

**Physiology**

- 1- **In which of the followings, Na<sup>+</sup> -K<sup>+</sup>-Pump does not have any effect?**
  - a) Maintenance of Na and K concentration difference between two sides of membrane
  - b) Participation in resting membrane potential
  - c) Maintenance the size of cells
  - d) Producing action potential
  
- 2- **Why neostigmine is used to treat myasthenia-gravis?**
  - a) Causes more release of acetylcholine from the presynaptic nerve ending
  - b) Has similar effect with actylcholine but can not be destroyed by acetylcholinesterase
  - c) On nicotinic receptor has agonist effect
  - d) Inhibits acetylcholinesterase activity
  
- 3- **In which of the following conditions, there is a left deviation of the mean electrical axis of the heart?**
  - a) Left ventricular hypertrophy
  - b) Deep inspiration
  - c) Right ventricular hypertrophy
  - d) Stand up position
  
- 4- **What is the value of ejection fraction in resting healthy adult?**
  - a) 40%
  - b) 60%
  - c) 20%
  - d) 80%
  
- 5- **Which one is correct about the vascular blood flow?**
  - a) Turbulent flow has more energy than laminar flow
  - b) The velocity of flow in the lateral of the vessels is far greater than central
  - c) By increasing of viscosity, blood flow changes to turbulent
  - d) RBC is the main determinant of density and has positive effect on Reynolds' Number
  
- 6- **Which one is not correct about the arterial pressure regulation?**
  - a) Chemoreceptors are activated when blood pressure reduces
  - b) Baroreceptors regulate, blood pressure in different body positions
  - c) Baroreceptors have a crucial role in long term regulation of blood pressure
  - d) Atrial and pulmonary arteries reflexes are sensitive to volume changes and control arteries pressure

- 7- In which of the following there is not gastrocolic reflex in the colon?
- Destruction of Meissner plexus
  - Destruction of Auerbach plexus
  - Acetylcholine release
  - Extrinsic autonomic denervation
- 8- Which of the following inhibits gastric acid secretion?
- Gastrin
  - Somatostatin
  - Acetylcholine
  - Histamine
- 9- Which one is correct about the central chemoreceptors?
- Stimulates with changes in arterial O<sub>2</sub>
  - Stimulates with changes in arterial CO<sub>2</sub>
  - Located in the VRG
  - Located in the DRG
- 10- Which of the following is the most effective in regulation of respiration in normal condition?
- Changes in arterial pH
  - Acute changes in O<sub>2</sub> pressure
  - Acute changes in CO<sub>2</sub> pressure
  - Long term changes in CO<sub>2</sub> pressure
- 11- In renal acid-base balance, which one of the following is not correct?
- Bicarbonate ions are reabsorbed by interaction with H<sup>+</sup> in the tubular system.
  - Hydrogen ions are secreted by secondary active mechanism in the proximal tubules.
  - Hydrogen ions are secreted by primary active mechanism distal part of nephrons.
  - Bicarbonate ions are directly reabsorbed from luminal membranes.
- 12- Which one is correct during normal conditions, in tubular reabsorption mechanism?
- The highest pressure belongs to plasma oncotic pressure.
  - Net reabsorption pressure is equal to 20 mmHg.
  - Plasma hydrostatic pressure has a positive effect on reabsorption.
  - Increase in interstitial oncotic pressure increases the reabsorption.
- 13- Which function is related to the spinocerebellum?
- Timing of the sequential voluntary movements.
  - Control of equilibrium.
  - Coordinating movements of the distal limbs.
  - Planning of sequential movements.

- 14- Which of the following is the neurotransmitter of acute pain in the sensory spinal nerve?
- GABA
  - Glutamate
  - Substance P
  - Serotonin
- 15- Following excitation of muscle spindle, which fiber is excited and what would happen to agonist muscle?
- Ia - muscle contraction
  - Ib- muscle contraction
  - II - muscle relaxation
  - Ib - muscle relaxation
- 16- Which of the following is decreased by sympathetic activation?
- Cellular metabolism
  - Blood flow to the kidneys
  - Glycolysis in the liver
  - Mental activity
- 17- Which of the following has inhibitory effect on growth hormone secretion?
- Ghrelin
  - Somatotropin
  - Estrogen
  - Testosterone
- 18- Which of the following is decreased by Thyroxin?
- Heart rate
  - Number of mitochondria
  - Na-K-ATPase production
  - Triglycerides in plasma
- 19- What is the effect of estrogen on the number of the FSH and LH receptors in the ovarian follicular cells?
- increases FSH receptors but decreases LH receptor
  - decreases both of the receptors
  - increases both of the receptors
  - decreases FSH receptors but increases LH receptor

- 20- Which one is correct about the direct effect of Angiotensin II on proximal reabsorption of sodium?**
- a) By increase in peritubular capillary hydrostatic pressure increases sodium reabsorption
  - b) By increase in sodium/potassium pump activity in basolateral membrane increases sodium reabsorption
  - c) By decrease in sodium/proton exchanger in tubular membrane increases sodium reabsorption
  - d) By inhibition of aldosterone secretion decreases sodium reabsorption
- 21- What is the cause of longer duration of ventricular cell action potential compared to skeletal muscle?**
- a) Entrance of sodium from fast channels and exit of potassium from slow channels.
  - b) Entrance of sodium and calcium from slow channels.
  - c) Higher blood flow.
  - d) Existence of gap junctions between the cells.
- 22- Which of the following is correct about blood circulation?**
- a) The blood flow to each tissue is regulated by the tissue requirements rather than blood pressure.
  - b) Resistance of a vessel can be calculated from the multiplying the blood flow and pressure difference between the beginning and end of the vessel.
  - c) Cardiac output is the sum of blood flow through both ventricles in one minute.
  - d) The least resistance in systemic blood circulation belongs to large arteries and veins.
- 23- Which one is correct about the absorption of digestive product in gastrointestinal system?**
- a) Reabsorption of amino acids and glucose are mainly by secondary active mechanisms
  - b) Amino acids are absorbed by facilitated diffusion
  - c) The intestinal absorption of ions has no relation with ions capacity
  - d) Hundred percent of the free fatty acids are absorbed in the form of chylomicron
- 24- What is the cause of skeletal muscle tone?**
- a) Spontaneous action potential of the muscle
  - b) Totally are due to impulses generated from the spinal cord
  - c) Totally are due to signals from the brain
  - d) Mainly is due to signals generated from muscle spindle
- 25- Which of the following causes pulmonary edema?**
- a) Decrease in osmotic pressure of pulmonary interstitial fluid
  - b) Increase in blood osmotic pressure
  - c) Increase in osmotic pressure of pulmonary interstitial fluid
  - d) Increase of left atrial pressure

- 26- Which of the following data, transmitted to cerebellum through the ventral spinocerebellar tract?**
- a) Anterior horns spinal cord motor signals situation
  - b) Movement speed of different parts of the body
  - c) Skeletal muscle tension
  - d) Forces acting on the surfaces of the body

## Pathology

- 27- Proliferation of the glandular epithelium of the female breast at puberty and pregnancy is called .....**
- a) Hormonal hyperplasia
  - b) Compensatory hyperplasia
  - c) Hormonal hypertrophy
  - d) Compensatory hypertrophy
- 28- A fifty-year old man is in emergency room with severe abdominal pain. Fatty necrosis with chalky lines due to calcification are seen in surgical specimen. Which is the most probable diagnosis?**
- a) Acute gastritis
  - b) Acute appendicitis
  - c) Acute pancreatitis
  - d) Acute colitis
- 29- Which molecule mediates transmigration of leukocytes through endothelium?**
- a) Mac1
  - b) VCAM1
  - c) P-selectin
  - d) CD31
- 30- Inhibition of which mediator in a patient taking glucocorticoid will result in weakness of scar due to diminished production of fibrosis?**
- a) TGF- $\beta$
  - b) PDGF
  - c) IL-1
  - d) IL-13
- 31- Which of the following tests is used to monitor of anticoagulant effects of heparin?**
- a) TT
  - b) PT
  - c) PTT
  - d) FDP

- 32- Which type of hypersensitivity reaction describes anemia following opsonization and phagocytosis of coated RBCs with auto antibodies in SLE patients?
- I
  - II
  - III
  - IV
- 33- In a patient that presents with scleroderma limited to the fingers and face, telangectasia, Raynaud phenomenon and calcinosis, you expect which antibody to be positive?
- Anti SSA
  - Anti DNA topoisomerase I
  - Anticentromere antibody
  - Anti ds DNA
- 34- There is a well-defined pulmonary nodule, composed of mature hyaline cartilage with clefts lined by respiratory-type epithelium, without atypia; which is the most probable diagnosis?
- Choristoma
  - Hamartoma
  - Adenoma
  - Papilloma
- 35- What is called: a number of chromosomes that is not a multiple of haploid state.
- aneuploidy
  - deletion
  - mutation
  - translocation
- 36- In which disease, fatty liver is more common?
- Beriberi
  - Marasmus
  - Rickets
  - Kashiorkor
- 37- Infection with *Clostridium perfringens* in intestine, causes which of the following inflammatory responses?
- Chronic inflammation and scarring
  - Cytopathic-cytoproliferative
  - Mononuclear and granulomatous
  - Tissue necrosis

- 38- Which of the following is mechanism of Epidermal Growth Factor (EGF)?**
- a) adhesion to intra-nucleoli receptors
  - b) intracellular cAMP level
  - c) inhibition of DNA proliferation
  - d) activation of intrinsic kinase
- 39- Expression of which of the following factors is responsible for platelet adhesion and clot formation in endothelial injury?**
- a) VWF
  - b) VIII
  - c) Glanzmann
  - d) I
- 40- MHC class I is specifically expressed on which of the following cells.**
- a) Plasma cell
  - b) B cell
  - c) CD4 T cell
  - d) CD8 T cell
- 41- What is called “secondary implants of a tumor that are discontinuous with the primary tumor and located in remote tissues?”**
- a) Invasion
  - b) Metastasis
  - c) Undifferentiating
  - d) Anaplasia

### Biochemistry

- 42- For the synthesis of fatty acid, acetyl CoA is transported to cytosol as .....**
- a) malate
  - b) citrate
  - c) oxaloacetate
  - d) pyruvate
- 43- The deficiency of which enzyme is responsible for Lesch-Nyhan syndrome?**
- a) Hypoxanthine-guanine phosphoribosyltransferase
  - b) Phosphofructokinase I
  - c) Pyruvate kinase
  - d) Acetyl CoA carboxylase

- 44- Which enzyme is rate-limiting for heme biosynthesis pathway?**
- a) Porphobilinogendeaminase
  - b) Coproporphyrinogen synthase
  - c) Delta aminolevulinic acid synthase
  - d) Ferrochelatase
- 45- A patient has been intoxicated with carbon monoxide. Inhibition of which complex of electron transport chain is responsible for this condition?**
- a) III
  - b) I
  - c) II
  - d) IV
- 46- Which one is indicative of the affinity of enzyme to its substrate?**
- a) Optimum pH
  - b)  $K_m$
  - c) Optimum temperature
  - d)  $V_{max}$
- 47- The side chain of which amino acid can form electrostatic bond?**
- a) Alanine
  - b) Arginine
  - c) Leucine
  - d) Phenylalanine
- 48- Which hormone is synthesized from tyrosine?**
- a) Estradiol
  - b) Growth hormone
  - c) Epinephrine
  - d) Oxytocin
- 49- In diphtheria, which step of translation is inhibited?**
- a) Termination
  - b) Initiation
  - c) Elongation
  - d) Binding of amino acid to tRNA

- 50- Pain in joints and black color of urine are caused by deficiency in which enzyme?**
- Glutaryl CoA dehydrogenase
  - Homogentisate 1,2dioxygenase
  - Tyrosine aminotransferase
  - Fumaryl acetoacetate hydroxylase
- 51- Which apolipoprotein is required for the esterification of cholesterol in blood circulation?**
- A-I
  - C-II
  - B-100
  - B-48
- 52- In prolonged fasting, increased activity of which enzyme is expected in liver?**
- Phosphofructokinase 2
  - Pyruvate kinase
  - Phosphoenolpyruvatecarboxykinase
  - Pyruvate dehydrogenase
- 53- Which vitamin is required for conversion of oxaloacetate to aspartate?**
- B<sub>1</sub>
  - B<sub>6</sub>
  - B<sub>2</sub>
  - B<sub>12</sub>
- 54- Which reaction of krebs cycle is inhibited by arsenite?**
- Oxaloacetate→citrate
  - Isocitrate→oxalosuccinate
  - $\alpha$ -ketoglutarate→succinyl-CoA
  - Succinate→fumarate
- 55- Different forms of an enzyme which catalyze similar reactions are called?**
- Zymogen
  - Enzyme
  - Isoenzyme
  - Apoenzyme
- 56- Which enzyme contains selenium as prosthetic group?**
- Glutathione reductase
  - Glutathione peroxidase
  - Superoxide dismutase
  - Catalase

- 57- In which tissue, pentose phosphate pathway is less important?**
- a) Erythrocytes
  - b) Liver
  - c) Cortex of adrenal
  - d) Skeletal muscle
- 58- Control of the activity of which catalytic enzyme will regulate the whole metabolic pathway?**
- a) Rate-limiting reaction
  - b) The reaction in equilibrium
  - c) Reaction of production or consumption of ATP
  - d) The first reaction in a pathway

### Medical Physics

- 59- The physical and biological half lives of a radioactive tracer in human body are 3 hr and 6 hr respectively. What is the effective half life? ( $T_{\frac{1}{2}\text{eff}}$ )**
- a) 6
  - b)  $\frac{1}{2}$
  - c) 3
  - d) 2
- 60- In an acceptable exposure range in diagnostic radiology, increase in which parameter causes worse contrast?**
- a) Exposure time
  - b) x-ray intensity
  - c) x-ray energy
  - d) Tube to film distance
- 61- In ultrasonography, any decrease in wave frequency leads to:**
- a) Increase in depth effect, better resolution
  - b) Decrease in depth effect, worth resolution
  - c) Decrease in depth effect, better resolution
  - d) Increase in depth effect, worth resolution
- 62- In Exotropia the optical axis of eye ball deviates ....., and ..... muscle is weakened.**
- a) Outward , Right internal
  - b) Inward , Right external
  - c) Outward , Right external
  - d) Inward , Right internal

**63- Which one cause hyperopia (Farsightedness) in eye?**

- a) Shortening of axial length of eye ball
- b) Decrease in curvature of cornea radius
- c) Reduction of refraction index of the eye
- d) Increase in vertical curvature of cornea

**64- Decrease in which parameter causes increase in x-ray tube output in radiology system?**

- a) Filtration
- b) Filament current intensity
- c) Tube voltage
- d) Exposure time

## Psychology

**65- Which part of type A personality is predictor of heart attacks?**

- a) Pessimism
- b) Irritability
- c) Perfectionism
- d) Hostility

**66- According to Freud, which of the following is the most basic and important defense mechanism?**

- a) Repression
- b) Projection
- c) Rationalization
- d) Denial

**67- According to the Piaget theory, in which stage of cognitive development children reach to “conservation”?**

- a) Sensorimotor
- b) Concrete operation
- c) Preoperational
- d) Formal

**68- A patient says “a man have a plan to kill me”. He/She suffered from .....**

- a) Illusion
- b) Hallucination
- c) Delusion
- d) Obsession

- 69- "Strange anxiety" in children start at ..... month.
- a) 6
  - b) 8
  - c) 10
  - d) 12
- 70- Which of the following is true about long-term memory?
- a) Encoding in long-term memory is visual
  - b) Emotional factors can disturbed the retrieval
  - c) The capacity of the long term memory is  $7\pm 2$
  - d) Memory lose is problem of the storage

### Parasitology

- 71- The *Leishmania* parasites are proliferated in which one of the human cell group?
- a) neutrophils
  - b) lymphocytes
  - c) plasma cells
  - d) macrophages
- 72- Immunodeficiency has role of the severity in the following diseases, except:
- a) cryptosporidiosis
  - b) toxoplasmosis
  - c) giardiosis
  - d) keratitis
- 73- Which of the following drug is recommended for prevention of malaria relapse caused by *Plasmodium vivax*?
- a) primaquine
  - b) mefloquine
  - c) quinine
  - d) chloroquine
- 74- A physician is suspected to parasitic disease in a child with the history of exposure to pets and presence of hypereosinophilia, hepatomegaly, pulmonary inflammation and fever. Which of the following disease is more probable?
- a) toxocariosis
  - b) enterobiosis
  - c) trichostrongyliosis
  - d) trichuriasis

**75- Finding eggs in “biliary aspirate” is related to:**

- a) *Fasciola hepatica*
- b) *Trichuristrichiura*
- c) *Onchocerca volvulus*
- d) *Hymenolepis nana*

**76- “Anaphylactic shock” is a risk in infection with .....**

- a) fascioliosis
- b) cysticercosis
- c) hydatidosis
- d) heterophyiosis

**77- All the following parasites live in the liver, except:**

- a) *Fasciolagigantica*
- b) *Paragonimuswestermani*
- c) *Dicrocoeliumdendriticum*
- d) *Clonorchissinensis*

**78- In which of the following stage transmission of *Toxoplasma gondii* from placenta to fetus is more probable?**

- a) The first trimester of pregnancy
- b) The second trimester of pregnancy
- c) The third trimester of pregnancy
- d) During birth delivery

### Mycology

**79- In ectothrix type of tineacapitis which dermatophyte is the frequent etiologic agent?**

- a) *Epidermophytonfloccosum*
- b) *Microsporumgypseum*
- c) *Microsporumcanis*
- d) *Trichophytonschoenleinii*

**80- Which type of infection is the most common type in CNS cryptococcosis?**

- a) Cryptococcoma
- b) Encephalitis
- c) Meningoencephalitis
- d) Meningitis

### Medical Entomology

**81- Which diseases are transmitted by tick, mosquito, lice and sand fly, respectively?**

- a) Zika, River blindness, Zoonotic Cutaneous leishmaniasis, Malaria
- b) Lyme, Chikungunya, Epidemic Typhus, Visceral Leishmaniasis
- c) Crimean-Congo hemorrhagic fever, Chagas, Dengue, Endemic typhus
- d) Yellow Fever, Relapsing fever, Tularemia, Anthroponetic Cutaneous Leishmaniasis

**82- What are the vector, agent and reservoir of Plague disease?**

- a) *Pulex irritans*, *Borrelia persica*, human
- b) *Xenopsyllacheopsis*, *Yersinia pestis*, rodents
- c) *Argas persicus*, *Rickettsia typhi*, birds
- d) *Xenopsylla brasiliensis*, *Plasmodium falciparum*, monkey

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**Bacteriology**

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**83- Which of the following antibiotics is prescribed as prophylaxis for individuals who are in contact with patients with whooping cough?**

- a) Doxycyclin
- b) Ampicillin
- c) Azithromycin
- d) Vancomycin

**84- The cytology study of endocervical specimen of a 30 years old female with cervicitis demonstrated inclusion bodies in epithelial cells. Which of the following specification is not related to causative of disease?**

- a) existence of RB and EB
- b) lack of growth in synthetic media
- c) obligate intracellular form
- d) having pilli

**85- Which of the following antibiotics is not appropriate against the mentioned bacterium?**

- a) Tetracycline against *Rickettsia prowazekii*
- b) Penicillin against *Treponema pallidum*
- c) Erythromycin against *Legionella pneumophila*
- d) Clindamycin against *Clostridium difficile*

**86- Concerning prophylactic usage of antibiotics, which choice is not correct?**

- a) In cases of contagious epidemic diseases
- b) Prevention of emerging drug resistance
- c) Prevention of post-surgical infections
- d) Prevention of opportunistic in susceptible patients

**87- Which of the following factors block the germination of *Clostridium tetani* in tissues?**

- a) Oxygen
- b) Calcium Ion
- c) Necrotic tissue
- d) Foreign body

- 88- The most prevalent microflora of that is resident in Eye is:**
- Staphylococcus epidermidis*
  - Streptococcus pneumoniae*
  - Corynebacterium diphtheriae*
  - Pseudomonas aeruginosa*
- 89- Which of the following antibiotics you suggest for treatment of infection caused by methicillin resistant Staphylococcus?**
- Vancomycin
  - Ciprofloxacin
  - Ceftriaxone
  - Ertapenem
- 90- Which of the following vaccines is a live attenuated bacterium?**
- Pertussis cough
  - Tuberculosis
  - Anthrax
  - Tetanus
- 91- The Gram negative coccobacilli has been isolated from bone marrow that is able to use the sugar Erythritol as source of nutrient. Which of the following organism is the main cause of infection?**
- Brucella*
  - Francisella*
  - Salmonella*
  - Bordetella*

## Virology

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- 92- Latent infections occur in all virus infections below, EXCEPT:**
- Varicella-Zoster Virus (VZV)
  - Respiratory Syncytial Virus (RSV)
  - Epstein-Barr Virus (EBV)
  - Cytomegalovirus (CMV)
- 93- Which of the following serologic patterns indicates previous HBV infection and immunity to hepatitis B?**
- HBsAg (+) , Anti-HBs (+) , Anti-HBc (-)
  - HBsAg (+) , Anti-HBs (-) , Anti-HBc (+)
  - HBsAg (-) , Anti-HBs (+) , Anti-HBc (+)
  - HBsAg (-) , Anti-HBs (-) , Anti-HBc (-)

**94- which one of these viruses has a segmented genome?**

- a) Mumps
- b) Polio
- c) Rota
- d) Adeno

**95- Which one of these viruses has a T-Antigen?**

- a) Parvovirus
- b) Polyomavirus
- c) Herpesvirus
- d) Poxvirus

## Anatomy

**96- Which of the following muscles is innervated by trochlear nerve?**

- a) Lateral rectus
- b) Inferior oblique
- c) Levatorpalpebrasuperioris
- d) Superior oblique

**97- Which of the following bones forms lateral wall of orbital cavity?**

- a) Lacrimal
- b) Sphenoid
- c) Ethmoid
- d) Frontal

**98- Which of the following branches arises from third part of subclavian artery?**

- a) Thyrocervical
- b) Costocervical
- c) Dorsal scapular
- d) Vertebral

**99- Which of the following muscles relax the vocal cords?**

- a) Thyroarythenoid
- b) Oblique arythenoid
- c) Posterior cricoarythenoid
- d) Cricothyroid

**100- Which of the following parts is innervated by the mandibular nerve?**

- a) Hard plate
- b) Lacrimal gland
- c) Tongue
- d) Nasal cavity

**101- The deepest element in the parotid gland is .....**

- a) Internal carotid artery
- b) External carotid artery
- c) Facial nerve
- d) Retromandibular vein

**102- Which of the following arteries supply the speech sensory area of cortex?**

- a) Middle cerebral
- b) Posterior cerebral
- c) Anterior cerebral
- d) Posterior communicating

**103- Which area is the location of second order neuron of fine touch for upper limb?**

- a) Gracilis nucleus
- b) Dorsal horn of spinal cord
- c) Cuneatus nucleus
- d) Dorsal root ganglion

**104- All of the following nuclei are located in the midbrain,EXCEPT:**

- a) Oculomotor
- b) Abducent
- c) Trochlear
- d) Superior colliculus

**105- Which gyrus is related to the auditory cortex?**

- a) Cuneus
- b) Superior parietal
- c) Superior frontal
- d) Superior temporal

**106- All of the following muscles act as medial rotator of humerus,EXCEPT:**

- a) Teres major
- b) Pectoralis major
- c) Infraspinatus
- d) Latissimusdorsi

**107- All of the following arteries are branches of axillary artery,EXCEPT:**

- a) Posterior circumflex humeral
- b) Thoracoacromial
- c) Anterior circumflex humeral
- d) Suprascapular

**108- Which of the following nerves is a terminal branch of medial cord?**

- a) Median
- b) Axillary
- c) Radial
- d) Ulnar

**109- Which of the following structures pass through both greater & lesser sciatic foramina:**

- a) Sciatic nerve
- b) Internal pudendal artery
- c) Inferior gluteal artery
- d) Posterior cutaneous nerve of thigh

**110- Which of the following muscles assists in flexing the thigh at the hip joint and the leg at the knee joint?**

- a) Rectus Femoris
- b) Sartorius
- c) Biceps femoris
- d) Vastusintermedius

**111- Which part of the vertebra, lies directly behind the intervertebral foramen?**

- a) Pedicle
- b) Vertebral body
- c) Facet joint
- d) Lamina

**112- All of the followings are related to the mediastinal surface of right lung, EXCEPT:**

- a) Thoracic duct
- b) Superior vena cava
- c) Azygos vein
- d) Esophagus

**113- Which of the followings, reinforce the posterior wall of the inguinal canal?**

- a) Rectus abdominis
- b) Inguinal ligament
- c) Lacunar ligament
- d) Conjoint tendon

**114- All of the followings lie between the layers of uterine broad ligament, EXCEPT:**

- a) Fallopian tube
- b) Uterine cervix
- c) Uterine round ligament
- d) Ovarion ligament

- 115- Which of the following viscerae, is supplied by both the celiac and superior mesenteric arteries?**
- a) Spleen
  - b) Liver
  - c) Duodenum
  - d) Transverse colon
- 116- Which of the followings, builds up the floor of the superficial perineal pouch?**
- a) Colles' fascia
  - b) Camper's fascia
  - c) Pelvic diaphragm
  - d) Perineal membrane
- 117- Which nucleus extends into the lower half of pons and all length of medulla oblongata?**
- a) ambiguus
  - b) solitarius
  - c) inferiorsalivatory
  - d) motor nucleus of V
- 118- Which of the following areas, is supplied by posterior cerebral artery?**
- a) Wernicke area
  - b) Brocca area
  - c) Sensory cortex of lower limb
  - d) Primary visual area
- 119- Which structure is located in the sulcus between trachea and esophagus?**
- a) Vagus n.
  - b) Phrenic n.
  - c) Recurrent laryngeal n.
  - d) Internal jugular V.
- 120- All of the followings can be found in both hip and knee joints, EXCEPT:**
- a) intracapsular ligament
  - b) articular capsule
  - c) meniscus
  - d) hyaline cartilage
- 121- In adductor canal, which of the following structures lies anterior to the femoral artery?**
- a) Saphenous nerve
  - b) Femoral vein
  - c) Sural nerve
  - d) Greater saphenous vein

- 122- The superior and inferior hypophyseal arteries, originate from ..... part of internal carotid artery.**
- a) Cervical
  - b) Cavernosal
  - c) Petrosal
  - d) Cerebral
- 123- Which of the following arteries originate from ophthalmic artery before entering the optic canal?**
- a) Lacrimal
  - b) Anterior ethmoidal
  - c) Supraorbital
  - d) Central retina

### Nutrition

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- 124- A decrease in which indicator reflects stunting?**
- a)  $\frac{\text{weight}}{\text{height}}$
  - b)  $\frac{\text{weight}}{\text{age}}$
  - c)  $\frac{\text{height}}{\text{age}}$
  - d)  $\frac{\text{head circumference}}{\text{age}}$
- 125- Compared to non-pregnancy, how much the requirement for protein is increased in pregnancy?**
- a) 10
  - b) 20
  - c) 15
  - d) 25
- 126- Which fatty acid is active in eye's retina?**
- a) DHA
  - b) EPA
  - c) Linoleic acid
  - d) Linolenic acid
- 127- Which nutrient is required for producing the active form of vitamin A in visual pigments?**
- a) Iron
  - b) Zinc
  - c) Folic acid
  - d) Copper

**128- All the following in mothers milk is influenced by mothers nutrition except:**

- a) Vitamin B2
- b) Omega 6 fatty acid
- c) Vitamin D
- d) Cholesterol

**129- One glass of which food contains more folic acid?**

- a) Fresh orange juice
- b) Raw cabbage
- c) Cooked lentil
- d) Banana

## Embryology

**130- The intermaxillary segment is derived from the ..... Prominence(s).**

- a) Lateral nasal
- b) Medial nasal
- c) Maxillary
- d) Mandibular

**131- Which aortic arch contributes to the formation of the definitive arch of the aorta?**

- a) Fourth left aortic arch
- b) Third left aortic arch
- c) Fourth right aortic arch
- d) Sixth right aortic arch

**132- All of the following are formed from the paramesonephric duct,EXCEPT:**

- a) body of the uterus
- b) uterine tubes
- c) hymen
- d) cervix

**133- The central core of a primary stem villus contains .....**

- a) maternal blood
- b) syncytiotrophoblast
- c) cytotrophoblast
- d) fetal blood

**134- All of the following structures are derived from endoderm,EXCEPT:**

- a) lining of the gut
- b) adrenal medulla
- c) lining of the respiratory tract
- d) glands of the digestive tract

**135- Which of the following nucleus is located in General Visceral Efferent column?**

- a) Ambiguus
- b) Inferior salivatory nucleus
- c) Facial motor
- d) Solitarius

## Histology

**136- Pathological evaluation of a brain tumor confirmed the expression of glial fibrillary acidic protein (GFAP), which following cell is the origin of the tumor?**

- a) Microglia
- b) Oligodendrocyte
- c) Neuron
- d) Astrocyte

**137- Which one of the germinal cell is present in the ovarian secondary follicle?**

- a) Ovum
- b) Oogonium
- c) Secondary oocyte
- d) Primary oocyte

**138- Which following mechanism is responsible for lipid secretion into the milk?**

- a) Apocrine
- b) Merocrine
- c) Holocrine
- d) Juxtacrine

**139- Degeneration of which small intestine epithelial cell processes leads to celiac disease?**

- a) Axonem
- b) Cilia
- c) Microvilli
- d) Stereocilia

**140- Which one of the following Blood cells dose not originate from myeloid lineage?**

- a) Erythrocyte
- b) Natural killer
- c) Mast cell
- d) Monocyte

**141- Malfunction of skin melanocyte tyrosinase enzyme leads to which following disease?**

- a) Albinism
- b) Vitiligo
- c) Psoriasis
- d) Pemphigoid

**142- Which one of the following endocrine glands is steroidogenic?**

- a) Anterior pituitary
- b) Pancreatic islets
- c) Parathyroid gland
- d) Adrenal cortex

**143- Which of following organelle has a role in transform of genetic diseases?**

- a) Ribosome
- b) Rough endoplasmic reticulum
- c) Mitochondrion
- d) Golgi apparatus

**144- Which one of the following cell has responsibility for filling cavities in the central nervous system?**

- a) Microglia
- b) Fibroblast
- c) Oligodendrocyte
- d) Astrocyte

**145- The nucleus of which following cell undergoes morphological changes during differentiation?**

- a) Ameloblast
- b) Mesenchymal cell
- c) Macrophage
- d) Spermatocyte

### **Public health**

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**146- All are true regarding propagated epidemic except:**

- a) No secondary waves occur
- b) Its duration is more than one incubation period of the disease
- c) Person to person transmission occurs
- d) Spread depends on herd immunity

**147- The most effective design for measuring the incidence of diseases in a community is:**

- a) Case-control study
- b) Cohort study
- c) Cross sectional study
- d) Interventional (RCT)

**148- Which of the following statements is correct about health promotion?**

- a) Is the process of enabling people to change their life style
- b) Is about the better treatment of diseases
- c) Concerns better health services usage
- d) Is face to face health education

**149- Which of the following vaccines are given at birth in Iran?**

- a) BCG , HBV , Hib
- b) BCG , HBV , MMR
- c) OPV , BCG , HBV
- d) MMR , OPV , Hib

**150- All of the following is true about sub-clinical cases except:**

- a) They play a significant role in maintaining herd immunity in the community
- b) They are responsible for immunity in adults to a variety of infection
- c) They can be detected only by laboratory tests
- d) Host does not transmit the infectious agent to others

**151- All of the following are goals of vaccination except:**

- a) To prevent subclinical diseases
- b) To prevent clinical diseases
- c) To decrease the fatality ratio
- d) To increase herd immunity

**152- Which is an occupational disease?**

- a) Diphtheria
- b) Malaria
- c) Cholera
- d) Brucellosis

**153- In a population of 500,000 people, the total sum of age-specific fertility rate is 500. Which of the following is the correct total fertility rate?**

- a) 2.5
- b) 1
- c) 2.1
- d) 0.1

**154- Which of the following statements regarding the coronary heart disease is primordial prevention?**

- a) High risk people screening
- b) Hypertension control
- c) Periodic clinical examination
- d) Life style change

**155- In patients with AIDS, which of the following vaccines is contraindicated?**

- a) IPV
- b) DT
- c) DPT
- d) BCG

**156- Which of the following statements is correct regarding “difference between incidence of a disease in exposed and unexposed group if other variables have similar effects in both groups”?**

- a) Odd's ratio
- b) Attributable risk
- c) Relative risk
- d) Cumulative incidence

## **Genetics**

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**157- Which of the following mutations usually has the less effect on protein function?**

- a) Substitution mutations which lead to silent mutations
- b) Substitution mutations in promoter region
- c) Substitution mutations which lead to nonsense mutations
- d) Deletions in coding region which lead to frameshift mutations

**158- In FISH technique, which of the following probe can be used for anaploidy detection in interphase period?**

- a) whole chromosome painting
- b) telomeric
- c) locus specific
- d) centromeric

**159- In fetus ultrasound, duodenum atresia, associated with which of the following syndromes?**

- a) Trisomy 18
- b) Trisomy 13
- c) Trisomy 21
- d) Trisomy 16

**160- Epigenetics means:**

- a) Regulation of gene expression through changes in chromosome structure
- b) Regulation of gene expression without any change in DNA sequence
- c) Regulation of gene expression through deletion of Junk DNA
- d) Regulation of gene expression through changes in DNA sequence

- 161- Which one is the most important characteristics of autosomal dominant pattern of inheritance?**
- a) Parents consanguinity
  - b) Transmission through healthy parents
  - c) Transmission through one affected parent
  - d) Male to male transmission
- 162- About trisomy 21 , in which step homologous chromosomal nondisjunction happened?**
- a) Paternal anaphase of meiosis I
  - b) Maternal metaphase of meiosis I
  - c) Maternal anaphase of meiosis I
  - d) Paternal metaphase of meiosis I

### Medical Immunology

- 163- Which of the following molecules are expressed on activated T cells?**
- a) CD4 , CD25
  - b) CD8 , CD28
  - c) CD45 , CD40
  - d) CD8 , CD154
- 164- Which of the following cytokines upregulates expression of MHCII on APCs?**
- a) IL-10
  - b) IFN- $\gamma$
  - c) TGF- $\beta$
  - d) GMCSF
- 165- The rise in total serum IgE occurred in which one of the following conditions?**
- a) Atopy
  - b) Allergy against parasite antigens
  - c) Allergic asthma
  - d) Contact dermatitis
- 166- Which of the following phenomena play major role in central tolerance?**
- a) bone marrow negative selection
  - b) expression of costimulatory molecules
  - c) expression of inhibitory molecules on T cells
  - d) Thymic negative selection

- 167- What is the main factor involved in GVHD (Graft Versus Host Disease) in bone marrow transplantation?**
- a) MHC mismatch
  - b) Pre formed Antibodies
  - c) High dose immunosuppressive drugs
  - d) Donor mature Allogeneic T cells
- 168- The concentration of which complement components are higher in human sera?**
- a) C1
  - b) C3
  - c) C2
  - d) C5
- 169- Defect in ADA (Adenosinedeaminase) leads to which of the immune deficient syndrome?**
- a) Autosomal SCID
  - b) X-Linked SCID
  - c) Digeorge syndrome
  - d) X-Linked agammaglobulinemia
- 170- Which on of cytokine profile leads to ADCC in helminthic infection?**
- a) IL4-IL5-IL13
  - b) IL2-IFN $\gamma$ -TNF $\alpha$
  - c) IL2-IL8-IL12
  - d) IL4-IFN $\gamma$ -TNF $\alpha$
- 171- Which one of the following infection mostly occurred in splenectomised patients?**
- a) capsular bacteria
  - b) intra cellular bacteria
  - c) viral infection
  - d) fungal infection

## English

**Reading comprehension: Read the following passage carefully and by selecting the one item -a, b, c, or d- appropriately complete the statements which follow. Then mark your answer sheet.**

It is not entirely clear why Lipitor became the most successful drug in the history of the pharmaceutical industry. Tens of millions of people have taken Lipitor, now available in its generic form as atorvastatin, to lower their bad LDL. Despite its popularity with physicians and its clear ability to bring cholesterol numbers down, there are some serious side effects to contend with. Many of these complications were not discovered until years after the drug was on the market.

We have been reporting on muscle and memory problems for a very long time. Initially, we were criticized by physicians for bringing these adverse drug events to the attention of patients on the grounds that statins in general and Lipitor in particular were life savers and we shouldn't in any way discourage their use. But we received so many stories of devastating complications that we could not remain silent. What we do not know is how common some of these side effects may be. We suspect that such side effects are more common with statins than most health professionals realize. We recognize that some people really do need these medications to prevent a heart attack or a stroke. The data suggest that people who have clearly diagnosed heart disease can benefit. Those who have had one heart attack can reduce the risk of a second by taking a statin. And many individuals never suffer any side effects from statins. Good for them. They are fortunate.

**172- The main purpose of the writers for writing the above passage was to .....**

- a) inform professionals about the side effects of drugs
- b) inform people about the side effects of atorvastatin
- c) withdraw Lipitor from the market
- d) withdraw atorvastatin from the market

**173- The side effects of Lipitor was .....**

- a) recognizable after physicians were content with the issue
- b) apparent right after its discovery
- c) known long time after its appearance on the market
- d) noticeable after extensive professional criticism

**174- It is stated in this passage that the use of statins should be .....**

- a) encouraged as they are life savers
- b) continued in those with a history of heart attack
- c) discouraged in patients with heart attacks
- d) stopped because of memory loss, and heart attack

**175- The main concern of the writers is .....**

- a) how to bring the complications to the attention of physicians
- b) what mechanism is responsible for complications
- c) how common the complications of statins are
- d) what health professionals know about LDL lowering mechanism

**176- According to the passage, the writers “could not remain silent” about the .....**

- a) disturbing side effects of Lipitor
- b) criticism of the physicians
- c) LDL lowering effect of statins
- d) benefits of Lipitor for heart attack sufferers

**Vocabulary and terminology: Select the one item –a, b, c, or d- which best completes the sentences. Then mark your answer sheet.**

**177- During inhalation, the diaphragm ..... and moves in the inferior direction.**

- a) contracts
- b) depresses
- c) evokes
- d) induces

**178- The emergency department ..... all fields of medicine and surgery and is responsible for admission, diagnosis, and treatment.**

- a) compliments
- b) encompasses
- c) compiles
- d) enacts

**179- Central nervous system ..... are drugs that alleviate pain without causing anesthesia.**

- a) inoculations
- b) analgesics
- c) contraceptives
- d) epidemics

**180- Muscular wave-like movement to transport food through the digestive system is called .....**

- a) regurgitation
- b) mastication
- c) emulsification
- d) peristalsis

**181- Suture of the ileum is known as .....**

- a) ileitis
- b) ileorrhaphy
- c) ileostomy
- d) ileocolitis

**182- Climate change could affect the social and environmental -----of health such as clean air, safe drinking water, sufficient food and secure shelter.**

- a) suppressants
- b) concerns
- c) hazards
- d) determinants

**183- There are significant advances in immunotherapy which might ----- a new era of treating cancer.**

- a) confess
- b) deter
- c) launch
- d) impede

**184- Extreme high air temperatures can directly ----- deaths from cardiovascular and respiratory disease, particularly among elderly people.**

- a) rule out
- b) contribute to
- c) compensate for
- d) turn down

## Persian Language

۱۸۵- مادر مریم از دو روز پیش در ناحیه شانه خود احساس درد می‌کند. مریم او را به بیمارستان می‌برد. پزشک پس از معاینه به مریم می‌گوید: مادر شما نیاز به فیزیوتراپی دارد.

در جمله دوم فاعل کدام است؟

(الف) مادر

(ب) پزشک

(ج) مریم

(د) درد

۱۸۶- در جمله "حسین برای خرید دارو به داروخانه رفت." زمان فعل را مشخص کنید؟

(الف) مضارع خبری

(ب) گذشته ساده

(ج) گذشته دور

(د) آینده

۱۸۷- زمان فعل "من هر روز معلم خود را می‌دیدم" را مشخص کنید.

(الف) گذشته استمراری

(ب) گذشته ساده

(ج) گذشته دور

(د) گذشته التزامی

۱۸۸- در کدام نوع از انقلاب‌ها، معمولاً شمار کشته‌ها بالا است؟

(الف) در انقلاب‌های سیاسی

(ب) در انقلاب‌هایی که مردم با استبداد داخلی درگیر هستند.

(ج) در انقلاب‌هایی که مردم با بیگانه درگیر هستند.

(د) در انقلاب‌های فرهنگی

۱۸۹- محدود ساختن ابزار شناخت به «حس و تجربه» کدامیک از بحران‌های زیر را در پی دارد؟

(الف) بحران علمی

(ب) بحران اخلاقی

(ج) بحران روانی

(د) بحران معرفتی

۱۹۰- در جمله "قلم پیمان در دست کاوه است" نقش کلمه پیمان را مشخص کنید.

(الف) صفت

(ب) مضاف

(ج) مضاف‌الیه

(د) متمم

۱۹۱- در جمله "من وارد خانه شدم" نهاد را مشخص کنید.

- (الف) وارد
- (ب) خانه
- (ج) من
- (د) شدم

۱۹۲- بدن انسان از اعضای مختلفی مثل قلب، مغز، کلیه و ریه تشکیل شده است و هر عضو از بافت‌های مختلف به وجود می‌آید. در بدن انسان چهار نوع بافت اصلی وجود دارد که عبارتند از: بافت پوششی، بافت همبندی، بافت عضلانی و بافت عصبی. هر یک از بافت‌ها از مجموعه سلول‌ها تشکیل شده‌اند.

کدام یک از ساختارهای زیر واحد ساختمان بدن انسان است؟

- (الف) سلول
- (ب) بافت
- (ج) عضو
- (د) دستگاه

۱۹۳- در بافت عصبی دو نوع سلول وجود دارد: سلول‌های عصبی و سلول‌های گلیال. سلول‌های عصبی یا نورون‌ها در انتقال پیام عصبی نقش دارند و سلول‌های گلیال نقش پشتیبانی و تغذیه را به عهده دارند. سلول‌های گلیال عبارتند از: آستروسیت، اولیگودندروسیت، میکروگلی و سلول اپاندیمی.

کدام سلول زیر نقش انتقال پیام عصبی را به عهده دارد؟

- (الف) نورون
- (ب) آستروسیت
- (ج) میکروگلی
- (د) اولیگودندروسیت

۱۹۴- در بافت عصبی دو نوع سلول وجود دارد: سلول‌های عصبی و سلول‌های گلیال. سلول‌های عصبی یا نورون‌ها در انتقال پیام عصبی نقش دارند و سلول‌های گلیال نقش پشتیبانی و تغذیه را به عهده دارند. سلول‌های گلیال عبارتند از: آستروسیت، اولیگودندروسیت، میکروگلی و سلول اپاندیمی.

کدام یک از سلول‌های زیر به عنوان یک سلول گلیال شناخته می‌شود؟

- (الف) ماکروفاژ
- (ب) اولیگودندروسیت
- (ج) فیبروبلاست
- (د) نورون

## Epidemiology

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**195- Which of the following characteristics of a surveillance system shows the ability of the system in case detection?**

- a) Flexibility
- b) Positive predictive value
- c) Representativeness
- d) Acceptability

**196- In one study, incidence of a disease was 10% in smokers and 5% in non-smokers, what is the attributable risk of disease in smokers?**

- a) 7.5%
- b) 2.5%
- c) 5%
- d) 10%

**197- You can see the results of mammography and pathology (as a golden standard) in a sample of 450 patients below. If a patient from the same population would have a positive mammography, what will be the probability of having breast cancer?**

		Pathology result	
		Positive	Negative
Mammography result	Positive	50	150
	Negative	50	200

- a) 0.75
- b) 0.50
- c) 0.20
- d) 0.25

**198- Consider the following findings from a cohort study. What is the relative risk of positive outcome after exposure in this study?**

		Disease	
		Positive	Negative
Exposure	Positive	50	9950
	Negative	100	4900

- a) 2
- b) 0.50
- c) 0.25
- d) 4

**199- Based on screening tests in neonates, 160 neonates with hypothyroidism were diagnosed. These neonates and 320 other normal neonates were recruited in a study. Their IQs were compared in 5 years old age. What is the study type?**

- a) Cohort study
- b) Case- control study
- c) Cross- sectional study
- d) Clinical trial

**200- Which of the following is considered as the “third level” prevention for the diseases?**

- a) Physical activity
- b) Screening
- c) Rehabilitation
- d) Weight loss