CHAPTER 8

HORMONE METABOLISM

1. Hormones

(A) Act as coenzyme
(B) Act as enzyme
(C) Influence synthesis of enzymes
(D) Belong to B-complex group

2. Hormone that binds to intracellular receptor is

(A) Adrenocorticotropic hormone
(B) Thyroxine
(C) Follicle stimulating hormone
(D) Glucagon

3. Hormone that bind to cell surface receptor and require the second messenger camp is

(A) Antidiuretic hormone
(B) Cholecystokinin
(C) Calcitriol
(D) Gastrin

4. A hormone secreted from anterior pituitary is

(A) Growth hormone (B) Vasopressin
(C) Oxytocin (D) Epinephrine

5. A hormone secreted from posterior pituitary is

(A) Vasopressin
(B) Thyrotropic hormone
(C) Prolactin
(D) Adrenocorticotropic hormone

6. The number of amino acids in human growth hormone is

(A) 91 (B) 151
(C) 191 (D) 291

7. Growth hormone causes hyperglycemia. It is a result of

(A) Decreased peripheral utilization of glucose
(B) Decreased hepatic production via gluconeogenesis
(C) Increased glycolysis in muscle
(D) Decrersed lipolysis

8. Acromegaly results due to excessive release of

(A) Thyroxine (B) Growth hormone
(C) Insulin (D) Glucagon

9. Growth hormone is released by

(A) Somatostatin
(B) Growth hormone releasing hormone
(C) Prolactin release inhibiting hormone
(D) Luteinizing releasing hormone

10. The number of amino acids in prolactin is

(A) 134 (B) 146
(C) 172 (D) 199

11. Adrenocorticotropic hormone (ACTH) is a single polypeptide containing

(A) 25 amino acid (B) 39 amino acid
(C) 49 amino acid (D) 52 amino acid

12. Biological activity of ACTH requires

(A) 10-N-terminal amino acid
(B) 24-N-terminal amino acid
(C) 24-C-terminal amino acid
(D) 15-C-terminal amino acid

13. ACTH stimulates the secretion of

(A) Glucocorticoids (B) Epinephrine
(C) Thyroxine (D) Luteinizing hormone

14. Excessive secretion of ACTH causes

(A) Cushing's syndrome
(B) Addison's disease
(C) Myxoedema
(D) Thyrotoxicosis

15. In Cushing's syndrome-a tumour associated disease of adrenal cortex, there is

(A) Decreased epinephrine production
(B) Excessive cortisol production
(C) Excessive epinephrine production
(D) Decreased cortsoil production

16. ACTH induces rise in

(A) Cyclic AMP (B) Cyclic GMP
(C) Calcium (D) Magnesium

17. The circulating concentration of ACTH in plasma is

(A) 0.05 mμ/100 ml
(B) 0.1–2.0 mμ/100 ml
(C) 2.5–3.5 mμ/100 ml
(D) 3.0–5.0 mμ/100 ml

18. Hyperglycemic effect of glucocorticoids is due to

(A) Inactivation of protein phosphatase
(B) Inactivation of fructose 1,6-biphosphatase
(C) Stimulation of synthesis of pyruvate carboxylase
(D) Stimulation of synthesis of eltroxykinase

19. The predominant glucocorticoid is

(A) Cortisol
(B) Aldosterone
(C) Dehydroephiandrosterone
(D) Androstenedione

20. A specific cortisol binding protein, transcortin is a

(A) Albumin (B) α_1-Globulin
(C) α_2-Globulin (D) β-Globulin

21. Cortisol is synthesized in

(A) Zona fasiculata (B) Zona glomerulosa
(C) Zona reticularis (D) Chromaffin cells

22. All mammalian steroid hormones are formed from

(A) Purine (B) Pyrimidine
(C) Cholesterol (D) Pyrrole

23. A very efficient inhibitor of steroid biosynthesis is

(A) Aminoglutethimide
(B) Aminoimidazole
(C) Aminoimidazolesuccinyl carboxamine
(D) Aminopterin

24. In adrenal gland the cholesterol is stored

(A) Mostly in the free form
(B) Mostly in esterified form
(C) Large amount of free form and less amount of esterified form
(D) Equal amounts of free and esterified form

25. Aldosterone synthesis occurs in

(A) Zona reticularis (B) Zona fasciculata
(C) Zona glomerulosa (D) Chromaffian cells

26. In the biosynthesis of cortiol, the sequence of enzymes involved is

(A) Hydroxylase–dehydrogenase + isomerase – hydroxylase
(B) Dehydrogenase–hydroxylase–isomerase
(C) Hydroxylase–lyase–dehydrogenase isomerase
(D) Isomerase–lyase–hydroxylase–dehydrogenase

27. The defect in adrenal cortex responsible for lack of glucocorticoids and mineralcorticoids is

(A) Androstenedione deficiency
(B) 17α-OH progesterone deficiency
(C) C-21 hydroxylase deficiency
(D) Testosterone deficiency

28. 3-β-Hydroxysteroid dehydrogenase and $\Delta^{5,4}$ isomerase catalyse the conversion of the weak androgen DHEA to

(A) Androstenedione (B) Testosterone
(C) Progesterone (D) Estrone

29. In the resting state plasma concentration of cortisol is

(A) 0.4–2.0 μg/100 ml
(B) 2.0–4.0 μg/100 ml
(C) 5.0–15.0 μg/100 ml
(D) 18.0–25.0 μg/100 ml

30. The most important effect of aldosterone is to

(A) Increase the rate of tubular reabsorption of sodium
(B) Decrease the rate of tubular reabsorption of potassium
(C) Decrease the reabsorption of chloride
(D) Decrease the renal reabsorption of sodium

31. One of the potent stimulators of aldosterone secretion is

(A) Increased sodium concentration
(B) Decreased potassium concentration
(C) Increased potassium concentration
(D) Increased ECF volume

32. In the rennin-angiotensin system the primary hormone is

(A) Angiotensinogen (B) Angiotensin I
(C) Angiotensin II (D) Angiotensin III

33. Aldosterone release is stimulated by

(A) α_2-Globulin (B) Renin
(C) Angiotensin II (D) Growth hormone

34. In the synthesis of Angiotensin I, rennin acts on Angiotensinogen and cleaves the

(A) Leucine – leucine at 10 and 11 position
(B) Valine – tyrosine at 3 and 4 position
(C) Isoleucine – histidine at 5 and 6 position
(D) Proline – histidine at 7 and 8 position

35. Catecholamine hormones are synthesized in the

(A) Chromaffin cells of adrenal medulla
(B) Zona glomerulosa of adrenal cortex
(C) Zona fasciculate of adrenal cortex
(D) Zona reticularis of adrenal cortex

36. Catecholamine hormones are

(A) 3, 4-Dihydroxy derivatives of phenylethylamine
(B) p-Hydroxy derivatives of phenylacetate
(C) p-Hydroxy derivatives of phenylpyruvate
(D) p-Hydroxy derivatives of phenyllactate

37. The sequential steps in the conversion of tyrosine to epinephrine are

(A) Ring hydroxylation-decarboxylation-side chain hydroxylation-N-methylation
(B) Side chain hydroxylation-decarboxylation-ring hydroxylation N-methylation
(C) Decarboxylation-ring hydroxylation-side chain hydroxylation-N-methylation
(D) N-methylation-decarboxylation-ring and side chain hydroxylation

38. The hormone required for uterine muscle contraction for child birth is

(A) Progesterone (B) Estrogen
(C) Oxytocin (D) Vasopressin

39. The number of amino acids in the hormone oxytocin is

(A) 7 (B) 9
(C) 14 (D) 18

40. Vasopressin and oxytocin circulate unbound to proteins and have very short plasma half lives, on the order of

(A) 1–2 minutes (B) 2–4 minutes
(C) 5–8 minutes (D) 10–12 minutes

41. Melanogenesis is stimulated by

(A) MSH (B) FSH
(C) LH (D) HCG

42. The number of amino acids in antidiuretic hormone is

(A) 9 (B) 18
(C) 27 (D) 36

43. ADH

(A) Reabsorbs water from renal tubules
(B) Excretes water from renal tubules
(C) Excretes hypotonic urine
(D) Causes low specific gravity of urine

44. Increased reabsorption of water from the kidney is the major consequence of the secretion of the hormone?

(A) Cortisol (B) Insulin
(C) Vasopressin (D) Aldosterone

45. An increase in the osmolality of extracellular compartment will

(A) Inhibit ADH secretion
(B) Stimulate ADH secretion
(C) Cause no change in ADH secretion
(D) Stimulate the volume and osmoreceptor and inhibit ADH secretion

46. For Catecholamine biosynthesis the rate limiting enzyme is

(A) DOPA decarboxylase
(B) DOPAMINE β-hydroxylase
(C) Tyrosine hydroxylase
(D) Phenylalanine hydroxylase

47. A hormone which cannot cross the blood brain barrier is

(A) Epinephrine (B) Aldosterone
(C) ACTH (D) TSH

48. The plasma level of epinephrine is less than

(A) 0.1 ng/ml (B) 0.2 ng/ml
(C) 0.4 ng/ml (D) 0.8 ng/ml

49. Epinephrine is rapidly metabolized by

(A) Monoamine oxidase
(B) Deaminase
(C) Transminase
(D) Decarboxylase

50. Pheochromocytomas are tumours of

(A) Adrenal cortex (B) Adrenal medulla
(C) Pancreas (D) Bone

51. A characteristic of pheochromocytoma is elevated urinary excretion of

(A) Dopamine
(B) Tyrosine
(C) Vinylmandelic acid
(D) Phenylalanine

52. In the synthetic pathway of epinephrine, disulfiram (antabuse) inhibits the enzyme:

(A) Tyrosine hydroxylase
(B) Dopamine β-hydroxylase
(C) DOPA decarboxylase
(D) N-methyl transferase

53. The biosynthesis of both Catecholamine and serotonin require

(A) Tyrosine hydroxylase
(B) N-methyl transferase
(C) Aromatic amino acid decarboxylase
(D) Tryptophan pyrrolase

54. Epinephrine stimulates glycogenolysis in

(A) Liver (B) Muscle
(C) Liver and muscle (D) Kidney

55. A cup of strong coffee would be expected to

(A) Interfere with the synthesis of prostaglandins
(B) Decrease the effect of glucagon
(C) Enhance the effect of epinephrine
(D) Provide the vitamin nicotinic acid

56. Epinephrine is derived from norepinephrine by

(A) Decarboxylation (B) Hydroxylation
(C) Oxidation (D) N-methylation

57. 5 HIAA test is negative if patient is taking

(A) Aspirin (B) Colchicine
(C) Phenothiazone (D) Methotrexate

58. Presence of significant amount of 5-HIAA in urine indicates

(A) Carcinoid in liver
(B) Carcinoid in appendix
(C) Metastasis of carcinoma of liver
(D) Hepatoma

59. The normal serum level of triiodothyronine (T_3) is

(A) 0.2–0.5 ng/ml (B) 0.7–2.0 ng/ml
(C) 2.0–4.0 ng/ml (D) 5.0–8.0 ng/ml

60. The normal serum level of thyroxine (T_4) is

(A) 2.0–4.0 μg/100 ml
(B) 5.5–13.5 μg/100 ml
(C) 14.0–20.3 μg/100 ml
(D) 20.0–25.0 μg/100 ml

61. Excess secretion of thyroid hormones causes

(A) Hyperthyroidism (B) Myxoedema
(C) Cretinism (D) Cushing syndrome

62. Insufficient free T_3 and T_4 results in

(A) Grave's disease (B) Mysoedema
(C) Cushing syndrome (D) Gigantism

63. In primary hypothyroidism the useful estimation is of

(A) T_3 (B) T_4
(C) TBG (D) Autoantibodies

64. When iodine supplies are sufficient the T_3 and T_4 ratio in thyroglobulin is

(A) 1 : 2 (B) 1 : 4
(C) 1 : 7 (D) 1 : 10

65. A substance which competes with iodide uptake mechanism by thyroid gland is

(A) Thiocynate (B) Iodoacetate
(C) Fluoride (D) Fluoroacetate

66. Thyroperoxidase enzyme contains

(A) Heme (B) Copper
(C) Zinc (D) Magnesium

67. Thyroproxidase requires hydrogen peroxide as oxidizing agent. The H_2O_2 is produced by

(A) $FADH_2$ dependent enzyme
(B) NADH dependent enzyme
(C) NADP dependent enzyme
(D) NADPH dependent enzyme

68. Thyroid stimulating hormone is a dimer. The α-subunits of TSH, LH, FSH are identical. Thus the biological specificity must therefore be β subunit in which the number of amino acids is

(A) 78 (B) 112
(C) 130 (D) 199

69. TSH stimulates the synthesis delete

(A) Thyroxine (B) Adrenocorticoids
(C) Epinephrine (D) Insulin

70. Thyroid hormones are synthesized by the iodination of the amino acid:

(A) Glycine (B) Phenylalanine
(C) Alanine (D) Tyrosine

71. The tyrosine residues per molecule of thyroglobulin is

(A) 85 (B) 95
(C) 115 (D) 135

72. The percentage of inactive precursors (monoidotyrosine and diiodotyrosine) in thyroglobulin is

(A) 30 (B) 40
(C) 50 (D) 70

73. The number of amino acids in parathormone is

(A) 65 (B) 84
(C) 115 (D) 122

74. The sequence of amino acid in which the biological value of parathormone is

(A) 1–15 (B) 1–34
(C) 30–50 (D) 50–84

75. PTH

(A) Reduces the renal clearance or excretion of calcium
(B) Increases renal phosphate clearance
(C) Increases the renal clearance of calcium
(D) Decreases the renal phosphate clearance

76. The number of amino acids in the peptide hormone calcitonin is

(A) 16 (B) 24
(C) 32 (D) 40

77. Calcitonin causes

(A) Calcinuria and phosphaturia
(B) Decrease in urinary calcium
(C) Decrease in urinary phosphorous
(D) Increase in blood calcium level

78. The characteristic of hyperparathyroidism is

(A) Low serum calcium
(B) High serum phosphorous
(C) Low serum calcium and high serum phosphorous
(D) High serum calcium and low serum phosphate

79. Parathyroid hormone

(A) Is released when serum Ca^{++} is too high
(B) Inactivates vitamin D
(C) Is secreted when Ca^{++} is too low
(D) Depends on vitamin K for adequate activity

80. δ-Cells of islet of langerhans of pancreas produce

(A) Pancreatic polypeptide
(B) Pancreatic lipase
(C) Somatostatin
(D) Steapsin

81. β-cells of islet of langerhans of the pancreas secrete

(A) Insulin
(B) Glucagon
(C) Somatostatin
(D) Pancreatic polypeptide

82. Target tissue of insulin is

(A) Red blood cells
(B) Renal tubular cells
(C) GI tract epithelial cells
(D) Liver

83. Insulin is a dimmer. The number of amino acids in the A and B chain respectively is

(A) 19 and 28 (B) 21 and 30
(C) 25 and 35 (D) 29 and 38

84. In A chain of the insulin molecule the N-terminal amino acid is

(A) Glycine (B) Valine
(C) Serine (D) Phenylalanine

85. In the A chain of insulin molecule the C-terminal amino acid is

(A) Asparagine (B) Threonine
(C) Valine (D) Tyrosine

86. In the B chain of insulin molecule, the N-terminal amino acid is

(A) Proline (B) Threonine
(C) Phenylalanine (D) Lysine

87. In the B chain of insulin molecule, the C-terminal amino acid:

(A) Threonine (B) Tyrosine
(C) Glutamate (D) Valine

88. In the insulin molecule, the number of interchain disulphide brides is

(A) 1 (B) 2
(C) 3 (D) 4

89. In the insulin molecule, the number of intrachain disulphide bridges is

(A) 1 (B) 2
(C) 3 (D) 4

90. Insulin exists in polymeric forms, for polymerization it requires

(A) Calcium (B) Magnesium
(C) Manganese (D) Zinc

91. The number of amino acids in pre-pro insulin is

(A) 51 (B) 86
(C) 109 (D) 132

92. Proinsulin has

(A) 74 amino acids (B) 86 amino acids
(C) 105 amino acids (D) 109 amino acids

93. Daily secretion of insulin in a normal adult man is about

(A) 10 units (B) 20 units
(C) 30 units (D) 50 units

94. The insulin content of pancreas is about

(A) 50–70 units (B) 100–150 units
(C) 150–180 units (D) 200–250 units

95. The half life of insulin is

(A) < 3–5 minutes (B) < 8–10 minutes
(C) < 15 minutes (D) < 15 minutes

96. Insulin stimulates

(A) Hepatic glycogenolysis
(B) Hepatic glycogenesis
(C) Lipolysis
(D) Gluconeogenesis

97. Action of insulin on lipid metabolism is

(A) It increases lipolysis and increases triglyceride synthesis
(B) It decreases lipolysis and increases triglyceride synthesis
(C) It decreases lipolysis and decreases triglyceride synthesis
(D) It increases synthesis of triglyceride and increased ketogenesis

98. Insulin increases the activity of

(A) Pyruvate kinase
(B) Phosphorylase
(C) Triacylglycerol kinase
(D) Fructose 2, 6-bisphosphatase

99. Insulin decreases the activity of

(A) cAMP dependent protein kinase
(B) HMG CoA-reductas
(C) Phosphodiesterase
(D) Acetyl CoA-carboxylase

100. The human insulin gene located on the short arm of chromosome:

(A) 11 (B) 17
(C) 18 (D) 20

101. Normal serum insulin level varies between

(A) 4–25 μU/ml (B) 25–50 μU/ml
(C) 70–90 μU/ml (D) 100–120 μU /ml

102. Following is a normal overnight fast and a cup of black coffee, a diabetic woman feels slightly nausious and decides to skip breakfast. However she does take her shot of insulin. This may result in

(A) Heightened glycogenolysis
(B) Hypoglycemia
(C) Increased lipolysis
(D) Glycosuria

103. Deficiency of insulin results in

(A) Rapid uptake of sugar
(B) Low blood glucose level
(C) Decrease urine output
(D) Presence of glucose in urine

104. The primary stimulus for insulin secretion is increased.

(A) Blood level of epinephrine
(B) Blood level of glucagon
(C) Blood level of glucose
(D) Water intake

105. The α-cells of pancreas islets produce

(A) Insulin
(B) Glucagon
(C) Somatostatin
(D) Pancreatic polypeptide

106. The number of amino acids in single chain polypeptide glucagons is

(A) 21 (B) 29
(C) 31 (D) 39

107. The half life of glucagons is

(A) ~5 (B) ~7
(C) ~10 (D) ~12

108. Glucagon enhances

(A) Hepatic glycogenolysis
(B) Muscle glycogenolysis
(C) Hepatic glycogenesis
(D) Lipogenesis

109. Normal serum glucagons level in fasting state varies between

(A) 0–10 pg/ml (B) 20–100 pg/ml
(C) 200–300 pg/ml (D) 400–500 pg/ml

110. Glucagon

(A) Increases protein synthesis
(B) Inhibits lipolysis in adipocytes
(C) Increases gluconeogenesis in liver
(D) Stimulates muscle glycogenolysis

111. Normal serum free testosterone in adult men varies between

(A) 1–5 ng/dl (B) 6–9 ng/dl
(C) 10–30 ng/dl (D) 50–100 ng/dl

112. Normal serum free testosterone in adult women varies between

(A) 0.0–0.2 ng/dl (B) 0.3–2 ng/dl
(C) 10–30 ng/dl (D) 50–100 ng/dl

113. The prepubertal total serum testosterone is

(A) <100 ng/100 ml (B) < 200 ng/100 ml
(C) <300 ng/100 ml (D) < 400 ng/100 ml

114. The total serum testosterone in adult men is

(A) 50–100 ng/100 ml
(B) 150–250 ng/100 ml
(C) 300–1000 ng/100 ml
(D) 1000–3000 ng/100 ml

115. The total serum testosterone in adult women is

(A) 0–5 ng/100 ml
(B) 10–15 ng/100 ml
(C) 20–80 ng/100 ml
(D) 100–200 ng/100 ml

116. The serum estradiol level in men is

(A) 0–5 pg/ml (B) 5–10 pg/ml
(C) 24–68 pg/ml (D) 40–60 pg/ml

117. The serum estradiol level in women during 1–10 days of menstrual cycle is

(A) 0–10 pg/ml (B) 12–20 pg/ml
(C) 24–68 pg/ml (D) 80–100 pg/ml

118. The serum estradiol level in women during 11–20 days of menstrual cycle is

(A) 5–30 pg/ml (B) 50–300 pg/ml
(C) 500–900 pg/ml (D) 1000 pg/ml

119. The serum estradiol level in women during 21–30 days of menstrual cycle is

(A) 10-20 pg/ml (B) 22-66 pg/ml
(C) 73-149 pg/ml (D) 1000 pg/ml

120. The serum progesterone level in follicular phase is about

(A) 0.2–1.5 ng/100 ml
(B) 2.0–2.5 ng/100 ml
(C) 3.5–4.5 ng/100 ml
(D) 5.0–6.5 ng/100 ml

121. Serum progesterone level during pregnancy is

(A) < 12 ng/ml (B) > 12 ng/ml
(C) < 20 ng/ml (D) >24 ng/ml

122. Serum progesterone level during luteal phase is

(A) 0.2–203 ng/ml (B) 3.0–5.0 ng/ml
(C) 6.0–30 ng/ml (D) 750 ng/ml

123. Androgens are produced by

(A) Cells of sertoli
(B) Leydig cells
(C) Rete testis
(D) Efferent ductules

124. The leyding cell activity is controlled by

(A) Intestitial cell stimulating hormone
(B) Adernocortex stimulating hormone
(C) Thyroid stimulating hormone
(D) Melanocyte stimulating harmone

125. Stein-leventhal syndrome is due to overproduction of

(A) Estrogens (B) Androgens
(C) Gastogens (D) Ethinyl estradiol

126. The production of progesterone by corpus luteum cell is stimulated by

(A) LH (B) TSH
(C) ACTH (D) MSH

127. In the biosynthesis of testosterone the rate limiting step is conversion of

(A) Cholesterol to pregnenolone
(B) Pregnenolone to progesterone
(C) Progesterone to 17 α-hydroxy progesterone
(D) 17 α-Hydroxy progesterone to androstenedione

128. The enzyme catalyzing conversion of androstenedione to testosterone is a

(A) Oxygenase (B) Dehydrogenase
(C) Isomerase (D) Decarboxylase

129. Conversion of testosterone to estradiol requires the enzyme:

(A) Aromatase (B) Dehydrogenase
(C) Lyase (D) Isomerase

130. The precursor of testosterone is

(A) Aldosterone (B) Methyl testosterone
(C) Estrone (D) Pregnenolone

131. Urinary 17 ketosteroids

(A) Are not found in women
(B) Reflect the total production of androgenic substances
(C) Indicate the total production of sex hormone
(D) Are highly active androgens

132. The hormone measured in urine to test pregnancy is

(A) Anterior pituitary luteinizing hormone
(B) Androgen
(C) Progesterone
(D) Choroinic gonadotropin

133. Total number of amino acids in human chorionic gonadotropin is

(A) 53 (B) 92
(C) 145 (D) 237

134. A hormone produced by corpus luteum and placenta, concerned with relaxation of pelvis tissue is

(A) HCG
(B) Chorionic somatommotropin
(C) Relaxin
(D) Progestins

135. Synthetic progesterone used in oral contraceptive is

(A) Norethindrone (B) Pregnenolone
(C) Androstenodione (D) Stilbestrol

136. Young women are protected against myocardial infaracation because of the activity of

(A) Estrogen (B) Progesterone
(C) Growth hormone (D) Oxytocin

137. Hormone receptors possess all the following properties except

(A) All of them are proteins
(B) They possess a recognition domain
(C) They bind hormones with a high degree of specificity
(D) Number of receptors in a target cell is constant

138. The only correct statement about hormone receptors is

(A) Receptors for protein hormones are present in cytosol
(B) Receptors for steroid hormones are membrane bound
(C) Hormone-receptor binding is irreversible
(D) Receptors can undergo down regulation and up regulatoin

139. Down regulation is

(A) Increased destruction of a hormone
(B) Feed back inhibition of hormone secretion
(C) Decreased concentration of a hormone in blood
(D) Decrease in number of receptors for a hormone

140. All the following statements about hormones are true except

(A) All of them require specific carriers in plasma
(B) All of them require specific receptors in target cells
(C) Some of them are subject to feedback regulation
(D) Some of them increase the transcription of certain genes

141. All the following statements about steroid hormones are true except

(A) They are hydrophobic
(B) They require carriers to transport them in circulation
(C) Their receptors are intracellular
(D) They require cyclic AMP as second messenger

142. Cyclic AMP acts as the second messenger for

(A) ADH (B) Glucagon
(C) Calcitonin (D) All of these

143. Cyclic AMP acts as the second messenger for all of the following except

(A) Oxytocin (B) TSH
(C) ACTH (D) FSH

144. Cyclic GMP acts as the second messenger for

(A) Nerve growth factor
(B) Atrial natriuretic factor
(C) Epinephrine
(D) Norepinephrine

145. Some hormones produce their intracellular effects by activating

(A) Phospholipae A_1 (B) Phospholipase B
(C) Phospholipase C (D) All of these

146. Inositol triphosphate is the second messenger for

(A) Gastrin (B) Cholecystokinin
(C) Oxytocin (D) All of these

147. G-proteins act as

(A) Hormone carriers
(B) Hormone receptors
(C) Second messengers
(D) Signal transducers

148. Signal transducer for glucagons is a

(A) Cyclic nucleotide
(B) Phosphoinositide
(C) Stimulatory G-protein
(D) Inhibitory G-protein

149. G-proteins are

(A) Monomers (B) Dimers
(C) Trimers (D) Tetramers

150. G-proteins have a nucleotide binding site for

(A) ADP/ATP (B) GDP/GTP
(C) CDP/CTP (D) UDP/UTP

151. The nucleotide binding site of G-proteins is present on their

(A) α-Subunit (B) β-Subunit α- and β-
(C) γ-Subunit (D) δ-Subunit

152. Adenylate cyclase is activated by

(A) GDP-bearing α-Subunit of G-protein
(B) GTP-bearing α-Subunit of G-protein
(C) GDP-bearing γ-Subunit of G-protein
(D) GTP-bearing γ-Subunit of G-protein

153. Tyrosine kinase activity is present in

(A) α-Adrenergic receptors
(B) β-Adrenergic receptors
(C) Cholinergic receptors
(D) Insulin receptors

154. Insulin receptor is a

(A) Monomer (B) Dimer
(C) Trimer (D) Tetramer

155. Tyrosine kinase activity is present in

(A) Acetylcholine receptor
(B) PDGF receptor
(C) ADH receptor
(D) All of these

156. Protein kinase C is activated by

(A) Cyclic AMP (B) Cyclic GMP
(C) Diacyl glycerol (D) Inositol triphosphate

157. Melatonin is synthesised in

(A) Hypothalamus
(B) Posterior pituitary gland
(C) Pineal gland
(D) Melanocytes

158. Melatonin is synthesised from

(A) Phenylalanine (B) Tyrosine
(C) Tryptophan (D) None of these

159. Melanocyte stimulating hormone is secreted by

(A) Pineal gland
(B) Anterior lobe of pituitary gland
(C) Posterior lobe of pituitary gland
(D) Intermediate lobe of pituitary gland

160. MSH causes

(A) Dispersal of melanin granules in melanocytes
(B) Increase in melanin concentration in melanocytes
(C) Decerease in melanin concentration in melanocytes
(D) Increase in number of melanocytes

161. Secretion of MSH is regulated by

(A) Feedback mechanism
(B) Melatonin
(C) Hypothalamic hormones
(D) ACTH

162. A hormone synthesised in the hypothalamus is

(A) Melatonin
(B) Melanocyte stimulating hormone
(C) Vasopressin
(D) Prolactin

163. Posterior pituitary gland secretes

(A) Catecholamines
(B) Oxytocin
(C) Follicle stimulating hormone
(D) Serotonin

164. A nonapeptide among the following is

(A) Antidiuretic hormone
(B) Insulin
(C) ACTH
(D) Thyrotropin releasing hormone

165. Diabetes insipidus is caused by deficient secretion of

(A) Insulin (B) Glucagon
(C) Vasopressin (D) Oxytocin

166. Peripheral vasoconstriction is caused by high concentrations of

(A) Antidiuretic hormone
(B) Melatonin
(C) Glucagon
(D) Oxytocin

167. Somatotropin is secreted by

(A) Hypothalamus (B) Anterior pituitary
(C) Posterior pituitary (D) Thyroid gland

168. Secretion of Insulin-like Growth Factor-I is promoted by

(A) Insulin (B) Glucagon
(C) Growth hormone (D) Somatomedin C

169. Growth hormone increases

(A) Protein synthesis (B) Lipogenesis
(C) Glycogenolysis (D) All of these

170. Secretion of growth hormone is inhibited by

(A) Somatomedin C (B) Somatostatin
(C) Feedback inhibition (D) All of these

171. Secretion of somatotrophin is promoted by

(A) Somatomedin C
(B) Somatostatin
(C) Growth hormone releasing hormone
(D) Hypoglycaemia

172. Human growth hormone has

(A) One polypeptide chain and one intra-chain disulphide bond
(B) One polypeptide chain and two intra-chain disulphide bond
(C) Two polypeptide chains joined by one disulphide bond
(D) Two polypeptide chains joined by two disulphide bond

173. Number of amino acid residues in human growth hormone is

(A) 51 (B) 84
(C) 191 (D) 198

174. Number of amino acid residues in prolactin is

(A) 51 (B) 84
(C) 191 (D) 198

175. Secretion of prolactin is regulated by

(A) Feedback inhibition
(B) Prolactin releasing hormone
(C) Prolactin release inhibiting hormone
(D) All of these

176. Precursor of ACTH is

(A) Cholesterol (B) Pregnenolone
(C) Corticotropin (D) Pro-opiomelanocortin

177. All of the following can be formed from pro-opiomelanocortin except

(A) α-and β-MSH (B) β-and γ-Lipotropins
(C) α-and β-Endorphins (D) FSH

178. All the following statements about pro-opiomelanocortin are true except

(A) It is made up of 285 amino acids
(B) It is synthesised in pars intermedia and anterior lobe of pituitary gland
(C) It is the precursor of ACTH and melatonin
(D) It is the precursor of corticotropin like intermediate lobe peptide and endorphins

179. All the following statements about ACTH are true except

(A) It is a tropic hormone
(B) Its target cells are located in adrenal cortex
(C) Its receptors are located in the cell membrane
(D) Its second messenger is inositol triphosphate

180. Regulation of ACTH secretion occurs through

(A) Corticotropin releasing hormone (CRH) and corticotropin release inhibiting hormone (CRIH) of hypothalamus
(B) Feedback inhibition by cortisol
(C) CRH and feedback inhibition by cortisol
(D) CRIH and feedback inhibition by cortisol

181. ACTH is a polypeptide made up of

(A) 39 amino acids (B) 41 amino acids
(C) 51 amino acids (D) 84 amino acids

182. CRH is a polypeptide made up of

(A) 39 amino acids (B) 41 amino acids
(C) 51 amino acids (D) 84 amino acids

183. Hormonal activity of ACTH is completely lost on removal of

(A) 5 C-terminal amino acids
(B) 10 C-terminal amino acids
(C) 15 C-terminal amino acids
(D) None of these

184. All the following statements about TSH are true except

(A) It is a glycoprotein
(B) It is made up of α- and β-subunits
(C) Receptor recognition involves both the subunits
(D) Its subunit is identical with those of FSH and LH

185. All the following statements about TSH are true except

(A) It is a tropic hormone
(B) It acts on para-follicular cells of thyroid glands
(C) Its receptors are membrane-bound
(D) Its second messenger is cyclic AMP

186. All the following statements about thyrotropin releasing hormone are true except

(A) It is secreted by hypothalamus
(B) It is a pentapeptide
(C) It increases the secretion of TSH
(D) Its secretion is inhibited by high level of T_3 and T_4 in blood

187. In males, luteinising hormone acts on

(A) Leydig cells (B) Sertoli cells
(C) Prostate gland (D) All of these

188. All the following statements about FSH are true except

(A) It is a tropic hormone secreted by anterior pituitary
(B) Its secretion is increased by gonadotropin releasing hormone
(C) It acts on Sertoli cells
(D) It increases the synthesis of testosterone

189. In males, secretion of luteinising hormone is inhibited by

(A) Gonadotropin releasing hormone
(B) FSH
(C) High blood level of testosterone
(D) Inhibin

190. Secretion of luteinising hormone is increased by

(A) GnRH (B) FSH
(C) Testosterone (D) None of these

191. In structure and function, HCG resembles

(A) FSH (B) LH
(C) GnRH (D) Progesterone

192. Acromegaly results from overproduction of

(A) ACTH during childhood
(B) TSH during adult life
(C) Growth hormone during childhood
(D) Growth hormone during adult life

193. Acromegaly results in all the following except

(A) Overgrowth of the bones of face, hands and feet
(B) Increased stature
(C) Enlargements of viscera
(D) Impaired glucose tolerance

194. Overproduction of growth hormone during childhood causes

(A) Acromegaly (B) Gigantism
(C) Cushing's disease (D) Simmond's disease

195. Decreased secretion of growth hormone during childhood causes

(A) Simmond's disease (B) Cushing's disease
(C) Dwarfism (D) Cretinism

196. Stature is increased in

(A) Gigantism (B) Acromegaly
(C) Simmond's disease (D) Cushing's disease

197. An amino acid used for the synthesis of thyroid hormone is

(A) Tyrosine (B) Tryptophan
(C) Histidine (D) Proline

198. An enzyme required for the synthesis of thyroid hormones is

(A) Iodinase (B) Deiodinase
(C) Thyroperoxidase (D) Thyroxine synthetase

199. Thyroperoxidase iodinates

(A) Free tyrosine in thyroid gland
(B) Tyrosine residues of thyroglobulin
(C) Tyrosine residues of thyroxine binding globulin
(D) Tyrosine residues of thyroxine binding prealbumin

200. In thyroxine, tyrosine residues are iodinated at positions:

(A) 1 and 3 (B) 2 and 4
(C) 3 and 5 (D) 4 and 6

201. Thyroid gland takes up circulating iodine

(A) By simple diffusion
(B) By facilitated diffusion
(C) By active uptake
(D) In exchange for chloride

202. Thyroid hormones are present in blood

(A) In free form
(B) In association with thyroxine binding globulin (TBG)
(C) In association with thyroxine binding pre-albumin (TBPA)
(D) Mainly in association with TBG, partly in free form and sometimes in association with TBPA also

203. When thyroxine binding globulin and thyroxine binding pre-albumin are saturated with thyroxine, the excess hormone is transported by

(A) Albumin (B) Gamma globulins
(C) Transcortin (D) None of these

204. Receptors for thyroid hormones are present

(A) On the cell membrane
(B) Across the cell membrane
(C) Inside the cells
(D) In association with G-proteins

205. Binding of thyroxine to its receptors

(A) Activates Adenylate cyclase
(B) Activates guanylate cyclase
(C) Activates a stimulatory G-protein
(D) Increases transcription

206. The most powerful thyroid hormone is

(A) Reverse T_3 (B) DIT
(C) T_3 (D) T_4

207. The most abundant thyroid hormone in blood is

(A) Free T_3 (B) T_3 bound to TBG
(C) Free T_4 (D) T_4 bound to TBG

208. Secretion of thyroid hormones is regulated by

(A) Hypothalamus
(B) Anterior pituitary
(C) Feedback regulation
(D) All of these

209. Clinical features of hyperthyroidism include

(A) Goitre, heat intolerance, weight loss and tachycardia
(B) Goitre, tremors, tachycardia and cold intolerance
(C) Exophthalmos, goiter, tachycardia and loss of appetite
(D) Exophthalmos, goiter, tremors and obesity

210. All the following may occur in hyperthyroidism except

(A) Goitre (B) Increased appetite
(C) Loss of weight (D) Low BMR

211. All the following may occur in myxoedema except

(A) Cold intolerance (B) Low BMR
(C) Tachycardia (D) Dry and coarse skin

212. Mental retardation can occur in

(A) Cretinism
(B) Juvenile myxoedema
(C) Myxoedema
(D) Juvenile thyrotoxicosis

213. Parathyroid hormone (PTH) is synthesised in

(A) Chief cells of parathyroid glands
(B) Oxyphil cells of parathyroid glands
(C) Para follicular cells of thyroid glands
(D) Follicular cells of thyroid gland

214. The number of amino acid residues in PTH:

(A) 51 (B) 84
(C) 90 (D) 115

215. Amino acid residues which are essential for the biological activity of PTH are

(A) N-terminal 34 amino acids
(B) N-terminal 50 amino acids
(C) C-terminal 34 amino acids
(D) C-terminal 50 amino acids

216. Half-life of PTH is

(A) A few seconds (B) A few minutes
(C) A few hours (D) A few days

217. The second messenger for PTH is

(A) Cyclic AMP (B) Cyclic GMP
(C) Diacylglycerol (D) Inositol triphosphate

218. PTH causes all of the following except

(A) Increased intestinal absorption of calcium
(B) Increased intestinal absorption of phosphate
(C) Increased tubular reabsorption of calcium
(D) Increased tubular reabsorption of phosphate

219. Secretion of PTH is regulated by

(A) Hypothalamus
(B) Anterior pituitary
(C) Feedback effect of plasma PTH
(D) Feedback effect of plasma calcium

220. A high concentration of PTH in blood causes

(A) Increase in plasma calcium and inorganic phosphorous
(B) Decrease in plasma calcium and inorganic phosphorous
(C) Increase in plasma calcium and decrease in plasma inorganic phosphorous
(D) Decrease in plasma calcium and increase in plasma inorganic phosphorous

221. Tetany can occur

(A) In primary hyperparathyroidism
(B) In secondary hyperparathyroidism
(C) In idiopathic hypoparathyroidism
(D) After accidental removal of parathyroid glands

222. Crystallisation of insulin occurs in the presence of

(A) Chromium (B) Copper
(C) Zinc (D) Calcium

223. Daily secretion of insulin is about δ–

(A) 10–20 mg (B) 40–50 mg
(C) 10–20 units (D) 40–50 units

224. Insulin receptors are decreased in number in

(A) Obesity (B) Starvation
(C) Hyperinsulinism (D) Kwashiorkor

225. Insulin binding sites are present on the

(A) α-subunits of insulin receptor
(B) β-subunits of insulin receptor
(C) γ-subunits of insulin receptor
(D) α-and β–subunits of insulin receptor

226. α-Subunits of insulin receptor are present

(A) Outside the cell membrane
(B) In the cell membrane
(C) Across the cell membrane
(D) In the cytosol

227. β-Subunits of insulin receptor are present

(A) Outside the cell membrane
(B) In the cell membrane
(C) Across the cell membrane
(D) In the cytosol

228. In the insulin receptor, tyrosine kinase domain is present in

(A) α-Subunits (B) β-Subunits
(C) γ-Subunits (D) δ-Subunits

229. Binding of insulin to its receptor activates

(A) Adenylate cyclase (B) Guanylate cyclase
(C) Phospholipase C (D) Tyrosine kinase

230. Insulin receptor is made up of

(A) One α-and one β-subunit
(B) Two α-and two β-subunit
(C) Two, α two β-and two γ-subunit
(D) One α, one β-one γ-and one δ-subunit

231. Insulin is required for the active uptake of glucose by most of the cells except

(A) Muscle cells (B) Renal tubular cells
(C) Adipocytes (D) Liver cells

232. Insulin decreases

(A) Glycogenesis
(B) Glyolysis
(C) Gluconeogenesis
(D) Tubular reabsorption of glucose

233. Insulin increases

(A) Glycogenesis (B) Gluconeogenesis
(C) Lipolysis (D) Blood glucose

234. Insulin increases

(A) Protein synthesis (B) Fatty acid synthesis
(C) Glycogen synthesis (D) All of these

235. Insulin decreases the synthesis of

(A) Hexokinase (B) Glucokinase
(C) PEP carboxykinase (D) Glycogen synthetase

236. Diabetes mellitus can occur due to all of the following except

(A) Deficient insulin secretion
(B) Tumour of β–cells
(C) Decrease in number of insulin receptors
(D) Formation of insulin antibodies

237. Hypoglycaemic coma can occur

(A) In untreated diabetes mellitus
(B) In starvation
(C) After overdose of oral hypoglycaemic drugs
(D) After overdose of insulin

238. Second messenger for glucagons is

(A) Cyclic AMP (B) Diacylglycerol
(C) Cyclic GMP (D) Inositol triphosphate

239. Number of amino acid residues in glucagons is

(A) 29 (B) 34
(C) 51 (D) 84

240. Glucagon secretion increases

(A) After a carbohydrate-rich meal
(B) After a fat-rich meal
(C) When blood glucose is high
(D) When blood glucose is low

241. The maineffecting of glucagons is to increase

(A) Glycolysis in muscles
(B) Glycogenolysis in muscles
(C) Glycogenolysis in liver
(D) Glycogenesis in liver

242. Tyrosine is required for the synthesis of all of the following except

(A) Melatonin (B) Epinephrine
(C) Norepinephrine (D) Thyroxine

243. Dopamine is synthesised from

(A) Dihydroxyphenylalanine
(B) Epinephrine
(C) Norepinephrine
(D) Metanephrine

244. Blood brain barrier can be crossed by

(A) Epinephrine (B) Dopamine
(C) Dopa (D) All of these

245. Epinephrine is synthesised in

(A) Chromaffin cells of adrenal medulla
(B) Sympathetic ganglia
(C) Brain
(D) All of these

246. Immediate precursor of epinephrine is

(A) Metanephrine (B) Norepinephrine
(C) Dopa (D) Dopamine

247. The chief metabolite of catecholamines is

(A) Metanephrine
(B) Normetanephrine
(C) 3, 4-Dihydroxymandelic acid
(D) Vanillylmandelic acid

248. An enzyme involved in catabolism of catecholamines is

(A) Dopa decarboxylase
(B) Aromatic amino acid decarboxylase
(C) Monoamine oxidase
(D) Catechol oxidas

249. Norepinephrine binds mainly to

(A) α-Adrenergic receptors
(B) β-Adrenergic receptrors
(C) Muscarinic receptors
(D) Nicotinic receptors

250. Astimulatory G-protein transduces the signals from

(A) α_1-and β_1-adrenergic receptors
(B) α_2-and β_2-adrenergic receptors
(C) α_1-and α_2-adrenergic receptors
(D) β_1-and β_2-adrenergic receptors

251. Binding of catecholamines to α_2–adrenergic receptors

(A) Increases the intracellular concentration of cAMP
(B) Increases the intracellular concentration of cGMP
(C) Decreases the intracellular concentration of cAMP
(D) Decreases the intracellular concentration of cGMP

252. Phosphoinositide cascade is activated on binding of catecholamines to

(A) α_1-Adrenergic receptors
(B) α_2-Adrenergic receptors
(C) β_1-Adrenergic receptors
(D) β_2-Adrenergic receptors

253. Epinephrine decreases

(A) Glycogenesis (B) Glycogenolysis
(C) Gluconeogenesis (D) Lipolysis

254. Epinephrine increases the concentration of free fatty acids in plasma by increasing

(A) Extramitochondrial fatty acid synthesis
(B) Mitochondrial fatty acid chain elongation
(C) Microsomal fatty acid chain elongation
(D) Lipolysis in adipose tissue

255. Epinephrine increases all of the following except

(A) Glycogenolysis in muscles
(B) Lipolysis in adipose tissue
(C) Gluconeogenesis in muscles
(D) Glucagon secretion

256. Secretion of catecholamines is increased in

(A) Cushing's syndrome
(B) Addison's disease
(C) Phaeochromocytoma
(D) Simmond's disease

257. Zona glomerulosa of adrenal cortex synthesises

(A) Glucocorticoids
(B) Mineralocorticoids
(C) Androgens
(D) Estrogen and progesterone

258. Cortisol is a

(A) Glucocorticoid (B) Mineralocorticoid
(C) Androgen (D) Estrogen

259. The major mineralcorticoid is

(A) Hydrocortisone (B) Aldosterone
(C) Aldactone A (D) Androstenedione

260. Steroid hormones are synthesised in all of the following except

(A) Testes (B) Ovaries
(C) Adrenal medulla (D) Adrenal cortex

261. Steroid hormones are synthesised from

(A) Cholesterol
(B) 7-Dehydrocholesterol
(C) Calcitriol
(D) 7-Hydroxycholesterol

262. A common intermediate in the synthesis of all the steroid hormones is

(A) Pregnenolone
(B) 17-Hydroxypregnenolone
(C) Corticosterone
(D) Progesterone

263. A common intermediate in the synthesis of cortisol and aldosterone is

(A) Progesterone (B) Testosterone
(C) Estradiol (D) None of these

264. A common intermediate in the synthesis of estrogens is

(A) Cortisol
(B) Andostenedione
(C) Corticosterone
(D) 11-Deoxycorticosterone

265. Glucocorticoids are transported in blood

(A) In association with transcortin chiefly
(B) In association with albumin to some extent
(C) In free form partly
(D) All of these

266. All the following statements about transcortin are true except

(A) It is synthesised in liver
(B) It transports glucocorticoids
(C) It transports aldosterone
(D) It transports progesterone

267. The second messenger for glucocorticoids is

(A) Cyclic AMP
(B) Cyclic GMP
(C) Inositol triphosphate
(D) No second messenger is required

268. Glucocorticoids increase all of the following except

(A) Gluconeogenesis
(B) Lipolysis in extremities
(C) Synthesis of elcosanoida
(D) Hepatic glycogenesis

269. Glucocorticoids increase the synthesis of all of the following except

(A) Glucokinase
(B) Glucose-6-phosphatase
(C) Fructose-1, 6-biphosphatase
(D) Pyruvate carboxylase

270. Secretion of glucocorticoida is regulated by all the following except

(A) Hypothalamus
(B) Anterior pituitary
(C) Feedback control by blood glucose
(D) Feedback control by glucocorticoids

271. Excessive secretion of glucocorticoids raises blood glucose by

(A) Decreasing glycogenesis
(B) Increasing glycogenolysis
(C) Increasing gluconeogenesis
(D) Inhibiting HMP shunt

272. Mineralcorticoids regulate the metabolism of all of the following except

(A) Sodium (B) Potassium
(C) Calcium (D) Chloride

273. Mineralocorticoids increase the tubular reabsorption of

(A) Sodium and calcium
(B) Sodium and potassium
(C) Sodium and chloride
(D) Potassium and chloride

274. Mineralocorticoids increase the tubular secretion of

(A) Sodium (B) Potassium
(C) Chloride (D) Bicarbonate

275. Secretion of mineralcorticoids is increased by

(A) ACTH (B) Angiotensin
(C) Hypokalaemia (D) Hypernatraemia

276. In Addison's disease, there is excessive retention of

(A) Potassium (B) Sodium
(C) Chloride (D) Water

277. In adrenogenital syndrome due to total absence of 21-hydroxylase in adrenal cortex, there is

(A) Deficient secretion of glucocorticoids
(B) Deficient secretion of mineralcorticoids
(C) Excessive secretion of androgens
(D) All of these

278. Spironolactone is an antagonist of

(A) Cortisol (B) Hydrocortisone
(C) Aldosterone (D) Testosterone

279. Androgens are synthesised in

(A) Leydig cells in testes
(B) Sertoli cells in testes
(C) Seminiferous tubules
(D) Prostate gland

280. Testosterone is transported in blood by

(A) Transcortin
(B) Testosterone binding globulin
(C) Testosterone estrogen binding globulin
(D) Albumin

281. The metabolites of androgens are

(A) 17-Hydroxysteroids
(B) 17-Ketosteroids
(C) 11-Hydroxysteroids
(D) 11-Ketosteroids

282. An androgen which is more powerful than testosterone is

(A) Androstenedione (B) Dihydrotestosterone
(C) Androsterone (D) Epiandrosterone

283. Secretion of androgens is increased by

(A) LH (B) FSH
(C) ACTH (D) Growth hormone

284. During late pregnancy, the major source of progesterone is

(A) Adrenal cortex (B) Placenta
(C) Corpus luteum (D) Graafian follicles

285. Progesterone is transported in blood by

(A) Transcortin
(B) Sex hormone binding globulin
(C) Albumin
(D) Testosterone estrogen binding globulin

286. The major metabolite of progesterone is

(A) Pregnenolone (B) Pregnanediol
(C) Estradiol (D) Norethindrone

287. Secretion of progesterone

(A) Is more in first half of menstrual cycle than in second half
(B) Is more in second half of menstrual cycle than in first half
(C) Remains constant during menstrual cycle
(D) Decreases during pregnancy

288. Women become susceptible to osteoporosis after menopause due to decreased

(A) Secretion of Parathormone
(B) Conversion of vitamin D into calcitriol
(C) Secretion of estrogen
(D) Secretion of progesterone

289. A hormone used for detection of pregnancy is

(A) Estrogen
(B) Progesterone
(C) Oxytocin
(D) Chorionic gonadotropin

290. Placenta secretes all of the following except

(A) FSH
(B) Progesterone
(C) Estrogen
(D) Chorionic gonadotropin

291. Gastrin is a polypeptide made up of

(A) Five amino acids
(B) Twelve amino acids
(C) Seventeen amino acids
(D) Twenty amino acids

292. Biological activity of gastrin is present in the

(A) Four N-terminal amino acids
(B) Four C-terminal amino acids
(C) Five N-terminal amino acids
(D) Five C-terminal amino acids

293. All the following statements about β-endorphin are true except μ:

(A) It is a polypeptide
(B) Its precursor is pro-opio-melanocortin
(C) Its receptors are represent in brain
(D) Its action is blocked by morphine

294. All the following statements about epidermal growth factor are true except

(A) It is a protein
(B) It possess quaternary structure
(C) Its receptor is made up of a single polypeptide chain
(D) Its receptor possesses tyrosine kinase domain

295. Met-enkephalin is a

(A) Tripeptide (B) Pentapeptide
(C) Octapeptide (D) Decapeptide

296. Vasoconstrictor effect of ADH is mediated by

(A) cAMP (B) cGMP
(C) Protein kinase C (D) Angiotensin II

297. The rate limiting step in catecholamine synthesis is catalysed by

(A) Phenylalanine hydroxylase
(B) Tyrosine hydroxylase
(C) Dopa decarboxylase
(D) Phenylethanolamine N-methyl transferase

298. Dopa decarboxylase is inhibited by

(A) Epinephrine (B) Norepinephrine
(C) α–Methyldopa (D) None of these

299. Tyrosine hydroxylase is inhibited by

(A) Catecholamines (B) α–Methyldopa
(C) Phenylalanine (D) Vanillyl mandelic acid

300. Urinary excretion of vanillyl madelic acid is increased in

(A) Phaeochromocytoma
(B) Cushing's syndrome
(C) Carcinoid syndrome
(D) Aldosteronism

301. Iodide uptake by thyroid gland is decreased by

(A) Thicyanate (B) Thiouracil
(C) Thiourea (D) Methimazole

302. Binding of growth hormone to its receptor results in phosphorylation of

(A) JAK-2
(B) Growth hormone receptor
(C) STATs
(D) All of these

303. Binding of growth hormone to its receptor results in increased transcription of

(A) c-fos gene (B) c-myc gene
(C) p-53 gene (D) None of these

304. Activation of IRS-1, PI-3 kinase and GRB-2 is brought about by

(A) Glucagon (B) Insulin
(C) Prolactin (D) IGF-2

305. The protein IRS-1 is phosphorylated by

(A) Protein kinase A
(B) Protein kinase C
(C) Tyrosine kinase activity of insulin receptor
(D) Tyrosine kinase activity of IGF-1 receptor

306. Phosphorylated IRS-1 activates GRB-2 which is

(A) G-protein receptor binding protein-2
(B) Growth factor receptor binding protein-2
(C) Growth hormone receptor binding protein-2
(D) Glucocorticoid receptor binding protein-2

307. STAT proteins are

(A) Thermostat proteins of brain
(B) Glucostat proteins of hepatocyte cell membrane
(C) Short term activators of translation
(D) Signal transduction and activators of transcription

308. Activated phospholipase C acts on

(A) Phosphatidyl inositol-4, 5-biphosphate
(B) Inositol-1, 4, 5-triphosphate
(C) Protein kinase C
(D) Pl-3 kinase

309. Phospholipase C is activated by

(A) G_s proteins (B) G_i proteins
(C) G_q proteins (D) G_{12} proteins

310. Proteoglycans are made up of proteins and

(A) Glucosamine (B) Mannosamine
(C) Sialic acid (D) Mucopolysaccharides

311 Sweat chlorides are increased in

(A) Cystic fibrosis (B) Pancreatic cancer
(C) Acute pancreatitis (D) None of these

312. All the following statements about cystic fibrosis are correct except

(A) It is inherited as an autosomal recessive disease
(B) It affects a number of exocrine glands
(C) It causes increased sweating
(D) Sweat chlorides are above 60 mEq/L in this disease

313. Radioactive iodine uptake by thyroid gland 24 hours of a test dose is

(A) 1.5–15% of the test done
(B) 15–20% of the test done
(C) 20–40% of the test done
(D) 50–70% of the test done

314. Radioactive iodine uptake by thyroid gland is increased in

(A) Endemic goitre (B) Hyperthyroidism
(C) Myxoedema (D) Creatinism

315. Normal range of total thyroxine in serum is

(A) 0.8–2.4 ng/dl (B) 0.8–2.4 μg/dl
(C) 5–12 ng/dl (D) 5–12 μg/dl

316. Normal range of total tri-iodothyronine in serum is

(A) 0.1–0.2 ng/dl (B) 0.1–0.2 μg/dl
(C) 0.8–2.4 ng/dl (D) 0.8–2.4 μg/dl

317. Administration of TSH increases serum T_3 and T_4 in

(A) Hyperthyroidism of pituitary origin
(B) Hyperthyroidism of thyroid origin
(C) Hypothyroidism of pituitary origin
(D) Hypothyroidism of thyroid origin

318. High level of T_3 and T_4 and low TSH in serum indicates

(A) Hyperthyroidism of pituitary origin
(B) Hypothyroidism of pituitary origin
(C) Hyperthyroidism of thyroid origin
(D) Hypothyroidism of thyroid origin

319. BMR is increased in

(A) Endemic goitre (B) Thyrotoxicosis
(C) Myxoedema (D) Cretinism

320. Which one of the following statements correctly describes eukaryotic DNA?

(A) If uses DNA polymerase with nuclease activities
(B) It is replicated bidirectionally at many points
(C) It contains no repetitive DNA
(D) It is nonlinear

321. Which one of the following causes frame shift mutation?

(A) Transition
(B) Transversion
(C) Deletion
(D) Substitution of purine to pyrimidine

322. The second messenger for many hormones is

(A) ATP (B) cyclic AMP
(C) cGMP (D) UTP

323. The most potent hormone concerned with the retention of sodium in the body is

(A) Cortisone (B) Aldosterone
(C) Corticosterone (D) Cortisol

324. Aspirin blocks the synthesis of

(A) Prostaglandins only
(B) Prostacyclins only
(C) Thromboxanes only
(D) All of these

325. Retention of sodium in the body leads to a retention of

(A) Potassium
(B) Water
(C) Potassium and water
(D) Neither potassium nor water

326. cAMP is so called because it is formed during

(A) TCA cycle
(B) Urea cycle
(C) Rhodopsin cycle
(D) It has a cyclic structure

327. Protein bound iodine is _____ bound to protein.

(A) Iodine (B) Thyroid hormones
(C) Thyroxine (D) Tri iodo thyronine

328. In hypophysectonized animals, fasting produces

(A) Severe hyperglycemia
(B) Hypoglycemia
(C) No change in blood sugar
(D) Mild hyper glycemia

329. Calcitomica is antagonist to

(A) Serotonin
(B) Thyroxine
(C) Tri iodo thyronine
(D) Para thyroid hormone

330. There is polyuria without glycosuria in this disorder

(A) Diabetes insipidus (B) Diabetes millitus
(C) Bronze diabetes (D) Juvenile diabetes

331. In hyperparathyroidism there is

(A) Hypocalcemia (B) Hypophophatemia
(C) Hypokalemia (D) Hyperkalemia

332. Insulin resistance is encountered in

(A) Addison's disease (B) Hypothyroidism
(C) Hypopituctarism (D) Acromegaly

333. Richest source of prostaglandins in a human male is

(A) Blood (B) Urine
(C) Semen (D) C.S.F.

334. One of the following is not used as a second messenger by hormones:

(A) mRNA
(B) cAMP
(C) Calcium ions
(D) Myoinisotol 1, 4, 5 triphosphate

335. This pancreatic hormone increases the blood-sugar level:

(A) Insulin
(B) Glucagon
(C) Pancreozymin
(D) Pancreatic polypeptide

336. Which one of the following statements is fully correct?

(A) Hormones are needed in the diet
(B) Hormones can be elaborated only by endocrine glands
(C) All the hormones enter the cells and perform their function
(D) Hormones are substance synthesized in the body in small quantities and control and regulate metabolic events

337. T_3 is

(A) Thyroxine
(B) Triodo thyronine
(C) Triodo tyrosine
(D) Reverse tri iodo thyronine

338. Whcih of the following hormone is a peptide of less than ten amino acids?

(A) Insulin (B) Growth hormone
(C) Oxytocin (D) Parathyroid hormone

339. Tyrosine of thyroglobulin is acted upon by _____ to give mono and diiodo tyrosines.

(A) Potassium Iodide
(B) Iodine
(C) Iodide I
(D) Higher valency state of iodine (I^+)

340. Whcih of the following hormone does not activate adenylate cyclase?

(A) Epinephrine
(B) Glucagon
(C) Parathyroid hormone
(D) Insulin

341. Pheochromacytoma is a tumor of

(A) adrenal medulla
(B) bone
(C) head of Pancreas
(D) pituitary

342. Which one of the following statements is incorrect?

(A) Insulin increases glucose phosphorylation
(B) Insulin increases glycolysis
(C) Insulin augments HMP shunt
(D) Insulin promotes gluconeogenesis

343. Which of one ring in the structure of the following is aromatic?

(A) Androgens (B) Estrogens
(C) Cholesterol (D) Bile acids

344. Which of one of the following is not GUT hormone?

(A) Motiline (B) Secretion
(C) Gastrin (D) Calcitonin

345. Which of the following hormones are synthesized as prehormones

(A) Vasopressin and oxytocin
(B) Growth hormone and insulin
(C) Insulin and parathyroid hormone
(D) Insulin and Glucagon

346. This hormone has disulphide group:

(A) Glucagon (B) Insulin
(C) T_4 (D) Epinephrine

347. The blood sugar raising action of the hormone of suprarenal cortex is due to

(A) Glyconeogenesis
(B) Glycogenolysis
(C) Glucagon like activity
(D) due to inhibition of glomerular filtration of glucose

348. Hyper insulinism can cause coma since

(A) The chief nutrient for the brain is glucose
(B) The chief nutrient for the heart is glucose
(C) The glucostatic role of the liver is damaged
(D) The kidneys are damaged

349. Which of the following property of prostaglandins has been utilized by chinicians in hospital for

(A) Inducing fever
(B) Causing inflammation
(C) Effecting smooth muscle contraction
(D) Disaggregation of spermatozoa

350. A major structural difference between estrogens and androgens is the fact that

(A) The androgens are usually C_{21} steroids
(B) The estrogens are usually digitonin - precipitable
(C) The androgens have an aromatic ring
(D) The estrogens have an aromatic ring

351. Alloxan can experimentally induce diabetes mellitus due to

(A) Stimulation of α cells of the islets of langerhans
(B) Necrosis of the β cells of the islets
(C) Potentiation of insulinase activity
(D) Epinephrine like action

352. Which of the following alleviates asthma?

(A) PGE_1 only (B) PGE_1 and PGE_2
(C) PGF_2 (D) PGA

353. Thyroxine is derived from

(A) Tyrosine (B) Tyranine
(C) Taurine (D) Tryptaine

354. Adrneal cortical response is poor in

(A) Kwashiorkor (B) Marasmus
(C) Fatty liver (D) Atherosclerosis

355. Protein bound iodine in blood is present to the extent of _____ / dL

(A) 3–8 mg (B) 4–8 mg
(C) 3–8 gm (D) 4–8 gm

356. Prostaglandins are

(A) C_2 unsaturated acids
(B) C_{27} saturated alcohols
(C) C_{20} saturated acids
(D) C_{27} saturated alcohols

357. Which of tne of the following scientists has not worked in the field of prostaglandins?

(A) Voneuler (B) Sultan Karim
(C) Andre robet (D) Kendal

358. The suffix number in the names of prostaglandins gives the number of

(A) OH groups (B) Double bonds
(C) Acid groups (D) Ketoacids

359. One of the important functions of prostacyclins is

(A) Inhibition of platelet aggregation
(B) Contraction of uterus
(C) Decrease of gastric secretion
(D) Relieving osthma

360. Vasopressin is also known as

(A) Antidiabetogenic hormone
(B) Antidiuretic hormone
(C) Somatotropic hormone
(D) Pitoxin

361. Which of the following is used for inducing labour?

(A) Prostaglandins (B) Prostacyclins
(C) Vasopressin (D) Thromboxanes

362. Which of the following does not have disulphide bond?

(A) Oxytocin (B) Vasopressin
(C) Insulin (D) Glucagon

363. Which is incorrect ? Epinephrin promotes the glycogenolysis in

(A) Muscle (B) Liver
(C) Heart (D) None of these

364. Which of one of the following is released by hypothalamus?

(A) Somatostatin
(B) Somatotropic hormone
(C) Somato medin C
(D) Luteinising hormone

365. Which one of the following is not liberated by the adenohypophysis?

(A) Growth hormone (B) TSH
(C) ACTH (D) Gonadotropin

366. Which of the following hormone is not under the control of ACTH?

(A) Aldosterone (B) Cortisol
(C) Corticosterone (D) Deoxycorticosterone

367. Which of the following organ prefers fructose to glucose

(A) Liver (B) Testes
(C) Pancreas (D) Heart

368. Total synthesis of creatine can be done by

(A) Liver (B) Kidneys
(C) Pancreas (D) Heart

369. Thyrotropin releasing hormone is a

(A) Dipeptide (B) Tripeptide
(C) Octapeptide (D) Decapeptide

370. Hypthalamo _____ gonadal oxis, fill up the blank with the suitable word.

(A) Adrenal (B) Thyroid
(C) Hypophyseal (D) Pancreatic

371. The sequence of amino acids in human growth hormone and the synthesis were done by

(A) Sanger (B) Krebs
(C) Chah Holi (D) Molisch

372. Proopiomelanocortin is the precussor of

(A) ACTH (B) β-tropin
(C) Endorphins (D) All of these

373. Adrenalin is synthesized from

(A) Adenine (B) Adenosine
(C) Tyrosine (D) Tryptophan

374. Corticotropin releasing hormone controls the direct release of

(A) Pro-opiomelanocortin
(B) α MSH
(C) β MSH
(D) Endorphins

375. The immediate parent of α, β and γ endorphins is

(A) Pro-opiomelanocortin
(B) β-lipotropin
(C) ATCH
(D) Lipoprotein

376. Prolactin release inhibiting hormone is believed to be

(A) Serotonin (B) Norepinephrine
(C) Dopanine (D) Acetyl choline

377. Whcih one of the following is not a symptom of *cushing's disease*?

(A) Hyperglycemia (B) Hypernatremia
(C) Hirsutism (D) Hyperkalemia

378. Insulin increases the permeability of glucose across the plasma membrane of muscle cells by

(A) Acting on adenylate cycle
(B) By loosening the integrity of the membrane
(C) Through Ca^{2+} ions
(D) By membrane cruting the hexose carries of intracellular organelles and making them fuse with the plasma membrane

379. Somatostatin is produced by

(A) Hypothalamus
(B) Pancreas
(C) Hypothalamus and pancreas
(D) Hypothalamus and Adrenals

380. Insulin like growth hormones are produced by

(A) Hypophysis (B) Liver
(C) Pancreas (D) Thyroid

381. In pheochromocytoma, urine will have

(A) FILGU (B) VMA
(C) 5 HIAA (D) Lysine and Arginine

382. Aldosteronism will present the chemical pathology of

(A) Addison's (B) Cushing's
(C) Grave's (D) Hartnup's

383. One of the following does not bind T_3 and T_4:

(A) Albumin (B) TBG
(C) TBPA (D) Haptoglobin

384. Epinephrine causes in muscle:

(A) Gluconeogenesis (B) Glycogenesis
(C) Glycolysis (D) Glycogenolysis

385. Reverse T_3 is

(A) A synthetic compound given counter the effects of T_3
(B) Formed from T_4 but has no hormone function
(C) Formed by isomerisation of T_3
(D) Formed from T_4 and has hormone function

386. This pancreatic hormone promotes hypogenesis:

(A) Insulin (B) Glucagon
(C) Stomato station (D) Pancreozymine

387. It is unique that the following single antidiabetogenic hormone effectively counter acts the several diabetogenic hormones:

(A) Glucagon (B) Glucocorticoids
(C) Insulin (D) Growth hormone

388. Which of the following statements is correct?

(A) Thyroxine inhibits utilization of glucose
(B) Insulin increases utilization of glucose
(C) Glucagon promotes muscle glycogenolysis
(D) Insulin inhibits lipogenesis from carbohydrates

389. Steroid hormones are synthesized from

(A) Adenine (B) Protein
(C) Vitamin (D) Cholesterol

390. Hormones act only on specific organs or tissues. These are called

(A) Active sites (B) Reaction centre
(C) Target organ/Tissue (D) Physiological site

391. _____ hormone is a single chain polypeptide having 32 amino acids with molecular weight of 3,600.

(A) Testosteron (B) Thyroxine
(C) Calcitonine (D) Vasopressin

392. Which of the following is noted in cushing's syndrome, a tumor associated disease of the adrenal cortex?

(A) Decreased production of epinephrine
(B) Excessive production of epinephrine
(C) Excessive production of vasopressin
(D) Excessive production of cortisol

393. A cup of strong coffee would be expected to

(A) Interfere with synthesis of prostaglandins
(B) Decrease the effects of Glucagon
(C) Enhance the effects of epinephrine
(D) Provide the vitamin nicotinic acid

394. Increased reabsorption of water from the kidney is the major consequence of which of the following hormones?

(A) Cortisol (B) Insulin
(C) Vasopressin (D) Aldosterone

395. Lack of Glucocorticoids and mineral corticoids might be consequence of which of the following defects in the adrenal cortex?

(A) Androstenadione deficiency
(B) Estrone deficiency
(C) 17 α-OH progesterone deficiency
(D) C- α-Hydroxylase deficiency

396. ADP ribosylation is the mode of action of

(A) Cholera toxin
(B) Acetyl choline
(C) Muscerinic receptors
(D) Cyclic AMP

397. Which one of the following hormones is derived most completely from tyrosine?

(A) Glucagon (B) Thyroxine
(C) Insulin (D) Prostaglandins

398. Insulin regulates fatty acid synthesis by

(A) Dephosphorylating of acetyl CoA carboxylase
(B) Activating phosphorylase
(C) Inhibiting malonyl CoA formation
(D) Controlling carnitine-Acyl CoA transferase activity

399. Hormonal stimulation of the formation of the second messenger inositol 1,4,5 triphosphate (IP_3) quickly leads to the release of which other intracellular messenger?

(A) cAMP (B) Prostaglandin
(C) Calcinon (D) Leukotriene

400. Hormone receptors that stimulate cAMP production

(A) are part of a complex of two proteins that transform the external signal into internal cAMP production
(B) are proteins distinct and separate from those that catalyze the production of cAMP
(C) cause release of the catalytic subunit upon binding of the hormone
(D) are not very specific and bind a number of different hormones

401. All the following hormones use cAMP as a second messenger except

(A) Estrogen (B) FSH
(C) Luteinizing (D) Glucagon

402. All the following hormones promote hyperglycemia except

(A) Epinephrine (B) Norepinephrine
(C) Insulin (D) Glucagon

403. Glucagon activates the enzyme *adenyl-cyclase* which causes the increase of blood sugar level. Hence this hormone is called

(A) Hypoglycemic factor
(B) Hyper glycemic factor
(C) Antidiauritic factor
(D) Thyrotropin-releasing factor

404. TSH hormone biochemically is a

(A) Protein (B) Fat
(C) Glycoprotein (D) Carbohydrate

405. The secondary sexual characters in females is effected by

(A) Estrogens (B) Gluco corticoids
(C) MIS (D) None of these

406. A hypochromic microcytic anaemia which increases Fe, store in the bone marrow may be

(A) Folic acid responsive
(B) Vitamin B_{12} responsive
(C) Pyridoxine responsive
(D) Vitamin C responsive

407. Gastric Secretion is regulated by the hormone:

(A) Glucagon (B) Gastrin
(C) Epinephrin (D) ACTH

408. An essential agent for converting glucose to glycogen in liver is

(A) Latic acid (B) GTP
(C) UTP (D) Pyruvic acid

409. Which of the following hormones is not involved in carbohydrate metabolism?

(A) ACTH (B) Glucagon
(C) Vasopressin (D) Growth hormone

410. In the process of transcription, the flow of genetic information is from

(A) DNA to DNA (B) DNA to protein
(C) RNA to protein (D) DNA to RNA

411. Anticodon region is an important part of the structure of

(A) r-RNA (B) t-RNA
(C) m-RNA (D) z-DNA

412. Thyroid function is determined by the use of isotopes:

(A) Na^{24} (B) K^{42}
(C) Ca^{45} (D) I^{131}

413. Pernicious anaemia is diagnosed by the radio active substance:

(A) Cl^{36} (B) P^{32}
(C) CO^{60} (D) Fe^{59}

ANSWERS

1. C	2. B	3. A	4. A	5. A	6. C
7. A	8. B	9. B	10. D	11. B	12. B
13. A	14. A	15. B	16. A	17. B	18. C
19. A	20. C	21. A	22. C	23. A	24. B
25. C	26. A	27. C	28. A	29. C	30. A
31. C	32. C	33. C	34. A	35. A	36. A
37. A	38. C	39. B	40. B	41. A	42. A
43. A	44. C	45. B	46. C	47. A	48. A
49. A	50. B	51. C	52. B	53. B	54. C
55. C	56. D	57. C	58. C	59. B	60. B
61. A	62. B	63. D	64. C	65. A	66. A
67. D	68. B	69. A	70. D	71. C	72. D
73. B	74. B	75. A	76. C	77. A	78. D
79. C	80. C	81. A	82. D	83. B	84. A
85. A	86. C	87. A	88. B	89. A	90. D
91. C	92. B	93. D	94. D	95. A	96. B
97. B	98. A	99. A	100. A	101. A	102. B
103. D	104. C	105. B	106. B	107. A	108. A
109. B	110. C	111. C	112. B	113. A	114. C
115. C	116. C	117. C	118. B	119. C	120. A
121. D	122. C	123. B	124. A	125. B	126. A
127. A	128. B	129. A	130. D	131. B	132. D
133. D	134.C	135. A	136. A	137. D	138. D
139. D	140. A	141. D	142. D	143. A	144. B
145. C	146. D	147. D	148. C	149. C	150. B
151. A	152. B	153. D	154. D	155. B	156. C
157. C	158. C	159. D	160. B	161. C	162. C
163. B	164. A	165. C	166. A	167. B	168. C
169. A	170. B	171. C	172. B	173. C	174. D
175. C	176. D	177. D	178. C	179. D	180. C
181. A	182. B	183. D	184. D	185. B	186. B
187. A	188. D	189. C	190. A	191. B	192. D
193. B	194. B	195. C	196. A	197. A	198. C
199. B	200. C	201. C	202. D	203. A	204. C
205. D	206. C	207. D	208. D	209. A	210. D
211. C	212. A	213. A	214. B	215. A	216. B
217. A	218. D	219. D	220. C	221. D	222. C
223. D	224. A	225. A	226. A	227. C	228. B
229. D	230. B	231. D	232. C	233. A	234. D
235. C	236. B	237. D	238. A	239. A	240. D
241. C	242. A	243. A	244. C	245. D	246. B

247. D	248. C	249. A	250. D	251. C	252. A
253. A	254. D	255. C	256. C	257. A	258. B
259. C	260. A	261. A	262. A	263. A	264. B
265. D	266. C	267. D	268. C	269. A	270. C
271. C	272. C	273. C	274. B	275. B	276. A
277. D	278. C	279. A	280. C	281. B	282. B
283. A	284. B	285. A	286. B	287. B	288. C
289. D	290. A	291. C	292. B	293. D	294. B
295. B	296. C	297. B	298. C	299. A	300. A
301. A	302. D	303. A	304. B	305. B	306. B
307. D	308. A	309. C	310. D	311. A	312. C
313. C	314. B	315. D	316. B	317. C	318. C
319. B	320. C	321. C	322. B	323. B	324. D
325. B	326. D	327. B	328. B	329. D	330. A
331. B	332. D	333. C	334. A	335. B	336. D
337. B	338. C	339. D	340. D	341. A	342. D
343. B	344. D	345. C	346. B	347. A	348. A
349. C	350. D	351. B	352. B	353. A	354. A
355. A	356. A	357. D	358. B	359. A	360. A
361. A	362. D	363. C	364. A	365. D	366. A
367. B	368. C	369. B	370. C	371. C	372. D
373. C	374. A	375. B	376. C	377. D	378. D
379. C	380. B	381. B	382. B	383. D	384. D
385. B	386. A	387. C	388. B	389. D	390. C
391. C	392. D	393. C	394. C	395. D	396. A
397. B	398. A	399. C	400. B	401. A	402. C
403. B	404. C	405. A	406. D	407. B	408. C
409. C	410. D	411. B	412. D	413. C	