

**Physiology**

- 1) **A newly developed local anesthetic block's Na<sup>+</sup> channels in nerves, Which of the following effects on the membrane potential would be expected to produce?**
- A) Decrease the Na<sup>+</sup> equilibrium potential
  - B) Shorten the absolute refractory period
  - C) Reduction in membrane excitability
  - D) Increase the Na<sup>+</sup> equilibrium potential
- 2) **Assuming complete dissociation of all solutes, which of the following solutions would be hyperosmotic to 1 mM NaCl?**
- A) 1.5 mM glucose
  - B) 1 mM KCl
  - C) 1 mM glucose
  - D) 1 mM CaCl<sub>2</sub>
- 3) **In contraction of gastrointestinal smooth muscle, which of the following events occurs after binding of Ca<sup>2+</sup> to calmodulin?**
- A) Opening of ligand-gated Ca<sup>2+</sup> channels
  - B) Increased myosin light chain kinase activity
  - C) Ca<sup>2+</sup> induced Ca<sup>2+</sup> release
  - D) Depolarization of the sarcolemmal membrane
- 4) **Which option can be included in the horizontal axis of the cardiac function curve, instead of atrial pressure?**
- A) Cardiac output
  - B) Ventricular contractility
  - C) End diastolic volume
  - D) Stroke volume
- 5) **Which of the intervals in the electrocardiogram increases with a sharp increase in the activity of the parasympathetic nervous system?**
- A) PR interval
  - B) RR interval
  - C) QT interval
  - D) QRS duration

- 6) **The tendency for edema to occur will be increased by?**
- A) Arteriolar constriction
  - B) Muscular activity
  - C) Increased plasma protein concentration
  - D) Increased venous pressure
- 7) **Which agent is released or secreted after a hemorrhage and causes an increase in renal Na<sup>+</sup> reabsorption?**
- A) Atrial natriuretic peptide
  - B) Angiotensin I
  - C) Aldosterone
  - D) Antidiuretic hormone (ADH)
- 8) **Which of the plexus situated between the longitudinal and circular layers of the muscularis?**
- A) Aurbach's plexus
  - B) Meissner's plexus
  - C) Triangular plexus
  - D) Laimer's plexus
- 9) **Secretin hormone affects on the ..... of pancreas and causes ..... secretion.**
- A) Acini cells - Digestive enzymes
  - B) Acini cells - HCO<sub>3</sub><sup>-</sup> ions
  - C) Duct cells - digestive enzymes
  - D) Duct cells - HCO<sub>3</sub><sup>-</sup> ions
- 10) **In which condition the lung edema would produced?**
- A) Stenosis in the mitral valve
  - B) Decrease of the left atrium pressure
  - C) Decrease of the right atrium pressure
  - D) Increase of the right atrium pressure
- 11) **Which one of the following sentences is correct?**
- A) Adrenergic receptor activity in the respiratory air way lead to reduction of air way resistance
  - B) Oxygen transport from respiratory barrier to the capillaries do via facilitated diffusion
  - C) Surfactant push the air away from the big alveolus to the small ones
  - D) We can directly measure the Total Lung Capacity (TLC) by an spirometer

**12) To produce a concentrated urine, which one is required?**

- A) A reduction in GFR
- B) Presence of adequate amounts of aldosterone
- C) Presence of high amounts of ADH
- D) All of the above

**13) In a person with urinary tract obstruction, elevation of which pressure causes stop of filtration?**

- A) Bowman's capsule oncotic pressure
- B) Bowman's capsule hydrostatic pressure
- C) Glomerular capillaries oncotic pressure
- D) Glomerular capillaries hydrostatic pressure

**14) Transducin is stimulated by ..... and causes ..... of ..... enzyme.**

- A) rhodopsin - inhibition - phosphodiesterase
- B) metarhodopsin II - inhibition - adenylyl cyclase-
- C) metarhodopsin II - excitation - phosphodiesterase
- D) cGMP - excitation - adenylyl cyclase

**15) What is the ability to keep track of many bits of information simultaneously and to cause recall of this information instantaneously as it is needed for subsequent thoughts?**

- A) Intermediate long-term memory
- B) Working memory
- C) Skill memory
- D) Memory sensitization

**16) Which of the choices decrease neuronal excitability?**

- A) GABA
- B) Theophylline
- C) Caffeine
- D) Glutamate

**17) Which of the following effects is correct for insulin?**

- A) Increasing plasma amino acid concentration
- B) Stimulating gluconeogenesis
- C) Enhancing potassium entry into cell
- D) Converting glycogen to glucose

- 18) Which of the following effects is a symptom of hypothyroidism?**
- A) Diarrhea
  - B) Decreased libido
  - C) Elevated systolic pressure
  - D) Muscle tremor
- 19) Capacitation of the spermatozoa that activate the sperm for the final processes of fertilization cause:**
- A) Differentiation and elongation of spermatids
  - B) Secretion of nutrient fluid contains hormones and enzymes
  - C) Increased permeability to calcium ions in the membrane of the sperm
  - D) Release of large quantities of prostaglandins and fibrinogen
- 20) What is the effect of a drug which inactivates acetylcholinesterase?**
- A) Inhibition the acetylcholine release from presynaptic cell
  - B) Increasing the ability of acetylcholine for activating the muscle contraction
  - C) Inhibition the acetylcholine binding to its protein receptor
  - D) Increasing the empty of vesicles of acetylcholine
- 21) Duration of which part of a normal electrocardiogram is longer?**
- A) QRS complex
  - B) PQ segment
  - C) T wave
  - D) P wave
- 22) Which of the following receptors have main and fundamental role in short-term regulation of arterial pressure?**
- A) Aortic and carotid baroreceptors
  - B) Atrial pressure receptors
  - C) Aortic and carotid chemoreceptors
  - D) Central chemoreceptors
- 23) In which segment of tubules as the first portion, the fluid osmolarity is regulated in response to plasma ADH changes?**
- A) Thin descending loop of henle
  - B) Cortical collecting tubule
  - C) Proximal tubule
  - D) Late distal tubule

**24) Which pair of following stimuli increase the pancreatic secretion?**

- A) Gastrin , Acetylcholine
- B) Secretin , Cholecystokinin
- C) Acetylcholine , Cholecystokinin
- D) Motilin , Gastrin

**25) What is the mechanism of insulin in the liver for regulation of glucose?**

- A) Increasing the activity of glucokinase enzyme
- B) Activation of liver phosphorylase
- C) Increasing the activity of glucose phosphatase enzyme
- D) Decreasing the activity of glycogen synthase enzyme

**26) Which following sentence is correct about cerebellum?**

- A) Dentate nucleus of cerebellum has relation with the oldest part of the cerebellum
- B) Sensory information from limbs terminate on lateral zone
- C) Vermis of cerebellum with help of brain cortex has a role in planning of voluntary movement
- D) Interposed nucleus of cerebellum has a role in control of limb movements

### **Pathology**

**27) In histologic exam of bronchial biopsy in a heavy smoker, usual respiratory type epithelium is replaced by stratified squamous epithelium. Which of the following is correct about this type of adaptation?**

- A) Phenotypic change of mature epithelial cells
- B) Reprogramming of stem cells to another pathway
- C) Forming of new pathway after primary differentiation
- D) Transdifferentiation of differentiated cells

- 28) Which of the followings is more probably associated with an increased risk of skin and lung carcinoma?**
- A) Mercury
  - B) Cadmium
  - C) Lead
  - D) Arsenic
- 29) Which of the following forms of secondary hypercoagulability states is associated with increase in platelet aggregation and decreased release of PGI-2?**
- A) Homocystinuria
  - B) Advanced age
  - C) Oral contraceptive
  - D) Increase in Protein C
- 30) Defect in which of the following mechanisms, is the cause of Chronic Granulomatous Disease (CGD)?**
- A) Microbicidal activity
  - B) TLR Signaling Pathway
  - C) Leukocyte Adhesion Deficiency
  - D) Phagolysosome Activity
- 31) Which of the followings is the major cytokine in acute inflammation?**
- A) TNF
  - B) IL-12
  - C) IL-17
  - D) INF- $\gamma$
- 32) Deficiency of the late component of classical complement pathway (C5-C9), results in infection by which organism?**
- A) Staphylococcus aureus
  - B) Neisseria
  - C) Klebsiella
  - D) Pneumococci

- 33) Which of the followings, leads to malignancy by induction of pyrimidine dimer?**
- A)  $\beta$ -naphtylamine
  - B) Ultraviolet radiation
  - C) Helicobacter pylori
  - D) Hepatitis C Virus
- 34) A 23 years old female, who has Systemic Lupus Erythematosus, presents with glomerulonephritis. Which type of hypersensitivity reactions is the mechanism of the renal involvement?**
- A) III
  - B) I
  - C) II
  - D) IV
- 35) Infection by which organism leads to rapid and severe gangrenous necrosis?**
- A) Klebsiella pneumoniae
  - B) Clostridium perfringens
  - C) Hemophilus influenza
  - D) Treponema pallidum
- 36) Which of the following cells, synthesizes Adenosin diphosphatase (ADPase)?**
- A) Platelet
  - B) Monocyte
  - C) Endothelial
  - D) B lymphocyte
- 37) In microscopic evaluation of gastric tissue, islets of Langerhans and exocrine glands of pancreas are seen in the submucosa. What is the diagnosis?**
- A) Choriostoma
  - B) Tissue metaplasia
  - C) Hamartoma
  - D) Pancreatic metastasis
- 38) Which one the following in acute inflammation is the reason for erythema and stasis of blood flow?**
- A) Vasoconstriction induced by serotonin
  - B) Vasodilatation induced by histamine
  - C) Reaction to thromboxan A<sub>2</sub> in vascular bed
  - D) Vascular reaction to endothelin

- 39) Gradual bone formation in soft tissues in tissue damage foci is called:**
- A) Choriostoma
  - B) Metaplasia
  - C) Ectopia
  - D) Hamartoma
- 40) Cancer growth accompanied by progressive infiltration, invasion, and destruction surrounding tissue is called:**
- A) Local invasion
  - B) Low grade tumor
  - C) Metastasis
  - D) High grade tumor
- 41) Which of the following is responsible for white infarction?**
- A) Arterial occlusion in solid tumor
  - B) Venous occlusion in ovary
  - C) In tissues with dual circulation
  - D) In loose tissue such as lung

### Biochemistry

- 42) In a patient with a genetic defect, the uptake of chylomicron remnants and IDL into liver is disturbed which has resulted in increased triglyceride and cholesterol in the blood. The deficiency of which of the following apolipoproteins is expected?**
- A) ApoA-I
  - B) ApoE
  - C) ApoC-II
  - D) ApoB-100
- 43) All of the complexes in electron transport chain act as proton pump, except?**
- A) II
  - B) III
  - C) I
  - D) IV
- 44) How does phosphoglycerate kinase lead to ATP production during carbohydrate metabolism?**
- A) Oxidative decarboxylation
  - B) Oxidative phosphorylation
  - C) Substrate level phosphorylation
  - D) Phosphorolysis

- 45) In eukaryotes, which process occurs simultaneously with elongation phase?**
- A) translation
  - B) 5' capping
  - C) 3' capping
  - D) mRNA splicing
- 46) Inhibition of which DNA polymerase, involved in replication, causes the primers to remain in the newly synthesized DNA?**
- A)  $\delta$
  - B)  $\alpha$
  - C) I
  - D) II
- 47) What change in pH and 2,3-bisphosphoglycerate would increase oxygen release from hemoglobin?**
- A) Increase - Increase
  - B) Decrease - Decrease
  - C) Decrease - Increase
  - D) Increase - Decrease
- 48) Which of the following amino acids in myoglobin is likely to be located within the interior of the molecule?**
- A) Valine
  - B) Arginine
  - C) Lysine
  - D) Aspartate

- 49) A child is suffering from mental retardation and self-mutilation and shows high uric acid in blood which are signs of Lesch -Nyhan syndrome. Genetic deficiency of which enzyme would cause this disease?**
- A) Hypoxanthine - Guanine phosphoribosyltransferase
  - B) XMP - Glutamine amidotransferase
  - C) Glutamine - PRPP amidotransferase
  - D) Adenine phosphoribosyl transterase
- 50) In a 66-year old patient with liver cirrhosis, ammonia is not getting detoxified and can cause brain damage. Which of the following amino acids can bind ammonia to convert it to non-toxic form?**
- A) Aspartate
  - B) Glutamate
  - C) Serine
  - D) Cysteine
- 51) Which glycogen storage disease is caused by the deficiency of muscle phosphorylase?**
- A) Von Gierke
  - B) Cori
  - C) McArdel
  - D) Pompe
- 52) In a patient, a tumor near the pituitary stalk has destroyed the connection between anterior pituitary and hypothalamus. The secretion of all of the following hormones are defective, except?**
- A) Estradiol
  - B) ACTH
  - C) Oxytocin
  - D) T4
- 53) A hormone has increased the activity of phosphalipase C in the cell. This will be followed by an increase in ... ?**
- A) Cytosol calcium concentration
  - B) Tyrosine phosphorylation in the hormone receptor
  - C) The activity of guanylyl cyclase
  - D) The activity of protein kinase A
- 54) Which of the following Structures contain sialic acid?**
- A) Ganglioside
  - B) Lecithin
  - C) Galactocerebroside
  - D) Cephalin

**55) Which of the following vitamins are stored in the body?**

- A) B12
- B) B1
- C) B6
- D) B2

**56) What is the mechanism of Allopurinol in the treatment of Gout?**

- A) Inhibition of Xanthine Oxidase enzyme
- B) Activation of Hypoxanthine - Guanine Phospho Ribosyl Transferase (HGPRT) enzyme
- C) Activation of Urate Oxidase enzyme
- D) Inhibition of Phosphoribosyl Transferase

**57) Which of the following enzymes are the key enzyme in gluconeogenesis pathway?**

- A) Phosphoenol Pyruvate Carboxy Kinase
- B) Aldolase
- C) Glyceraldehyde 3 Phosphate Dehydrogenase
- D) Triosphosphate Isomerase

**58) Which of the following molecules and hormones activate acetyl CoA carboxylase?**

- A) Citrate and insulin
- B) Citrate and cortisol
- C) Malonate and glucagon
- D) Malonyl CoA and adrenaline

### Medical Physics

**59) There are three requirements for diagnosis medical ultrasound: generation of an ultrasound beam, ..... and processing of the signal for the display.**

- A) reception of the returning echo
- B) thermoelectronic effect of echo
- C) photoelectric effect of echo
- D) transmission of the signal

- 60) Which one destroy the contrast in X-ray imaging?**
- A) Increase in X-ray intensity (MA)
  - B) X-ray scatter (Is)
  - C) Increase in X-ray time (sec)
  - D) Decrease in X-ray energy (Kv) in diagnosis energy range
- 61) If the half life of radionuclide A is twice of radionuclide B, decay constant ( $\lambda$ ) of radionuclide A is ... of radionuclide B?**
- A) Equal
  - B) Half
  - C)  $0.693/2$
  - D) Twice
- 62) In ....., myopic in one meridian and hyperopic in the other.**
- A) compound myopic astigmatism
  - B) simple myopic astigmatism
  - C) mixed astigmatism
  - D) compound hyperopic astigmatism
- 63) Which of the following can cause an increase in the exit of the amount of hardness penetration power of beams in diagnostic x-ray lamp?**
- A) Increase in the beaming time
  - B) Increase in the filtration thickness
  - C) Increase in the power of filament flow (mA)
  - D) Decrease voltage in bothe poles of lamp (kVp)
- 64) Which of the following rays is used in medical nuclear imaging technique with SPECT?**
- A) Gamma
  - B) Negative Beta
  - C) Alpha
  - D) Neutron

**Psychology**

- 65) An individual buys an item and then realizes it is defective. He tries to return the item, but the seller refuses to accept it. In response to the seller's refusal, the individual keeps repeating, "This is defective and I want to return it" firmly until the seller agrees to take the item back. What type of behavior the individual has exhibited?**
- A) Domineering behavior
  - B) Obsessive- compulsive behavior
  - C) Aggressive behavior
  - D) Assertive behavior
- 66) In Freud's psychoanalysis theory, during the Oedipal phase, in what way do boys try to overcome their castration anxiety?**
- A) Identifying with father
  - B) Regressing to a previous psychosexual stage
  - C) Using defense mechanism of undoing
  - D) Identifying with mother
- 67) Which theoretical perspective, instead of relying on motives, emotions or unconscious conflicts, emphasizes on conscious mental processes in explaining certain psychiatric disorders?**
- A) Cognitive perspective
  - B) Behavioral perspective
  - C) Humanistic perspective
  - D) Biological perspective
- 68) An individual who sees himself in the mirror and thinks that someone is staring at him, what problem is he or she suffering from?**
- A) Prosopagnosia
  - B) Illusion
  - C) Persecutory delusion
  - D) Visual problem
- 69) Which characteristics can be stressful in events?**
- A) personal limitations, dangerous situation and opportunities, prediction
  - B) Uncontrolable, solving oppositions, vulnerable, narcissism
  - C) Amount of stress, shakefulness, internal oppositions
  - D) Uncontrolable, predictable, optimum capacity

- 70) Childs tendency to stay close to special people and feeling more safe in the presence of these people is defined as:**
- A) Modelling
  - B) Fondness
  - C) Role playing
  - D) Attachment

### Parasitology

- 71) A patient with gastrointestinal symptoms, acute colitis and dysentery has been referred to a physician, for specific treatment which drug is recommended?**
- A) Niclosamide
  - B) Metronidazole
  - C) Thiabendazole
  - D) Mebendazole
- 72) Which clinical sign in acquired toxoplasmosis among immunocompetent individuals is more prevalent?**
- A) Atypic pneumonia
  - B) Lymphadenitis
  - C) Maculo-Papular lesion
  - D) Myocarditis
- 73) Which shape of blood and tissue flagellated protozoa is without free flagellum?**
- A) Trypomastigote
  - B) Promastigote
  - C) Epimastigote
  - D) Amastigote
- 74) Rhabditiform larva has been found in stool specimen of a patient. Which of the following infectivity is probable?**
- A) *Toxocara canis*
  - B) *Strongyloides stercoralis*
  - C) *Echinococcus granulosus*
  - D) *Fasciola hepatica*

- 75) Cystitis and bladder epithelium hyperplasia is related to ..... ?**
- A) Heterophiasis
  - B) Taeniasis
  - C) Schistosomiasis
  - D) Trichuriasis
- 76) "PAIR: Percutaneous Aspiration Injection Reaspiration " is a method for the treatment of ..... ?**
- A) Ascariasis
  - B) Cysticercosis
  - C) Hymenolepiasis
  - D) Hydatidosis
- 77) Which form of *Plasmodium* parasites inoculate to human in natural transmission of malarial parasites by female anophele fly?**
- A) oocyst
  - B) gametocyte
  - C) sporozoite
  - D) meozoite
- 78) Which of the following helminthic infections is more dangerous in Acquired Immunodeficiency syndrome?**
- A) *Ascaris lumbricoides*
  - B) *Strongyloides stercoralis*
  - C) *Ancylostoma duodenale*
  - D) *Trichuris trichura*

### Mycology

- 79) In which disease intertrigo infection is common?**
- A) Sporotrichosis
  - B) Mucormycosis
  - C) Mycetoma
  - D) Candidiasis
- 80) Trush is a type of.....**
- A) Mycetoma
  - B) Candidiasis
  - C) Cryptococcosis
  - D) Aspergillosis

### Medical Entomology

**81) What are the agent and vector of dengue fever, yellow fever, chikungunya and zika diseases?**

- A) Plasmodium - Culex
- B) virus - Aedes
- C) Bacteria - Sandfly
- D) Helminth - Anopheles

**82) What are the agent and vector of malaria in Iran?**

- A) *Plasmodium vivax* - *Anopheles stephensi*
- B) *Plasmodium ovale* - *Anopheles arabiensis*
- C) *Plasmodium falciparum* - *Anopheles gambiae*
- D) *Plasmodium Knowlesi* - *Anopheles dirus*

### Bacteriology

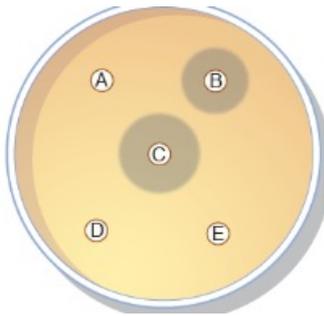
**83) Which one of the following antimicrobial agents would be most appropriate to treat bloodstream infection due to methicillin-resistant *Staphylococcus aureus* (MRSA)?**

- A) Clarithromycin
- B) Teicoplanin
- C) Cefotaxime
- D) Gentamicin

**84) The disease is due to gram negative bacilli infection with indicated tachycardia, septicemia, increased IL-1, stimulation of lymphocyte mitosis, and Schwartzmann's reaction. Which bacterial structure is the cause of the above symptoms?**

- A) Capsule
- B) lipoprotein
- C) Flagella
- D) Lipopolysaccharide

- 85) The results of agar disc diffusion test are shown in figure. What is the correct interpretation of these results?



- A) The isolate is sensitive to antibiotics D and B  
B) The isolate is sensitive to antibiotics C and B  
C) The isolate is resistant to antibiotics B and D  
D) The isolate is resistant to antibiotics E and D
- 86) Microscopic examination of vaginal smear shows Gram-negative cocci in phagocytes. Which bacteria is probably the cause of the infection?
- A) *Chlamydia*  
B) *Gardnerella*  
C) *Neisseria*  
D) *Trichomonas*
- 87) Which antimicrobial drugs inhibit protein synthesis of microorganisms?
- A) Carbapenems  
B) Monobactams  
C) Quinolones  
D) Aminoglycosides
- 88) A 23-year-old male was injured after playing with flammable materials. The patient was admitted to the hospital immediately after his burn injury. On day 10, wound swabs showed colonization with extended-spectrum  $\beta$ -lactamase (ESBL) producing *Klebsiella pneumoniae*. Which of the following drugs is suggested for treatment?
- A) Cephalexin  
B) Ceftazidime  
C) Daptomycin  
D) Imipenem

**89) Which one of the following antibiotic is used in *clostridium difficile* infection?**

- A) Ciprofloxacin
- B) Metronidazole
- C) Clindamycin
- D) Ampicillin

**90) Which one of the following bacteria is responsible for granulomatosis infantiseptica diseases?**

- A) *Hemophilus aphrophilus*
- B) *Corynebacterium diphtheria*
- C) *Listeria monocytogenes*
- D) *Legionella pneumophila*

**91) In which *compylobacter* you find capsule-like protein (S protein)?**

- A) Coli
- B) Jejuni
- C) Upsaliensis
- D) Fetus

### Virology

**92) The mode of transmission of which virus is different from the other viruses?**

- A) Hepatitis C Virus
- B) Human Papilloma virus
- C) MERS-CoV Coronavirus
- D) Human Immunodeficiency virus (HIV)

**93) Which of the following is usually the first serologic marker detected after primary hepatitis B virus infection?**

- A) HBe-Ab
- B) HBcAg
- C) anti-HBc
- D) HBsAg

**94) Which of the following viruses can cause congenital malformations?**

- A) Cytomegalovirus (CMV)
- B) Rhinovirus
- C) Rabies virus
- D) Mumps virus

**95) Chronic infection and latency can occur during infection with which of the following viruses?**

- A) Epstein-Barr Virus (HHV-4)
- B) Noroviruses
- C) Astroviruses
- D) Influenza Virus

### Anatomy

**96) Which one of the following muscle opens the mouth?**

- A) temporalis
- B) Masseter
- C) medial pterygoid
- D) lateral pterygoid

**97) Portocaval anastomosis exist in all of the following locations, except:**

- A) Medial border of kidney
- B) Anal canal
- C) Around umbilicus
- D) Abdominal esophagus

**98) All of the following phrases about the spinal cord are true, except...**

- A) Rubrospinal tract passes through the ventral column.
- B) The cauda equina is composed of the roots of some spinal nerves.
- C) Thoracic nerves emerge below their numeral vertebra.
- D) The first neuronal cell body of all general sensory pathways is placed in the dorsal root ganglion.

**99) All of the following structures pass beneath or through the ankle retinaculum except:**

- A) Deep proneal nerve
- B) Superficial proneal nerve
- C) Posterior tibial artery
- D) Anterior tibial artery

**100) Which artery does supply the visual cortex, mainly?**

- A) Posterior communicating
- B) Anterior cerebral
- C) Anterior communicating
- D) Posterior cerebral

**101) All of the followings lie at the level of sternal angle, except:**

- A) 4<sup>th</sup> costal cartilage
- B) Pulmonary bifurcation
- C) Aortic arch
- D) T4-T5 intervertebral disc

**102) All of the following muscles insert on perineal body, except:**

- A) Bulbospongiosus
- B) Pubovaginalis
- C) Ischiocavernosus
- D) Deep transverse perineal

**103) The vagus nerves supply the parasympathetic innervation of all of the followings, except:**

- A) Jejunum
- B) Descending colon
- C) Spleen
- D) Stomach

**104) The preganglionic fibers to the otic ganglion reach it through ..... nerve**

- A) lesser petrossal
- B) pterygoid canal
- C) Deep petrosal
- D) greater petrossal

**105) Where is the proper site of mitral valve auscultation?**

- A) Right side of sternal angle
- B) Left second intercostal space
- C) Left 5th intercostal space
- D) Right 4th costal cartilage

**106) All of the following muscles are paralyzed in the median nerve injury except:**

- A) Palmaris longus
- B) Adductor pollicis
- C) Flexor carpi radialis
- D) Opponens pollicis

**107) Which of the following nerves is the nervous pathway of cremasteric reflex?**

- A) Femoral
- B) Genitofemoral
- C) Iliohypogastric
- D) Ilioinguinal

**108) Which of the following arteries supplied the palatine tonsil?**

- A) Maxillary
- B) Ascending palatine
- C) Descending palatine
- D) Facial

**109) Which of the following foramen open into pterygopalatin fossa?**

- A) Spinasum
- B) Lacerum
- C) Rotundum
- D) Ovale

**110) Which of the followings has anterior relation with first part of duodenum?**

- A) Quadrate lobe of liver
- B) Gastroduodenal artery
- C) Portal vein
- D) Common bile duct

**111) Which of the following muscle is not a rotator cuff muscle?**

- A) Teres minor
- B) Infraspinatus
- C) Supraspinatus
- D) Teres major

**112) Which nucleus is related to the archo-cerebellum?**

- A) Fastigi
- B) Globus
- C) Dentate
- D) Emboliformis

**113) Which anatomical structure located laterally to the femoral ring?**

- A) Femoral nerve
- B) Femoral artery
- C) Femoral Vein
- D) Lacunar ligament

**114) All of the following structures are contents of posterior mediastinum, EXCEPT:**

- A) Thoracic duct
- B) Sympathetic trunk
- C) Azygos vein
- D) Phrenic nerve

**115) All of the following tracts are seen in the midbrain, EXCEPT:**

- A) Medial lemniscus
- B) Lateral Lemniscus
- C) Vestibulospinal
- D) Corticospinal

**116) Which anatomical structure located medially in the cubital fossa?**

- A) Median nerve
- B) Ulnar nerve
- C) Brachial artery
- D) Radial nerve

**117) Which of the following is the location of exit of the inferior petrosal sinus from the skull?**

- A) Hypoglossal Canal
- B) Jugular Foramen
- C) Innominate Foramen
- D) Foramen Lacerum

**118) Which of the following muscle is innervated by mandibular nerve?**

- A) Palatopharyngeus
- B) Tensor veli palatini
- C) Levator veli palatini
- D) Palatoglossus

**119) Which of the following structure is crossover by right and left ovarian and testicular arteries in abdomen?**

- A) Ureter at the level of L<sub>3</sub> vertebra
- B) Ureter at the level of L<sub>2</sub> vertebra
- C) Psoas major muscle at the level of L<sub>3</sub> vertebra
- D) Psoas major muscle at the level of L<sub>2</sub> vertebra

**120) Which of the following commissure connects the olfactory areas of cerebral hemispheres?**

- A) Corpus callosum
- B) Anterior commissure
- C) Fornix
- D) Posterior commissure

**121) Which of the following artery mainly supply the left artium of the heart?**

- A) Anterior interventricular artery
- B) Left coronary artery
- C) Circumflex artery
- D) Right coronary artery

**122) All of the following statements about linea semilunaris in abdominal wall are true except:**

- A) In above it relates to the fundus of gall bladder, in right side of the abdomen.
- B) It is extend from apex of 9th costal rib to pubic tubercle
- C) This line is touchable in the lateral border of the rectus abdominis muscle when this muscle contracted
- D) It forms lower part of posterior wall of the rectus sheath.

**123) What is the name of buras that is between the tibia and patellar ligament?**

- A) Prepatellar
- B) Superficial infrapatellar
- C) Suprapatellar
- D) Deep infrapatellar

## Nutrition

**124) Which fatty acids are essential?**

- A) Linoleic acid and Alpha linolenic acid
- B) Arachidonic acid and linoleic acid
- C) Oleic acid and Alpha linolenic acid
- D) Arachidonic acid and Alpha linolenic acid

**125) Which dietary amino acid's supplementation improves neurological functioning in patients with hepatic encephalopathy?**

- A) Branched-chain amino acids
- B) Aromatic amino acids
- C) Sulfur-containing amino acids
- D) Non-essential amino acids

**126) Which nutrient's deficiency results in Keshan disease?**

- A) Iodine
- B) Zinc
- C) Selenium
- D) Copper

**127) How many times Aspartame is more sweeter than sugar?**

- A) 1000 times
- B) 180 times
- C) 2 times
- D) 100 times

**128) Which of the following foods has less amounts of riboflavin?**

- A) Banana
- B) Egg
- C) Milk
- D) Liver

**129) How many kilo calories is increased in the amount of energy requirement by pregnant women during the first six months of breast feeding as compared to the period before pregnancy?**

- A) 250
- B) 400
- C) 450
- D) 330

**Embryology**

**130) Brachiocephalic artery develops from:**

- A) Conus cordis
- B) Right horn aortic sac
- C) Primitive ventricle
- D) Proximall part of trauncus artriosus

**131) Intra embryonic coelom appears in:**

- A) Extraembryonic mesoderm
- B) Interediate mesoderm
- C) Paraxial mesoderm
- D) Lateral plate mesoderm

**132) Degeneration of corpus luteum in the early months of pregnancy is prevented by:**

- A) Estrogen
- B) Lutein
- C) HCG
- D) Progestrone

**133) Lateral upper lip is formed by:**

- A) Medial nasal prominence
- B) Lateral nasal prominence
- C) Maxillary prominence
- D) Frontonasal prominence

**134) Efferent ductules of testis is formed by:**

- A) Testis cords
- B) Paramesonephric duct
- C) Mesonephric duct
- D) Mesonephric tubules

**135) Which of the following is the source of the dorsal grey column of the spinal cord?**

- A) Floor plate
- B) Alar plate
- C) Roof plate
- D) Basal plate

## Histology

- 136) Accumulation of which one of the cytoplasmic organelles leads to Nissl bodies formation in the perikaryon of neurons?**
- A) Peroxisome
  - B) Ribosome
  - C) Golgi apparatus
  - D) Smooth endoplasmic reticulum
- 137) Zona pellucida is observed between which of structures of the ovarian follicles?**
- A) Theca interna - Theca externa
  - B) Theca externa - Stroma
  - C) Oocyte - Granulosa
  - D) Granulosa - Theca interna
- 138) Which of the following cells makes external limiting layer in the retina of eye?**
- A) Muller
  - B) Bipolar
  - C) Horizontal
  - D) Amacrine
- 139) By which mechanism, the secretory cells of mammary glands release lipid components into milk?**
- A) Holocrine
  - B) Merocrine
  - C) Autocrine
  - D) Apocrine
- 140) External mesangial cells are seen in which of the following histological structure of kidney?**
- A) Connective tissue of medulla
  - B) glomerular capillary
  - C) Urinary pole of nephron
  - D) Arterial pole of nephron
- 141) What type of capillaries are present in the bone marrow tissue?**
- A) Sinusoidal
  - B) Visceral
  - C) Continuous
  - D) Fenestrated

- 142) Which of the following cells of gastric mucosa has acidophilic cytoplasm and round nucleus?**
- A) Stem
  - B) Chief
  - C) Mucous
  - D) Parietal
- 143) In a study of malignant tumor, it was observed that metastatic cells have desmin intermediate filament. Which of the following is the source of the tumor?**
- A) Neural Tissue
  - B) Epithelial tissue
  - C) Connective Tissue
  - D) Muscular Tissue
- 144) Transmission of tetanus toxin from axon terminals cause damage of the cell body of neuron. What is the name of this transmission and which protein plays a role in this process?**
- A) Retrograde - kinesin
  - B) Antrograde - Kinesin
  - C) Retrograde - Dynein
  - D) Antrograde - Dynein
- 145) Which of the following area has no gland?**
- A) Vagina
  - B) Female external genitalia
  - C) Body of Uterus
  - D) Cervix of Uterus

### Public Health

- 146) Which principles of primary health care encompass both promoting and preventing interventions?**
- A) Appropriate methods
  - B) Comprehensive care
  - C) Equity
  - D) Community participation
- 147) Which of the following indexes could determine all three growth failure (Underweight, Wasting, Overweight) in children?**
- A) Height for age
  - B) Body mass index for age
  - C) Weight for age
  - D) Weight for height

- 148) In lactating woman in postpartum amenorrhea phase, with an impairment in her liver function test, which of the following methods is more appropriate?**
- A) Rhythm method
  - B) Norplant
  - C) POP (lynesterol)
  - D) DMPA
- 149) Which of the following considered as primary prevention?**
- A) Specific preventive measures
  - B) Diabetes control in people with diabetes
  - C) Healthy lifestyle education for children
  - D) Screening for phenylketonuria in newborn
- 150) Which form of breast milk contains less fat and more growth factor?**
- A) Fore milk
  - B) Colostrum
  - C) Hind milk
  - D) Mature milk
- 151) Host in which the parasite attains maturity or passes its sexual stage is called...:**
- A) Definitive
  - B) Transport (carrier)
  - C) Secondary
  - D) Intermediate
- 152) Someone who is smoker is ready to change his behavior and plan to quit smoking. Regarding stages of behavioral change model, he is in.....stage.**
- A) Action
  - B) Contemplation
  - C) Pre-contemplation
  - D) Preparation
- 153) The total population of a city is 1000000 in one year. Regarding the numbers of female population (age 15-44) and total number of live births which are 250000 and 1000 respectively at that time, the General Fertility Rate is....:**
- A) 4
  - B) 0.5
  - C) 0.25
  - D) 1

**154) Which of the following international organizations or programs directly have a role in health development?**

- A) International Labour Organization (ILO)
- B) United Nations Children's Fund (UNICEF)
- C) World Food Programme (WFP)
- D) Organization of the Prohibition of Chemical Weapons (OPCW)

**155) All the following are absolute IUD prohibition except:**

- A) Abnormal uterus bleeding, irregular or undiagnosed
- B) History of dysmenorrhea
- C) Active pelvic infections recent or recurrent
- D) Coagulation disorders

**156) Which of the following present the percentile of low curve line of country growth?**

- A) Third percentile without considering the gender
- B) Girls third percentile
- C) Average third percentile of boys and girls
- D) Boys third percentile

### Genetics

**157) Select the correct statement about the impact of genetic factors in Adult life:**

- A) 5-10% of common cancers such as those of the breast, colon, and ovary have a strong hereditary component
- B) Less than 1% of the older adult population in developed countries will have a genetically determined medical problem
- C) Approximately 1% of all malignancies are primarily caused by polygenic inheritance
- D) By the age of 25 years, 50% of the population will have a disorder in which genetic factors play an important role

**158) Which of the following techniques can be used to screen genes for unknown mutations?**

- A) Realtime PCR
- B) Oligonucleotide ligation assay
- C) RFLP
- D) Sanger Sequencing

**159) Which is correct about Extragenic DNA?**

- A) Satellite DNA can be used for forensic and paternity tests
- B) LINE Sequences are clustered around the centromeres
- C) MiniSatellite DNA composed by Interspersed repeated DNA Sequences
- D) MiniSatellite DNA can be used for DNA fingerprinting

**160) Which is a typical mechanism by which a proto-oncogene is converted to an oncogene?**

- A) Loss of heterozygosity in tumor suppressor genes
- B) A chromosomal translocation resulting in the down-regulation of the proto-oncogene
- C) A point mutation and deactivation of the proto-oncogene
- D) Amplification of the proto-oncogene

**161) Which terms are explained as autosomal traits that are expressed more frequently in one sex than in another?**

- A) Sex Influence
- B) Sex Limitation
- C) Partial Sex-Linkage
- D) X-Linked Recessive Inheritance

**162) Which of the following is true regarding twin delivery?**

- A) Transfer or identical twin heritage by mother and father is impossible
- B) The incidence of twin delivery is 2 to 5 times more in IVF
- C) Identical twins with different sexes is impossible
- D) Late division after the fourth day of pregnancy causes attached twins

### Medical Immunology

**163) Intracellular antigenic peptides presented by which one of the MHC molecules to the cells specified below?**

- A) class II to Th
- B) class I to Th
- C) class I to Tc
- D) class II to Tc

**164) Which class of antibodies against *Toxoplasma* sp. represent the early stages of infection?**

- A) High affinity IgE
- B) Low affinity IgG
- C) High affinity IgG
- D) Low affinity IgE

**165) The defect in IFN-gamma and IL-12 activity are associated with increased susceptibility to which one of the following pathogens?**

- A) Extracellular protozoa
- B) Extracellular encapsulated bacteria
- C) DNA viruses
- D) Intracellular bacteria

**166) In order to prevent rejection of grafted organs, which of the following molecules is blocked by CTLA4-Ig?**

- A) B7
- B) CTLA-4
- C) CD28
- D) CD2

**167) All of the followings are observed in clinical latency period of HIV infection except for:**

- A) High titer of Anti-envelope antibody
- B) Steadily decline of CD4+ T cells
- C) High number of viral particles in plasma
- D) Active viral replication in lymph node

**168) Which one of the following cytokine profiles are dominated in MS patients?**

- A) Treg, Th17
- B) Th2, Treg
- C) Th1, Th17
- D) Th19, Th1

**169) With which mechanism abatacept (CTLA-4-Ig) drug inhibit activation of T-cells?**

- A) Helping CD28 attachment to B7
- B) Inhibit IL-2 production
- C) Inhibition B7 interaction with CD28
- D) Inhibit IL-4 production

**170) Disorder and mutation in which gene causes x - linked hyper - IgM syndrome?**

- A) FASL
- B) BTK
- C) CD40L
- D) FAS

171) In which part of the molecule idiotypic characters of antibodies are located?

- A) In variable portion of both chains
- B) In Permanent portion of heavy chain
- C) In permanent portion of light chain
- D) In bending portion

### English Language

**Reading comprehension: Read the following passage and then choose the best suggested answer for each question.**

In recent years, melancholia has been increasingly viewed as a disorder of neuro-circuitry, reflecting perturbed neurotransmitter functioning impacting on mood, cognition and psychomotor parameters, and disrupted connectivity of cortical systems. Attempts at its definition and precise diagnosis have been problematic. Multivariate analysis conducted over several decades generated a large set of so-called "endogeneity" symptoms that were viewed as defining the condition. As quantified in an early study, while many such symptoms (e.g. weight change, insomnia, impaired libido) are common in melancholic depression, they are also common in non-melancholic depression and in other states (e.g. anxiety). Thus, if such items are included in melancholia diagnostic indices (as commonly occurs), their non-specificity swamps the capacity of truly differentiating items to accurately assign patients to a diagnosis of melancholic or non-melancholic depression. In DSM-5, melancholia is accorded "specifier" as against "sub-type" status, which automatically compromises its clear differentiation from major depression itself. In addition, a number of DSM-5 depressive symptoms (e.g. PMD, weight loss, anhedonia, early morning awakening, excessive or inappropriate guilt) are criteria for both melancholia and for major depression. As major depression is the broad generic diagnosis, it would have been logical to require patients with melancholia to first meet criteria for major depression symptoms and then to meet a differing set of symptom criteria that have specificity to melancholia itself. The consequence of the current DSM-5 model is that there is minimal differentiation between those who are assigned a diagnosis of major depression with melancholia and those assigned a diagnosis of major depression without melancholia. This muddies the diagnosis of true melancholia while also leading to an increased risk of "over-diagnosing" melancholia. Thus, studies that seek to pursue the causes and optimal treatments of melancholia are clearly compromised if DSM-5 criteria are used.

172) The underlined word its refers to the.....

- A) melancholia
- B) disrupted connectivity
- C) neuro-transmitter functioning
- D) mood disturbance

173) Over several attempts, melancholia has been .....

- A) rarely differentiated from the similar disorders
- B) diagnosed in the early stage correctly
- C) defined precisely by multivariate analysis
- D) easily differentiated from other diseases

**174) Multivariate research has identified endogeneity symptoms which are .....**

- A) common in melancholic depression but not in anxiety
- B) not helpful in differential diagnosis
- C) common in insomnia but not in impaired libido
- D) preventing conduction of further studies

**175) The writer suggests to detect major depression symptoms.....**

- A) initially before differential diagnosis of melancholia
- B) early with the diagnosis of insomnia
- C) concurrently with the diagnosis of melancholia
- D) following the diagnosis of anxiety

**176) The writer ..... use of DSM-5 criteria for the diagnosis of melancholia.**

- A) fully supports the
- B) recommends the early
- C) compromises with the advocates of the
- D) argues the limitations of the

**Vocabulary and terminology: Read the following questions and choose the best answer for each item.**

**177) The nocturnal enuresis or urinary ..... of children and of adults is frequently relieved by this drug.**

- A) abstinence
- B) strain
- C) incontinence
- D) incapacitation

**178) Air circulation is necessary to prevent excess sweating which can lead to the ..... and growth of fungal infections.**

- A) transformation
- B) infiltration
- C) detection
- D) exacerbation

**179) Plants can help reduce the ..... of respiratory diseases as well as lung cancer.**

- A) commitment
- B) assurance
- C) incidence
- D) consensus

**180) Discharge of fatty stools is referred to as .....** .

- A) dysmenorrhea
- B) steatorrhea
- C) mucorrhea
- D) adiposuria

**181) Glossorrhaphy is the .....**

- A) radiography of the renal pelvis
- B) surgical fixation of the colon
- C) suturing of wound in the tongue
- D) softening of the glomerulus

**182) There is no cure for Alzheimer's which .....** people's ability to care for themselves.

- A) releases
- B) thrives
- C) reveals
- D) steals

**183) The golden rule to minimize slight disability from glaucoma, as a hazardous eye disorder, is early .....**  
**and proper treatment.**

- A) selection
- B) addiction
- C) infection
- D) detection

**184) There are many causes for loss of hearing, such as nerve deafness often due to working in constant loud noise or after being .....** to a loud explosion.

- A) exposed
- B) opposed
- C) advised
- D) proposed

## Persian Language

185) کدام مورد زیر اپیمر گلوکوز است؟

- A) لاکتوز
- B) مانوز
- C) ریبوز
- D) فروکتوز

186) آلودگی به کدامیک از انگل های زیر از راه مدفوعی- دهانی است؟

- A) پلاسمودیوم فالسیپارم
- B) توکسوپلازما گوندی
- C) ژیاوردیالامبلیا
- D) آسکاریس لومبریکوئیدس

187) در کدام فرایند هوا از اتمسفر وارد ریه ها می شود؟

- A) بازدم
- B) بازدم شدید
- C) دم
- D) فشار فضای جنبی

188) زمان فعل «من هر روز خواهر خود را می دیدم.» را مشخص نمایید؟

- A) گذشته ساده
- B) گذشته التزامی
- C) گذشته استمراری
- D) گذشته دور

189) در جمله «کتاب علی در دست نسرین است.» نقش کلمه علی را مشخص کنید؟

- A) متمم
- B) مضاف
- C) مضاف الیه
- D) صفت

190) در جمله «محمد وارد دانشگاه شد.» نهاد را مشخص نمایید؟

- A) دانشگاه
- B) شد
- C) وارد
- D) محمد

191) مینا دیروز به بیمارستان مراجعه کرد. پزشک پس از معاینه مینا، برای او دارو تجویز کرد. در جمله دوم فاعل کدام است؟

- A) دارو
- B) بیمارستان
- C) مینا
- D) پزشک

192) در جمله «مریم برای سفر به قم رفت.» زمان فعل را مشخص کنید؟

- A) گذشته دور
- B) آینده
- C) مضارع خبری
- D) گذشته ساده

193) در جمله «آن درخت زیبا است.» صفت را مشخص کنید.

- A) زیبا
- B) درخت زیبا
- C) آن
- D) درخت

194) محل دو شاخه شدن نای کجاست؟

- A) مفصل استرنوکلاویکولار راست
- B) مهره T6
- C) مفصل استرنوکلاویکولار چپ
- D) زاویه استرنال

### Epidemiology

195) Executive Officers of car production company have recently faced with complaints of workers from dye portion of the factory about bladder cancer that are imminently being condemned in a court due to failure of workers protection. Which of the following type of studies is the fastest and cheapest one to investigate the relationship between dye exposure and bladder cancer?

- A) Case Control
- B) Cohort
- C) Case Series
- D) Cross - Sectional

196) In a cohort study concerning the relationship between cirrhosis of the liver and the subsequent risk of hepatic encephalopathy (HE), 1000 adults were followed. Out of 500 patients with cirrhosis, 300 and out of 500 controls 100 cases of HE were diagnosed. What is the relative risk of HE?

- A) 3
- B) 5
- C) 3.75
- D) 2.5

- 197) In a cohort study, the researchers could not follow-up all subjects who were at risk. To estimate the risk of outcome, which of the following is suggested?**
- A) Incidence density
  - B) Period prevalence
  - C) Cumulative incidence
  - D) Point prevalence
- 198) Studies have showed that 21 percent of cardiovascular disease incidence is caused by cigarette smoking. Which one is related to this number?**
- A) Attributable Fraction
  - B) Population Attributable Fraction
  - C) Relative Risk
  - D) Odds Ratio
- 199) The mortality rate in a group of treated patients is 15% and in the untreated group is 19%. How many patients would need to be treated (NNT) to prevent one death?**
- A) 20
  - B) 10
  - C) 25
  - D) 5
- 200) Which of the following studies can be used in recognition of patient characteristics during a period of time?**
- A) Control cases
  - B) All the above
  - C) Same group
  - D) Ecologic