

Comprehensive Medical Basic Sciences Exam, After 2017

200 questions

Time: 200 minutes

37 pages

Important Notes:

- * Choose only one option among the given ones as the best possible answer.
- * Check the number of pages and questions before you begin. Let the administrative staff know in case of any problems.
- * you are not penalized for incorrect answers.

Words of attention for students of Mega- region 3

* **The key to the test is available at the website of medicine-school.kums.ac.ir subsection for basic sciences exam and pre-internship (<http://5.63.15.76:81>)**

How to post an objection to the questions

* **official deadline: from 4 p.m Thursday 16/12/97 to 4 p.m Saturday 18/12/97**

* **Objections to the balanced questions: possible at <http://sanjeshp.ir>**

* **Registering objections to the other questions: at the website of school of medicine of Kermanshah: medicine-school.kums.ac.ir subsection for basic sciences exam and pre-internship (<http://5.63.15.76:81>)**

Physiology

- 1- Which of the following is correct about action potential?
 - a) Its specific shape depends on the type and numbers of voltage channels
 - b) All the sodium channels activate at the same time in the depolarization phase
 - c) In the hyperpolarization phase the rate of potassium outflux increases
 - d) The lowest potassium permeability occurs in the overshoot

- 2- Which of the following is correct about smooth muscle contraction?
 - a) Na-K exchanger plays a role in termination of relaxation
 - b) All the calcium for contraction comes from the extracellular fluid
 - c) Calcium-Calmodulin complex phosphorylates the myosin heavy chain
 - d) Action potential is necessary for the contraction to occur

- 3- The blood volume at the end of diastole in the left ventricle is equal to
 - a) Isovolumic contraction
 - b) Isovolumic relaxation
 - c) The beginning of atrial systole
 - d) End of the ventricular systole

- 4- Which of the following occurs in the primary stages of vasomotor center ischemia?
 - a) Contraction of the veins and arteries
 - b) Dilation of the veins and arteries
 - c) Dilation of the veins and contraction of the arteries
 - d) Contraction of the veins and dilation of the arteries

- 5- Which item represents the order of pulse pressure change in aortic stenosis and reduced compliance?
 - a) Decrease-Increase
 - b) Decrease-Decrease
 - c) Increase- Increase
 - d) Increase-Decrease

- 6- If albumin production decreases in a patient,
 - a) Net filtration pressure increases
 - b) Capillary oncotic pressure increases
 - c) Capillary hydrostatic pressure decreases
 - d) Lymph flow decreases

- 7- Which item represents glucose and fructose transport from the apical membrane respectively?
 - a) Secondary active transport - Facilitated diffusion
 - b) Primary active transport - Facilitated diffusion
 - c) Facilitated diffusion - Secondary active transport
 - d) Secondary active transport - Secondary active transport

- 8- What is the most important propulsive movement in the colon?

-
- a) **Hustration**
 - b) **Segmentation**
 - c) **Mass movement**
 - d) **Retropulsion**

9- What is the respiratory pattern in a person whose medulla is separated from the pons?

- a) **Rapid and shallow breathing**
- b) **Expiration becomes very deep**
- c) **Decreased and irregular breathing rate**
- d) **Breathing stops completely**

10- In a healthy person in a standing position, what is the correct choice about dead space?

- a) **Physiologic dead space is zero**
- b) **Alveolar dead space is zero**
- c) **Physiologic dead space is larger than anatomic one**
- d) **The anatomic and alveolar dead spaces are equal**

11- Which process occurs in the rod cells of retina in the dark?

- a) **Sodium outflux from outer segment of the cell**
- b) **Inactivation of the Na-K pump**
- c) **Potassium outflux from inner segment of the cell**
- d) **Activation of transduction**

12- Which of the following is correct in pain sensation?

- a) **Stimulation of periaqueductal gray matter causes hyperalgesia**
- b) **Nerve routes transferring fast pain are A α types**
- c) **Prostaglandins induce hyperalgesia**
- d) **The cause of pain during muscle spasm is due to increase in blood perfusion**

13- Where are the mirror neurons located in the brain cortex?

- a) **Primary motor cortex**
- b) **Premotor area**
- c) **Supplementary area**
- d) **Occipital cortex**

14- Which one of the followings increases platelet aggregation?

- a) **Thromboxane A₂**
- b) **Thrombomodulin**
- c) **Antithrombin III**
- d) **Plasmin**

15- Which of the following is the effect of growth hormone?

- a) **Decrease in the uptake of glucose by the skeletal muscle**
- b) **Decrease in the free fatty acid release**
- c) **Decrease in the membrane permeability to amino acids**

d) Decrease in the fat consumption for metabolism

16- Which of the following hormones decreases plasma free fatty acid concentration?

- a) Cortisol
- b) Growth hormone
- c) Insulin
- d) Epinephrine

17- Which of the following is derived from proopiomelanocortin?

- a) Betalipotropin
- b) Leptin
- c) Melatonin
- d) Serotonin

18- In which tubular segment of the kidney is water removed from the tubule and a little urea enters the tubule?

- a) Proximal tubule
- b) Thin descending segment of Henle
- c) Thin ascending segment of Henle
- d) Cortical collecting duct

19- In the case of four-time increase in the resistance of efferent arteriole, what change occurs in GFR?

- a) Increase
- b) Decrease
- c) No change
- d) First a decrease and then an increase

20- Which of the following hormones and cells are related to the estrogen production in the testes?

- a) Sertoli cells-FSH
- b) Sertoli cells-LH
- c) Leydig cells-LH
- d) Leydig cells-FSH

21- In presence of ADH, which tubule segment is completely impermeable to water?

- a) Thick ascending loop of Henle
- b) Cortical collecting tubule
- c) Thin descending loop of Henle
- d) The proximal tubule

22- What happens if a person's respiratory muscles are paralyzed?

- a) Breathing stops at end of inspiration
- b) Breathing stops at end of expiration
- c) Expiration becomes deep and inspiration shortens
- d) Inspiration becomes deep and expiration shortens

23- Which enzyme activates the pancreatic proenzymes in the small intestine?

- a) Entrokinase
- b) Chymotrypsin
- c) Elastase
- d) Phospholypase A2

24-If the radius of a vessel doubles and its length increases four times , how does blood flow change in it?

- a) Increases 2 times
- b) Increases 4 times
- c) It halves
- d) Increased to one quarter

25- Which one is not involved in the contraction of smooth muscle?

- a) Calmodulin
- b) Myosin kinase
- c) Calcium
- d) Myosin phosphatase

26- What happens when the hair cells in the equilibrium apparatus are stimulated?

- a) The entry of potassium from the perilymph fluid into the cells
- b) The entry of potassium from the endolymph fluid into the cells
- c) The entry of sodium from the perilymph fluid into the cells
- d) The entry of sodium from the endolymph fluid into the cells

27. The decrease in which of the following ions leads to an increase in permeability of neuron membrane to Na ions?

- a) Potassium
- b) Calcium
- c) Bicarbonate
- d) Phosphate

28. Which of the following is involved in increasing the osmolality of the renal medulla?

- a) Active transport of ions from the thick ascending branch of the Henle loop
- b) Active transport of urea from collecting ducts
- c) Diffusion of ions from collecting ducts
- d) Diffusion of water through the thin descending branch of the Henle loop

29. Which of the following plays a role in idiopathic rhythm of sinoatrial node?

- a) Obstruction of slow sodium-calcium channels due to the potential membrane resting hyperpolarization
- b) Permeability of the membrane to sodium and calcium through slow sodium-calcium channels
- c) Rapid entrance of sodium or calcium through channels related to their voltage
- d) Decreased potassium conduction in the potential repolarization phase

30. Which of the following agents decreases the pulse pressure?

-
- a) Rapid passage of blood through arteries
 - b) Decreased volume capacity of major arteries
 - c) Decreased stroke volume
 - d) Decreased diastolic pressure in arteries

31. Which of the following is **NOT** included in estimating alveolar ventilation in one minute?

- a) Current volume
- b) Dead space volume
- c) Respiration rate in one minute
- d) Practical residual capacity

32. The major receptor of which of the following hormones is among those matched with the G protein?

- a) Insulin
- b) Glucagon
- c) Growth
- d) Leptin

33. Which one is the difference between myenteric and submucosal plexuses?

- a) The myenteric neuron plexuses are all stimulating.
- b) The myenteric plexus is basically involved in secretion and local absorption.
- c) The submucosal plexus is composed of linear chains and is more widely distributed.
- d) Stimulation of the myenteric plexus causes a rise in the tonic contraction of the intestine

34. Disturbance in which of the following leads to the loss of vision in the two temporal visual fields?

- a) Optic chiasma
- b) Radiation intensity
- c) Optic nerve
- d) Optic tract

35. What is the role of Renshaw neurons in the spine?

- a) Inhibition of tensile reflex response
- b) Stimulation of spinal motor neurons
- c) Lateral inhibition of adjacent motor neurons
- d) Weakening of major signal transport

36. Which one is **NOT** among the effects of cortisol in controlling inflammation?

- a) Stabilizing lysosome membrane
- b) Decreasing the permeability of capillaries
- c) Decreasing the migration of WBCs to the inflamed area
- d) Increasing the production of T lymphocytes

37- In which of the following lipid groups is the Choline (Chemical) group present?

- a) Phosphatidic acid
- b) Ganglyoside
- c) Glucocerebroside
- d) Sphingomyelin

38. From which of the following amino acids is keratin derived?

- a) Lysine, arginine, metunine
- b) Glycine, metunine, arginine
- c) Cysteine, metunine, glycine
- d) Arginine, alanine, metunine

39- Glucocorticoide hormones such as cortisol cause

- a) An increase in glycogenolysis
- b) A decrease in lipolysis
- c) A decrease in blood glucose
- d) An increase in amino acid anabolism in liver

40- Hexokinase is a Enzyme.

- a) Transferase
- b) Ligase
- c) Lyase
- d) Hydrolase

41- Which of the following reactions uses biotin as a coenzyme?

- a) Hydroxylation
- b) Carboxylation
- c) Decarboxylation
- d) Deamination

42- In which tissue is the insulin-like growth factor-I (IGF-I), the intermediate of growth hormone function, synthesized?

- a) Hypothalamus
- b) Hypophysis
- c) Liver
- d) Pancreas

43. What is the first purine nucleotide synthesized through the Denovo route?

- a) Carbamoile phosphate
- b) Ornitidin monophosphate
- c) Inosine monophosphate
- d) 5-phosphoribosilamin

44-Which of the following items is correct for carbamoyl phosphate synthase I?

- a) It is a key enzyme in urea cycle.
- b) It is a key determinant in citrate concentration.
- c) It is a key enzyme in uric acid biosynthesis.
- d) It is a key enzyme in pyrimidine nucleotide biosynthesis.

45- Which compound is a mucopolysaccharide?

- a) Inulin
- b) N-Acetyl glucose amine
- c) Heparin
- d) Amylopectin

46- Which apoprotein is involved in the activation of lecithin cholesterol acyl transferase (LCAT)?

- a) Apo- AII
- b) Apo-CI
- c) Apo-CII
- d) Apo-AI

47- Which compound exists in the CAP structure of mRNA?

- a) 7- methyl guanosine
- b) 2-methyl cytidine
- c) 7-methyl adenosine
- d) 2-methyl thymidine

48- If the dissociation constant (pKa) for amino acid of aspartic acid (ASP) is 2.09, 3.96 and 9.82, respectively, what is its isoelectric pH (pI)?

- a) 3.02
- b) 5.9
- c) 6.89
- d) 5.29

49- Which amino acid is found in the intra-molecular portion of the globular protein?

- a) Asparagine
- b) Isoleucine
- c) Serine
- d) Glutamine

50. In which of the following diseases does the level of bilirubin conjugate (direct) increase in the blood?

- a) Obstructive jaundice
- b) Hemolytic jaundice
- c) Infantile jaundice
- d) Crigler - Najjar

51- Which of the following tests is more specific for Hashimoto thyroiditis diagnosis?

- a) Anti-Tyroperoxidase (Anti-TPO)
- b) Thyroid stimulating hormone (TSH)
- c) Tyroxine (T4)
- d) Thyroid binding protein (TBP)

52. A patient suffers from fat malabsorption, fatty stools, and accumulation of fat in

intestinal cells. The defect in which apoleoprotein causes these signs?

- a) B-48
- b) C-II
- c) D
- d) E

53. A neonate suffers from maple tree syrup urine. The defect in the catabolism of which amino acid is the main cause?

- a) Valine
- b) Serine
- c) Histidine
- d) Proline

54. An enzyme produced by a virus inactivates a protein involved in replication. Which protein is the substrate of this enzyme?

- a) Single stranded binding protein
- b) TATA-box binding protein
- c) Catabolite activator protein
- d) Cap binding protein

55. In the case of aldolase B enzyme deficiency, the increase in which substance causes metabolic problems?

- a) Fructose-1-phosphate
- b) Glyceraldehyde
- c) Glyceraldehyde-3- phosphate
- d) Dihydroxy aseton phosphate

56. In reduced concentration of paratormone (PTH) in the serum, which form of vitamin D is produced in the kidneys?

- a) 1,25-dihydroxycholecalciferol
- b) 25,24-dihydroxycholecalciferol
- c) 1,24-dihydroxycholecalciferol
- d) 25- hydroxycholecalciferol

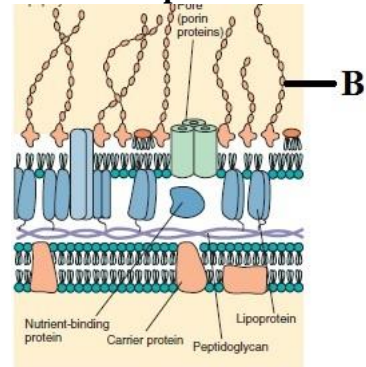
Bacteriology

57. What is the main action of the pentose phosphate pathway (glucose monophosphate)?

- a) NADPH production
- b) Pyruvate production

- c) oxaloacetate production
- d) Pyruvate phosphonol production

58- Related to section B of the picture below, all of the following are true except?



- a) Has an endotoxin activity
- b) Induces Schwartzman reaction
- c) Can stimulate macrophages
- d) Is a part of peptidoglycan

59- Which antibiotic inhibits protein synthesis in bacteria?

- a) Ceftazidim
- b) Polymixin B
- c) Ciprofloxacin
- d) Gentamycin

60- What are the most prevalent bacteria in catheter and shunt infection?

- a) Coagulase negative staphylococci
- b) Coagulase positive staphylococci
- c) Beta – hemolytic streptococci
- d) Alpha – hemolytic streptococci

61. Which bacterium causes necrotizing fasciitis?

- a) Streptococcus pyogenes
- b) Staphylococcus epidermidis
- c) Streptococcus anginosus

d) *Streptococcus agalactiae*

62. A farmer sustains eye infection due to the entrance of a foreign object in the eye while working on the farm. The infection cannot be treated with antibiotics, leading to complete evacuation of the eye. What can the causal bacterium be?

- a) *Bacillus cereus*
- b) *Staphylococcus Aureus*
- c) *Clostridium perfringens*
- d) *Acinetobacter baumannii*

63. Which of the following groups is at risk for central nervous system listeriosis?

- a) Pregnant women
- b) Middle-aged men
- c) Neonates
- d) Elderly people

64. Which of the *Escherichia coli* enterotypes involves the large intestine?

- a) EPEC
- b) ETEC
- c) STEC
- d) EAEC

65. What is the common cause of outer ear infection in swimmers (Swimmer's ear)?

- a) *Burkholderia sayesha*
- b) *Pseudomonas aeruginosa*
- c) *Acinetobacter baumannii*
- d) *Moraxella catarrhalis*

66- Which one is the alternative test for PPD test?

- a) IFN- γ release assay
- b) Lepromin test
- c) Acid fast staining
- d) Polymerase chain reaction

67- On basis of WHO recommendation, which antibiotics are used for the treatment of brucellosis?

- a) Vancomycin – teicoplanin
- b) Ciprofloxacin - ceftriaxone
- c) Rifampin – doxycycline
- d) Gentamycin - Imepenem

68- Which of the following is the most important virulence factor of *Bacteroides fragilis*?

- a) Toxin A
- b) Toxin B
- c) Hyaluronidase
- d) capsule

69. In the pathogenesis of which of the following streptococci does protein M play a major role?

- a) Agalatae
- b) Pyogenes
- c) Pneumoniae
- d) Mutans

70. Which bacterium is the causal agent of the Ecthyma Gangrenosum disease?

- a) *Staphylococcus aureus*
- b) *Actinomyces israelii*
- c) *Clostridium perfringens*
- d) *Pseudomonas aeruginosa*

71. Which of the following bacterial species produces both catalase and coagulase enzymes?

- a) *Staphylococcus aureus*
- b) *Staphylococcus epidermis*
- c) *Streptococcus pneumoniae*
- d) *Streptococcus pyogenes*

72. The Optochin test plays a key role in the identification of

- a) *Streptococcus pneumoniae*
- b) *Escherichia coli*
- c) *Legionella pneumophila*
- d) *Listeria monocytogenes*

Parasitology and Entomology

73- Which of the following parasites may cause intestinal obstruction?

- a) *Ancylostoma*
- b) *Enterobius*
- c) *Ascaris*
- d) *Trichuris*

74- In which of the following plasmodia is the central nervous system more invaded?

- a) *P. falciparum*
- b) *P. vivax*
- c) *P. malaria*
- d) *P. ovale*

75- The most severe signs of disease in congenital toxoplasmosis are seen in:

- a) Three months before pregnancy
- b) The first trimester of pregnancy
- c) The second trimester of pregnancy
- d) The third trimester of pregnancy

76- How does a human being get infected with hydatid cyst?

- a) Consuming infected liver
- b) Consuming infected beef
- c) Swallowing eggs excreted from dogs
- d) Close contact with infected humans and livestock

77- Which of the following parasites is more important in immunodeficient patients?

- a) *Trichuris trichura*
- b) *Ancylostoma duodenale*
- c) *Necator americanus*
- d) *Strongyloides stercoralis*

78- Which of the following parasites can be transmitted by contact lenses?

- a) *Negleria*
- b) *Acanthamoeba*
- c) *Leishmania*
- d) *Toxoplasma*

79- Which of the following parasites is transmitted by aquatic vegetables?

- a) *Fasciola hepatica*
- b) *Schistosoma hematobium*
- c) *Dicrocoelium dendriticum*
- d) *Paragonimus westermani*

80- Which one of the following drugs is used for the treatment of clinical signs in malaria?

- a) Blood schizontocidals
- b) Tissue schizontocidals
- c) Gametocidals
- d) Hyponozoitecidals

81- The infected mosquito saliva doesn't have any role in the transfer of this disease:

- a) Malaria
- b) Yellow fever
- c) River blindness
- d) Japanese Encephalitis

82. In order to control and prevent hydatid cyst, which action is suggested?

- a) Periodic treatment of dogs with anti-helminth drugs
- b) Sanitary disposal of human stool
- c) Sanitary disposal of livestock stool
- d) Thorough cooking of cow and lamb liver and meat

83. What is the drug of choice for trichomonas?

- a) Mebendazole
- b) Albendazole
- c) Praziquantel
- d) Metronidazole

84. Which species of Phlebotomos is the main carrier of zoonotic type cutaneous leishmaniasis?

- a) P.paptasi
- b) P.sergenti
- c) P.major
- d) P.argentipes

Mycology

85-Which one is the drug of choice for cryptococcal meningitis?

- a) streptomycin
- b) Terbinafine
- c) Amphotericin- B
- d) Grizeofulvin

86. All of the following are correct about Cryptococcus neoformans except:

- a) It is naturally found in soil, special contaminated with pigeon feces.
- b) The fermented form of the fungus sheds from the patient's lesions.
- c) Its route of entrance is the lung.
- d) Its infectious ability is accompanied by the production of exotoxin A.

87-All of the following statements are correct concerning Candida albicans except:

- a) C.albicans is a budding yeast that is part of normal flora
- b) C.albicans causes thrush
- c) C. albicans is producing non septate hyphae
- d) Impaired cell mediated immunity is an important predisposing factor to disease

88. Black dot is the clinical feature of

- a) Tinea Capitis
- b) Tinea nigra
- c) Black piedra
- d) Trichomycosis

89. Which of the following is correct?

- a) A chain of lesions around lymphatic ducts is a sign of Myostoma.
- b) Subcutaneous polyfistulized abscess containing granules is a sign of sporotrichosis.
- c) Herpes lesions are seen in the myostoma.
- d) Stellate bodies are seen in sporotrichosis.

Virology

90. Buccavirus belongs to which of the following virus groups?

- a) Adenoviridae
- b) Paro virideh
- c) Papillomaviridae
- d) polyomaviridae

91. Which of the following is the carrier of the virus causing Crimean Congo Haemorrhagic Fever (CCHF)?

- a) Mosquito
- b) Bug
- c) Mite
- d) Tick

92. Formaldehyde removes viral infections through interacting with

- a) Capsid
- b) Envelope
- c) Gonium
- d) Capsumere

93. Which virus produces heterophillic antibody?

- a) CMV
- b) HSV
- c) EBV
- d) HIV

94. In which of the following viral infection is the simultaneous administration of serum and vaccine the basis of treatment?

- a) Mumps
- b) Rubella
- c) Influenza
- d) Rabid

Anatomy

- 95- Which of the following is adjacent to the medial surface of the right lung apex?**
- a) Brachiocephalic artery
 - b) Arch of aorta
 - c) Azygos vein
 - d) Thoracic duct
- 96- Which of the following veins doesn't drain to the coronary sinus?**
- a) Great cardiac
 - b) Middle cardiac
 - c) Ant. cardiac
 - d) Small cardiac
- 97- Which of the following arteries goes through the gastrosplenic ligament?**
- a) Short gastric
 - b) Left gastroepiploic
 - c) Splenic
 - d) Gastroduodenal
- 98- Sympathetic chain passes through to the abdomen.**
- a) Beneath the Lateral arcuate ligament
 - b) Beneath the Medial arcuate ligament
 - c) Esophageal opening
 - d) Aortic opening
- 99- All of the following structures are posterior to the second part of duodenum except:**
- a) Gastroduodenal artery
 - b) Hilum of the right kidney
 - c) Right renal vessels
 - d) Inf. vena cava
- 100- Blood supply of ascending colon is carried out by.....**
- a) Right colic artery
 - b) Middle colic artery
 - c) Left colic artery
 - d) Gastroduodenal
- 101- Internal spermatic fascia is continuous of:**
- a) Transverse abdominal muscle
 - b) Transversalis fascia

- c) Int. abdominal muscle
- d) Int. abdominal fascia

102- Which of the following structures is posterior to the abdominal ureter?

- a) Genitofemoral nerve
- b) Gonadal artery
- c) Ext. Iliac artery
- d) Femoral nerve

103- Which of the following structures is not included in the Adductor canal?

- a) Femoral artery
- b) Femoral vein
- c) Femoral nerve
- d) Nerve to vastus medialis

104- Injury to which of the following causes loss of sensation in the medial cutis of the forearm?

- a) Medial cord of brachial plexus
- b) Ulnar nerve
- c) Median nerve
- d) posterior cord of brachial plexus

105- Which of the following nerves innervates extensor digitorum brevis muscle?

- a) Deep fibular nerve
- b) Superficial fibular nerve
- c) Sural nerve
- d) Tibial nerve

106- Which of the following structures passes through the posterior flexor retinaculum to the palm?

- a) Tendon of flexor pollicis longus m.
- b) Ulnar nerve
- c) Radial artery
- d) Tendon of flexor carpi ulnaris m.

107- Which of the following structures is not in the median plane of the skull?

- a) Nasal crest
- b) Foramen lacerum
- c) Ext. occipital crest
- d) Vomer

108- Which of the following nerves passes through the tympanic cavity?

- a) Chorda tympani
- b) Vestibulocochlear
- c) Facial
- d) Mandibular

109-Which of the following nerve is responsible for sensory innervation of lower eyelid?

- a) Maxillary nerve
- b) Ophthalmic nerve
- c) Mandibular nerve
- d) Facial nerve

110-All of the following structures are adjacent to lateral surface of sternocleidomastoid muscle except:

- a) Ext. jugular Vein
- b) Transverse cervical n.
- c) Great auricular n.
- d) Accessory nerve

111-Which of the following nerves is not a branch of the cervical plexus?

- a) Phrenic nerve
- b) Supraclavicular nerve
- c) Ansa cervicalis
- d) Greater occipital nerve

112-Which of the following glands is innervated by the parasympathetic fibers from otic ganglion?

- a) Lacrimal gland
- b) Parotid gland
- c) Submandibular gland
- d) Nasal mucosal gland

113-Which of the following nuclei is associated with the ventralis lateral nucleus of the thalamus?

- a) Globus pallidus
- b) Amygdaloid
- c) Dentate nucleus
- d) Mammillary bodies

114-Which artery supplies the lingual motor area in the cortex?

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

115- Parasympathetic fibers of oculomotor originate from:

- a) Solitary nucleus
- b) Sup. Salivatory nucleus
- c) Inf. Salivatory nucleus
- d) Edinger westfal nucleus

116- Cerebrospinal fluid is finally absorbed by :

-
- a) **Sup. sagittal sinus**
 - b) **Inf. sagittal sinus**
 - c) **Sigmoid sinus**
 - d) **Transverse sinus**

117- Which one participates in receptor-mediated endocytosis?

- a) **Cadherin**
- b) **Actin**
- c) **Tubulin**
- d) **Clathrin**

118- Which one has keratinized stratified squamous epithelium?

- a) **Esophagus**
- b) **Vagina**
- c) **Urinary bladder**
- d) **Hard palate**

119- Which one is found in bone canalicules?

- a) **Osteoblast process**
- b) **Osteocyte process**
- c) **Blood capillary**
- d) **Nerve fiber**

120- To which nerve cell is the Schmidt-lanternman cleft related?

- a) **Microglia**
- b) **Astrocyte**
- c) **Satellite**
- d) **Schwann**

121- In which part of muscular tissue is the Nebulin protein seen?

- a) **Sarcomere**
- b) **Intercalated disc**
- c) **Dense body**
- d) **Reticulum sarcoplasmic**

122- In which part of liver is the Ito cell seen ?

- a) **Disse space**
- b) **Portal space**
- c) **Sinusoid wall**
- d) **Bill canalicule**

123- Which cell forms the filtration slit in the kidney?

- a) **Mesengeal**
- b) **Podocyte**
- c) **Macula densa**
- d) **Juxtaglomerular**

124- Which kind of capillary is seen in neurohypophysis?

- a) Continous
- b) Sinusoid
- c) Fenesterated with diapheragm
- d) Fenesterated without diapheragm

125- In which epidermal cell are lamellar granules seen?

- a) Langerhans
- b) Keratinocyte
- c) Merkel
- d) Melanocyte

126- Which layers of mature follicle participate in the corpus luteum structure?

- a) Techa interna, theca externa
- b) Theca externa, granulosa
- c) Theca interna, granulosa
- d) Zona pellucida, theca externa

127- Which one is related to the 9th day of development?

- a) Lacuna
- b) Amniotic cavity
- c) Extraembryonic mesoderm
- d) Primary vilus

128- Secondary villus does not have.....

- a) Blood vessels
- b) Mesoderm
- c) Syncytiotrophoblast
- d) cytotrophoblast

129- Which part of mesoderm contributes to the formation of body lateral folds?

- a) Somatic layer of lateral plate mesoderm
- b) Paraxial mesoderm
- c) Intermediate mesoderm
- d) Visceral layer of lateral plate mesoderm

130- The smooth-wall part of the left atrium is originated from

- a) Pulmonary veins
- b) Sinus venarum
- c) Bulbus cordis
- d) Primary atrium

131- Cephalic and caudal limbs of intestinal loop contribute to the formation of...

- a) illuem
- b) jujenum
- c) secum
- d) appendix

132. During fetal development, which of the following closes the foramen between the pleural and peritoneal cavities?

- a) Pleuroperitoneal folds
- b) Adhesion of pleuropericardial membranes
- c) Adhesion of pleuropericardial membranes to the pulmonary base
- d) Pericardioperitoneal folds

133. Which cell in the intestinal mucosa plays a role in its immunity by secreting lysosome and defensin?

- a) Goblet
- b) Microfold
- c) Enteroendocrine
- d) Paneth

134. Which cytoplasmic organelle prevents the creation of free radicals by disintegrating hydrogen peroxide?

- a) Endosome
- b) Peroxisome
- c) Proteasome
- d) Lysosome

135. Regarding the secretory role of leydig cells, which of the following organelles is abundantly found in their cytoplasm?

- a) Smooth endoplasmic reticulum
- b) Proteasome
- c) Golgi apparatus
- d) Ribosome

136. A neonate born with congenital disorder of thyrosinase enzyme will suffer from which of the following cutaneous lesions?

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

137. The failure of the cranial neuropore to close leads to which of the following congenital malformations?

- a) Holoprosencephaly
- b) Anencephaly
- c) Spina bifida
- d) Rachischisis

138. Which of the male sex cells performs the first meiotic division?

- a) Spermatogonia
- b) Primary spermatocytes
- c) Secondary spermatocytes
- d) Spermatid

139. In which portion is the sperm capacitation process carried out?

- a) Seminiferous tubule
- b) Epididymis duct
- c) Vas deferens ampule
- d) Female genital system

140. Which nerve does not take part in the sensory innervation of external periphery of the foot?

- a) Sural
- b) Tibial
- c) Sciatic
- d) saphenous

141. Which of the following structures is part of the diencephalon?

- a) Substantia nigra
- b) Superior colliculus
- c) Olive
- d) Mammillary body

142. Which of the following is supplied by the superior mesenteric artery?

- a) Gall bladder
- b) Spleen
- c) Descending colon
- d) Cecum

143. The glossopharyngeal nerve transfers the sensation of which part of the mouth?

- a) Palatine tonsil
- b) Tip of the tongue
- c) Sublingual
- d) Uvula

144. From which of the following arteries is the left marginal artery of the heart branched?

- a) Circumflex

-
- b) **Right coronary**
 - c) **Anterior interventricular**
 - d) **Posterior interventricular**

145. The ilium bone does not contribute to the formation of which of the edges of the hip bone?

- a) **Inferior**
- b) **Medial**
- c) **Posterior**
- d) **Superior**

146. Which one shows the sequence of the parts of vaginal vulva from the front to the back?

- a) **Clitoris, urethra, vagina, vestibular gland duct**
- b) **Clitoris, vagina, urethra, vestibular gland duct**
- c) **Clitoris, urethra, vestibular gland duct, vagina**
- d) **Urethra, clitoris, vagina, vestibular gland duct**

147. Between which layers is the heart pericardium space located?

- a) **Serous parietal and visceral pericardium**
- b) **Serous parietal pericardium and fibrous pericardium**
- c) **Fibrous epicardium and pericardium**
- d) **Serous visceral epicardium and pericardium**

148. To which part of the duodenum does the choledochal duct open?

- a) **First**
- b) **Second**
- c) **Third**
- d) **Fourth**

Principles of Health Services

149-What is the first step in changing behavior?

- a) **Believe in behavior change**
- b) **Understand the benefits of new behavior**
- c) **Know the consequences of past behavior**
- d) **All of the above**

150- Which of the following organizations is responsible for promoting the awareness of nations regarding population problems and their solutions?

- a) **World Health Organization**
- b) **United Nation Children's Fund**
- c) **United Nation Population Fund**
- d) **United Nation Educational, Scientific and Cultural Organization**

151- Which primary health care principle is represented by prevention and promotional intervention?

-
- a) Appropriate technology
 - b) Intersectional coordination
 - c) Comprehensiveness of services
 - d) Community participation

152- Which level of prevention (left to right) is the best for reducing the complications and severity of the disease?

- a) Second-Second
- b) Second- Third-
- c) Third-Second
- d) Third- Third-

153-What is the correct order of service providers in Iran's health system?

- a) Health center- Home care - General hospital- college hospital
- b) General hospital- Home care- health center- - college hospital
- c) Home care- health center- General hospital- college hospital
- d) Home care- health center- college hospital- General hospital

154- When does the natural course of the disease begin?

- a) Exposure to factors
- b) Pathogen entry into the body
- c) Detectable disease
- d) Appearance symptoms of the disease

155- Which term denotes the mental experience of a lack of health?

- a) Disease
- b) Illness
- c) Sickness
- d) disability

156- Which one is not among the primary health care components introduced by the World Health Organization?

- a) Access to essential drugs
- b) Treatment of common illnesses and injuries
- c) Mental Health Care
- d) Control of endemic infectious diseases

157. Under which condition is the use of combined pregnancy prevention pills (OCP) NOT contraindicated?

- a) Diseases of cerebral vessels
- b) Age above 35
- c) Breast carcinoma
- d) Hepatic neoplasia

158. What is the most environmental service unit in the health system?

- a) Specialized hospital
- b) General hospital
- c) Health-treatment center
- d) Health House

159. As chronic diseases such as cancer, diabetes, and cardiovascular diseases cannot be treated for sure, in addition to constant care, which of the following is of superb importance in their early diagnosis?

- a) Vaccination
- b) Screening
- c) Treatment
- d) Rehabilitation

Epidemiology

160- In a screening program of diabetes mellitus, test A is positive when FBS \geq 140 mg/dl and Test B is positive when FBS \geq 126 mg/dl. Which of the following is correct?

- a) Sensitivity of test A is more than test B.
- b) Specificity of test B is more than test A.
- c) False positive in test A is more than false positive in test B.
- d) False negative in test A is more than false negative in test B.

161- The result of a screening on 100 people showed that 20 percent of them were positive. If the mentioned test has 50 percent "negative predictive value", please calculate the number of "false negative" persons?

- a) 80 persons
- b) 40 persons
- c) 20 persons
- d) 50 persons

162- Which of the following conditions is incorrect about the existence of "Herd immunity"?

- a) The disease agent must be restricted to a single host species.
- b) Transmission must be relatively indirect.
- c) The infectious agent should not have a non- human reservoir.
- d) The infectious agent must be able to induce solid immunity.

163- What is the suitable dominator is for calculating proportioned mortality from cardiovascular diseases?

Proportional mortality = $\frac{\text{number of deaths from proportionate}}{\text{?}} \times 100$

- a) Number of persons with heart disease in one year
- b) Number of persons in the population at mid-year
- c) Number of deaths in one year
- d) Number of population at risk of heart disease in one year

164- Choose the right option about odds ratio and relative risk.

- a) Odds ratio is measurable in either case – control or cohort studies and relative risk is only measurable in cohort studies
- b) Odds ratio is only measurable in case – control studies and relative risk is measurable in case - control studies
- c) Odds ratio is only measurable in cohort studies and relative risk is only measurable in case- control studies
- d) Odds ratio is only case – control studies and relative risk is measurable both in case – control and cohort studies

165- Which of the following is not correct about epidemic event characteristics?

- a) Epidemic is defined as the occurrence in a community of a group of illness of similar nature, excess of normal expectancy
- b) This term is only used for infectious diseases
- c) There is no total and universal cut-off for epidemic for all regions and diseases
- d) Epidemic can occur at every interval

166. A problem with cohort studies is removing or reducing lost items during follow-ups. The loss of individuals during a study is among which of the errors?

- a) Random Error
- b) Selection Bias
- c) Information Bias
- d) Confounding

167. Which of the following is NOT correct about the epidemic curve with a common source encountering the infectious agent only once?

- a) The horizontal axis represents the time period after encounter.
- b) The curve shows distribution during the incubation period.
- c) The vertical axis represents the number of disease cases.
- d) The curve shows person-to-person spread.

168. In a study entitled "The relationship between catching a specific disease and the risk of death", the researcher has compared the death rate due to the same disease in the study groups. What type of study is it?

- a) Case – control
- b) Cohort
- c) Cross sectional – descriptive
- d) Trial

169-"Accumulation of excess CSF in the ventricles of the brain" is termed.....

- a) Hydrocephalus
- b) Neurilemmoma
- c) Glioma
- d) Hemiparesis

170- Which of the following refers to the adhesion of the eyelids?

- a) Keratoritis
- b) Presbycusis
- c) Symblepharon
- d) Esotropia

171- When platelets are transfused to a patient alloimmunized against platelet, there is no therapeutic effect and the patient is termed..... to platelets.

- a) Refractory
- b) Optimal
- c) Regressive
- d) Opposite

172- Myelogenous leukemia is a condition that originates in the

- a) Pituitary gland
- b) Bone marrow
- c) Liver
- d) Spleen

173- Which of the following is the definition for aphagia?

- a) Extreme thirst
- b) Difficulty hearing
- c) Inability to swallow
- d) Loss of hair

174- The Greek root cyst/o- is related to?

- a) Blood
- b) Bladder
- c) Spine
- d) Brain

175- Sudden violent involuntary series of contractions of a group of muscles that may be paroxysmal is called

- a) Shivering
- b) convulsion
- c) epilepsy
- d) seizure

176- The ranges of mitotic rates in many tissues throughout development into maturity and are different in various body tissues.

- a) Secretions
- b) Exertions
- c) mobility

d) senescence

177- Local defect or excavation of the surface of an organ or tissue is called

- a) plantar
- b) ulcer
- c) lesion
- d) gangrene

178- In there is softening of bone tissue because of diminished calcium salt formation.

- a) Osteodesis
- b) Osteoporosis
- c) Osteopenia
- d) Osteomalacia

179- The surgeon's note on the file of the admitted patient to the ward reads: slipping of one intestinal part into another part below it. What is the diagnostic term?

- a) Intussusceptions
- b) interception
- c) Inception
- d) Intersection

180- The degree to which poor nutrition affects to colds is not yet clearly established, but an inadequate diet is suspected of lowering resistance in general

- a) distribution
- b) relation
- c) susceptibility
- d) passage

Of all the drugs which human beings have used and abused in the course of their chequered history, alcohol is almost certainly the oldest and also the most widely used because it is so easily produced. Airborne yeasts readily lead to fermentation in any sugary juice – from grapes, fruit, or berries – if it is exposed to warm air for a few days, and most preliterate people soon learnt the intoxicating effects of such juices and how to facilitate the fermentation process. Many also learnt at an early stage how to convert starch containing cereals like maize to alcoholic brews by chewing the cereal and spitting it into water, which allows salivary amylase to convert the starch to sugars, which yeasts then convert to alcohol.

181- The word abused in line one refers to

- a) Improper use of drugs
- b) Correct use of drugs
- c) Absence of drugs

d) Drug avoidance

182- According to the passage what did most preliterate people learn?

- a) How to ferment alcohol
- b) The toxic effects of alcohol
- c) The poisonous effect of alcohol consumption
- d) The exciting effect of alcohol

183- The underlined word “which” in the last sentence is a pronoun that replaces

- a) Starch
- b) Sugar
- c) Salivary amylase
- d) Alcohol

B. Reading Comprehension:

The fitness world is full of gadgets. Some are helpful, but many are more trouble than they are worth. Regardless of what shape you are in, one device you might find useful is a heart rate monitor.

The key to cardiovascular fitness is getting a good but safe aerobic workout. Heart rate monitors, which monitor your heart rate while you exercise, can help you do that with ease. They range from relatively simple devices that show at a glance how many times per minute your heart is beating, to devices that record information like how long you were exercising at your target heart rate.

Here is a simple way to determine your maximum and target heart rates: subtract your age from 220 to figure out your maximum heart rate. For example, if you are 35, your maximum heart rate is 185 beats per minute. Your target heart rate is 50% to 85% of that number, or 93 beats to 157 beats per minute. These numbers are based on a healthy adult.

184 - The text fitness gadgets.

- a) challenges the benefits of any
- b) rejects any troubles caused by
- c) recommends the use of any
- d) approves the use of certain

185 - The heart rate monitor is referred to as a

- a) helpful gadget
- b) fitness exercise
- c) trouble gadget
- d) outdated gadget

186 - The underlined word "that" refers to

- a) a heart rate monitor
- b) the key to cardiovascular fitness
- c) fitness exercise
- d) a good but safe aerobic workout

187 - Heart rate monitors that are used to check heart rate are

- a) of various types
- b) to check the heart just at a glance
- c) few simple devices
- d) to show the duration of exercise

188 -The maximum heart rate for a person who is 50 years old is beats per minutes.

- a) 180
- b) 170
- c) 157
- d) 165

Medical Biology

189- Which enzyme is responsible for removing RNA primers from Okazaki fragments in DNA synthesis (replication) ?

- a) DNA Polymerase I
- b) DNA Polymerase II
- c) DNA Gyrase
- d) DNA Ligase

190- Which enzyme is responsible for the synthesis of leading strand of DNA in eukaryotes?

- a) Pol ϵ
- b) Pol δ
- c) Pol β
- d) Pol α

191- In which stage (phase) of the cell cycle does DNA replication occur?

- a) G1 phase
- b) S phase
- c) G2 phase
- d) M phase

192- If one cell has AT contents 40%, what will the percentage of Guanine residue be?

- a) 30%
- b) 15%
- c) 60%
- d) Guanine residue cannot be calculated

193- Choose the incorrect statement about a double stranded DNA molecule?

- a) $A+T=G+C$
- b) $A=T$
- c) $G=C$
- d) $A+G=C+T$

194- Which factor is not a termination codon in translation of an mRNA sequence?

- a) UAA
- b) UGA
- c) AUU
- d) UAG

195- Which rRNA is not found in the structure of prokaryotic ribosomes?

- a) 5s
- b) 23s
- c) 18s
- d) 16s

196- Which of the following is the Kozak sequence?

- a) GCCAUCG
- b) AAC AUGG
- c) AUACGCA
- d) GCCAUUC

197- The anticodon is a structure on:

- a) hnRNA
- b) mRNA
- c) tRNA
- d) rRNA

198- A polysome could be best described as:

- a) an active site of DNA synthesis
- b) an active site of RNA synthesis
- c) an active site of lipid synthesis
- d) an active site of protein synthesis

199- The Shine-Dalgarno sequence is:

- a) a trailer sequence
- b) a stop codon
- c) a reading frame of a gene
- d) a short sequence that acts as a ribosomal binding site

200- Which of the following techniques can be used to determine a defective gene and for cancer diagnosis?

- a) Western blot
- b) Southern blot
- c) Northern blot
- d) Eastern blot



Good Luck