

Exam Date & Time: 21-Jul-2022 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Human Anatomy and Physiology II [PHA-BP201T-S1]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) During the repolarizing phase of neuronal action potential

1) K ⁺ channel opens and K ⁺ influx occurs	2) K ⁺ channel opens and K ⁺ efflux occurs	3) Na ⁺ channel opens and Na ⁺ efflux occurs	4) Na ⁺ channel opens and Na ⁺ influx occurs
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(1)

2) Brain tumor that affects astrocytes

1) Hodgkin's lymphoma	2) Alzheimer's disease	3) Glioblastoma multiforme	4) Melanoma
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(1)

3) Through inter-ventricular foramina CSF flows into

1) Heart and lungs	2) Subarachnoid space	3) Lateral ventricles	4) Third ventricle
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(1)

4) High level of this neurotransmitter in the interstitial fluid of the CNS causes excitotoxicity

1) Acetylcholine	2) Serotonin	3) Dopamine	4) Glutamate
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(1)

5) Adrenergic receptor that regulates secretion of renin

1) $\alpha 1$	2) $\alpha 2$	3) $\beta 1$	4) $\beta 2$
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(1)

6) Muscarinic receptor present in SA node

1) M1	2) M2	3) M3	4) $\beta 1$
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(1)

7) Fibrous tunic layer consists of

1) Sclera	2) Choroid	3) Amacrine Cell	4) Iris
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(1)

8) Papillae located in small trenches on the lateral margins of the tongue

1) Vallate	2) Fungiform	3) Foliate	4) Filiform
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(1)

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9) Organophosphorus poisoning causes the inhibition of this enzyme

1) Phosphodiesterase	2) Acetylcholinesterase	3) Adenylate cyclase	4) Monoamine oxidase
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(1)

10) Bases of the pyramids face the cortex and their apex known as _____ point towards the centre of the kidney

1) Renal papillae	2) Renal pyramid	3) Renal pelvis	4) Renal column
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(1)

11) Each bronchopulmonary segment of lungs has many small compartments called

1) Bronchioles	2) Lobars	3) Lobules	4) Alveolar ducts
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(1)

12) One of the following is not an action of angiotensin II

1) Vasoconstriction	2) Inhibits the release of antidiuretic hormone	3) Stimulates adrenal cortex to secrete aldosterone	4) Acts on thirst center to increase water intake
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(1)

13) Functional residual capacity is the sum of

1) Residual volume + inspiratory reserve volume	2) Tidal volume + expiratory reserve volume	3) Tidal volume + inspiratory reserve volume	4) Residual volume + expiratory reserve volume
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(1)

14) Down-regulation is a phenomenon when

1) A hormone is present in excess, the number of receptors may increase	2) A hormone is present in excess, the number of receptors may decrease	3) A hormone is deficient, the number of receptors may increase	4) A hormone is deficient, the number of receptors may decrease
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(1)

15) Which is the enzyme that inactivates cAMP?

(1)

1)	Protein diesterase	2)	Phosphokinase	3)	Phosphodiesterase	4)	Protein kinase
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16) Which one among the following does not have an inhibiting hormone?

1)	Thyroid hormone	2)	Prolactin	3)	Growth hormone	4)	Melatonin
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17) Identify the correct statement for parathormone

1)	Increases blood phosphate level and decreases blood calcium and magnesium levels	2)	Decreases blood phosphate level and increases blood calcium and magnesium levels	3)	Decreases blood phosphate level and increases blood calcium and sodium levels	4)	Increases blood phosphate level and decreases blood calcium and sodium levels
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18) Which is not a principal action of insulin?

1)	Stimulates protein synthesis	2)	Increases glycogenesis	3)	Decreases glycogenolysis	4)	Increases lipolysis
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19) The seminiferous tubules are lined with immature cells called

1)	Spermatozoa	2)	Spermatid	3)	Spermatogonia	4)	Spermatocyte
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20) This ligament of uterus lies on either side of the rectum and connects the uterus to the sacrum

1)	Broad ligament	2)	Uterosacral ligament	3)	Cardinal ligament	4)	Round ligament
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II Long Answers

Answer all the questions.

1) Correlate the ovarian and uterine cycles with the hypothalamic and anterior pituitary gland hormones. (10)

2) A) A 50 year old male presented to the endocrinology OPD. The patient gained weight of around 25 kg over a period of 2 years. He had increased appetite and absence of satiety and would often get violent on being denied food. He also complained of increased thirst, craving for water associated with increased frequency of micturition, headache and visual blurring. The patient's weight was 102 kg with body mass index of 34.5. Lab Investigations are as follows: TSH, T3, T4 - Low; LH, (10)

FSH - Low, Cortisol - Low, IGF - Low, Blood sugar - High, ACTH - Low. Correlate the symptoms with the parts of the brain associated and explain how it is linked to the disease.

B) Describe the histology of nervous tissue.

III Short Answers

Answer all the questions.

- 1) Describe the olfactory signal transduction mechanism. (5)
- 2) With a schematic representation, explain the negative feedback regulation of glomerular filtration rate by juxtaglomerular apparatus. (5)
- 3) Describe the anatomy of ear and auditory pathway. (5)
- 4) Discuss the various factors affecting pulmonary ventilation. (5)
- 5) Considering antidiuretic hormone, discuss its physiological mechanism of action on target cells. (5)
- 6) Elaborate the physiological effects of glucocorticoids with suitable examples. (5)
- 7) Explain the inheritance of sickle cell anaemia with a Punnett square. (5)

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