

TEST BANK



Scientific Team
الفريق العلمي

Done by: Volunteer

NOTE: MORE THAN ONE CHOICE MAY BE CORRECT !

الأسئلة يمكن شوي صعبة لأنها بتربط شغلات كثيرة مع بعض، وأكثر من خيار يكون صح، لكن هذا النمط هو الأقرب لأسئلة د.وليد وإن شاء الله إنه يجي بالامتحان منهم أو زيهم 😊

Chose all the correct answers:

1. An intravenous infusion of noradrenaline differs from one of adrenaline in that it:

- A. Acts on alpha adrenoceptors.
- B. Does not act on beta adrenoceptors.
- C. Raises total peripheral resistance.
- D. Increases cardiac output.
- E. Decreases skin blood flow.

2. Pancreatic glucagon:

- A. Is produced by the beta cells of the islets of Langerhans.
- B. Is a polypeptide.
- C. Output is inversely proportional to the blood glucose level.
- D. Has a half-life in the circulation of 3–4 hours.
- E. Increases the breakdown of liver glycogen.

3. During sleep there is a fall in the circulating level of:

- A. Cortisol.
- B. Insulin.
- C. Adrenaline.
- D. Antidiuretic hormone.
- E. Growth hormone.

4. Adrenocorticotrophic hormone (ACTH) secretion increase:

- A. When the median eminence of the hypothalamic is stimulated.
- B. When aldosterone blood level falls.
- C. When cortisol blood levels fall.
- D. In bursts during the night as the normal hour of wakening approaches.
- E. Following severe trauma.

5. Aldosterone secretion is increased by an increase in plasma:

- A. Volume.
- B. Osmolality.
- C. Potassium concentration.
- D. Renin concentration.
- E. ACTH concentration.

6. Glucocorticoid injections lead to increases in:

- A. Lymph gland size.
- B. Fibroblastic activity.
- C. Anabolic activity in muscle.
- D. Bone resorption.
- E. Membrane stability in mast cell and lysosomes.

7. Incorrect regarding cortisol:

- A. Is bound in the plasma to an alpha globulin.
- B. Is inactivated in the liver and excreted in the bile.
- C. Injections lead to a rise in arterial pressure.
- D. Inhibits release of ACTH from the anterior pituitary gland.
- E. Is released with a circadian variation so that cortisol blood levels peak in the morning.

8. Adrenaline secretion from the adrenal glands increases all the following except:

- A. Blood glucose level.
- B. Blood free fatty acid level.
- C. Blood flow to skeletal muscle.
- D. Blood flow to the splanchnic area.
- E. Release of renin in the kidneys.

9. Insulin?

- A. Stimulates release of free fatty acids from adipose tissue.
- B. Secretion tends to raise the plasma potassium level.
- C. Facilitates entry of glucose into skeletal muscle.
- D. Facilitates entry of amino acids into skeletal muscle.
- E. Secretion is increased by vagal nerve activity.

10. Adrenaline differs from noradrenaline in that it:

- A. Increases the heart rate when injected intravenously.
- B. Is the main catecholamine secreted by the adrenal medulla.
- C. Increases the strength of myocardial contraction.
- D. Is a more potent dilator of the bronchi.
- E. Constricts blood vessels in mucous membranes.

11. The chemical structure of insulin:

- A. Contains a sterol ring.
- B. Is identical in all mammalian species.
- C. Is such that it is effective when taken by mouth.
- D. Has been synthesized in the laboratory.
- E. Can be synthesized by bacteria.

12. Hormones secreted by the adrenal cortex:

- A. Include cholesterol.
- B. Are mostly bound to plasma proteins.
- C. Include sex hormones.
- D. Are excreted mainly in the bile after conjugation.
- E. Are essential for the maintenance of life.

13. During an oral glucose tolerance test the:

- A. Subject is given 5–10 grams of glucose.
- B. Plasma glucose should rise by less than 10 per cent from the fasting level.
- C. Plasma insulin should rise by about 100 per cent from the fasting level.
- D. Rise in plasma glucose is less than with intravenous administration.
- E. Rise in plasma insulin is less than with intravenous administration.

14. Inhibition of angiotensin-converting enzyme (ACE) decreases the:

- A. Formation of angiotensin II.
- B. Plasma renin level.
- C. Work of the heart.
- D. Circulating level of angiotensin I.
- E. Total body potassium.

15. The plasma level of adrenocorticotrophic hormone (ACTH):

- A. Is normally maximal around midnight.
- B. Is regulated mainly by the blood cortisol level.
- C. Shows exaggerated circadian fluctuations with an adrenal tumour.
- D. Is raised in the presence of complete adrenal failure.
- E. Is reduced in patients on long-term high dosage glucocorticoids.

16. Incorrect regarding sudden complete loss of parathyroid function:

- A. Leads to skeletal muscle spasms.
- B. May be fatal if treatment is not given to raise the blood level of ionized calcium.
- C. Causes haemorrhagic disease due to lack of calcium for haemostasis.
- D. May be treated in the short-term by slow intravenous injection of calcium ions.
- E. May be treated in the long-term by regular doses of vitamin D.

17. Severe uncontrolled diabetes mellitus leads to a raised:

- A. H^+ ion concentration in body fluids.
- B. Plasma K^+ concentration.
- C. Urinary specific gravity and osmolality.
- D. Blood volume.
- E. Arterial PCO_2 .

18. An adrenal medullary tumour (phaeochromocytoma) causes an increase in all of the following except:

- A. Systolic blood pressure which may be transient or constant.
- B. Tremor of the extended hand.
- C. Basal metabolic rate.
- D. Diastolic arterial pressure which does not respond to alpha adrenoceptor blocking drugs.
- E. Urinary catecholamines.

19. Insulin?

- A. Requirements at night are similar to those during the day.
- B. Half-life is usually reduced in patients with diabetes mellitus.
- C. Is partly bound to proteins in the blood.
- D. Requirements are increased in obesity.
- E. Requirements are increased by exercise.

20. Destruction of the anterior pituitary gland causes all of the following except:

- A. Amenorrhoea.
- B. Diabetes insipidus.
- C. Skin pallor.
- D. Impaired ability to survive severe stress.
- E. A fall in basal metabolic rate (BMR).

21. In severe diabetes mellitus, there may be a fall in:

- A. Extracellular fluid osmolality.
- B. Appetite.
- C. Blood volume.
- D. Arterial blood pH to below 7.0.
- E. Blood bicarbonate to half its normal value.

22. Excessive glucocorticoid production (Cushing's syndrome) causes an increase in:

- A. Skin thickness.
- B. Bone strength.
- C. Blood glucose.
- D. Arterial pressure.
- E. The rate of wound healing.

23. Hypoglycaemic coma differs from hyperglycaemic coma in that there is more likelihood of a:

- A. Rapid loss of consciousness.
- B. Weak pulse.
- C. Normal blood pH.
- D. Glucose-free urine.
- E. High acetone level in urine.

24. In diabetic ketosis there is a decreased metabolic breakdown of one of the following:

- A. Ketones.
- B. Glycogen.
- C. Glucose.
- D. Fat.
- E. Amino acids.

25. In adrenal failure there is likely to be a fall in the:

- A. Extracellular fluid volume.
- B. Total red cell mass.
- C. The sodium:potassium ratio in plasma.
- D. Arterial blood pressure.
- E. Blood urea.

26. A patient with severe diabetic ketoacidosis is likely to benefit from administration of:

- A. Intra-gastric fluids.
- B. Intravenous insulin.
- C. Isotonic glucose.
- D. Isotonic sodium chloride.
- E. Oxygen by breathing mask if hyperventilation is present.

27. PTH secretion is usually increased in one of the following:

- A. In patients with chronic renal failure.
- B. In people taking excessive amounts of vitamin D.
- C. In patients with anterior pituitary tumours secreting excessive amounts of its hormones.
- D. When blood phosphate levels fall.
- E. When plasma protein levels fall.

28. Surgical removal of the pituitary gland is likely to lead to a decrease in one of the following:

- A. Plasma osmolality.
- B. Menstrual frequency.
- C. Axillary hair.
- D. Sexual desire (libido).
- E. Breast size.

29. One of the following is incorrect regarding the oral glucose tolerance test in a patient with:

- A. Diabetes mellitus shows a higher than normal fasting blood glucose level.
- B. Diabetes mellitus shows glycosuria when blood glucose is three times the normal fasting level.
- C. Diabetes mellitus shows a delayed return to the fasting blood glucose level.
- D. An insulin-secreting tumour shows no rise in blood glucose level during the test.
- E. Malabsorption syndrome shows a lower than normal peak level for blood glucose.

ANSWERS WITH EXPLANATIONS :

1

- A. **False** Both act on alpha receptors but noradrenaline is the more potent stimulant.
- B. **False** Both act on beta receptors but adrenaline is the more potent stimulant.
- C. **True** Noradrenaline raises but adrenaline reduces it.
- D. **False** Adrenaline raises but noradrenaline reflexly reduces it.
- E. **False** Both constrict skin vessels due to their alpha receptor stimulant properties.

2

- A. False** It is produced by the alpha cells.
- B. True** It is quite similar in structure to secretin.
- C. True** It normally prevents a serious fall in blood glucose.
- D. False** It is much shorter (5–10 minutes); this allows glucagon levels in the blood to adjust rapidly to changes in blood glucose levels.
- E. True** It also mobilizes fatty acids.

3

- A. True** The waking catabolic state changes to an anabolic state.
- B. True** Insulin secretion occurs mainly in association with meals.
- C. True** Adrenaline secretion is associated with stress.
- D. False** This rises as plasma osmolality rises; water is lost but not replaced during sleep.
- E. False** This increases, allowing growth and anabolic repair of tissue wear and tear.

4

- A. True** The median eminence secretes corticotropin-releasing hormone (CRH), the releasing hormone for ACTH.
- B. False** Aldosterone secretion is regulated mainly by the renin/angiotensin system.
- C. True** This negative feedback helps to maintain the blood cortisol level.
- D. True** This is part of the circadian rhythm which produces high morning cortisol levels.
- E. True** Most forms of stress increase ACTH output by their neural input to the median eminence of the hypothalamus where CRH is formed.

5

- A. False** This reduces aldosterone secretion.
- B. False** This increases adrenocortical hormone (ADH) secretion.
- C. True** K has a direct stimulatory effect on the adrenal cortex.
- D. True** This leads to formation of angiotensin II which stimulates the cortex.
- E. True** Though the main action of ACTH is on glucocorticoid secreting cells; it has some action on mineralocorticoid secreting cells.

6

- A. False** Glucocorticoids inhibit mitotic activity in lymphocytes.
- B. False** Glucocorticoids inhibit fibroblastic activity; this may allow chronic infections to spread since they are not walled off effectively by fibrous scarring.
- C. False** They are catabolic; released amino acids are converted to glucose.
- D. True** Decreased bone formation and increased resorption may cause osteoporosis.
- E. True** This blocks release of histamine and lysosomal enzymes in allergic responses.

7

- A. Correct** It is bound to transcortin; free cortisol is released to replace that taken up by the tissues.
- B. Incorrect** The inactive products of cortisol degradation in the liver are conjugated with glucuronic acid and sulphate and excreted in the urine. The answer is B.
- C. Correct** Partly at least because of its mineralocorticoid effects.
- D. Correct** The negative feedback loop that maintains plasma cortisol levels constant.
- E. Correct** It is regulated through a hypothalamic 'clock'.

8

- A. True** By promoting glycogenolysis in the liver.
- B. True** By promoting lipolysis in the fat stores.
- C. True** By its predominant effect on beta-receptors in the smooth muscle of skeletal muscle arterioles.
- D. False** Splanchnic flow falls since alpha-receptors predominate in splanchnic arterioles. The answer is D.
- E. True** Juxtaglomerular cells respond to beta-receptor stimulation by releasing renin.

9

- A. False** It stimulates uptake of fatty acids by adipose tissue.
- B. False** It lowers it by promoting potassium uptake by cells.
- C. True** Thus lowering the blood sugar level.
- D. True** Thereby favouring anabolism.

E. True This mobilizes insulin at the beginning of a meal.

10

A. True Noradrenaline injection causes reflex slowing of the heart.

B. True Adrenaline constitutes some 80 per cent of this secretion.

C. False Both increase the strength of myocardial contraction.

D. True It has stronger beta effects (including bronchodilation).

E. False Both vasoconstrict ('decongest') mucous membranes.

11

A. False It contains two peptide chains.

B. False Minor differences occur but these differences do not affect insulin action.

C. False Its peptide structure is broken down by digestive proteases in the gut.

D. True In 1964 by Katsoyannis.

E. True Using recombinant DNA.

12

A. False This is not a hormone.

B. True For example, the globulin transcortin binds cortisol.

C. True In both sexes they stimulate the growth of axillary and pubic hair.

D. False After conjugation they are excreted mainly by the kidney.

E. True Without replacement therapy, loss of adrenal cortical function results in death.

13

A. False 50–100 grams of glucose are used.

B. False It normally rises by around 50 per cent.

C. False It rises about ten-fold from a very low fasting level.

D. True The rise is about half as great.

E. False Oral glucose stimulates much more release of insulin.

14

A. True The enzyme converts angiotensin I into angiotensin II.

B. False Plasma renin rises as the blood pressure falls.

C. True The fall in blood pressure it causes decreases the work of the heart and can be an effective treatment for some types of heart failure.

D. False It rises due to the increased renin and the inability to convert to angiotensin II.

E. False Due to the fall in aldosterone secretion, less potassium is excreted.

15

- A. **False** It is maximal around the time of awakening.
- B. **False** This feedback system is over-ridden by the hypothalamic circadian rhythm.
- C. **False** The level is high but the circadian rhythm is lost.
- D. **True** Due to loss of negative feedback by cortisol.
- E. **True** ACTH is suppressed by these exogenous glucocorticoids.

16

- A. **True** This is a central feature of tetany.
- B. **True** Due to severe convulsions.
- C. **False** Calcium levels do not fall below the levels needed for haemostasis. C is the answer.
- D. **True** This is the acute treatment of choice, e.g. calcium gluconate.
- E. **True** This acts by increasing intestinal calcium absorption.

17

- A. **True** This is a prime feature of ketoacidosis.
- B. **True** The excess H ions compete with K ions for excretion in the distal tubules.
- C. **True** Due to the dissolved glucose.
- D. **False** This falls due to osmotic diuresis and vomiting.
- E. **False** Hyperventilation reduces PCO₂ to compensate the metabolic acidosis.

18

- A. **True** Due to phasic or tonic release of adrenaline and/or noradrenaline.
- B. **True** Due to beta adrenoceptor stimulation by adrenaline.
- C. **True** Due to release of adrenaline.
- D. **False** -receptor blockers typically lower the blood pressure.
- E. **True** This is a diagnostic feature.

19

- A. **False** Insulin is required mainly in response to meals.
- B. **False** The disease is not usually due to rapid insulin breakdown.
- C. **True** Abnormal binding may occur in diabetes mellitus.
- D. **True** Obese patients usually show increased insulin resistance.
- E. **False** Exercise reduces insulin requirements.

20

- A. True** Due to absence of FSH and LH.
- B. False** ADH is released from the posterior pituitary.
- C. True** Due to loss of ACTH and melanocyte-stimulating hormone (MSH) actions.
- D. True** Due to loss of ACTH and failure of the cortisol surge in response to stress; loss of TSH and consequent hypothyroidism also contribute.
- E. True** BMR falls due to loss of TSH drive to the thyroid.

21

- A. False** It rises due to excess glucose molecules plus water loss.
- B. False** It is increased due to loss of glucose in the urine.
- C. True** Due to osmotic diuresis and vomiting.
- D. True** This indicates life-threatening acidosis.
- E. True** Bicarbonate is used up buffering the keto-acids.

22

- A. False** Skin is thin due to protein catabolism; striae appear.
- B. False** Bones are weakened by breakdown of the protein matrix.
- C. True** Due mainly to gluconeogenesis.
- D. True** Due to the salt and water retention caused by gluco- and mineralocorticoids.
- E. False** Healing is slowed in this catabolic state.

23

- A. True** Blood glucose can drop more rapidly than diabetic ketosis can develop.
- B. False** The pulse is usually strong in hypoglycaemic coma but weak in hyperglycaemic coma because of fluid depletion.
- C. True** Hypoglycaemia does not affect the pH.
- D. True** However, glucose may be present if urine containing glucose entered the bladder before the onset of hypoglycaemia.
- E. False** Usually acetone is absent in hypoglycaemic coma.

24

- A. False** Breakdown continues normally but ketones accumulate due to rapid production.
- B. False** Insulin normally inhibits glycogenolysis.
- C. True** Due to its impaired entry into the cells.
- D. False** Fat breakdown is increased to yield ketone bodies.
- E. False** Gluconeogenesis and amino acid catabolism increase.

25

- A. True** Due to salt and water loss from lack of gluco- and mineralocorticoids.
- B. False** The haemoglobin level rises due to haemoconcentration.
- C. True** It falls since loss of aldosterone leads to potassium retention.
- D. True** Low blood volume may lead to hypotension and hypovolaemic circulatory failure.
- E. False** It tends to rise due to the oliguria associated with the hypotension.

26

- A. False** Vomiting is likely so intravenous fluids are needed to correct the fluid deficit.
- B. True** Insulin is needed to reverse the derangement of metabolism.
- C. True** A water deficit is remedied by intravenous isotonic glucose.
- D. True** This remedies the extracellular fluid deficit; the pH disturbance is corrected by restoring normal metabolism and fluid balance.
- E. False** The hyperventilation is due to acidosis, not oxygen lack.

27

- A. True** Phosphate retention results in a fall in the ionized calcium level in blood; this stimulates the parathyroid to produce more parathormone (secondary hyperparathyroidism).
- B. False** The increased level of ionized calcium in blood depresses parathyroid activity.
- C. False** Pituitary hormones are not involved in the regulation of parathyroid activity.
- D. False** This raises ionized calcium levels and depresses parathyroid activity.
- E. False** This decreases the total blood calcium but not the ionized calcium level that regulates parathormone secretion.

28

- A. False** Osmolality increases due to the induced diabetes insipidus.
- B. True** Amenorrhoea is common due to loss of gonadotrophic hormones.
- C. True** The adrenal androgens responsible for axillary hair are under ACTH control.
- D. True** Libido is influenced by the sex hormones which are under gonadotrophic control.
- E. True** The oestrogen and progesterone responsible for breast development are under gonadotrophic control.

29

- A. True** The level is higher due to impaired glucose homeostasis even in the fasting state.
- B. True** The renal threshold for glucose is about twice the normal fasting level.
- C. True** Due to impaired insulin response to the glucose stimulus.
- D. False** Blood glucose rises but then falls to a low level due to excessive insulin secretion.
- E. True** The curve is flattened due to impaired glucose absorption.

THE END