Physiology MCQs

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Apologies for missing/nonsense/repeat questions, and remember to read the question carefully in the real exam, because different variations of the same questions occur.

1) With regard to lung structure and function:
    a) the lung has a surface area of 100-150 square meters
    b) each red cell spends 0.75 seconds in the capillary network
    c) The bronchial circulation supplies the airways to the alveolar ducts
    d) A normal breath (500ml) requires a distending pressure > 3cm water
    e) The alveolar ducts have very few alveoli

2) With regard to ventilation of the lungs:
    a) The volume of gas remaining in the lungs after maximal expiration is called the functional residual capacity
    b) Total ventilation in the normal lung is approx 7.5L/min (assuming respiratory rate 15/min)
    c) Alveolar ventilation is directly proportional to alveolar pCO2
    d) Physiologic dead space can be measured using Fowlers method
    e) Anatomic dead space can be measured using Bohr's method

3) With respect to gas diffusion in the lungs
    a) Rate of gas diffusion is directly proportional to alveolar wall thickness
    b) CO2 diffuses 4 times as rapidly as O2 due to smaller molecular weight
    c) Transfer of CO is diffusion limited
    d) High altitude increases the rate of O2 diffusion
    e) Resistance to diffusion from O2/Hb reaction is minimal compared to resistance from traversing the alveolar and RBC membrane

4) With respect to pulmonary blood flow and metabolism
    a) The mean pressure in the main pulmonary artery is about 15mmHg
    b) Pulmonary vascular resistance increases with increased pulmonary artery pressure
    c) In Zone 2 of the lung pressures are PA>Pa>Pv
    d) Hypoxic vasoconstriction depends on central nervous connections
    e) Histamine is metabolized by interstitial hitaminases

5) In ventilation-perfusion relationships in the lung
    a) The 4 causes of hypoxaemia are VQ mismatch, shunt, diffusion and hyperventilation
    b) The apex of the lung has a low VQ ratio compared to the base
    c) The Respiratory Quotient is a constant
    d) In VQ mismatch increased ventilation is very effective at increasing arterial PO2
    e) The PiO2 of air at sea level is 150mmHg

6) In gas transport by the blood
    a) Increased [H+] shifts the O2 saturation curve to the left
    b) Normal arterial blood has 0.03 ml O2 dissolved in each 100ml of blood
    c) The Haldane Effect describes increased CO2 uploading in the presence of reduced Hb
    d) CO has 340 times the affinity for Hb than O2
    e) CO poisoning is an example of hypoxic hypoxia

7) With regard to the mechanics of breathing
    a) Muscles of inspiration include the diaphragm and internal intercostals
    b) The slope of the pressure volume curve measures resistance
    c) Surfactant is produced by Type II alveolar epithelial cells

d) At rest the alveolar pressure is -1 cm H_2O
e) In emphysema lung compliance is reduced

8) In control of ventilation
   a) The central chemoreceptors respond to decreases in pO_2 and pH
   b) In humans the aortic bodies do not respond to a fall in arterial pH
   c) Stimulus for ventilation from the carotid bodies is via the Vagus nerve
   d) The Pneumotaxic Centre, is in the ventral medulla
   e) Peripheral chemoreceptors respond to $pO_2 < 80$ mmHg

9) When exercising
   a) The increase in cardiac output leads to a fall in pulmonary vascular resistance
   b) The O_2 dissociation curve moves to the left due to a rise in pCo_2 and temperature
   c) In humans the haematocrit rises due to RBC ejection from the spleen
   d) Static exercise does not produce a large increase in systemic arterial pressure
   e) At very high work levels PCO_2 rises and PO_2 falls

10) With regard to respiratory function at high altitude
   a) systemic pH is normalized before CSF pH
   b) people born at high altitude have an increased ventilatory response to hypoxia
   c) the most important feature for acclimatization is hyperventilation
   d) Although pO_2 is normal, O_2 concentration of the arterial blood is reduced
   e) Adaptation includes left heart hypertrophy

1)Total body water

a) increases with age
b) is typically 45% of bodyweight
c) is typically 63 % of body weight
d) is greater in men than women
e) is composed largely of interstitial fluid

2) With the addition of 1 litre of 5% dextrose intravenously to which compartment is it mainly distributed

a) intracellular
b) interstitial
c) extracellular
d) transcellular
e) vascular

3) Regarding the composition of ECF versus ICF . ECF has

a) decreased magnesium
b) increased phosphate
c) increased potassium
d) decreased sodium
e)

4) ECF compared to ICF has

a) increased potassium
b) decreased phosphate
c) increased phosphate
d) decreased sodium

e)

5) A fit healthy 20 y/o male lose 1 litre of blood

a) the haematocrit falls immediately
b) this is a 35 % blood loss
c) plasma protein synthesis is not increased
d)
e)

6) Anion gap is

a) sodium + potassium – bicarbonate
b) due to organic protein ions and phosphate ions
c) increased in hyperchloremic metabolic alkalosis
d)
e)

7) Ratio of HCO3- ions to carbonic acid at pH of 7.1 is

a) 1
b) 10
c) 0.1
d) 100
e) 0.01

8) With the loss of 1 litre of blood

a) haematocrit falls immediately
b) iron resorption is not increased
c) this equals 35 % plasma volume loss
d) baroreceptors increase parasympathetic output
e) red cell mass normalises within 2 weeks

9) What is the hydrogen ion concentration at a pH of 7.4

a) 0.0001meq/L
b) 0.00004 meq/L
c) 0.0004 meq/L
d) 0.0002 meq/L
e) 0.00002 meq/L

10) Regarding basic physiological measures all of the following are true EXCEPT

a) osmolarity is the number of osmoles per litre of solution
b) pH is the log to the base 10 of the reciprocal of hydrogen ion concentration
c) carbon has a molecular mass of 12 dalton
d) osmolarity is measured by freezing point depression
e) one equivalent of Na+ is 23g/L

11) With regards to membrane potential

a) the Donan effect relies on non-diffusable ions
b) the exterior of the cell is negative with respect to the interior
c) the membrane potential tends to push chloride ions out of the cell
d) potassium leaks out against a concentration gradient
e) it can be derived by measuring the chloride concentration and using the Nernst equation

12) Na+/K+ ATPase

a) hydrolyses ADP to ATP
b) extrudes 3 Na+ from the cell for every 2 K+ in
c) consists of an alpha, beta and gamma sub-unit
d) lies on the ECF side of the membrane
e) is potentiated by the drug ouabain

13) With regard to the action potential of a neuron with an RMP of –70mV

a) the firing level is likely to be-30mV
b) the overshoot will not extend much past 0mV
c) the absolute refractory period occupies only 10% of repolarisation
d) chloride influx will restore the membrane potential
e) increasing the external chloride ion concentration increases the RMP

14) In skeletal muscle

a) the immediate energy source for contracting is GTP
b) troponin T inhibits the interaction with myosin
c) the myosin is contained entirely within the A band
d) the heads of actin contain the ATP hydrolysis site
e) tropomysin is made up of 3 sub-units

15) In smooth muscle the alternating sinusoidal RMP is due to

a) calcium influx
b) sodium influx
c) potassium influx
d) chloride influx
e) potassium efflux

16) The special feature of the contraction of smooth muscle is that

a) actin is not involved
b) myosin is not involved
c) calcium is not involved
d) ATP is not the energy source
e) The membrane potential is unstable

17) With respect to the cardiac action potential

a) unlike nerve action potential there is no overshoot
b) plateau and repolarisation may be 200 times larger than depolarisation phase
c) the resting membrane potential is –90mV
d) sodium channels are progressively inactivated in phase 2
e) it is usually 20 ms in duration

18) Upon stretching intestinal smooth muscle

a) it hyperpolarises
b) the tension is due to elastic forces only
c) it depolarises
d) relaxation occurs
e) it is an example of a multi-unit smooth muscle

19) Upon skeletal muscle contraction

a) the H zone increases
b) the I zone decreases

c) the A zone decreases
d) the A and I zone increase
e) none of the above

20) Which of the following is the largest

a) fibrinogen
b) haemoglobin
c) albumin
d) gamma globulin
e) alpha 1 antitrypsin

21) The liver synthesises all of the following EXCEPT

a) albumin
b) fibrinogen
c) gamma globulins
d) complement
e) erythropoetin

22) The part of the cardiovascular system with the largest cross sectional surface area is

a) arteries
b) capillaries
c) large veins
d) aorta
e) vena cava

23) All of the following are true of skeletal and cardiac muscle EXCEPT

a) they both have striations
b) they have high resistance gap junctions
c)
d)
e)

24) With respect to smooth muscle, calmodulin

a) acts to curtail contraction
b) acts to stimulate contraction
c) acts to limit relaxation
d) acts to stimulate relaxation
e)

25) The R wave of the ECG is due to

a) calcium influx
b) chloride influx
c) sodium influx
d) potassium efflux
e) chloride efflux

26) Which statement concerning iron is FALSE

a) iron is absorbed in the duodenum
b) it is the major component of myoglobin

c) excess can de associated with diabetes
d)
e)

27) Regarding iron

a) it is absorbed in the duodenum
b) 70 % is present in myoglobin
c) a deficiency can cause diabetes
d) the amount absorbed ranges between 10-20%
e) mobilferin binds less iron in iron deficiency

28) Haemoglobin

a) the globin portion is a porphyrin
b) the difference between haemoglobin and myoglobin is haeme
c) foetal haemoglobin has no beta chains
d)
e)

29) With a fall in systemic blood pressure

a) GFR falls more than renal plasma flow
b) There is efferent arteriolar constriction
c) The filtration fraction falls
d) There is no efferent arteriolar constriction
e) GFR does not change

30) What is the filtration fraction of the kidney (GFR/RBF)

a) 0.1
b) 0.2
c) 0.3
d) 0.4
e) 0.5

31) The osmolarity of the pyramidal papilla is

a) 400
b) 800
c) 1200
d) 1600
e) 2000

32) What is the major stimulus for the secretion of ADH

a)
b)
c)
d)
e) hyperosmolarity

33) Hypokalemic metabolic alkalosis is associated with

a) carbonic anhydrase inhibition
b) diuretic use

c) chronic diarrohea
d)
e)

34) Which of the following would be best used for measuring GFR

a) radiolabelled albumin
b) inulin
c) deuterium oxide
d) tritium oxide
e) mannitol

35) Given the following values calculate the GFR

Plasma PAH 90: Urine PAH 0.3: Plasma inulin 35: urine inulin 0.25: Urine flow 1 ml/min: Hct 40%

a) 120
b) 150
c) 180
d) 240
e) 400

36) Where in the renal tubules does the intratubular and interstitial osmolality hold the same values

a) thick ascending loop of Henle
b) thin descending loop of Henle
c) distal convoluted tubule
d) collecting duct
e) none of the above

37) With respect to the GFR

a) it can be equated to creatinine clearance
b)
c)
d)
e)

38) With respect to the renal handling of potassium

a)
b)
c)
d) potassium is reabsorbed actively in the proximal tubule
e)

39) In the kidneys sodium is mostly reabsorbed with

a) chloride
b) bicarbonate
c) glucose
d) potassium
e) calcium

40) In chronic acidosis the major adaptive buffering system in the urine is

a) carbamino compounds
b) bicarbonate

c) ammonium
d) histidine residues
e) phosphate

41) The following blood gases represent pH 7.32, pCO2 31mmHg and HCO3-20mmol/L

a) primary metabolic acidosis
b) primary respiratory alkalosis
c) a picture consistent with diuretic abuse
d) mixed respiratory acidosis, metabolic acidosis
e) partly compensated metabolic acidosis

42) The following gases are associated with

PCO2 45 pH 7.57 HCO3- 30

a) acetazolamide treatment
b) diuretic use
c) diarrhoea
d)
e)

43) The absorption of sodium in the proximal tubule

a) reabsorbs 80% of the filtered sodium
b) causes increasing hypertonicity
c) is powered by Na+/H+ ATPase
d) shares a common carrier with glucose
e) all of the above

44) With regard to osmotic diuresis

a) urine flows are much less than in a water diuresis
b) vasopressin secretion is almost zero
c) the concentration of the urine is less than plasma
d) increased urine flow is due to decreased water reabsorption in the proximal tubule and loop of Henle
e) osmotic diuresis can only be produced by sugars such as mannitol

45) Renal acid secretion is affected by all the following EXCEPT

a) PaCO2
b) K+ concentration
c) Carbonic anhydrase
d) Aldosterone
e) Calcium

46) Glucose reabsorption in the kidney is

a) a passive process
b) closely associated with potassium
c) the same in all nephrons
d) occurs predominantly in the distal tubule
e) resembles glucose reabsorption in the intestine

47) Which of the following is the most permeable to water

a) thin ascending loop of Henle

b) distal convoluted tubule
c) thin descending loop of Henle
d) cortical portion of collecting tubule
e) thick ascending limb of the loop of Henle

48) With regard to urea

a) it moves actively out of the proximal tubule
b) it plays no part in the establishment of an osmotic gradient in the medullary pyramids
c) all of the tubular epithelium is impermeable to urea except the inner medullary portion of the collecting duct
d) a high protein diet reduces the ability of the kidney to concentrate urine
e) vasopressin has no effect on the movement of urea across tubular epithelium

49) In a patient with a plasma pH of 7.1 the HCO_3^-/H_2CO_3 ratio is

a) 20
b) 10
c) 1
d) 0.1
e) 0.2

50) Which of the following best describes the changes found in uncompensated respiratory alkalosis

a) decreased pH, HCO_3^- and $PaCO_2$
b) increased pH and lowHCO_3^- and $PaCO_2$
c) decreased pH and HCO_3^- and normal $PaCO_2$
d) increased pH low HCO_3^- and normal $PaCO_2$
e) decreased pH increased HCO_3^- and normal $PaCO_2$

51) Pulmonary vascular resistance

a) increases as venous pressure rises
b) is increased at both low and high lung volumes
c) is decreased by histamine
d) increases with recruitment
e) is increased by muscular pulmonary arterioles which regulate flow to various regions of the lungs

52) Compliance of the lung is reduced by all the following EXCEPT

a) fibrosis
b) consolidation
c) emphysema
d) alveolar oedema
e) high expanding pressures

53) In control of ventilation the medullary chemoreceptors respond to decreased

a) O_2 tension
b) CO_2 tension
c) H^+ concentration
d) H^+ conc and CO_2 tension
e) H^+conc, CO_2 tension and PO_2

54) Laplaces law

a) explains the observed elastic recoil of the chest
b) explains the tendency of small alveoli to collapse
c) determines the change in volume per unit change in pressure
d) tells us the pressure is inversely proportional to tension
e) all of the above

55) The Haldane effect refers to

a) the shape of the CO_2 dissociation curve
b) the carriage of O_2 according to Henrys law
c) the chloride shift that maintains electrical neutrality
d) the dissociation constant for the bicarbonate buffer system
e) the increased capacity for deoxygenated blood to carry CO_2

56) The systemic circulation peripherally has

a) decreased red cell size
b) decreased pH
c) increased chloride
d) decreased HCO_3^-
e)

57) The major mechanism for transporting CO_2 in the blood is

a) carboamino groups
b) dissolved in blood by Henrys law
c) haemoglobin
d) bicarbonate
e) none of the above

58) The haemoglobin dissociation curve moves up and to the left with

a) increased H^+ concentration
b) hypothermia
c) increased 2,3 DPG
d) hypercarbia
e) all of the above

59) With regard to the distribution of pulmonary blood flow

a) typically there is a zone at the apex which is not perfused
b) the mean pulmonary arterial pressure is 8 mmHg
c) hypoxia leads to pulmonary dilation
d) the net balance of the Starling forces keep the alveoli dry

e) in some areas flow is determined by the arterial/alveolar pressure difference

60) With regard to pulmonary gas exchange

a) transfer of nitrous oxide is perfusion limited
b) diffusion is inversely proportional to the partial pressure gradient
c) the diffusion rate for CO2 is double that of O2
d) at altitude the profound systemic hypoxemia favours oxygen diffusion
e) transfer of O2 is diffusion limited

61) Which of the following is associated with the least increase in airway pressure

a) forced expiration
b) nasal breathing
c) very low lung volumes
d)
e)

62) Surfactant

a) increases compliance
b) is produced by type 1 pneumocytes
c)
d)
e)

63) A permanent inhabitant at 4,500 feet

a) has a high alveolar PO2
b) has a decreased 2,3, DPG
c) is highly sensitised to the effects of hypoxia
d) shows increased ventilation
e) may have a normal HCO3-

64) What is the PO2 of alveolar air with a CO2 of 64 and a respiratory quotient of 0.8

a) 35
b) 52
c) 69
d) 72
e) 80

65) What is the compliance of a lung if a balloon is blown up with 500ml of air with a pressure change from –5 to –10

a) 0.1
b) 1
c) 10
d) 100
e) 200

66) When walking at a steady pace the increase in respiratory rate is due to

a) decreased PO2
b) increased CO2
c) increased pH
d) increased pH CSF
e) none of the above

67) Which of the following are a cause of increased pulmonary vascular resistance

a) altitude
b) forced expiration
c)
d)
e)

68) What is the maximal volume left in the lung after maximal forced expiration

a) 0.5
b) 1.0
c) 2.0
d) 3.0
e) 3.5

69) Compliance is

a)
b)
c)
d) dependent on lung volume
e)

70) Carotid body stimulation occurs with

a) decreased blood pressure
b) decreased PaO2
c) increased PaO2
d) increased arterial pH
e) increased blood pressure

71) Permanent high altitude is associated with all of the following EXCEPT

a) increased arterial blood HCO_3^-
b) increased arterial blood 2,3 DPG
c) increased pulmonary artery pressure
d) increased alveolar ventilation
e) could have a normal $PaCO_2$

72) Increased 2,3 DPG occurs with all the following EXCEPT

a) chronic hypoxia
b) acidosis
c) androgens
d) thyroid hormones
e) none of the above

73) The anatomic dead space

a) varies with minute ventilation
b) is typically 150 mls
c) will increase in COPD
d) is alveolar minus the physiological dead space
e) all of the above

74) EDRF

a) shares a similar mechanism of action to GTN
b) activates adenyl cyclase

c) is the common pathway in the action of adenosine and histamine
d) antagonises the action of thromboxane
e) is synthesised by a magnesium dependent enzyme

75) All of the following explain venous blood flow EXCEPT

a) oncotic pressure gradient
b) smooth muscle contraction
c) skeletal muscle contraction
d) the pumping of the heart
e) intrathoracic pressure variations

76) All capillaries have

a) a diameter of 10-20 mm
b)
c)
d)
e) a basement membrane

77) Regarding Poiselle-Hagen flow in vessels , the flow in a vessal is proportional to

a) pressure difference between the two ends
b) radius
c) viscosity
d)
e)

78) Which of the following have a specific beta effect on smooth muscle contraction

a) adrenaline
b) noradrenaline
c) isoprenaline
d)
e)

79) With respect to isovolumetric contraction of the ventricle it is associated with

a) decreasing aortic pressure
b) aortic back flow
c) open mitral and tricuspid valves
d) open aortic and pulmonary valves
e) none of the above

80) The heat lost by the body at 21 degrees is due to

a) sweating
b) defecation
c) urination
d) radiation/conduction
e)

81) The poiseuille-Hagen formula tells us that

a) longer tubes can sustain higher flow rates
b) flow is directly proportional to resistance
c) flow will be doubled by a 20 % increase in vessel diameter
d) turbulent flow is predicted in high velocity vessels
e) why the venous capacitance is important in cardiac output

82) The greatest percentage of the circulating volume is contained within

a) capillaries
b) large arteries
c) pulmonary circulation
d) the heart
e) venules and veins

83) Which of the following organs receive the largest amount of the bloods circulation per kg of tissue

a) heart
b) kidney
c) brain
d) liver
e) adrenal

84) With regards to CSF composition

a)
b)
c)
d)
e) it is similar to the ECF of the brain

85) Myocardial contractility is decreased by all of the following EXCEPT

a) acidosis
b) barbituates
c) hypercarbia
d) bradycardia
e) glucagon

86) Cardiac output is decreased by

a) sleep
b) excersise
c) pregnancy in the first trimester
d) sitting from a lying position
e) all of the above

87) With regard to the cardiac cycle

a) phase 1 represents atrial systole
b) the aortic valve opens at the beginning of phase 2
c) the T wave of the ECG occurs during phase 4
d) the second heart sound is due to mitral valve closure
e) the c wave is due to tricuspid valve opening

88) With regard to the 12 lead ECG

a) lead 11 is at 90 degrees for vector analysis
b) V2 is placed in the 3rd left interspace
c) Septal Q waves are predictable in V2
d) +130 degrees is still a normal axis
e) the standard limb leads record the potential difference between 2 limbs

89) With regard to cardiac action potentials

a) cholinergic stimulation increases the slope of the pre-potential
b) the resting membrane potential is increased by vagal stimulation
c) phase 0 and phase1 are steepest in the AV node
d) the Twave is the surface ECG manifestation of phase 1
e) the action potential in the AV node is largely due to calcium fluxes

90) The most rapid conduction of electrical impulses occurs in the

a) AV node
b) Atrial pathways
c) Bundle of His
d) Purkinje system
e) Ventricular system

91) Which of the following are not part of the compensatory mechanism activated by haemorrhage

a) increased erythropeitin
b) increased insulin secretion
c) increased vasopressin secretion
d) increased glucacorticoid secretion
e) increased renin secretion

92) Cardiac output is affected by all of the following EXCEPT

a) exercise
b) eating
c) sleep
d)
e)

93) A young fit man goes from sitting to running with full exertion. His stroke volume will increse by

a) 400%
b) 700%
c) 2000%
d) less than 200%
e) 1000%

94) With respect to the cardiac cycle

a)
b)
c)
d) isovolumetric contraction phase immediately follows the phase of atrial systole
e)

95) Which of the following is a compensatory response to shock

a) decreased ADH
b)
c)
d) increased thoracic pumping
e)

96) With regard to the renin-angiotensin system

a) prorenin has 50% the action of renin
b) renin secretion will be increased by propranolol
c) angiotensinogen is secreted by the liver
d) angiotensin 1 is a potent vasoconstrictor
e) angiotensin 11 acts at receptors at the nucleus

97) Atrial natriuretic peptide

a) stimulates the secretion of ADH
b) secretion will be decreased by scuba diving
c) is a typical dual chain helix structure
d) stimulates erythropoeitin production
e) has generally the opposite actions to angiotensinII

98) During the valsalva manoeuvre bradycardia occurs

a) at the onset of straining
b) as the intrathoracic pressure reaches a maximum
c) as the result of an initial increase in cardiac output
d) when the glottis is opened and intrathoracic pressure returns to normal
e) if the patient has autonomic insufficiency

99) The 'c' wave of the jugular pulse is due to

a) atrial systole
b) atrial contraction against a closed tricuspid valve in complete block
c) the increase in intrathoraci pressure during expiration
d) transmitted pressure due to tricuspid bulging in isovolumetric contraction
e) the rise in pressure before the tricuspid valve opens in diastole

100) All of the following produce vasodilation EXCEPT

a) local K+ accumulation
b) systemic hypoxia
c) lactate
d) increased CO2 tension
e) decreased pH

101) Under basal conditions the percentage of the hearts caloric needs met by fat is

a) 70%
b) 60%
c) 50%
d) 40%
e) 30%

102) Baroreceptors

a)
b)
c)
d)
e)

103) Bradykinin

a) is named after it's effect on the heart
b) stimulates cutaneous smooth muscle constriction

c) stimulates GI smooth muscle constriction
d)
e)

104) With respect to absorption in the gut

a)
b)
c)
d) vitamins A, D and K are absorbed in the small intestine
e)

105) With regards to cholesterol which of the following is FALSE

a) it is present in animals
b) plants contain cholesterol
c) it is essential to the structure of the cell membrane
d) it is a precursor to bike acids
e)

106) Concerning pancreatic secretions

a) the pancreas secretes gastrin
b) pH is 6.0
c) it contains anti-trypsin molecules
d) it contains an enzyme converting polysaccharides to monosaccharides
e)

107) Gastric emptying

a) takes 1-3 hours
b)
c)
d)
e)

108) The majority of water ingested or secreted in the bowel is usually absorbed in the

a) stomach / duodenum
b) jejenum
c) ileum
d) ascending colon
e) descending colon

109) With regard to the parasympathetic nerve supply of the gut it is

a) essential
b) non-essential
c) modulatory
d) passive
e)

110) Which of the following does not utilise the same receptor in its mechanism of action

a) insulin
b) glucagon
c) PTH

d) ACTH
e) They all have the same mechanism of action

111) Anterolateral dissection of the spinal cord is associated with loss of

a) ipsilateral loss of pain
b) ipsilateral loss of temperature
c) ipsilateral hyperreflexia
d) contralateral vibration loss
e)

112) Which of the following is a nutritionally essential amino acid

a) glycine
b) histidine
c) tryptophan
d) tyrosine
e) cysteine

113) With regard to adrenal physiology

a) glucacorticoids exert their action by cGMP activation
b) cortisol has negligible mineralocorticoid activity
c) the largest steroid molecules are the oestrogens
d) dopamine is secreted by the adrenal medulla
e) the only glucacorticoid secreted in significant amounts is cortisol

114) Insulin secretion is stimulated by all of the following EXCEPT

a) mannose
b) glucagon
c) noradrenaline
d) leucine
e) acetylcholine

115) Insulin

a) is secreted by the A cells in the islets of Langerhans
b) is a triple helical polypeptide
c) is synthesised as a prohormone
d) binds at cytoplasmic receptor sites
e) causes K+ to leak out of cells

116) Lymph

a) Has an increased protein content compared with plasma
b) Has a differing protein in different areas
c) Fats cannot enter lymph
d) Has no lymphocytes
e) Contains no clotting factors

117) The hypothalamus is essential for

a)
b)
c)
d) renal function
e)

118) With regard to thyroid physiology

a) T3 and T4 are metabolised in the spleen and bone marrow
b) T3 and T4 bind and act at the same cell membrane receptor
c) T4 is synthesised from tyrosine held in thyroglobulin
d) T4 is more active than T3
e) T3 is bound to a complex polysaccharide in the plasma

119) A deficiency of parathyroid hormone is likely to lead to

a) hypophos phatemia
b) the formation of kidney stones
c) a self limiting illness
d) neuromuscular hyperexcitability
e) cystic bone disease

120) Alpha 1 stimulation will lead to

a) contraction of bladder trigone and sphincter
b) bronchial smooth muscle contraction
c) pupillary constriction
d) increased AV conduction
e) skeletal muscle vasodilation

121) The sensation for cold

a) is relayed by the thalamus
b) is transmitted by the dorsal columns
c) is an uncrossed sensory modality
d) is mediated by substance P fluxes
e) is mediated by A alpha fibres

122) MAO breaks down

a) seretonin
b) tryptophan
c) glycine
d) GABA
e) Glutamate

123) In the formation of adrenaline

a) COMT produces adrenaline from noradrenaline
b) Phenylalanine is converted to tyrosine
c) Seretonin is a vital intermediate step
d) Dopamine is two noradrenaline molecules side by side
e) Dopa is formed from dopa decarboxylase

124) (True) acetylcholinesterase

a) forms acetylcholine from acetate
b) is produced by the liver
c) functions only in nerve endings
d) is involved in GABA metabolism
e) none of the above

125) All the following are neurotransmitters EXCEPT

a) seretonin
b) glutamate
c) adenosine
d) insulin
e) glucagon

126) Inhibitory neurotransmitters increase the post synaptic conductance to

a) sodium
b) chloride
c) sodium and magnesium
d) magnesium
e) all of the above

127) Intrinsic factor

a)
b)
c)
d) is produced by the gastric parietel cells
e)

128) Protein digestion

a) commences upon activation of saliva
b)
c)
d)
e) is largely completed by the small intestine

129) The major inhibitory substance of the spinal cord is

a) GABA
b) Glutamate
c) Aspartate
d) Glycine
e) None of the above

130) Within the bladder

a) the first urge to void is at 400 mls
b) intravesical pressures can remain constant over a range of volumes
c) voiding reflex is dependent on sympathetic control
d) parasympathetic reflex controls external urethral sphincter
e)

131) Regarding glucagon

a) it is secreted by the pancreatic B cells
b) it increases glycogen formation
c) it has a half life 30 minutes
d) secretion is stimulated glucose

e) it stimulates insulin secretion

132) Which cells secrete intrinsic factor

a) G cells
b) Chief cells
c) Parietal cells
d) K cells
e) S cells

133) Where are the vitamins A, D, E and K absorbed

a) stomach
b) proximal small bowel
c) colon
d) distal small bowel
e) ileum

134) Regarding insulin

a) it increases protein catabolism in muscle
b) secretion is inhibited by somatostatin
c) secretion is stimulated by phenytoin
d) it causes decreased K+ uptake into adipose tissue
e) it causes decreased protein synthesis

135) Which is true of faeces

a) 50 ml is produced per day on average
b) it is chiefly formed from protein breakdown products
c) solids form 75% of its composition
d) the solid portion contains 30% bacteria
e) the brown colour is due to melanin