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Comprehensive Medical Basic Sciences Exam, (Before 2015)

200 questions

Time: 200 minutes

32 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

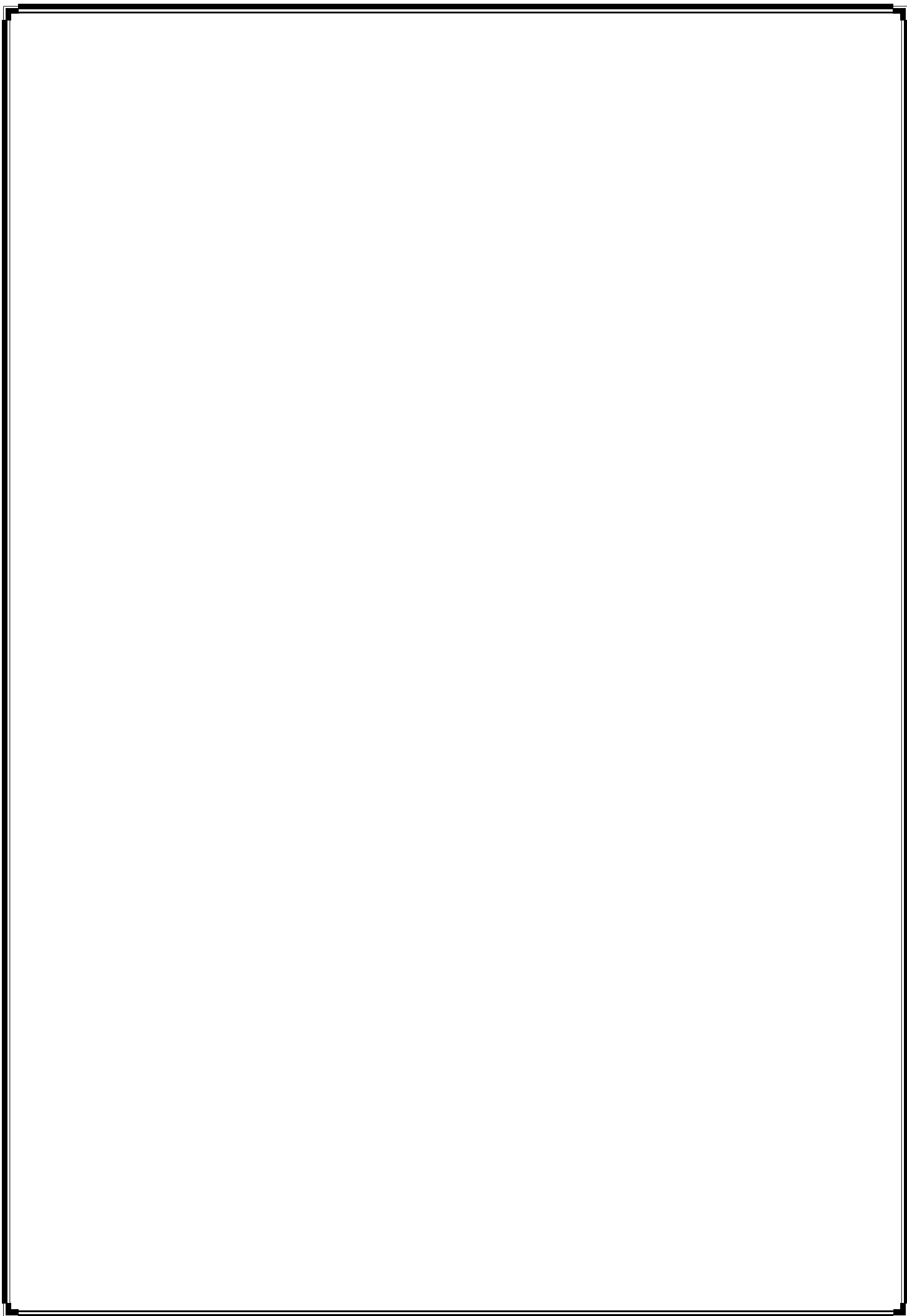
* **The key to the test is available at the website of medicine-school.kums.ac.ir subsection for basic sciences exam and pre-internship (<http://5.63.15.76:81>)**

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](http://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 followings 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 followings 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 in the 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, water is 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 times 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. 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

21. 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
22. 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
23. Which one is the difference between myenteric and submucosal networks?
- a) The myenteric neuron networks are all stimulating.
 - b) The myenteric network is basically involved in secretion and local absorption.
 - c) The submucosal network is composed of linear chains and is more widely distributed.
 - d) Stimulation of the myenteric network causes a rise in the tonic contraction of the intestine
24. Disturbance in which of the following leads to the loss of vision in the two temples of the visual field?
- a) Optic chiasma
 - b) Radiation intensity
 - c) Optic nerve
 - d) Optic tract
25. 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
26. 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

Pathology

27-Which organelle initiates intracellular calcification, in dystrophic calcification phenomenon?

- a) Mitochondria
- b) Endoplasmic reticulum
- c) Lysosome
- d) Golgi apparatus

28- In which form of tissue adaptation is the Ubiquitin-proteasome pathway involved?

- a) Hyperplasia
- b) Hypertrophy
- c) Atrophy
- d) Metaplasia

29-Which of the following cytokines is involved in the development of fever?

- a) IL-6
- b) IL-8
- c) TNF
- d) LTB4

30- Which enzyme is targeted by steroid drugs in the treatment of inflammation?

- a) Lipoxygenase
- b) Phospholipase
- c) Cyclooxygenase
- d) Arachidonic acid

31- In histopathological slides of a tissue, the arterial wall contains a pale pink area of necrosis with protein deposition and inflammation. Which type of tissue damage has occurred in this tissue?

- a) Fat necrosis
- b) Vascular necrosis
- c) Fibrinoid necrosis
- d) Inflammatory necrosis

32-Why does infarction occur rarely in the Lung?

- a) Anatomy of the vascular supply
- b) Rate of occlusion
- c) Tissue resistance to hypoxia
- d) Propagation of pulmonary thrombosis

33-Thrombin attachment to this receptor induces anticoagulant activity. Which receptor is responsible for this phenomenon?

- a) Thrombomodulin
- b) Thrombin receptor
- c) Tissue factor pathway inhibitor
- d) Von willebrand factor

34-Which Heavy metal causes multiple squamous cell carcinomas in palms and soles after chronic exposure?

- a) Lead
- b) Mercury
- c) Arsenic
- d) Cadmium

35-Which of the following is considered an unfavorable prognostic factor in an 18-month –old infant with neuroblastoma?

- a) Increased TRKA expression
- b) No c-MYC Amplification
- c) Chromosome 1 short arm deletion
- d) Near diploid DNA

36-Which of the following is expected in a syndrome with Fibrillin mutation?

- a) Ophthalmic manifestations are the most prominent changes
- b) Cardiovascular system involvement is the most serious change
- c) Its gene product acts as a frame for collagen deposition
- d) In this syndrome, Microfibril loss causes an abnormal rise in TNF factor

37-Which of the following tumors shows BRAF(V600E) mutation?

- a) Melanoma
- b) Squamous cell carcinoma
- c) Basal cell carcinoma
- d) Breast ductal carcinoma

38. Which one is expected to rise in in the blood in the case of DIC?

- a) Clotting factor number 7
- b) D-dimer
- c) Clotting factor number
- d) The number of platelets

39. Which of the following chemical mediators is the main cause of pain in acute inflammatory processes?

- a) C3b and IgG
- b) IL-1 and TNF
- c) Histamine and Serotonin
- d) Prostaglandins and Bradykinin

40. In a biopsy sample of air passages in a patient with dyspnea and a history of smoking, in addition to pseudostratified cylindrical tissue, there is epithelial tissue in some areas. Which of the following has occurred?

- a) Hypertrophy
- b) Atrophy
- c) Hyperplasia
- d) Metaplasia

41. In the case of hepatic amyloidosis, which histologic area experiences sedimentation of amyloid?

- a) Portal triad
- b) Disse space
- c) Between hepatocytes
- d) Around the central vein

Clinical Biochemistry

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

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

43- Glucocorticoid 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

44- Hexokinase is a Enzyme.

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

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

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

46- 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

47- 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.

48- Which compound is a mucopolysaccharide?

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

49- 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

50- 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

51- 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

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

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

53- 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)

54. 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

55. 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

56. 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

57. 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 acetone phosphate

58. In reduced concentration of parathormone (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

Medical Physics

59- If the parallel beams are convergent in the front of the retina at rest, what will the aberration type be and which type of lens can be used to correct it?

- a) Myopia - concave
- b) Hyperopia – concave
- c) Astigmatism – convex
- d) Presbyopia - convex

60- Using A-mode ultrasonography , which of the followings is more accurate compared to other methods?

- a) Tumor detection
- b) Dimensional measurement (thickness)
- c) Cyst detection
- d) Tissue moving speed

61- Which of the following are used for radiation field-size adjusting and for scatter photons removal, respectively?

- a) Collimator- Grid
- b) Collimator-Intensifying Screen
- c) Grid-increasing film to object distance
- d) Grid- Reducing kVp

62- How does the radio sensitivity of a tissue change with decreasing its differentiation degree and increasing metabolic rate?

- a) Less-more
- b) More-less
- c) Less-less
- d) More-more

63. Which of the following abnormalities is due to the decreased adaption field of the eye?

- a) Myopia
- b) Hyperopia
- c) Isotropy
- d) Presbyopia

64. The increase in which of the following improves the general quality of the radiographic image?

- a) Filter thickness
- b) External effective focus
- c) Grid proportion
- d) Cathode size

Clinical Psychology

- 65- What is the mean duration of depressive episodes?**
- a) 7 to 14 days
 - b) 4 to 6 weeks
 - c) 6 months
 - d) 1 year
- 66- Lithium is the preferred drug for treating which of psychiatric disorder?**
- a) Schizophrenia
 - b) Bipolar disorder
 - c) Panic disorder
 - d) Depression
- 67- Which of the following neurotransmitters has been implicated in mood disorders?**
- a) Serotonin
 - b) Dopamine
 - c) Endorphins
 - d) Substance-P
- 68- In which of the mental disorders do hallucinations and delusions usually occur?**
- a) Schizophrenia
 - b) Anxiety disorders
 - c) Mood disorders
 - d) Personality disorders
- 69. Following acute food poisoning in a restaurant, the individual feels nausea whenever smelling the same food. What is this type of nausea?**
- a) Operational response
 - b) Emotional response
 - c) Conditional response
 - d) Non-conditional response
- 70. After the return of the mother, the child avoids interacting with her or almost ignores her. What is this type of attachment?**
- a) Secure
 - b) Avoidance unsecure
 - c) Ambivalant unsecure
 - d) Disorganized

Parasitology

71- Which one of the following parasites may cause intestinal obstruction?

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

72- 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**

73- The most sever 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**

74- 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**

75- Which one of the following parasites is more important in immunodificient patients?

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

76- Which one the following parasites can be transmitted by contact lenses?

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

77. What is the most suitable method of diagnosing acute acquired toxoplasmosis in humans?

- a) Lymphatic node biopsy and Gimsa staining
- b) Measuring the IgM against toxoplasmosis
- c) Toxoplasmosis skin test
- d) Culture in non-cellular environments

78. Feces culture is used in the laboratory diagnosis of which helminth infection?

- a) *Ascaris lumbricoides*
- b) *Ancylostoma duodenale*
- c) *Trichuris trichiura*
- d) *Strongyloides stercoralis*

Mycology

79-Which one is the treatment of choice for cryptococcal meningitis?

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

80-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 for the disease

Entomology

81- The infected mosquito saliva does not have any role in

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

82- Which of the following insects lays its eggs in water?

- a) Cockroaches
- b) Mosquito
- c) Flea
- d) Fly

Bacteriology

83- which antibiotic inhibits protein synthesis in bacteria?

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

84- 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

85- 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

86. 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 Oreos
- c) Clostridium perfringens
- d) Acinetobacter baumannii

87. Which bacterium causes necrotizing fasciitis?

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

88. Which one is considered as a treatment method for improving the intestinal microbiota?

- a) Use of probiotics
- b) Use of prebiotics
- c) Use of antibiotics against intestinal pathogens
- d) Fecal microbiota transplantation

89. Which of the following bacteria does not have a capsule polysaccharide vaccine?

- a) *Neisseria Meningitidis*
- b) *Bordetella Pertussis*
- c) *Haemophilus influenzae*
- d) *Pneumococcus*

90. The infection caused by which bacteria cannot be treated with betalactomes?

- a) *Streptococcus pneumonia*
- b) *Meningococcus*
- c) *Mycoplasma pneumonia*
- d) *Haemophiluses*

91. Plague is transferred to human beings through which bacterium and carrier?

- a) *Yersiniapestisis* and flea
- b) *Borliapersica* and tick
- c) *Yersiniaenterocolitica* and mosquito
- d) *Yersiniapseudotuberculosis* and lice

Virology

92. *Buccavirus* belongs to which of the following virus groups?

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

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

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

94. Formaldehyde removes viral infections through interacting with

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

95. Which virus produces heterophilic antibody?

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

Anatomy

96- 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

97- Which of the following veins doesn't drain to the coronary sinus?

- a) Great cardiac
- b) Middle cardiac
- c) Ant. cardiac
- d) Small cardiac

98- Which of the following arteries goes through the gastrosplenic ligament?

- a) Short gastric
- b) Left gastroepiploic
- c) Splenic
- d) Gastroduodenal

99- Sympathetic chain passes through to the abdomen.

- a) Under the Lateral arcuate ligament
- b) Under the Medial arcuate ligament
- c) Esophageal opening
- d) Aortic opening

100- 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

101- Blood supply of ascending colon is carried out by.....

- a) Right colic artery
- b) Middle colic artery
- c) Left colic artery
- d) Gastroduodenal

102- Internal spermatic fascia is continuous of the

- a) Transverse abdominal muscle
- b) Transversalis fascia
- c) Int. abdominal muscle
- d) Int. abdominal fascia

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

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

104- 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

105- 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

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

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

107- 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.

108- 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

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

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

110-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

111-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

112-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

113-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

114-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

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

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

116- Parasympathetic fibers of oculomotor originate from:

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

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

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

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

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

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

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

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

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

121. 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

122. 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

123. 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

Nutritional Sciences

124- A deficiency of is one of the world's most common preventable causes of mental retardation.

- a) Zinc
- b) Iodine
- c) Selenium
- d) Magnesium

125-Two nutrients needed in large amounts during pregnancy for rapid cell proliferation are:

- a) Vitamin B12 and Vitamin C
- b) Vitamin B6 and Calcium
- c) Folate and Vitamin B12
- d) Copper and zinc

126- Vegetable and fish oils are rich in:

- a) Unsaturated fat
- b) Saturated fat
- c) Cholesterol
- d) Trans – fatty acids

127- A fiber-rich diet may help to prevent or control :

- a) Diabetes
- b) Cardiovascular diseases
- c) Constipation
- d) All of the above

128. Excess consumption of which of the following fats results in the highest level of LDL cholesterol?

- a) Dietary cholesterol
- b) Strolls
- c) Saturated fatty acids
- d) Trans-fatty acids

129. A 30-year-old woman is 68kg and 155cm high. Her BMI is calculated as $28.3\text{g}/\text{m}^2$. How do you evaluate her weight?

- a) Overweight
- b) Grade 1 obesity
- c) Normal range
- d) Grade 2 obesity

Embryology

130-which one is related to the 9th day of development?

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

131- Secondary villus does not have.....

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

132-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

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

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

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

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

135. 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

Histology

- 136- Which one participates in receptor-mediated endocytosis?**
- a) Cadherin
 - b) Actin
 - c) Tubulin
 - d) Clathrin
- 137- Which one has keratinized stratified squamous epithelium?**
- a) Esophagus
 - b) Vagina
 - c) Urinary bladder
 - d) Hard palate
- 138- Which one is found in bone canalicules?**
- a) Osteoblast process
 - b) Osteocyte process
 - c) Blood capillary
 - d) Nerve fiber
- 139- To which nerve cell is the Schmidt-lantermann cleft related?**
- a) Microglia
 - b) Astrocyte
 - c) Satellite
 - d) Schwann
- 140- In which part of muscular tissue is the Nebulin protein seen?**
- a) Sarcomere
 - b) Intercalated disc
 - c) Dense body
 - d) Reticulum sarcoplasmic
- 141- In which part of liver is the Ito cell seen ?**
- a) Disse space
 - b) Portal space
 - c) Sinusoid wall
 - d) Bill canalicule
- 142- Which cell forms the filtration slit in the kidney?**
- a) Mesengeal
 - b) Podocyte
 - c) Macula densa
 - d) Juxtglomerular

143. 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

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

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

145. 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

Public Health

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

- a) Satellite villages- main village- health center – general hospital
- b) Main village- health center- College hospital of the central province
- c) Main village- health center- general hospital- College hospital of the central province
- d) Satellite villages- main village- health center- hospital

147- What is the first step in changing behavior?

- a) Belief in behavior change
- b) Awareness of the benefits of new behavior
- c) Awareness of the consequences of past behavior
- d) All of the above

148- Which is not correct about breast milk?

- a) Exclusive breastfeeding has a contraceptive effect up to 98%
- b) Reduces the incidence of breast cancer in the mother
- c) Lacto ferine reduces the risk of infection in infants
- d) Breastfeeding has a protective effect against osteoporosis

149- Which of the following does not represent the necessity to use emergency contraception?

- a) Sex Rape
- b) Forgetting a combination pill for 3 times
- c) Forgetting breastfeeding pills for more than 3 hours
- d) Use of natural contraceptive method

150- What is the most appropriate age for starting complementary feeding in infants?

- a) Four to six months
- b) End of four months
- c) End of six months
- d) End of five months

151- 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

152- 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

153- 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

154- 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

155. 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

156. 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 super importance in their early diagnosis?

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

Genetics

157- Li-Fraumeni syndrome is mostly caused by an inherited mutation in thegene.

- a) *p53*
- b) *RB*
- c) *K ras*
- d) *ABL(Abelson)*

158- What is the inheritance pattern of the following diseases(from left to right): Achodroplasia, Huntington , hemophilia and Schizophernia

- a) Autosomal recessive, Autosomal recessive, X-linked recessive, Multifactorial
- b) Autosomal dominant, Autosomal dominant, X-linked recessive, Multifactorial
- c) Autosomal dominant, Multifactorial, Autosomal recessive, Autosomal dominant
- d) Autosomal recessive, Autosomal dominant, X-linked recessive, Autosomal recessive

159- Which diagnostic method is recommended when a therapeutic abortion is not allowed?

- a) Amniocentesis
- b) Pre-Implantation Genetic Diagnosis
- c) Chorionic Villus Sampling
- d) Cordocentesis

160 -In autosomal dominant inheritance, in a family with only one affected parent, what would the chance of disease occurrence in children be?

- a) 0%
- b) 25%
- c) 50%
- d) 75%

161- Which of the following diseases is not the result of three-nucleotide expansion repetition?

- a) Huntington disease
- b) Myotonic dystrophy type I
- c) Fragile X syndrome
- d) Marfan syndrome

162. Loss of Heterozygosity in the long arm of the 22 chromosome leads to which of the following conditions?

- a) Osteosarcoma and Retinoblastoma
- b) Meningioma and Neurofibroma type 2
- c) Wilm's Tumor and breast carcinoma
- d) Colorectal carcinoma and Renal carcinoma

Immunology

163- Which of the following is correct about the function of terminal deoxy nucleotide transferase (TdT) in induction of antibody diversity?

- a) Addition of palindromic sequence to the rearranged gene segments
- b) Substitution of nucleotide in the joining regions
- c) Joining of the variable gene segments of the heavy and light chains
- d) Addition of new nucleotides to the rearranged gene segments

164- Lymphoid follicles are visible in all of the following lymphoid organs, except?

- a) spleen
- b) Thymus
- c) Lymph node
- d) Peyer's patches

165- Which of the following is the correct order of serum levels of antibody?

- a) IgG>IgA>IgM>IgD
- b) IgA>IgG>IgD>IgM
- c) IgG>IgM>IgA>IgE
- d) IgM>IgG>IgA>IgE

166- All of the following are the features of an allergen, except?

- a) Protein structure
- b) Low molecular weight
- c) Low dose
- d) Low solubility

167- In which of the following condition is there a possibility for induction of hemolytic disease of new born (HDN) due to ABO incompatibility?

- a) Mother A⁻ and fetus A⁺
- b) Mother O⁺ and fetus A⁺
- c) Mother O⁻ and fetus O⁺
- d) Mother B⁻ and fetus AB⁺

168- Herceptin, a monoclonal antibody which is used for the treatment of breast cancer, targets which of the following molecules?

- a) CD19
- b) CD20
- c) HER-2
- d) PD-1

169. In which of the following cases is the type of excessive allergy leading to the disease NOT correct?

- a) Multiple sclerosis – type 2
- b) Type 1 diabetes – type 4
- c) Myasthenia Gravis – type 2
- d) Serum disease – type 3

170. Which of the following molecules plays a role in the survival and development of a tumor by inhibiting immune responses?

- a) CTLA4
- b) B7
- c) CD28
- d) CD19

171. Which of the following drugs enhances the survival of a graft through inhibiting calcineurin and subsequent inhibition of T cell activity?

- a) Cyclosporine A (CsA)
- b) Intra-Venous Immunoglobulin (IVIG)
- c) Mycophenolate Mofetil (MMF)
- d) CTLA4-Ig

Medical English

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

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

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

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

174- 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

175- Myelogenous leukemia is a condition that originates in the

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

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

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

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

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

178- 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

179- 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

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

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

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

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

A. Vocabulary Items:

182- Patients are advised to avoid caffeine, smoking, and alcohol which the symptoms of gastric ulcers.

- a) intensify
- b) alleviate
- c) obstruct
- d) contain

183 - Physical exercise; if sufficiency intensive and regular; can the various phenomena of ageing such as the decrease in muscle mass.

- a) overact
- b) overwhelm
- c) overuse
- d) override

184 - Unresolved legal and ethical issues impose considerable on the exchange of medical records in electronic form between care providers.

- a) solutions
- b) constrains
- c) premiums
- d) encouragements

Medical Biology

185. 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

186. Which DNA polymerase is responsible for the replication of the leading strand of DNA in eukaryotes?

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

187. In which stage (phase) of the cell cycle does DNA replication occur?

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

188. Choose the incorrect statement about a double stranded DNA molecule.

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

189. Which factor is not a termination codon in translation of an mRNA sequence?

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

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

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

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

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

192. A polysome could be best described as

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

193. Which of the following shows the Kozak sequence?

- a) GCCAUCG
- b) AUACGCA
- c) AACAUUGG
- d) GCCAUUC

194-The Shine-Dalgarno sequence is

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

Epidemiology

195- What is the commonality of incidence on an individual basis (cumulative incidence) and on an individual-time basis (incidence density)?

- a) The size obtained in both is between zero and one.
- b) They provide absolute risk value.
- c) They calculate the relative risk directly.
- d) They cannot be calculated based on population estimates.

196- Which type of screening bias results from failure to follow up groups at a comparable stage in the natural course of the disease?

- a) Detection Bias
- b) Lead time Bias
- c) Length Bias
- d) Recall bias

197- Using the epidemic curve, we can judge the following except:

- a) The temporal relationship between exposure and probable sources
- b) Seasonal or seasonal pattern of a particular infection
- c) The presence of a common source or progressive spread of the disease
- d) Spatial relationship between exposure and probable sources

198- What is the basic approach to problem solving in epidemiology?

- a) Comparison and inference
- b) Description and distribution of volume of health problems
- c) Identification of the etiological factors of the diseases
- d) Provision of basic data for planning

199- When our study results show that there is no statistically significant difference between the effects of the two treatments but in fact there is a difference, what is this termed in epidemiology?

- a) Type I error
- b) Type II error
- c) Percentage of confidence
- d) Statistical power of the test

200. In a case-control study, the proportion of a disease in individuals encountering it is twice compared to those with no encounter. With a confidence level of 95 percent if it does not include the value of 1, what is the interpretation of its relative risk?

- a) Positive and possibly causal
- b) No relationship
- c) Preventive encounter
- d) Not possible to interpret