

**I. Choose one best answer only. (1 pt each)**

1. The basic abnormality producing metabolic alkalosis is
  - A. Decreased arterial hydrogen ion concentration with increased arterial bicarbonate causing arterial pH to be greater than 7.4.
  - B. Decreased respirations with increased arterial carbon dioxide and hydrogen ion concentrations causing arterial pH to be less than 7.4.
  - C. Increased arterial hydrogen ion concentration with decreased arterial bicarbonate causing arterial pH to be less than 7.4.
  - D. Increased arterial hydrogen ion concentration with decreased arterial bicarbonate causing arterial pH to be greater than 7.4.
  - E. Increased respirations with decreased arterial carbon dioxide and hydrogen ion concentrations causing arterial pH to be greater than 7.4.
2. False About Urea
  - A. The NPN compound present in highest concentration in the blood.
  - B. Urea is the major excretory product of protein metabolism.
  - C. It is formed in the liver from amino groups (-NH<sub>2</sub>) and free ammonia generated during protein catabolism.
  - D. Assays for urea were based on measurement of nitrogen.
  - E. None
3. False about measurement of urea
  - A. To evaluate renal function
  - B. To assess hydration status
  - C. To determine nitrogen balance
  - D. To aid in the diagnosis of renal disease, and to verify adequacy of dialysis.
  - E. None
4. All are true about Uric acid except?
  - A. It is the product of catabolism of the purine nucleic acids.
  - B. Filtered by the glomerulus and secreted by the proximal tubules into the urine,

- C. Most uric acid is reabsorbed in the proximal tubules and reused.
  - D. Relatively insoluble in plasma and, at high concentrations, can be deposited in the joints and tissue, causing painful inflammation.
  - E. None
5. False about VLDL
- A. Is produced by the liver and contains apo B-100, apo E, and apo Cs; like Chylomicrons.
  - B. They are also rich in triglycerides.
  - C. They are the major carriers of exogenous (hepatic-derived) triglycerides
  - D. Transfer triglycerides from the liver to peripheral tissue.
  - E. None
6. All are true about amino acids except?
- A. They are the building blocks of proteins.
  - B. The sequence of those amino acids, of a specific protein is determined by the sequence of the bases in the gene that encodes that protein.
  - C. The chemical properties of the amino acids of proteins determine the biologic activity of the protein.
  - D. Growth, repair, and maintenance of all cells are independent on amino acids.
  - E. Proteins catalyze almost all of the reactions in living cells, controlling virtually all cellular processes.
7. All of the following alternatives are non essential aminoacids except?
- A. Alanine
  - B. Asparagines
  - C. Glutamic acid
  - D. Glycine
  - E. Histidine
8. In the following alternative which is false about protein
- A. All biochemical reactions are catalyzed by enzymes, which contain protein.

- B. The structure of cells and the extracellular matrix that surrounds all cells is largely made of the protein group collagens.
- C. Keratins are the most abundant protein in the human body.
- D. The transport of materials in body fluids depends on proteins such as transferrin.
- E. Receptors for hormones are transmembrane proteins, and transcription factors, needed to initiate the transcription of a gene, are proteins.

9. Decreased concentrations of serum albumin may be caused by the following

- A. An inadequate source of amino acids that occurs in malnutrition and malabsorption.
- B. Liver disease, resulting in decreased synthesis by the hepatocytes.
- C. Protein-losing enteropathy or gastrointestinal loss as interstitial fluid leaks out in inflammation and disease of the intestinal tract as in diarrhea.
- D. Albumin is normally excreted in very small amounts.
- E. All

10. True about C-reactive protein

- A. The second APPs to become elevated in inflammatory diseases
- B. Consists of four identical subunits and is synthesized primarily by liver.
- C. C-reactive protein (CRP) found in sera of acutely ill individuals from S. pneumonia.
- D. CRP activates the classic complement path way starting at C1q and stops opsonization, phagocytosis, and lysis of invading organisms. such as bacteria and viruses.
- E. None

## **HEATOLOGY**

1. Photometric haemoglobin procedures are subject to error due to:

- A. Exceptionally high WBC count
- B. Lipemic blood
- C. Icteric blood
- D. A and B
- E. A, B and C

-----2. All of the following can cause a falsely low hemoglobin results **EXCEPT**:

- A. Haemodilution
- B. Haemoconcentration
- C. Cells are trapped in fibrin
- D. Lyzed sample

-----3. Which of the following can invalidate haemoglobin test results?

- A. partially clotted blood sample caused by insufficient mixing of blood with anticoagulant
- B. haemodilution caused by sample contamination
- C. haemoconcentration due to prolonged stasis caused by prolonged tourniquet time
- D. mislabeled specimen caused by incorrect patient identification
- E. all of the above are pre-analytic collection errors that can compromise specimen integrity

-----4. Iron is in the +3 state:

- A. when carrying oxygen
- B. when carried/bound to transferrin
- C. to be absorbed by the intestine
- D. when carrying carbon monoxide

-----5. The 3 building blocks of haemoglobin are:

- A. Protoporphyrin, ferric iron and globin
- B. Pyrrole rings, ferrous iron and haeme
- C. Haeme, ferric iron and globin
- D. Protoporphyrin, ferrous iron and globin

-----6. Select the proper sequence of RBC maturation:

- A. Rubriblast, Rubricyte, Prorubricyte, Metarubricyte, Reticulocyte, Erythrocyte.
- B. Pronormoblast, Basophilic normoblast, Polychromatophilic normoblast, Orthochromic normoblast, Reticulocyte, Erythrocyte.
- C. A and B
- D. None

-----7. Methylene blue in the Wright's stain functions to:

- A. stain basic components of cells

- B. stain acid components of cells
- C. fix cells to the slide
- D. prevent artifact formation

-----8. Indicators of a bacterial infection include the presence of:

- A. Presence of reactive lymphocytes and Dohle bodies in the neutrophils.
- B. Toxic granules and vacuoles in the neutrophils.
- C. An increased number of immature neutrophils.
- D. A and B
- E. B and C

-----9. Which of the following are characteristic of monocytes?

- A. Contains lipases which aid the body's defense against bacteria with lipid capsules.
- B. Antigen presenting cells that interact with lymphoid cells in immunologic reactions.
- C. Differentiate into macrophages of the RES.
- D. A and B
- E. A, B and C

-----10. Basophil granules are:

- A. H<sub>2</sub>O soluble and may "washout" during staining.
- B. Contain a high concentration of histamine.
- C. Mediators of immediate hypersensitivity reactions when contents are released.
- D. A and C
- E. A, B and C

-----11. The PT evaluates which of the following factors?

- A. III
- B. VIII
- C. VII
- D. IX

-----12. Most common laboratory test used to monitor heparin therapy is the:

- A. clot retraction
- B. bleeding time
- C. APTT
- D. PT

-----13. The APTT evaluates which of the following factors?

- A. III
- B. VI
- C. VII
- D. X

-----14. Platelet aggregation will occur with the production of:

- A. cyclo-oxygenase
  - B. arachidonic acid
  - C. thromboxane A<sub>2</sub>
  - D. prostacyclin
- 15. An important inhibitor of Factor Xa and the Factor VIIa/TF complex is:
- A. antithrombin
  - B. plasminogen activator inhibitor
  - C. tissue plasminogen activator
  - D. tissue pathway factor inhibitor (TPFI)
- 16. The role of Factor XIII in haemostasis is to:
- A. initiate the intrinsic coagulation pathway
  - B. enhance the rate of prothrombinase production
  - C. stabilize the fibrin clot
  - D. initiate fibrinolysis
- 17. The presence of this component in plasma is strong evidence that fibrin has been formed and is being lysed:
- A. TPFI
  - B. D-dimer
  - C. urokinase
  - D. reptilase
- 18. The enzyme inhibited by aspirin is:
- A. thromboxane synthetase
  - B. cyclo-oxygenase
  - C. lactate dehydrogenase
  - D. phospholipase
- 19. Which of the following do **NOT** show a similar blood picture?
- A. Hereditary spherocytosis and warm autoimmune hemolytic anemia
  - B. Vitamin B<sub>12</sub> deficiency and folate deficiency
  - C. Acute blood loss and chronic blood loss.
  - D. Beta thalassemia minor and iron deficiency anemia
- 20. Which of the following results on a 1 day old infant indicate the need for further investigation?
- A. Hemoglobin level of 12.5 g/dL
  - B. Retic count of 5.0%
  - C. Macrocytic red cells
  - D. 1 nucleated red cell/differential
- 21. Marrow replacement anemias (Myelophthistic anemias):

- A. Result of bone marrow infiltration by malignant cells or replacement by fibrotic tissue.
- B. Commonly show a leukoerythroblastic blood picture.
- C. May compensate with extramedullary hematopoiesis.
- D. Production of cells in the spleen and liver can occur.
- E. All of the above.

-----22. Reticulocyte counts are usually increased:

- A. After acute blood loss due to accelerated bone marrow erythropoiesis.
- B. Following appropriate therapy for a deficiency.
- C. In aplastic anemia.
- D. A and B
- E. A, B and C

-----23. Features of severe hemolytic anemia may include:

- A. Erythroid hyperplasia of the bone marrow
- B. Reduced red cell lifespan
- C. Polychromasia and nucleated red cells on the peripheral blood smear
- D. B and C
- E. A, B and C

-----24. Fragmented red cells may be the result of:

- A. Malarial or clostridial infection
- B. Disseminated intravascular coagulation (DIC)
- C. Severe thermal burns
- D. A and C
- E. A, B and C

-----25. In untreated aplastic anemia, one would expect all of the following lab data **EXCEPT:**

- A. Normocytic and normochromic red cells.
- B. High serum bilirubin level.
- C. Blood findings of pancytopenia.
- D. Total bone marrow hypoplasia.

-----26. For a normal prothrombin time, all these factors are required in adequate concentrations EXCEPT

- A. Factor I
- B. Factor II
- C. Factor V
- D. Factor VII
- E. Factor VIII

-----27. The combined three mechanisms that work to prevent or control blood loss include all of the following EXCEPT :

- A. Vascular spasms.

- B. Inflammation.
- C. Platelet plugs.
- D. Stable fibrin blood clots.

-----28. Which of the following factors can directly cause the Hb S to sickling?

- A. Deoxygenation of hemoglobin
- B. Hypoxia,
- C. Acidosis,
- D. increased temperature

-----29. From the following statement which is NOT correct in iron deficiency?

- A. bone marrow iron stores will be completely depleted before the hemoglobin begins to drop
- B. The hemoglobin begins to fall before the MCV begins to decrease.
- C. The MCV may be normal in combined nutritional deficiency (deficiency of iron plus either cobalamin or folic acid)
- D. All are corrects

-----30. Which could not be the laboratory finding of sever megaloblastic Anemia?

- A. Leukopenia
- B. Hypersegmented neutrophils:
- C. Thrombocytosis
- D. Increased lactic dehydrogenase (LD)
- E. Increased bilirubin
- F. Decreased haptoglobin

56-year-old man presents with symptoms of severe dyspnea on exertion and fatigue. His laboratory values are as follows:

Hemoglobin 6.0 g/dL (normal: 12-15 g/dL)

Hematocrit 18% (normal: 36%-46%)

RBC count 2 million/L (normal: 4-5.2 million/L)

Reticulocyte count 3% (normal: 0.5%-1.5%)

-----31. Which of the following caused this man's anemia?

- A. Decreased red cell production
- B. Increased red cell destruction
- C. Acute blood loss (hemorrhage)
- D. There is insufficient information to make a determination

-----32. A 36-year-old man presents with fatigue and pallor. He is found to have a hematocrit of 23%. His reticulocyte index is 4. You suspect a hemolytic anemia. Which of the following lab abnormalities are not associated with hemolytic anemia?

- A. An elevated haptoglobin level
- B. An elevated LDH
- C. An elevated indirect bilirubin

- D. An elevated reticulocyte count
- E. The presence of hemosiderin in the urine

\_\_\_\_ 33. The enzyme the serum level of which is taken as a prognostic marker in the progression of clinical disease in malignant lymphomas is:

- A. Lactate dehydrogenase
- B. Creatine kinase
- C. Phosphokinase
- D. Lipase

\_\_\_\_ 34. In multiple myeloma:

- A. There is accumulation of plasma cells in the bone marrow
- B. An abnormal plasma paraprotein of IgG type is a consistent finding in two-thirds of patients
- C. Bence-Jones protein is detected in the urine of most patients
- D. All are correct

\_\_\_\_ 35. In polycythemia vera:

- A. There are high values of hemoglobin, packed cell volume and red cell count
- B. There is neutrophil leucocytosis in over half of patients
- C. Raised neutrophil alkaline phosphates score
- D. All are correct

\_\_\_\_ 36. Peripheral blood cytopenia with hypercellular bone marrow characterize:

- A. Malignant lymphomas
- B. Myelodysplastic syndromes
- C. Myeloproliferative syndromes
- D. Red cell enzymopathies

\_\_\_\_ 37. The Pelger-Huët cell:

- A. Is a hypersegmented neutrophil
- B. A neutrophil with a pince-nez nucleus
- C. A neutrophil with a drum-stick nuclear appendage
- D. A hypergranular neutrophil

\_\_\_\_ 38. One of the following cytochemical reactions gives a result similar to Sudan Black B in both normal and leukemic cells:

- A. Myeloperoxidase
- B. Neutrophil alkaline phosphatase

- C. Toluidine blue
- D. Non - specific esterase

**\_\_\_39. Large platelets and megakaryocytic fragments on stained blood film along with abnormal platelet function test results are seen in:**

- A. Secondary polycythemia
- B. Primary polycythemia
- C. Myelofibrosis
- D. Thrombocythemia

**\_\_\_40. Progression of CML to advanced stage:**

- A. Is heralded first by accelerated phase and culminates in the blast crisis phase
- B. Shows the hallmark picture of acute myeloblastic leukemia in all patients
- C. Is accompanied by achievement of remission in the patient with chemotherapy
- D. All are correct

### **Immunology comprehensive exam questions**

1. In a host defense against infectious agents, factors that are considered as a first line of defense includes
  - A. Complement
  - B. Inflammatory response
  - C. Interferons
  - D. Phagocytes
  - E. None of the above
2. A cellular and chemical system that follows immediately, if infectious agents make it past the surface defense is
  - A. The first line of defense
  - B. The second line of defense
  - C. The third line of defense
  - D. Specific defense
  - E. All except A
3. Immunity acquired as a result of transfer of maternal immunity is
  - A. Active naturally acquired
  - B. Active artificially acquired

- C. Passive naturally acquired
- D. Passive artificially acquired
- E. Both Active & Passive natural immunity

4. Sneezing and flushing of foreign substances from gaining access into the hosts system is the role of

- A. Adaptive immune response
- B. Mechanical barrier
- C. Physiological barrier
- D. Biochemical barrier
- E. Both mechanical and physiological barrier

5. Cells that arrive first at the site of infection during inflammation or infectious process are

- A. Monocytes
- B. Neutrophils
- C. Lymphocytes
- D. Natural killer cell
- E. All at the same time

6. Adaptive transfer of acquired immune responsiveness involves the transfer of:

- A. Antibody
- B. Complement
- C. Phagocytes
- D. Lymphocytes
- E. Serum

7. T cell surface marker that is important for total T cell enumeration is

- A. CD2
- B. CD3
- C. CD4
- D. CD8
- E. CDRs

8. B cell receptors that is uses to differentiate B cells from T cells and useful to enumerate total B cells is

- A. CD2
- B. CD3
- C. CD4

- D. CD19
- E. CD44

9. The role of the antigen-presenting cell in the immune response is all of the following *except*

- A. The limited catabolism of polypeptide antigens
- B. To allow selective association of MHC gene products & peptides.
- C. To supply second signals required to fully activate T cells.
- D. To present non-self peptides associated with MHC class II molecules to B cells
- E. To present peptide-MHC complexes to T cells with the appropriate receptor

10. Active immunization involves

- A. Injection of antigenic preparation
- B. Injection of preformed antibodies
- C. Injection of antitoxins
- D. Transplacental transfer of maternal antibodies
- E. All

11. An individual does not make an immune response to a self-protein because

- A. Self-proteins cannot be processed into peptides
- B. peptides from self-proteins cannot bind to MHC class I.
- C. peptides from self-proteins cannot bind to MHC class II.
- D. Lymphocytes that express a receptor reactive to a self-protein are inactivated by deletion or anergy.
- E. Developing lymphocytes cannot rearrange V genes required to produce a receptor for self- proteins

12. During generation of the adaptive immune response

- A. Recognition of Naïve antigen is carried out by memory cells
- B. Recognition of antigen is the first step for activation of lymphocytes
- C. There will be fast and vigorous response upon first exposure
- D. The two classes of MHC molecules present antigens to lymphocytes
- E. A and D

13. The innate immune system recognizes foreign substances due to

- A. Pathogen associated molecular patterns on pathogens

- B. Differentiation among the species of pathogens involved
- C. Presence of pattern recognition receptor on pathogens
- D. Education to discriminate self/ non- self in the thymus
- E. All of the above

14. A directional movement of phagocytes across the site of infection towards increased concentration gradient of chemical signals

- A. Chemotaxis
- B. Phagocytosis
- C. Pinocytosis
- D. Opsonization
- E. All

15. Identify the cell that is not a professional phagocyte

- A. Dendritic cell
- B. B lymphocyte
- C. Monocyte
- D. Macrophage
- E. Neutrophil

16. Immunodeficiency occurs as a result of

- A. Viral infection
- B. Cytotoxic drugs
- C. Malnutrition
- D. Lympho proliferative disorders
- E. All of the above

17. A condition that occurs when the immune system mistakenly attacks and destroys healthy body cells and tissues is known as:

- A. Auto immunity
- B. Hypersensitivity
- C. Immunodeficiency
- D. Immunologic tolerance
- E. All of the above

18. Effector functions of cell-mediated immune response do not involve

- A. Killing of intracellular microorganisms
- B. Increased reagenic antibody secretion

- C. Allograft rejection
- D. Tumor immunity
- E. Lymphokine secretion

19. The Fc region of antibody molecule. . .

- A. Is required for antigen binding
- B. Contains both heavy and light chains
- C. Is not a requirement for placental transmission
- D. Is not important for triggering of IgE mediated hypersensitivity
- E. Generally confers biological activity on the various molecules

20. In antibody mediated cell cytotoxicity the cell involved in target cell killing binds to \_\_\_\_\_ of the target cell

- A. Fab of bound Ab
- B. FC of bound Ab
- C. MHC molecule
- D. CD molecule
- E. Surface immunoglobulin

## Medical Mycology

\_\_\_\_\_ 1. Which of the following is true about laboratory diagnosis of sporotrichosis?

- A. Blood sample is the best specimen to diagnose sporothrix
- B. it is possible to see the yeast and the mold form of the fungus By 10% KOH Microscopy from clinical specimen
- C. It is possible to cultivate sporthrix by blood agar incubated at 37°C
- D. None.

\_\_\_\_\_ 2. The main difference between subcutaneous and systemic mycosis is:- \_\_\_\_\_

- A. Systemic mycosis is fungal infection of the internal organs and blood only whereas subcutaneous mycosis is fungal infection of the deep layer of the skin
- B. Subcutaneous mycosis usually contracted through traumatic inoculation whereas systemic fungal infection is through inhalation
- C. All fungus that causes systemic mycosis are dimorphic where as that of subcutaneous are monomorphic.
- D. None

\_\_\_\_ 3. Which of the following best describes molds?

- A. They produce hyphae and mold spores
- B. Reproduce by budding
- C. Produce nutrient absorbing and water exchanging portion of fungi called arial hyphae
- D. Produce vegetative hyphae that protrude above the surface of a substance

\_\_\_\_ 4. Select the correct statement from the following?

- A. A dimorphic fungi can exist as yeast cell in soil and mold in tissue
- B. Monomorphism and dimorphism is associated with number of cells.
- C. Monomorphic fungi exists as yeast cell in tissue and mold in soil
- D. Dimorphic fungi exist as yeast in tissue and mold in soil
- E. None

\_\_\_\_ 5. Mycoses which is confined to the outer most keratin layer of the skin is \_\_\_\_

- |                         |                     |
|-------------------------|---------------------|
| A. Cutaneous mycosis    | D. Systemic mycosis |
| B. Subcutaneous mycosis | E. None             |
| C. Superficial mycosis  |                     |

\_\_\_\_ 6. Which of the following staining technique is best to identify Cryptococcosis ?

- A. Gimsa staining
- B. Write staining
- C. Indian ink
- D. Gram stain
- E. None

\_\_\_\_ 7. Which of the following technique best maintains the microscopic morphology of mold fungi?

- A. Tease mount

- B. Cellophone preparation
- C. Slide culture
- D. Indian ink preparation

8. Which of the following is true concerning antifungal Therapy?

- A. It is less toxic than antibiotic
- B. The mechanism of action is mainly by inhibition of Protein synthesis
- C. Prolonged therapy is required
- D. Erythromycin and kanamycin are some examples of ergosterol synthesis inhibitors
- E. None

9. Your patient complains of an "itching rash" on her abdomen. On examination, you find that the lesions are red, circular, with a vesiculated border and a healing central area. Of the following choices, the MOST appropriate fungal infection is:-

- A. Tinea Pedis
- B. Tinea Cruris
- C. Tinea corporis
- D. Tinea Barbae

10. Which of the following is the best specimen to diagnose Black piedra?

- A. Skin scraping
- B. Hair clipping
- C. Nail scraping
- D. Skin swabbing
- E. None

### **Comprehensive Examination for Final year Graduating students**

**1. Interventions targeting eradication are currently under way for:**

- A. *D. medinensis*
- B. Ascariasis
- C. Schistosomiasis
- D. Malaria
- E. All of the above

**2. *Plasmodium* species mainly causing cerebral malaria:**

- A. *P. vivax*
- B. *P. malariae*
- C. *P. falciparum*
- D. *P. ovale*
- E. *P. knowlesi*

**3. The best method for recovery of *E. vermicularis* ova:**

- A. Direct stool microscopy
- B. Formol ether sedimentation concentration of stool specimens
- C. Adhesive tape technique
- D. Flootation technique of stool specimens
- E. All are equally effective

**4. Relapse of malaria a feature of:**

- A. *P. falciparum*
- B. *P. vivax*
- C. *P. ovale*
- D. A and B
- E. B and C

**5. Wrong statement about amebiasis:**

- A. Amebic dysentery results when *E. histolytica* cysts invade the wall of large intestine
- B. amebiasis can also disseminate extra intestinal
- C. *E. histolytica* ingests host RBCs
- D. Transmission is related to poor environmental hygiene
- E. All are correct

**6. Differentiation based on morphological features is unreliable in cases of:**

- A. *E. histolytica* and *E. dispar*
- B. *T. brucei gambiense* and *T. brucei rhodesiense*
- C. *Cryptosporidium parvum* and *Isospora belli*
- D. All of the above

E. A and B

**7. The disease and its vector not correctly matched in:**

- A. Onchocerciasis – black fly
- B. Leishmaniasis – sand fly
- C. African Trypanosomiasis – Tsetse fly
- D. Elephantiasis – mosquitoes
- E. None of the above

**8. Some intestinal nematodes show pneumonia-like symptoms during the initial phase of infection as they migrate heart-to-lung before developing in to adult. Parasites undergoing such journey include:**

- A. Hook worms, *T. trichiura* and *A. lumbricoides*
- B. *A. lumbricoides*, *T. trichiura* and *S. stercoralis*
- C. *A. lumbricoides*, Hook worms and *S. stercoralis*
- D. Hook worms, *E. vermicularis* and *T. trichiura*
- E. None of the above

**9. Human cysticercosis is caused by:**

- A. Ingesting larvae of *T. solium* in pork
- B. Ingestion of larvae of *T. saginata* in beef
- C. Ingestion of ova of *T. solium* in contaminated food
- D. Ingestion of ova of *T. saginata* in contaminated food
- E. A and C

**10. *Cryptosporidium parvum* a protozoan parasite which is considered a\_\_\_\_\_.**

- A. Pathogenic
- B. opportunistic
- C. Non-pathogenic
- D. None

**11. Reactivation of the hypnozoite stage of a parasite occurs in species.**

- A. *Toxoplasma gondii*
  - B. *Plasmodium falciparum*
  - C. *Plasmodium vivax*
  - D. *Cryptosporidium parvum*
  - E. None
- 12. Which of the following developmental stages of plasmodium species is infective to vertebrate host?**
- A. Schizonts
  - B. Sporozoites
  - C. Merozoites
  - D. Trophozoites
  - E. None
- 13. Modes of transmission of medically important nematodes include all except:**
- A. Active skin penetration
  - B. Mosquito bite
  - C. Faeco-oral route
  - D. Consumption of raw meat
  - E. None of the above
- 14. Antropogenic creation of new development projects such as building dams and irrigation canals may increase the rate of transmission of Schistosomes in people residing in the area mainly by favoring:**
- A. The snail hosts
  - B. Human excreta disposal on open field
  - C. Parasite maturity in the human host
  - D. Occurrence of malaria in the area
  - E. Drug resistance of the parasites
- 15. Wrong statement about urinary schistosomiasis:**
- A. It is caused by *S. haematobium*
  - B. It is not reported from Ethiopia so far

- C. It is sexually transmitted
- D. It is diagnosed by finding characteristic eggs in urine
- E. B and C

**16. \_\_\_\_\_ Specimen has the highest sensitivity for leishmania amastigote recovery.**

- A. Buffy coat
- B. Lymph node aspirate
- C. Bone marrow aspirate
- D. Spleen aspirate
- E. None

**17. \_\_\_\_\_ is antigen detection technique for the diagnosis of Leishmania**

- A. rk39 latex agglutination
- B. Direct agglutination test (DAT)
- C. Xenodiagnosis
- D. A & B
- E. None

**18. The trophozoites stage of *T. gondii* which is found during acute stage of infection is \_\_\_\_\_**

- A. Bradyzoite
- B. Tachyzoite
- C. Sporozoite
- D. Oocyst
- E. None

**19. Ingested red cells, single nucleus with central karyosome nucleus are characteristic features of \_\_\_\_\_**

- A. *G. lamblia*
- B. *E. histolytica*
- C. *T. vaginalis*
- D. *N. fowleri*
- E. None

**20. Which of the following parasites can be transmitted congenitally**

- A. *T. gondii*
- B. *C. parvum*
- C. *I. belli*
- D. *Plasmodium* SPP.
- E. None

**21. \_\_\_\_\_ infect young reticulocytes**

- A. *Plasmodium falciparum*
- B. *Plasmodium vivax*
- C. *Plasmodium malariae*
- D. A & B
- E. B & C

**22. If a person accidentally ingests egg from fecal matter defecated few hours ago, which parasite can be transmitted successfully?**

- A. *N. americanus*
- B. *S. stercoralis*
- C. *E. vermicularis*
- D. *A. lumbricoides*
- E. All

**23. Which one of the following parasite affect caecum and colon?**

- A. *T. trichiura*
- B. *A. lumbricoides*
- C. *A. duodenale*
- D. *S. stercoralis*
- E. None

**24. The following parasite due to their heart lung migration, cause pulmonary symptoms, EXCEPT.**

- A. *S. stercoralis*
- B. *E. vermicularis*
- C. *A. lumbricoides*

*D. A. duodenale*

*E. All*

**25. Diagnostic stage of the following soil-transmitted helminthes is egg, EXCEPT**

*A. S. stercoralis*

*B. N. americanus*

*C. A. lumbricoides*

*D. E. vermicularis*

*E. All*

**26. In formalin ether concentration technique the order of sedimentation from top to bottom is \_\_\_\_\_.**

A. Ether - Formalin - Feacal debris - Sediment

B. Ether - Feacal debris - Formalin - Sediment

C. Formalin - Ether - Feacal debris - Sediment

D. Formalin - Feacal debris - Ether - Sediment

E. None

**27. Based on mode of transmission, which of the following tissue nematode is distinct?**

A. *W. bancrofti*

B. *D. medinensis*

C. *L. loa*

D. *O. volvulus*

E. All have same mode of transmission

**28. One of the diagnostic feature of all filarial worms is the presence of sheath, Except for.**

A. *W. bancrofti*

B. *O. volvulus*

C. *D. medinensis*

D. *L. loa*

E. All have sheath

**29. Which one of the following tissue nematode does not have periodicity?**

- A. *B. malayi*
- B. *L. loa*
- C. *W. bancrofti*
- D. *B. timori*
- E. None

**30. All of the following species of Entamoeba, inhabit the intestine of an infected vertebrate, EXCEPT\_\_\_\_\_ .**

- A. *E. histolytica*
- B. *E. polecki*
- C. *E. gingivalis*
- D. *E. hartmani*
- E. None

**31. Which of the following trophozoites stage of protozoa is non-invasive?**

- A. *E. histolytica*
- B. *G. lamblia*
- C. *P. falciparum*
- D. *Toxoplasma gondii*
- E. None

**32. Which of the following is not characteristic feature of cyst stage of *E. histolytica*?**

- A. Central karyosome
- B. Directional motility
- C. Chromatoid bodies
- D. All
- E. None

**33. Blanketing of the villi is the main pathogenic outcome of .**

- A. *T. gondii*
  - B. *T. vaginalis*
  - C. *G. intestinalis*
  - D. *E. histolytica*
  - E. None
- 34. Which one is the correct differentiation feature between cyst of *E. histolytica* and *G. lamblia*?**
- A. *E. histolytica* cysts has four nuclei located at one pole
  - B. *E. histolytica* cyst is oval
  - C. *G. lamblia* cyst contains ingested RBC
  - D. All are correct
  - E. None is correct
- 35. Which one is incorrect regarding specimen of choice and suspected protozoal infection?**
- A. *LeishmaniaSpp* - Bone marrow aspiration
  - B. *N. fowleri* - blood specimen
  - C. *G. lamblia* - duodenal aspiration
  - D. *T. vaginalis* - urethral scraping
  - E. All are correct
- 36. Which of the species of parasites have indirect lifecycle?**
- A. *Trypanosoma Spp.*
  - B. *T. gondii*
  - C. *Plasmodium Spp.*
  - D. A & C
  - E. All
- 37. Which one of the following is correct matching regarding species and their infective stage?**
- A. *T. vaginalis* - quadrinucleated cyst
  - B. *LeishmaniaSpp* - amastigote
  - C. *TrypanosomaSpp* - pomastigote
  - D. A & B

- E. None
38. Which one of the following developmental stage is obligate intra-cellular?
- A. Promastigote
  - B. Amastigote
  - C. Trypomastigote
  - D. Epimastigote
  - E. None
39. Select the correct matching between parasite and their clinical manifestation.
- A. *T. b. gambiense* - chagas disease
  - B. *T. cruzi* - Sleeping sickness
  - C. *L. chagasi* - visceral leishmaniasis
  - D. *L. tropica* - wet oriental sore
  - E. C & D
40. Which one of the following statement is incorrect regarding mode of transmission of *T. gondii*?
- A. Ingestion of tachyzoite from cat faeces contamination.
  - B. Congenital transmission of **tachyzoites** via the placenta
  - C. Ingestion of **bradyzoites** in un/undercooked meat
  - D. Via transplantation of organ that contains **bradyzoites**
  - E. All are correct
  - F.

### Serology comprehensive exam questions

1. An agglutination test in which antigens are attached to a particulate carrier under experimental condition is
- A. Direct agglutination
  - B. passive agglutination
  - C. Reverse passive agglutination
  - D. Viral haemagglutination

- E. None of the above
2. An agglutination reaction in which natural or synthetic particles are coated with antibody molecule for the detection of antigen is
- A. Agglutination inhibition
  - B. Direct agglutination
  - C. Passive agglutination
  - D. Reverse passive agglutination
  - E. All of the above
3. Immunological techniques are employed to detect and quantitate
- A. Antigens
  - B. Antibodies
  - C. Complement proteins
  - D. Immune complexes
  - E. All of the above
4. An antigen-antibody reaction in which presence of soluble antigen neutralizes the reaction of soluble antibody and its corresponding particulate antigen is:-
- A. Precipitation reaction
  - B. Coomb's test
  - C. Agglutination inhibition
  - D. Immuno flure scence
  - E. Immuno fixation
5. Immunologic reaction where the types of antibody taking part and the relative proportion of antibody and antigen affects the final out come is

- A. Prozone
- B. Post zone
- C. Zone of equivalence
- D. Association constant
- E. All at the same time

6. Which of the followings is a primary antigen antibody reaction

- A. Agglutination
- B. Complement fixation
- C. Enzyme immuno assay
- D. Precipitation
- E. None

7. The following substances are helpful to visualize/measure antigen-antibody complexes

- A. Radioactive isotopes
- B. Dyes
- C. Cells
- D. Latex particles
- E. All

8. Detection of antigens in the patient specimen by immunological techniques implies

- A. Presence of disease causing agent
- B. healing after exposure to the antigen long ago

- C. Presence of high antibody concentration
- D. Destruction of microorganisms by chemotherapy
- E. All of the above

9. While doing enzyme immunoassays (EIA), the color is produced because of initial interaction between :

- A. Antigen and antibody
- B. Antigen and substrate
- C. Enzyme and antibody
- D. Enzyme and substrate
- E. Enzyme and antigen

10. One of the following tests is best used for the identification of an antigen on the surface of cells or tissues:

- A. Complement fixation test
- B. The indirect immunofluorescence test
- C. The Indirect ELISA
- D. The direct immunofluorescence
- E. The direct ELISA

11. Non-specific tests are different from specific ( treponemal ) tests for syphilis because they

- A. Utilize lipoidal antigen
- B. Detect reagenic antibody
- C. Utilize protein extracts of commensal treponames
- D. Detect anti -treponemal antibodies
- E. A and B

12. From the list identify the equipment NOT useful for facilitating antigen antibody binding during testing

- A. ELISA reader
- B. Shaker
- C. Centrifuge
- D. Incubator
- E. Water bath

13. Of the followings differentiate the one used least for preservation of serology specimens for long period of time

- A. Refrigeration
- B. Freezing
- C. Sodium azide
- D. Lyophilization
- E. Liquid nitrogen

14. A patient serum specimen was tested for reagenic antibodies by quantitative technique. It showed 4+, 3+, 2+, and 1+ agglutination at dilutions 1:2, 1:4, 1:8 and 1:16 respectively. The result is reported as

- A. Reactive  $\geq 16$
- B. Reactive 16
- C. Reactive 8
- D. Reactive 4
- E. Reactive 2

15. Which one is not correct about reagents and controls commonly used in serology laboratory;

- A. Commercially prepared
- B. In house prepared
- C. Could be diluted to the concentration desired
- D. Should not be after expiry date
- E. Reagents within expiry date will never deteriorate

Question 16-20  
Match words/statements/phrases in columns A that correctly matches with those given in Columns B

Column A

Column B

\_\_\_A\_\_\_ 16.  $\beta$ -hCG

A. Trophoblastic tumors

\_\_\_G\_\_\_ 17. Urease test

B. Toxoplasmosis

\_\_\_C\_\_\_ 18. pLDH

C. Malaria antigen

\_\_\_F\_\_\_ 19. EBV

D. Proteus vulgaris O antigen

\_\_\_E\_\_\_ 20. Dengue fever

E. Mosquito

F. viral capsid antigen (VCA)

G. H.pylori

## VECTOR BIOLOGY

1. Which one of the following is/are permanent ectoparasites?

A. *Dermacentor andersoni*

B. *P. h. capitis*

C. Rat fleas

D. All

\_\_\_\_\_ 2. Which one of the following is/are not true about vector/arthropods?

A. They have segmented body.

B. Their body is covered with Exoskeleton.

C. Their body can be divided into two identical halves.

D. None.

\_\_\_\_\_ 3. Which one of the following arthropods is/are characterized by three pair of leg?

A. Mites

B. Millipedes

C. Centipedes

D. Insect

\_\_\_\_\_ 4. Which one of the following combination is wrong?

A. Cyclopropagative = Filaria in mosquitoes

B. Propagative: = Plague in flea

C. Cyclodevelopmental = Filaria in mosquitoes

D. None

E. All

\_\_\_\_\_ 5. Which one of the following class of arthropoda does not have antennae?

A. Diplopoda

B. Chilopoda

C. Arachnida

D. Crustacean

\_\_\_\_\_ 6. What are the developmental stages involved in Hemimetabolous?

A. Egg → Nymph → Adult

B. Egg → larva → pupa → adult

\_\_\_\_\_ 7. Which one of the following is responsible for the transmission of Epidemic relapsing fever (*Borrelia recurrentis*)

A. *P. h. Corporis*

C. *Phthirus pubis*

B. *P. h. capitis*

D. All

\_\_\_\_\_ 8. "Wing" is a common feature of \_\_\_\_\_

A. Chilopoda

B. Arachnida

C. Insects

D. Crustacean

E. All except A

\_\_\_\_\_ 9. Which one of the following is the vector for "Murine typhus" transmission?

A. Louse

C. Ticks

B. Fleas

D. None

\_\_\_\_\_ 10. Which one of the following combination is right?

A. Hemiptera = Complete metamorphosis

B. Siphonoptera = Incomplete metamorphosis

C. Diptera = Incomplete metamorphosis

D. Anoplura = Complete metamorphosis

E. None

## Exam questions

1. Cytomegalovirus may cause the following diseases

A. Pneumonitis

B. Retinitis

C. Encephalopathy

D. All

E. None

2. Which of the following may have gastrointestinal manifestations

- A. HSV1
  - B. HSV2
  - C. VZV
  - D. CMV
  - E. None
3. The modes of transmission for CMV may be
- A. Direct contact
  - B. Congenital
  - C. Transmammary
  - D. All
  - E. None
4. Wrong about risk factors for CMV
- A. T- cell defect
  - B. Pregnancy
  - C. Transplantation
  - D. All
  - E. None
5. The golden standard for the diagnosis of CMV
- A. Cytopathology effect
  - B. Serology- Antibody detection
  - C. Serology - antigen detection
  - D. Culture
  - E. All
6. Epstein barr virus may cause
- A. Infectious mononucleosis
  - B. Burkitt's lymphoma
  - C. Nasopharyngeal carcinoma
  - D. All
  - E. None
7. Identify the wrong match of the virus with its preferred site of latency
- A. HSV1 = Sensory ganglia
  - B. Cytomegalovirus = Lymphocytes
  - C. Epstein Barr virus = B-lymphocytes
  - D. HHV 8 = Erythroid tissue
  - E. None
8. One is wrong about influenza virus
- A. Are ss RNA viruses
  - B. May infect humans, horses, pigs and other non domestic birds
  - C. Code for HA and NA proteins
  - D. Genetic reassortment is not common
  - E. None
9. Which of the following viruses replicate in the cytoplasm
- A. Parvovirus
  - B. Adenovirus

- C. Influenza virus
  - D. Herpesvirus
  - E. None
10. True about HA/NA proteins
- A. HA detaches the virus from the host cell
  - B. NA binds the virus to host cell
  - C. HA major antigen for antibody directed neutralization
  - D. NA removes sialic acid from glycoconjugate
  - E. None
11. Not true about Paramyxoviruses
- A. ssRNA viruses
  - B. segmented genome
  - C. linear negative sense genome
  - D. replicates in the cytoplasm
  - E. None
12. One of the following parainfluenza virus is most prevalent and causes pneumonia among infants
- A. Type I parainfluenza virus
  - B. Type II parainfluenza virus
  - C. Type III parainfluenza virus
  - D. Type IV parainfluenza virus
  - E. None
13. Diagnosis of parainfluenza virus may be made by
- A. Isolation of the virus from nasopharyngeal aspirates
  - B. Rapid detection of the antigens
  - C. Retrospective serologic detection
  - D. All
  - E. None
14. True about measles virus
- A. Host is limited to human
  - B. Has only one serotype
  - C. MMR is the vaccine of available
  - D. All
  - E. None
15. One of the following belongs to Picornaviridae family
- A. Corona virus
  - B. Measles
  - C. Mumps
  - D. Rubella
  - E. None
16. True about poliovirus
- A. Transmitted through feco - oral route

- B. Replicates in the Pharyngeal and Gastro intestinal tract
  - C. Causes destruction of the motor neurons
  - D. All
  - E. None
17. Corona viruses
- A. Have segmented RNA genome
  - B. Undergo genetic assortment
  - C. Undergo recombination of genome
  - D. Are small RNA viruses
  - E. None
18. Rhinoviruses
- A. Adapted to acidic environment
  - B. Limited to the upper respiratory tract
  - C. Have limited serotypes
  - D. Do not cause common cold
  - E. All
19. True about rabies virus
- A. It is bullet shaped RNA virus
  - B. Replicates in the muscle
  - C. Replicates in CNS
  - D. Antibody can block the progression of the disease
  - E. All
20. Which of the following statement is true about HIV
- A. It contains one ssRNA genome
  - B. It contains two ssRNA genome
  - C. It is positive strand RNA , equivalent to mRNA, that may be directly translated to proteins
  - D. Is naked capsid virus that is resistant to extreme conditions of the environment
  - E. All

