi
  (It is an example of special stain)
- If they would have asked about special stain for lipid demonstration: Oil Red O

Mnemonic : Oil Red O stains lipid (Oil for fat/lipid)

6.Answer: 3

Explanation:

t(11;14) points towards Mantle cell lymphoma

Must know table:

Lymphoma	Important markers and translocations
CLL/SLL	CD5+ CD23+
Mantle cell lymphoma	CD5+ CD23- Cyclin D1 positive t(11;14) SOX-11 (positive in Cyclin D1 negative Mantle cell lymphoma)
Follicular lymphoma	BCL-2+ t(14;18)
Diffuse Large B cell Lymphoma	CD20, BCL-6+
Burkitts Lymphoma	c-myc t(8;14)
Marginal zone lymphoma	BCL-10, MALT-1 t(11;18)

7.Answer: 3

Explanation:

Silicosis	Crazy pavement appearance
Caplan syndrome	Initially demonstrated in coal workers

Asbestosis	Basal lobes are involved
Mesothelioma	Malignant Pleural effusion without mediastinal shift

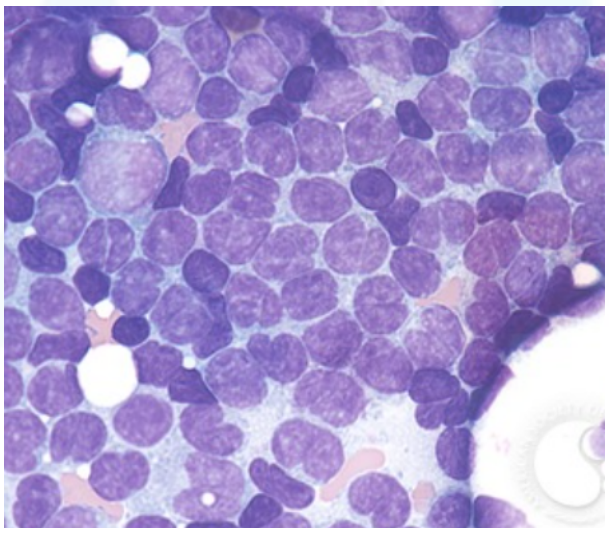
8.Answer: 2

Description: Causes of dry tap:

1. Hairy cell leukemia
2. AML-M7
3. Aplastic Anemia
4. Myelofibrosis

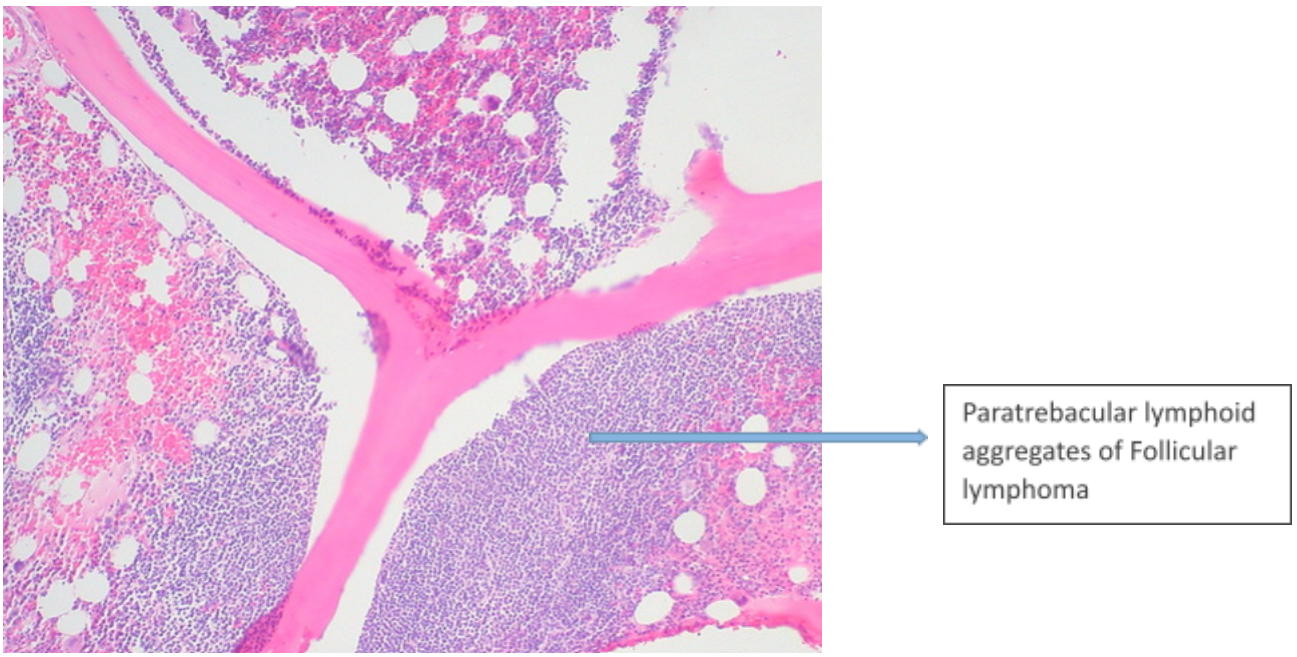
Follicular lymphoma:

Bone marrow aspiration:



Increased cellularity with predominance of Centrocytes

Bone marrow biopsy:



9.

Answers: 1

Explanation:

Causes of MPGN (Membranoproliferative glomerulonephritis):

Infections : Hep B,C,HIV, Malaria, Schistosomiasis

Immunological disorders: SLE, RA, Inherited complement deficiency

Malignancies: CLL

Most important association with HIV: FSGS (Collapsing variant)

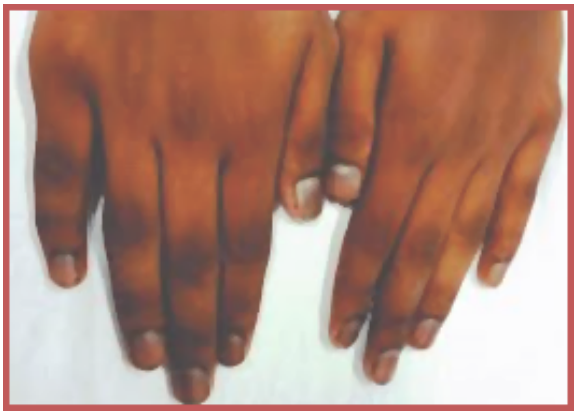
10.Answer: 2

Vitamin B12 deficiency is associated with hyperpigmentation of knuckles.

Other markers of vit B12 deficiency:

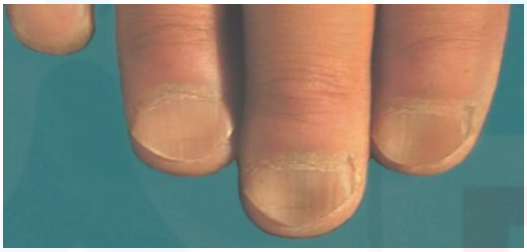
- Oral mucosal pigmentation
- Angular stomatitis
- Cheilitis

If koilonychia(spoon shaped cavity of nails) was shown, it indicates severe iron deficiency



Hyperpigmentation of Knuckles points towards Vitamin B12 deficiency

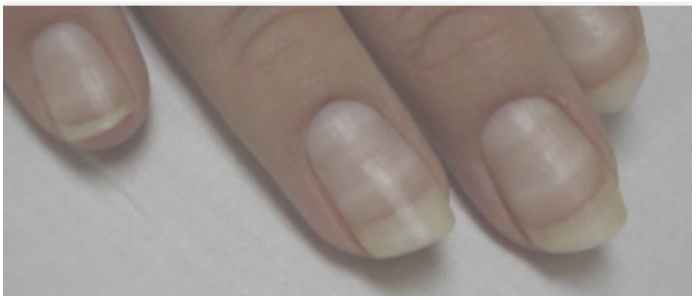
Other options:



Koilonychia (Spoon shaped nails) points towards Iron deficiency anemia

Hypoalbuminemia: Edema can be seen in hands and feet

Paired white lines on nails (Muehrcke's Lines) can be seen



11.Answer: 3

Description

- Most common retroperitoneal sarcoma: Liposarcoma (accounting for 30% of sarcomas)

- Most common variant of Liposarcoma: Well differentiated liposarcoma
- Most common malignant retroperitoneal tumor: Lymphoma

Translocation associated with myxoid liposarcoma:

- t(12;16)
- MDM2 positive

12.Answer: 4

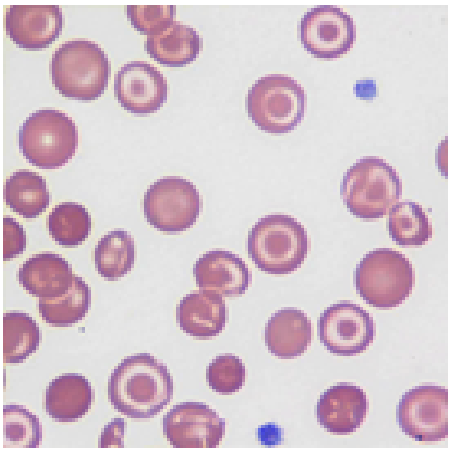
Explanation:

Hints towards Thalassemia:

- H/O Multiple blood transfusions
- Maxillary prominence

❖ Normal α:β globin chains = 1:1
❖ In β thalassemia, there is decreased β chains thus ratio will increase.
❖ Globin gene assay gives a definitive diagnosis. Can diagnose both α and β thalassemia
❖ Why not 1: Bone marrow aspiration will show erythroid hyperplasia with increased iron stores but not diagnostic
❖ Why not 3 :HPLC: Investigation of choice but best answer would be globin gene sequencing (as parental HPLC cannot confirm)
❖ Why not 4: Hb electrophoresis is used for screening (not definitive)

13.Answer: 1



Target cells are seen due to increased membrane (increased surface area to volume ratio)

T for target cells; T for Thalassemia

Other causes of target cells:

- HbC disease
- Sickle cell anemia

Occurs due to increased membrane area

Other options:

b) Loss of membrane results in formation of Spherocytes seen in Hereditary spherocytosis and Autoimmune hemolytic anemia

c) Denatured Hb results in formation of Heinz bodies seen in G6PD deficiency

d) Fragmentation of RBCs results in formation of Schistocytes seen in Hemolytic Anemia

14.Answer: 2

Most common finding of Lung injury in COVID: Diffuse alveolar damage

If they would have asked :

Most common cause of lung injury in COVID: Endothelial injury

15.**Answer:** 1

Explanation:

NLPHL (Nodular lymphocyte predominant Hodgkins lymphoma):

- Accounts for 5% of the cases
- Characterized by **Lymphohistiocytic variant (L&H variant)** with multilobed nuclei resembling popcorn kernels (popcorn cell)
- Eosinophils and plasma cells are usually scant or absent
- CD20+,CD45+,PAX5+,BCL6+
- CD15,CD30-ve
- **Excellent prognosis**; remission rate of 90-100% and 10 year survival rate >90%
- Usually EBV -ve

Classical Hodgkins lymphoma	Nodular lymphocyte predominant Hodgkins lymphoma

CD15+	CD20+
CD30+	CD45+

16.Answer: 4

Explanation:

APTT (Activated partial thromboplastin time)	Tests Intrinsic and common pathways
PT (Prothrombin time)	Tests Extrinsic and common pathways
BT (Bleeding time)	Tests platelets
TEG (Thromboelastography)	Tests intrinsic, extrinsic pathways and fibrinolysis, clot strength and platelet function

Components of TEG:

- Reaction time
- Alpha angle
- K time
- Maximum amplitude
- LY30 (Lysis at 30 minutes)

17.Answer: 1

Explanation

Myeloid neoplasm	**Percentage of association with JAK2 mutation**
PCV (Polycythemia vera)	95%
ET	50%

(Essential thrombocytosis)	
PMF (Primary myelofibrosis)	50%

Other mutations in ET,PMF: MPL,CALR

18.Answer: 2

Explanation:

- Hashimoto's disease shows increased TSH and very low T4
- Graves disease is associated with decreased TSH and elevated T3, T4

19.Answer: 2

Explanation:

Telomerase

- **Is an enzyme (Reverse transcriptase)**
- **Only in eukaryotes**
- **Helps in maintaining ends of chromosomes and thus maintain the chromosome length(protects chromosome ends from degradation)**
- Ageing is associated with decreased Telomerase enzyme
- Enzymes involved with DNA repair: DNA Polymerases

20.Answer: 4

Explanation:

HPV vaccine targets L1 capsid protein.

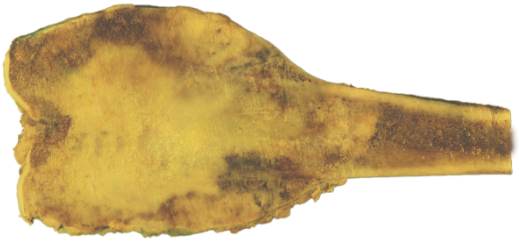
Gardasil vaccine: Each 0.5-mL dose contains approximately 20 mcg of HPV 6 L1 protein, 40 mcg of HPV 11 L1 protein, 40 mcg of HPV 16 L1 protein, and 20 mcg of HPV 18 L1 protein.

If they would have asked about proteins involved in Pathogenesis: E6,E7

21.Answer: 1

Explanation:

Gross:



High grade osteosarcoma involving the distal femur; much of this lesion is osteoblastic but scattered chondroblastic areas are also present

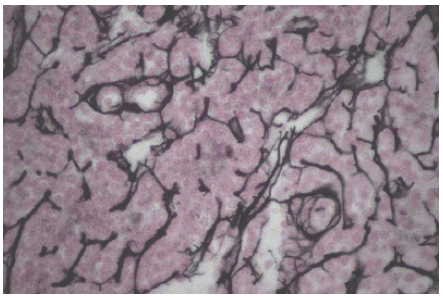
Chondrosarcoma: Heterogenous intramedullary mass extending through the medial cortex of the distal femur. The gross shows cartilaginous areas as white and glistening

22.**Answer:** 1

Explanation:

Mnemonic: Reticular fibers: seen in Reticuloendothelial system

1. Provide structural support
2. Present in Liver, Spleen, BM, Lymph node not in the thymus



23.Answer: 2

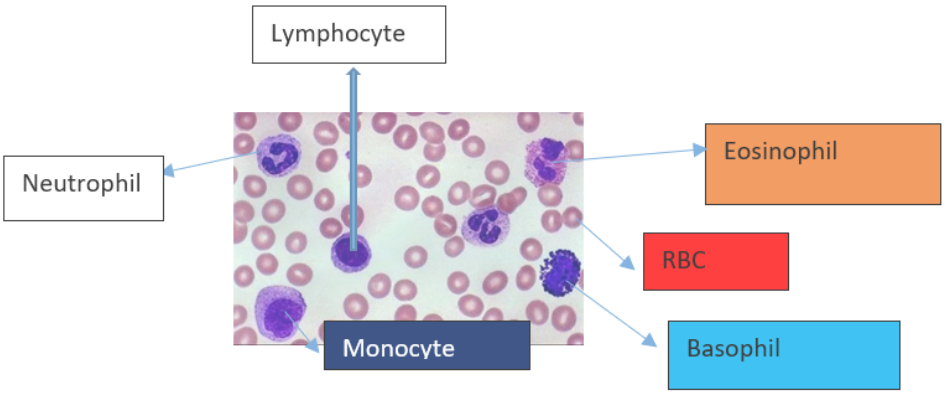
Explanation:

Eosinophil: Orange red granules

Basophil: Basophilic granules covering up the cell

Monocyte: Kidney shaped nucleus

Lymphocyte: Small condensed nucleus with scant cytoplasm



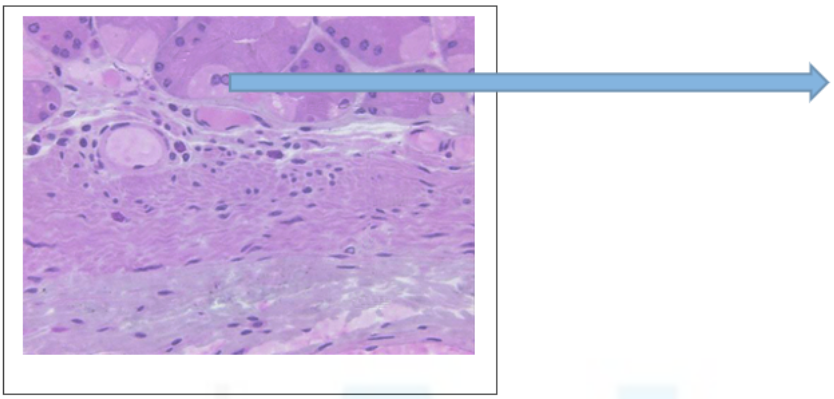
24.Answer: 2

Marked cells are parietal cells.

Mnemonic: P for parietal and P for pink

Parietal cells : source of Hcl, Intrinsic factor

ZES (Zollinger ellsion syndrome) is associated with hypergastrinemia due to G cell neoplasia and not due to parietal cells absence



Other options discussed below…

Absence of parietal cells: Leads to deficiency of Intrinsic factor

Results in:

Pernicious anemia and leads to **Vitamin B12 deficiency**

Gastric carcinoid tumors are being recognized increasingly in patients with pernicious anemia. Such tumors occur in the presence of achlorhydria, chronic atrophic gastritis, hypergastrinemia

25.Answer: 1

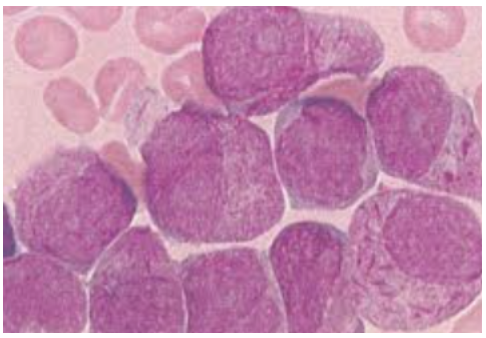
Description:

APML has presence of increased TLC in peripheral blood whereas others are associated with pancytopenia

APML:

Acute promyelocytic Leukemia

- Best prognosis
- PML;RARA
- Auer rods, maximum association with DIC



Causes of Pancytopenia:

- Megaloblastic anemia
- Hairy cell leukemia
- Myelodysplastic syndrome (MDS)