h. CRH

54) **The main excitatory amino acid in the nervous system is:**

a. dopamine
b. glutamate
c. glycine
d. ATP
e. ACTH
f. endorphine
g. acetylcholine
h. GABA

55) **The main inhibitory amino acids in the nervous system include:**

a. GABA
b. glutamate
c. dopamine
d. serotonin
e. glycine
f. acetylcholine
g. aspartate
h. ACTH

56) **The subtypes of glutamate receptors are:**

a. nicotinic
b. NMDA, AMPA
c. muscarinic
d. 5-HT_2
e. 5-HT_3
f. 5-HT_1
g. 5-HT_4
h. 5-HT_6

57) **Mechanism responsible for termination of action of excitatory and inhibitory amino acids is based on:**

a. biodegradation by enzyme, which is present in synaptic cleft
b. phagocytosis by glia cells
c. re-uptake by nerve endings and by glia cells
d. transport to the nucleus of the neuron
e. transfer through the blood-brain barrier
f. re-uptake by immune cells
g. diffusion
h. osmosis

58) **The result of binding of GABA on its receptor is:**

a. increases transmission of Cl^- ions into the cell
b. membrane depolarization
c. increases transmission of Na ions into the cell
d. membrane hyperpolarization
e. inhibition of the action potential activity
f. suppression of neuron excitability

g. influx of Fe ions into the cells
h. efflux of Fe ions from cells

59) **In immature nervous tissue GABA induces:**

a. membrane hyperpolarization
b. membrane depolarization
c. polarity of neuronal membrane is not changed
d. loss of neurons
e. increases of excitability of neurons
f. suppression of neuron excitability
g. influx of Fe ions into the cells
h. efflux of Fe ions from cells

60) **Glycine is:**

a. the main neurotransmitter of cells of substantia nigra
b. the main neurotransmitter of cells of locus coeruleus
c. the main inhibitory neurotransmitter of Renshaw's neurons of anterior horns of spinal cord
d. the main neurotransmitter of cells of nucleus raphe
e. excitatory amino acid
f. inhibitory amino acid
g. excitatory amine
h. inhibitory amine

61) **The main neurotransmitter of efferent neurons projecting their axons from spinal cord is:**

a. epinephrine
b. acetylcholine
c. angiotensin II
d. serotonin
e. histamine
f. GABA
g. glycine
h. aspartate

62) **The synaptic action of acetylcholine is terminated by:**

a. re-uptake of acetylcholine
b. biodegradation by acetylcholinesterase
c. exclusively by diffusion from synaptic cleft
d. enzyme acetylcholinesterase
e. transfer through the blood-brain barrier
f. re-uptake by immune cells
g. diffusion
h. osmosis

63) **Alteration of cholinergic system predominates in:**

a. Alzheimer's disease
b. Parkinson's disease
c. Creutzfeldt-Jakob's disease
d. hydrocephalus

e. depression
f. multiple sclerosis
g. curu
h. prionosis

64) **Catecholamines include:**
a. epinephrine
b. dopamine
c. serotonin
d. histamine
e. norepinephrine
f. glutamate
g. GABA
h. glycine

65) **Alteration of dopaminergic system is predominant finding in:**
a. Parkinson's disease
b. Alzheimer's disease
c. Creutzfeldt-Jakob's disease
d. myasthenia gravis
e. amyotrophic lateral sclerosis
f. multiple sclerosis
g. curu
h. prionosis

66) **One of the most important mediators of stress reaction is:**
a. melatonin
b. nerve growth factors
c. catecholamines
d. glucocorticoids
e. glycine
f. GABA
g. serotonin
h. histamine

67) **Monoamine theory of affective disorders suggests alteration of activity of neurons synthesizing:**
a. serotonin and norepinephrine
b. melatonin
c. enkephalin
d. angiotensin II
e. glutamate
f. GABA
g. glycine
h. histamine

68) **Brain neurons synthesizing histamine are localized mainly in:**
a. brainstem
b. prefrontal cortex
c. hypothalamus

d. cerebellum
e. substantia nigra
f. locus coeruleus
g. raphe nuclei
h. area postrema

69) **Brain neurons synthesizing dopamine are localized mainly in:**

a. basal ganglia
b. thalamus
c. substantia grisea
d. cerebellum
e. substantia nigra
f. locus coeruleus
g. raphe nuclei
h. area postrema

70) **Brain neurons synthesizing norepinephrine are localized mainly in:**

a. brainstem
b. cerebral cortex
c. hypothalamus
d. cerebellum
e. substantia nigra
f. locus coeruleus
g. raphe nuclei
h. area postrema

71) **Brain neurons synthesizing epinephrine are localized mainly in:**

a. brainstem
b. cerebral cortex
c. hypothalamus
d. cerebellum
e. substantia nigra
f. locus coeruleus
g. raphe nuclei
h. area postrema

72) **Brain neurons synthesizing serotonin are localized mainly in:**

a. brainstem
b. cerebral cortex
c. hypothalamus
d. cerebellum
e. substantia nigra
f. locus coeruleus
g. raphe nuclei
h. area postrema

73) **Gas neurotransmitters include:**

a. NO
b. CO
c. H_2S

d. ATP
e. angiotensin II
f. purines
g. O_2
h. CO_2

74) **Neuropeptides are synthesized:**

a. in nerve endings similarly as a small-molecule neurotransmitters
b. in the body of neurons
c. in the mitochondrion
d. directly in the synaptic vesicles
e. extra-neuronal
f. in the axon
g. in dendrites
h. in the cell nucleus

75) **Neuropeptides are released mainly:**

a. mainly during resting state of neuron
b. after low-frequency stimulation
c. after high-frequency stimulation
d. from the nerve endings
e. in special conditions also from dendrites
f. by adrenal medulla
g. by cells of gastrointestinal tract
h. mainly from the glia cells

76) **One neuron can synthesize and release:**

a. exclusively only one neurotransmitter
b. usually one or more than one type of neurotransmitters
c. one primary neurotransmitter and one or more co-transmitters
d. only neuropeptides
e. norepinephrine and simultaneously NPY
f. gas neurotransmitters and simultaneously neuropeptides
g. gas neurotransmitters and simultaneously small-molecule neurotransmitters
h. one neurotransmitter from the group of small-molecule neurotransmitters and one or more from the group of neuropeptides

77) **Purines:**

a. are involved exclusively in energetic metabolism
b. are involved also in transmission of nociceptive information
c. belong between classical neurotransmitters
d. belong between neuropeptides
e. belong between small-molecule neurotransmitters
f. belong between gas neurotransmitters
g. belong between classical excitatory neurotransmitters
h. belong between classical inhibitory neurotransmitters

78) **Neuropeptides are characterized by the following:**

a. are present in tissues in higher concentrations than small-molecules

neurotransmitters
b. are present in tissues in lower concentrations than small-molecules neurotransmitters
c. are synthesized in body of neurons
d. are synthesized in nerve endings
e. lower frequency of action potentials is necessary for their release from neuron
f. higher frequency of action potentials is necessary for their release from neuron
g. are the major inhibitory neurotransmitters in brain, spinal cord and retina
h. can play important role in maturation of the nervous system and regeneration of damaged neurons

79) **Insulin is produced by:**

a. A cells
b. B cells
c. D cells
d. F cells
e. G cells
f. exocrine pancreas
g. endocrine pancreas
h. H cells

80) **Islets of Langerhans secrete:**

a. glucagon
b. chymotrypsinogen
c. amylase
d. somatostatin
e. epinephrine
f. insulin
g. pancreatic polypeptide
h. pepsinogen

81) **Enlargement of the thyroid gland can be caused by:**

a. vitamin D deficiency
b. inflammation process
c. nodular hypothrophy and hypoplasia of the acinar cells
d. neoplastic process
e. increased intake of iodine
f. intestinal calcium malabsorption
g. increased coloid accumulation in the follicles
h. hypertrophy and hyperplasia of the epithelial cells of follicles

82) **The hypothalamic releasing hormones include:**

a. CRH
b. ACTH
c. glucocorticoids
d. epinephrine
e. dopamine
f. serotonin

g. GnRH
h. TRH

83) **Major hormones secreted from the anterior pituitary are:**

a. ACTH
b. prolactin
c. growth hormone
d. luteinizing hormone
e. follicle-stimulating hormone (FSH)
f. thyrotropin-releasing hormone (TRH)
g. vasopressin
h. oxytocin

posterior

84) **Hormones stored and released from neurohypophysis into the circulation are:**

a. ACTH
b. prolactin
c. growth hormone
d. luteinizing hormone
e. follicle-stimulating hormone (FSH)
f. thyrotropin-releasing hormone (TRH)
g. vasopressin
h. oxytocin

85) **Major hormones secreted from the adrenal medulla are:**

a. epinephrine
b. norepinephrine
c. glucocorticoids
d. cortisol
e. serotonin
f. mineralocorticoids
g. sex steroids
h. histamine

86) **Major hormones secreted from the adrenal cortex are:**

a. epinephrine
b. norepinephrine
c. glucocorticoids
d. cortisol
e. serotonin
f. mineralocorticoids
g. sex steroids
h. histamine

87) **Oxytocin a vasopressin are synthesized in:**

a. hypothalamus
b. hypophysis
c. adenohypohysis
d. neurohypophysis
e. hippocampus
f. epiphysis

g. nucleus paraventricularis hypothalami
h. nucleus supraopticus

88) **Cushing's syndrome:**

a. is primary hyperaldosteronism
b. is primary hypocortisolism
c. is primary hypercortisolism
d. is acute adrenocortical insufficiency
e. is secondary hyperaldosteronism
f. is chronic primary adrenocortical insufficiency
g. related to hyperfunction of adrenal cortex
h. related to hypofunction of adrenal cortex

89) **Symptoms of hyperthyroidism include:**

a. exophthalmos
b. increased heat production (sweating)
c. myxedema
d. growth and mental retardation (perinatal)
e. increased metabolic rate
f. weight loss
g. hypoventilation
h. increased cardiac output

90) **Symptoms of hypothyroidism include:**

a. dyspnea
b. weight loss
c. myxedema
d. tremor, weakness
e. decreased metabolic rate
f. weight gain
g. decreased cardiac output
h. exophthalmos

91) **Addison's disease is characterized by:**

a. hyperglycemia
b. virilization of the female
c. hyperpigmentation
d. central obesity
e. increased cortisol and androgen levels
f. decreased adrenal glucocorticoid, androgen, and mineralcorticoid
g. hypoglycemia
h. increased POMC and ACTH

92) **Hypothyroidism can be caused by:**

a. thyroid neoplasm
b. graves' disease
c. surgical destruction of thyroid
d. Hashimoto's thyroiditis
e. iodide deficiency
f. autoimmune thyroiditis

g. Conn's syndrome
h. Addison's disease

93) **Increased ACTH secretion would be expected in patients:**

a. with primary adrenocortical hyperplasia
b. with elevated levels of angiotensin II
c. receiving glucocorticoid for immunosupression following a renal transplant
d. with chronic adrenocortical insufficiency
e. with secondary adrenocortical insufficiency
f. with Graves' disease
g. with Addison's disease

94) **Pheochromocytoma:**

a. is a serious disease of the adrenal medulla
b. is a serious disease of the adrenal cortex
c. is a catecholamine-producing tumor
d. is a mineralocorticoids-producing tumor
e. the dominant clinical feature is arterial hypertension
f. the dominant clinical feature are metabolic changes
g. the dominant clinical feature is hyperpigmentation
h. the dominant clinical feature is osteoporosis

95) **Major effects of parathyroid hormone are:**

a. decreased blood volume
b. increased the production of activated vitamin D
c. enhances active reabsorption of calcium and magnesium from distal tubules
d. stimulation proteosynthesis
e. decreased renal calcium reabsorption in the distal tubule
f. increased bone resorption
g. reduction the reabsorption of phosphate from the proximal tubule of the kidney
h. increased the absorption of calcium in the intestine

96) **In the zona fasciculata and/or zona reticularis of the adrenal cortex are produced following hormones:**

a. aldosterone
b. corticosterone
c. epinephrine
d. cortisol
e. cholesterol
f. dehydroepiandrosterone
g. norepinephrine
h. progesterone

97) **Actions of glucocorticoids include:**

a. suppression of the immune response
b. inhibition of gluconeogenesis
c. increasing protein catabolism

d. decreasing glucose utilization
e. stimulation of T lymphocytes proliferation
f. maintenance of vascular responsiveness to catecholamines
g. anti-inflammatory effects
h. increasing lipolysis

98) **Major actions of insulin include:**

a. increases glycogenolysis and gluconeogenesis
b. increases lipolysis
c. decreases blood K^+ concentration
d. decreases glycogenolysis and gluconeogenesis
e. increases ketoacid production
f. increases uptake of glucose
g. increases protein synthesis
h. increases fat deposition and decreases lipolysis

99) **Congenital abnormality – 21β-hydroxylase deficiency is characterized by:** p 384

a. increased adrenal androgens
b. hyperplasia of zona glomerularis
c. hyperplasia of zona reticularis and zona fasciculata
d. decreased cortisol and aldosterone
e. decreased ACTH
f. increased 17-hydroxyprogesterone
g. virilization in females
h. hyperglycemia

100) **A female patient has hirsutism, hyperglycemia, obesity, muscle wasting, and increased circulating levels of ACTH. The most likely cause of her symptoms is:**

a. primary adrenocortical insufficiency (Addison's disease)
b. pheochromocytoma
c. primary overproduction of ACTH (Cushing's syndrome)
d. treatment with exogenous glucocorticoids
e. hypophysectomy
f. primary adrenocortical hyperplasia
g. Conn's syndrome

101) **Cushing's syndrome is characterized mainly by:**

a. increased of muscular mass
b. increased protein catabolism
c. decreased of blood glucose
d. increased hepatic gluconeogenesis
e. increased fat deposition and redistribution
f. increased protein synthesis
g. osteoporosis
h. increased osmotic diuresis maybe

102) **The vestibulocochlear nerve is:**

a. CN IV
b. CN IX
c. CN X