CHEMICAL COORDINATION AND INTEGRATION

BIOLOGY

Single Correct Answer Type

1. Androgens regulates
   a) Development of accessory sex organs
   b) Muscular growth
   c) Maturation of accessory sex organs
   d) All of the above
2. Progesterone hormone is secreted by
   a) Corpus albicans
   b) Corpus callosum
   c) Corpus luteum in ovaries
   d) Corpus uteri
3. Injury to adrenal cortex is not likely to affect the secretion of which one of the following?
   a) Aldosterone
   b) Both androstenedione and dehydroepiandrosterone
   c) Adrenaline
   d) Cortisol
4. Hormones are non-nutrient chemicals, which acts as…….. messengers and are produced in trace amount
   a) Intercellular
   b) Intracellular
   c) Extracellular
   d) None of these
5. Insulin receptors are
   a) Extrinsic protein
   b) Intrinsic protein
   c) G – protein
   d) Trimeric protein
6. Choose the correct option for A to D

Types of cells (Langerhans)	Hormones
α – cells secrete	*A*
β – cells secrete	*B*
γ – cells secrete	*C*
δ – cells secrete	*D*

   a) A-Glucagon, B-Insulin, C-Gastrin, D-Somatostatin
   b) A-Insulin, B-Glucagon, C-Gastrin, D-Somatostatin
   c) A-Insulin, B-Glucagon, C-Somatostatin, D-Gastrin
   d) A-Glucagon, B-Insulin, C-Somatostatin, D-Gastrin
7. 'GIP' stimulates the release of
   a) Glucagon
   b) Insulin
   c) Calcitonin
   d) Thyrocalcitonin
8. The thyroid gland is composed of …A… lobes which are located on either side of the …B… the lobes are interconnected with a thin flap of connective tissue called …C…
   Select the correct combination for A, B and C
   a) A-3, B-trachea, C-isthmus
   b) A-4, B-trachea, C-isthmus
   c) A-2, B-trachea, C-isthmus
   d) A-1, B-trachea, C-isthmus
9. Some hormone need the secondary messenger, because
   a) They need activator
   b) They can't cross cells membrane
   c) They can cross cells membrane
   d) They need a prosthetic group
10. Sex hormones can work without the help of
    a) Insulin
    b) Placenta
    c) Pituitary
    d) gonadotropins
11. Estrogen
    a) Stimulate the growth of ovarian follicle
    b) Stimulate the appearance of secondary sex characters
    c) Stimulate the growth of mammary gland
    d) All of the above
12. In human adults females, oxytocin
    a) Is secreted by anterior pituitary
    b) Stimulates growth of mammary glands

c) Stimulate pituitary to secrete vasopressin
d) Causes strong uterine contractions during parturition

13. The hormone that increases the blood calcium level and decreases its excretion by kidney is
a) Parathormone b) Calcitonin c) Thyroxine d) Insulin

14. Gastrointestinal hormones are
a) Steroidal in nature
b) Proteinaceous in nature
c) Glycoproteinaceous in nature
d) Both (a) and (b)

15. I. Glucagon
II. Epinephrine
III. Steroid hormone
IV. Idothyronine
Among the given hormones which needs secondary messenger
a) I and III b) III and IV c) I and II d) IV and I

16. A steroid hormone which regulates glucose metabolism is
a) Cortisol
b) Corticosterone
c) 11- deoxycorticosterone
d) Cortisone

17. The activity of formation of milk is regulated by the activity of …A… . While the ejection of milk is controlled by …B… hormone
Here, A and B refers to
a) A-oxytocin; B-prolactin
b) A-prolactin; A-oxytocin
c) A-prolactin; B-prolactin
d) A-oxytocin; B-prolactin

18. Feeling the tremors of an earthquake, a scared resident of seventh floor of a multistoreyed building starts climbing down the stairs rapidly. Which hormone initiates this action?
a) Thyroxine b) Adrenaline c) Glucagon d) Gastrin

19. Endocrine glands are
a) Ductless glands whose secretions pour directly into blood
b) Have ducts and pour their secretions into blood directly
c) Have ducts which straightway pour secretions into target organs
d) All of the above

20. Pheromones are also called
I. ectohormones
II. sex attractants
III. semichemicals
The correct option is
a) I and III b) I and III c) I, II and III d) II and III

21. Sertoli cells are regulated by the pituitary hormone known as
a) FSH b) GH c) Prolactin d) LH

22. Which of the following is gastrointestine hormone?
a) Prolactin b) Enterogastrone c) GH d) FSH

23. Islets of Langerhans is a normal human pancreas comprise only
a) 2-3% of pancreatic tissue
b) 1-2% of pancreatic tissue
c) 3-4% of pancreatic tissue
d) 4-5% of pancreatic tissue

24. Which is the function of norepinephrine?
a) Increase blood pressure
b) Urine formation
c) Increase secretion of adrenaline
d) None of the above

25. Correct order of action of hydrophilic hormones
I. Hormones bind to plasma membrane
II. Physiological response
III. Biochemical response
IV. Generation of secondary messenger
Choose the correct option

a) I, II, III, IV b) II, I, III, IV c) I, IV, III, II d) III, I, II, IV

26. To yield more milk, cow is injected with
a) Sorbitol b) Prolactin c) Gonadotrophs d) Sterol

27. FSH (Follicle stimulating hormone) is produced by
a) Adrenal cortex b) Anterior pituitary lobe
c) Middle pituitary lobe d) Posterior pituitary lobe

28. Calcium level decreases in the blood due to hyposecretion of
a) Parathyroid hormone b) Calcitonin c) Thyroxine d) Adrenaline

29. I. Somatostatin inhibits intestinal absorption of glucose
II. Leydig's cell secrete progesterone
III. Melatonin is secreted by pineal gland
IV. Myxoedema is a thyroid disorder
V. Neurohypophysis secreted ACTH
Select the correct statements and choose the option
a) I, III and IV b) II, III and V c) I, IV and V d) II, IV and V

30. Hypothyroidism causes
a) Myxoedema b) Cretinism c) Both (a) and (b) d) Exophthalmic goitre

31. Which one of the following is not an endocrine gland?
a) Kidney b) Thyroid c) Adrenal d) Pituitary

32. Pituitary gland is derived from
a) Ectoderm b) Endoderm c) Mesoderm d) None of these

33. 'ANF' is secretes by
a) Venous wall of heart b) Atrial wall of heart c) Both (a) and (b) d) None of these

34. Tyrosine is the precursor of
a) Adrenaline b) Noradrenaline c) Testosterone d) Both (a) and (b)

35. Which one of the following four glands is correctly matched with the accompanying description?
a) Thyroid — Hyperactivity in young children cause cretinism
b) Thymus — Starts undergoing atrophy after puberty
c) Parathyroid — Secretes parathormone, which promotes movements of Calcium ions from blood into bones during calcification
d) Pancreas — Delta cells of islets of Langerhans secrete a hormone, which Stimulates glycolysis in liver

36. Generally the steroid hormones are derived from
a) Proteins b) Carbohydrates c) Cholesterol d) Glycoprotein

37. Which hormone causes dilation of blood vessels, increased oxygen consumption and glycogenolysis?
a) ACTH b) Insulin c) Adrenaline d) Glucagon

38. In Cushing's syndrome, there is
a) An increase in blood glucose level b) Hypertrophy of the skeletal muscles
c) A fall in plasma cortisol d) A thickening of the skin

39. Progesterone is secreted by
a) Corpus luteum b) Uterus c) Placenta d) Graafian follicle

40. Thymus gland releases …… hormone
a) T_4 b) T_3 c) Thymosins d) TCT

41. Endemic goitre is state of
a) Increased thyroid function b) Normal thyroid function
c) Decreased thyroid function d) Moderate thyroid function

42. 'Tyrosine' is important in the formation of
I. T_3 II. T_4
III. Oxytocin IV. PRL
Select the correct combination
a) I and II b) II and III c) IV and I d) III and I

43. The thymus gland is a lobular structure located on the …A… side of the …B… and aorta. The thymus plays a significant role in the development …C… system
Choose the correct combination of A, B and C
a) A-ventral, B-heart, C-immune
b) A-lateral, B-kidney, C-circulatory
c) A-dorsal, B-heart, C-immune
d) A-dorsal, B-parathyroid, C-circulatory

44. Resorption of water and electrolytes by distal tubules of kidney and thereby diuresis reducing the loss of water through urine (diuresis) is done by
a) Oxytocin b) Vasopressin c) FSH d) LH

45. Which hormone produces calorigenic effect?
a) Thyroxine b) FSH c) Insulin d) All of these

46. I. Hormones are non-nutrient chemicals
II. Hormones act as intracellular chemicals
III. Hormones are produced in moderate quantity
IV. Hormones may be proteins, steroids, glycoproteins or biogenic amines
Choose the option with written above correct statements
a) I and II b) II and III c) III and IV d) I and IV

47. The thyroid gland is composed of
a) Follicles b) Stromal tissue c) Trachea d) Both (a) and (b)

48. Which one of the following endocrine glands functions as a biological clock and a neurosecretory transducer?
a) Adrenal gland b) Thyroid gland c) Pineal gland d) Thymus gland

49. An adenohypophysis hormone, which is regulated by feedback mechanism is
a) Oxytocin b) TSH c) Vasopressin d) Cortisone

50. A person is having problems with calcium and phosphorus metabolism in his body. Which one of the following glands may not be functioning properly?
a) Parathyroid b) Parotid c) Pancreas d) Thyroid

51. Which gland is called 4S and 3F?
a) Thyroid gland b) Parathyroid gland c) Adrenal gland d) Hypothalamus

52. Secretion is under control of neurosecretory nerve axons in
a) Pineal gland b) Adrenal cortex c) Anterior pituitary d) Posterior pituitary

53. Insulin is
a) Hypoglycemic hormone
b) Decreases the blood sugar
c) Act on adipose tissue and hepatocytes
d) All of the above

54. Which one is not a placental hormone?
a) HCG b) HCS c) Progesterone d) Melatonin

55. Largest endocrine gland is
a) Pituitary b) Adrenal c) Thyroid d) Pineal

56. GnRh (Gonadotropin Releasing Hormone) stimulates the
a) Pituitary to release the gonadotropin
b) Pituitary for synthesis and release of gonadotropin
c) Testis to release the gonadotropin
d) Hypothalamus to release the gonadotropin

57. Match the source of gland with its respective hormone as well as the function.

a)

Source gland	Hormone	Function

b)

Posterior pituitary	Vasopressin	Stimulates resorption of water in the distal tubules in the nephron

c)

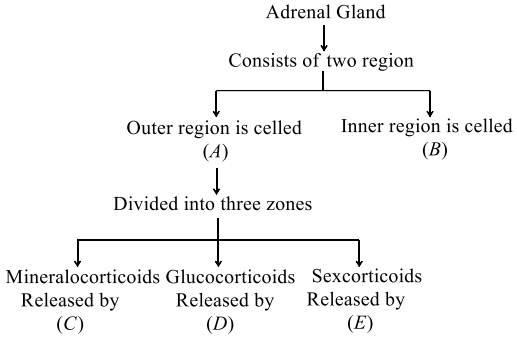
Corpus luteum	Oestrogen	Supports pregnancy

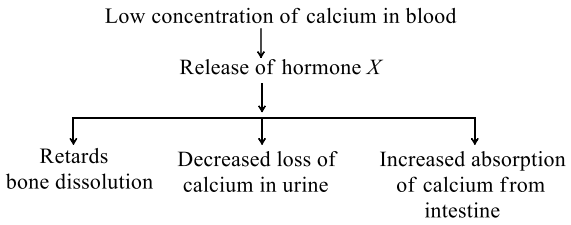
d)

Thyroid	Thyroxine	Regulates blood calcium

		level

58. Hyposecretion of which of the following can cause diabetes insipidus?
    a) Insulin b) Thyroxine c) Glucagon d) ADH
59. Gigantism and dwarfism are the disease related to
    a) Prolactin hormone of mammary gland b) Growth hormone of adenohypophysis
    c) Luteinising hormone of pituitary gland d) Thyroid stimulating hormone of thyroid
60. The function of pineal body is to
    a) Lighten the skin colours b) Control sexual behavior
    c) Regulate the period of puberty d) All of the above
61. The cause of cretinism is
    a) Hypothyroidism b) Hypoparathyroidism
    c) Hyperthyroidism d) Hyperparathyroidism
62. Hyposecretion of growth hormone causes
    a) Dwarfism b) Cretinism c) Myxoedema d) Acromegaly
63. The decline and disappearance of …… gland by the middle age is primary cause of ageing
    a) Thyroid b) Thymus c) Adrenal d) Parathyroid
64. Study the given flow chart and, identify A, B, C, D and E



    a) A-Cortex, B-Medulla, C-Zona glomerulosa, D-Zona reticulata, E-Zona fasciculata
    b) A-Cortex, B-Medulla, C-Zona glomerulosa, D-Zona fasciculata, E-Zona reticulata
    c) A-Medulla, B-Cortex, C-Zona glomerulosa, D-Zona fasciculata, E-Zona reticulata
    d) A-Medulla, B-Cortex, C-Zona glomerulosa, D-Zona reticulata, E-Zona fasciculata
65. Which of the following hormones are secreted by pancreas?
    a) Insulin and glucagon b) Epinephrine and norepinephrine
    c) Thyroxine and melanin d) Lactocin and oxytocin
66. Father of Endocrinology is
    a) Huxley b) Thomas Addison c) Abel d) Kimball and Murlin
67. Which of the following is correct
    a) Leukaemia - Skin cancer b) Diabetes - Sugar free
    c) Rheumatic fever - Defective pacemaker d) Heart attack - Radiation therapy
68. Which of the following hormones is not a secretary product of human placenta?
    a) Human chorionic gonadotrophin b) Prolactin
    c) Oestrogen d) Progesterone
69. 

    Name the hormone X
    a) PTH b) Adrenal hormone c) Both (a) and (b) d) ACTH
70. Molecule that bind the receptor and induces cell the post-receptor events is called …A… and molecule that bind to the receptor and inhibit all the post-receptor events is called …B….

a) A-antagonist, B-agonist
b) A-agonist, B-enzyme
c) A-antagonist, B-hormone
d) A-agonist, B-antagonist

71. In males, the spermatogenesis is regulated by
a) FSH b) Androgens c) Both (a) and (b) d) Hypothalamus

72. Hormone is a/an
a) Enzyme
b) Chemical messenger
c) Excretory product
d) Glandular secretion

73. Chemically hormones are
a) Biogenic amines only
b) Proteins, steroids and biogenic amines
c) Proteins only
d) Steroids only

74. MSH is produced by
a) Thyroid b) Anterior pituitary c) Posterior pituitary d) Pars intermedia

75. The hormone oxytocin and vasopressin are secreted by
a) Neurohypophysis b) Adenohypophysis c) Hypothalamus d) Adrenal medulla

76. Androgens act on the …A… and influence the male sexual behavior called …B… . These hormones produce …C… effect on protein and carbohydrate metabolism. Choose the correct combination of A, B and C
a) A-PNS, B-libido, C-catabolic
b) A-ANS, B-libido, C-catabolic
c) A-CNS, B-libido, C-anabolic
d) A-CNS, B-libido, C-catabolic

77. Which accessory genital gland occurs only in mammalian male?
a) Prostate gland b) Perineal gland c) Cowper's gland d) Bartholin gland

78. Decrease in the calcium level in blood is caused by
a) Prolactin b) Calcitonin c) Adrenocorticotrophin d) Oxytocin

79. Which of the following vitamins has some physiological effects similar to those of parathormone?
a) Vitamin- A b) Vitamin- D c) Vitamin- C d) Vitamin- B

80. I. The adrenal cortex secretes many hormones called corticoids
II. Corticoids involved in carbohydrate metabolism are called glucocorticoids
III. Cortisol is main glucocorticoids
IV. Aldosterone is the main mineralocorticoids
Select the correct combination from the given options
a) I, II and III b) II, III and IV c) I, III and IV d) I, II, III and IV

81. Glucagon is secreted by
a) Adrenal medulla
b) β-cells of islets of Langerhans
c) α-cells of islets of Langerhans
d) Adrenal cortex

82. Which of the following is the function of adrenaline?
a) Helps in gastric juice secretion
b) Increase heart rate and blood pressure
c) Increase blood calcium
d) Helps in milk secretion

83. Pineal gland of human brain secretes melatonin concerned with
a) Anger b) Body temperature c) Colouration of skin d) Sleep

84. Islets of Langerhans are found in
a) Anterior pituitary b) Kidney cortex c) Spleen d) Endocrine pancreas

85. I. Increase of heart beat
II. Increase of respiration rate
III. Stimulate breakdown of glycogen
IV. Stimulate breakdown of lipid and protein
Statement written above are the features of which hormone
a) PTH b) TCT c) Thymosin d) Catecholamine

86. In previous question *B* consists of which cells that secretes adrenaline and nor-adrenaline
a) Modified nerve cells b) Chromaffin cells c) Chief cells d) Both (b) and (c)

87. Cretinism, mental retardation, low intelligence quotient, abnormal skin, deaf-mutism, etc. are the results of
a) Hyperthyroidism b) Goitre c) Hypothyroidism d) Both (b) and (c)

88. Increase in bleeding time and delay in blood coagulation is due to the deficiency of which hormone?

a) Adrenaline b) Noradrenaline c) Parathormone d) Thyroxine

89. LH and FSH are collectively called
a) Oxytocin b) Somatotrophins c) Luteotrophins d) Gonadotrophins

90. Large number of hormones are secreted by
a) Pituitary b) Thyroid c) Hypothalamus d) Adrenal

91. Sella turcica protects our
a) Liver b) Thyroid c) Adrenals d) Pituitary

92. Vitamin that has similar action as the parathormone is
a) Vitamin-A b) Vitamin-B c) Vitamin-C d) Vitamin-D

93. Hormone that promotes cell division, protein synthesis and bone growth is
a) ADH b) ACTH c) PTH d) GH

94. Significant role of calcium balance in the body is maintained by
a) PTH and FSH b) PTH and TCT c) TCT and FSH d) TCT and GH

95. Which of them are the second messengers?
I. Cyclic AMP
II. IP_3
III. Ca^{2+}
The correct option is
a) I and II b) II and III c) I and III d) I, II and IV

96. Lipid soluble hormone works by interacting with
a) Intracellular receptors b) Intercellular receptors
c) Enzymes d) Producing enzymes

97. In situation of fear, in blood there is increase of
a) Insulin b) Androgen c) Adrenaline d) Oestrogen

98. Which hormone /gland acts in biological clocks?
a) Thyroid b) Thymus c) Adrenal d) Pineal

99. The gland which performs both endocrine and exocrine function is
a) Adrenal b) Thyroid c) Pancreas d) Pituitary

100. Mammalian prolactin is secreted by
a) Adenohypophysis b) Neurohypophysis c) Adrenal cortex d) Adrenal medulla

101. …A… is essential for the normal rate of hormone synthesis in the thyroid. Deficiency of iodine in our diet results in …B… and enlargement of the thyroid gland, commonly called …C…
Select the correct combination for A, B and C
a) A-Ferrous, B-goitre, C-hypothyroidism b) A-Iodine, B-hypothyroidism, C-goitre
c) A-Ferric, B-goitre, C-hypothyroidism d) A-Sodium, B-goitre, C-hypothyroidism

102. Pineal gland secretes which hormones
I. Serotonin
II. ACTH
III. MSH
IV. PRL
V. Melatonin
VI. FSH
The correct option is
a) I and II b) III and IV c) V and VI d) I and V

103. I. Pancreas II. Testis
III. Liver IV. Thyroid gland
V. Adrenal gland VI. Pituitary gland
Which of the above given glands are endocrine glands?
a) I and II b) Only III c) Only VI d) I, II and III

104. Which one of the following hormone is a modified amino acid?

a) Epinephrine b) Progesterone c) Prostaglandin d) Oestrogen

105. Inhibition of secretion of which of the following hormones is necessary for disintegration of corpus luteum?
a) LH b) Progesterone c) LTH d) FSH

106. The hyposecretion of which hormone leads to loss of sodium and water through urine, low blood pressure and hypotension?
a) Thyrotropic hormones b) Hormones of adrenal cortex
c) Hormones of adrenal medulla d) Luteotrophic hormones

107. The pituitary gland is located in a bony cavity called …A… and is attached to …B… by a stalk. Identify A and B to complete the given statement
a) A-sella turcica; B-midbrain b) A-sella turcica; B-forebrain
c) A-sella turcica; B-hypothalamus d) A-sella turcica; B-pineal

108. The term hormone was given by
a) Starling for insulin b) Starling for secretion
c) Byliss for insulin d) Byliss for secretion

109. Which regulates cell division, protein synthesis and growth of the bone?
a) Prolactin b) Somatotropic hormone
c) TSH d) MSH

110. Which is not a symptom of exophthalmic goiter?
a) Degenerating sex organs b) Protrusion of eyeball
c) Frightened look to the patient d) None of the above

111. JGC (Juxtaglomerular cell) secretes
a) ANF b) Erythropoietin c) Renin d) Angiotensinogen

112. Which of the following hormones does not contain a polypeptide?
a) Prostaglandin b) Oxytocin
c) Insulin d) Antidiuretic hormone

113. Diurnal rhythm of our body is maintained by
a) Thyroid gland b) Pineal gland c) Pituitary gland d) Hypothalamus

114. I. Non-nutrient
II. Intercellular messenger
III. Produced in trace amount
IV. Intracellular messenger
Select the correct properties of hormones from above list and then choose the option correct combination
a) I, II and III b) II, III and IV c) I, II and IV d) I, III and IV

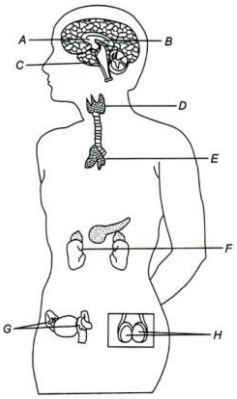
115. Consider the following statements
I. Calcitonin is non-iodised
II. Calcitonin is secreted by parafollicular cells
III. Calcitonin regulates the calcium level in blood
IV. Calcitonin is also called as TCT (Thyrocalcitonin)
V. TCT is hyperglycemic agent (factor)
Select the option containing correct statements from the above given statements
a) I, II and V b) I, II, III and IV c) III, IV and V d) II, III, IV and V

116. 'ANF' is a hormone, which
a) Is secreted when BP is increased b) Decreases BP
c) Cause vasodilation d) All of the above

117. Cretinism caused by
a) Hypothyroidism b) Hyperthyroidism
c) Deficiency of iodine d) Deficiency of thyroxine

118. Acromegaly is caused by
a) Excess of STH b) Excess of thyroxine
c) Deficiency of thyroxine d) Excess of adrenaline

119. Identify different endocrine glands in human (*A* to *H*)



a) A-Pineal, B-Hypothalamus, C-Pituitary, D-Thyroid and Parathyroid, E-Thymus, F-Adrenal, G-Ovary, H-Testis
b) A-Hypothalamus, B-Pineal, C-Pituitary, D-Thyroid and Parathyroid, E-Thymus, F-Adrenal, G-Ovary, H-Testis
c) A-Hypothalamus, B-Pineal, C-Pituitary, D-Thyroid and Parathyroid, E-Thymus, F-Adrenal, G-Testis, H-Ovary
d) A-Hypothalamus, B-Pineal, C-Pituitary, D-Thyroid and Parathyroid, E- Adrenal, F- Thymus, G-Testis, H-Ovary

120. Neurons of people suffering from diabetes insipidus do not secrete
a) Enzyme b) Steroid c) Fatty acid d) ADH

121. 'Myasthenia gravis' is related to which hormone?
a) Thyroid hormone b) Calcitonin hormone c) Thymosine hormone d) Vitamin-D

122. Gigantism and acromegaly are due to
a) Hypothyroidism b) Hyperthyroidism c) Hypopituitarism d) Hyperpituitarism

123. Who is known as 'father of Endocrinology'?
a) R H Whittaker b) Pasteur c) Einthoven d) Thomas Addison

124. Adrenal gland is present at the
a) Lateral side of each kidney b) Dorsal side of each kidney
c) Posterior side of each kidney d) Anterior side of each kidney

125. Thyroxine is secreted by
a) Hypothalamus b) Pituitary c) Thymus d) Thyroid

126. Which one of the following pairs of organs includes only the endocrine glands?
a) Parathyroid and adrenal b) Pancreas and parathyroid
c) Thymus and testes d) adrenal and ovary

127. Significant role in calcium balance in the body is performed by
I. PTH
II. T_4 and T_3
III. TCT
The correct option is
a) I and II b) II and III c) I and III d) I, II and III

128. Islets of Langerhans have …A… cells which secrete …B… hormone. This hormone reduces the blood glucose level by converting glucose into glycogen. Islets of Langerhans have …C… cells which secrete …D… hormone. This hormone increase the blood glucose by converting glycogen to glucose
Choose the correct combination for A, B, C and D
A C B D
a) α glucagon α insulin b) α insulin β glucagon
c) β insulin α glucagon d) α glucagon β insulin

129. According to accepted concept of hormone action, if receptor molecules are removed from target organs, then the target organ will

a) Continue to respond to hormone but in opposite way
b) Continue to respond to the hormone without any difference
c) Continue to respond to hormone but will require higher concentration
d) Not respond to the hormone

130. Hormone responsible for the control of the development of secondary sexual characters in females is
a) Androgen b) Oestrogen c) Progesterone d) Oxytocin

131. Hassall's bodies/corpuscles are present in
a) Adrenal medulla b) Thyroid c) Thymus d) Parathyroid

132. The Leydig cells or …A… cells which are present in …B… . Spaces produce a group of hormone called androgens mainly …C…
Choose the correct option for A, B and C
a) A-interstitial cells, B-intratubular spaces, C-testosterone
b) A-intrastitial cells, B-intertubular spaces, C-testosterone
c) A-intrastitial cells, B-intratubular spaces, C-testosterone
d) A-interstitial cells, B-intertubular spaces, C-testosterone

133. I. Insulin II. Epinephrine
III. Oestradiol IV. Norepinephrine
V. Testosterone VI. Glucagon
Which of the above hormones are amino acid derivatives?
a) I and II
b) III and IV
c) V and VI
d) II and IV

134. Oestrogen and testosterone are steroid hormones, and are the most likely bind to
a) Membrane ions cannels b) Enzyme-linked membrane receptors
c) G – protein linked membrane receptors d) Cytoplasmic receptors

135. Which one of the following pituitary hormones does not have a target organ to act upon?
a) Thyrotrophin b) Gonadotrophin c) Adrenocorticotrophin d) Somatotrophin

136. CCK acts on
a) Pancreas b) Gall bladder c) Both (a) and (b) d) Liver

137. In females the …A... induces the ovulation of fully mature follicle called …B... and maintain the …C… formed from remnants of the Graafian follicle after ovulation. Select the correct combination in reference to the above given statement
a) A-LH, B-Graafian follicles, C-pregnancy b) A-FSH, B-Graafian follicles, C-corpus luteum
c) A-FSH, B-Graafian follicles, C-pregnancy d) A-LH, B-Graafian follicles, C-corpus luteum

138. Which of the following are heterocine glands
I. Thyroid II. Parathyroid
III. Ovary IV. Testis
V. Pituitary VI. Pancreas
Choose the correct option
a) I, II and III b) III, IV and VI c) I, V and VI d) I, IV and V

139. Progesterone pill helps in preventing pregnancy by not allowing
a) Ova formation b) Fertilization c) Implantation d) None of these

140. Parathyroid hormone is a
a) Peptide b) Carbohydrate c) Lipid d) Steroid

141. How many Islets of Langerhans are present in normal human pancreas?
a) 1 to 2 million b) 2 to 3 million c) 3 to 4 million d) 4 to 5 million

142. Depict the correct line of the hormone
a) α-glucagon, β- insulin, δ-somatostatin b) α-insulin, β-glucagon, δ- somatostatin
c) δ- insulin, α- somatostatin, β-glucagon d) α- somatostatin, β- insulin, δ- glucagon

143. Diabetes mellitus takes place only when

a) α-cells of pancreas are in excess
b) β-cells of pancreas are in excess
c) α- cells of pancreas are in hypo
d) β- cells of pancreas are in hypo

144. Major roles of thymus gland in humans is/are
a) Differentiation of T-lymphocytes
b) Differentiation of B-lymphocytes
c) Promote production of antibodies
d) Both (a) and (c)

145. The hydrophilic hormones interact with …A… . While the hydrophobic hormones interact with …B…
Choose the correct option for A and B
a) A-cell membrane receptors; B-nuclear receptors
b) A-nuclear receptors; B-cell membrane receptors
c) A-intracellular receptors; B-nuclear receptors
d) A-nuclear receptors; B-intracellular receptors

146. Melatonin is secreted by
a) Skin
b) Thymus
c) Pituitary
d) Pineal gland

147. 'ANF' is
a) Steroidal in nature
b) Peptide hormone
c) Glucocorticoid hormone
d) Mineralocorticoid hormone

148. The formation of egg and sperm is affected by
a) LH
b) MH
c) TSH
d) FSH

149. Pituitary gland is divided into
a) Adenohypophysis and neurohypophysis
b) Adenohypophysis and pars distalis
c) Adenohypophysis and pars intermedia
d) Adenohypophysis and anterior pituitary

150. Pigmentation of skin in humans is maintained by
a) FSH
b) LH
c) MSH
d) ACTH

151. Storing and release of vasopressin and oxytocin is done by
a) Adenohypophysis
b) Neurohypophysis
c) Hypothalamus
d) Thyroid

152. Gluconeogenesis, lipolysis and proteolysis processes are stimulated by
a) Glucocorticoids
b) Mineralocorticoids
c) Both (a) and (b)
d) None of the above

153. Hypothalamus releases two types of hormones mainly
a) Stimulating hormones; Releasing hormones
b) Stimulating hormones; Inhibiting hormones
c) Exocrine hormones; Inhibiting hormones
d) Exocrine hormones; Stimulating hormones

154. Pair of ovary located …… of female (human)
a) Outside the abdomen
b) Inside the abdomen
c) Inside the scrotal sac
d) Inside the inguinal canal

155. Hormone responsible for the secretion of milk after parturition is
a) ICSH
b) Prolactin
c) ACTH
d) LH

156. T_3 and T_4 hormones are synthesised by
a) Follicles
b) Stromal tissue
c) Isthmus
d) Both (a) and (c)

157. Insulin and glucagon are transported to target organ by
a) Lymph
b) Blood
c) Pancreatic duct
d) Cystic duct

158. The 'amino acid derivative' among the following hormone is
a) Insulin
b) Epinephrine
c) Oestradiol
d) Testosterone

159. GIP (Gastric Inhibitory Peptide)
a) Inhibits the gastric secretion and motility
b) Inhibits the gastric secretion only
c) Activate the gastric secretion and motility
d) Activate the gastric secretion only

160. Absorption of water in DCT is controlled by
a) ADH
b) ACTH
c) LH
d) Oxytocin

161. Which of the following given organs are influenced by activity of PTH?
The option containing all correct answers is
I. Kidney II. Bone

III. Muscle IV. Intestine
V. Brain
a) I, II, III and IV b) I, II, III and V c) I, IV and V d) II, III, IV and V

162. Select the incorrect option
a) Thyroid gland is the largest endocrine gland in humans
b) Thyroid secretes T_3 and T_4
c) Thyroid gland is composed of follicle and stromal tissues
d) Thyroid consists of four lobes

163. Compared to a bull, a bullock is docile because of
a) Higher levels of thyroxine
b) Higher levels of cortisone
c) Lower levels of blood testosterone
d) Lower levels of adrenaline/ noradrenaline in its blood

164. Which of the following are identical?
a) ACTH and adrenaline b) HCG and progesterone
c) Calcitonin and oxytocin d) Vasopressin and ADH

165. Identify the four major hormones of GI tract. Out of the list given below
I. Gastrin
II. Secretin
III. Cholecystokinin
IV. ACTH
V. MSH
VI. GIP
The correct option is
a) I, II, III and IV b) II, III, IV and V c) III, IV, V and VI d) I, II, III and VI

166. Which of the following is the largest gland in an adult man?
a) Thymus b) Liver c) Thyroid d) Pancreas

167. The posterior pituitary is under the
a) Direct neural regulation of the adenohypophysis
b) Direct neural regulation of the hypothalamus
c) Direct axonal regulation of the adenohypophysis
d) Direct axonal regulation of the neurohypophysis

168. Pars intermedia is a part of
a) Neurohypophysis b) Adenohypophysis
c) Posterior lobe of pituitary d) Hypothalamus

169. Which one of the following pair correctly matches a hormone with a disease resulting from its deficiency?
a) Parathyroid hormone— Tetany b) Insulin — Diabetes insipidus
c) Relaxin — Gigantism d) Prolactin — Cretinism

170. The releasing hormones are produced by
a) Testis b) Pancreas c) Pituitary d) Hypothalamus

171. Which gland atrophies in adult?
a) Pituitary b) Thymus c) Thyroid d) Adrenal

172. Identify which of the following are endocrine glands?
I. Liver
II. Gastric gland
III. Pituitary gland
IV. Thyroid
Choose the correct option
a) I and II b) III and IV c) I and IV d) II and IV

173. Prostaglandins are
I. fatty in nature

II. proteinaceous in nature
III. steroidal in nature
IV. glycoproteinaccous in nature
Choose the correct option
a) Only I b) I and III c) II and IV d) Only IV

174. Which of the following is an accumulation and release centre of neurohormones?
a) Posterior pituitary lobe b) Intermediate lobe of the pituitary
c) Hypothalamus d) Anterior pituitary lobe

175. Erythropoietin
a) Stimulates erythropoiesis b) Inhibits erythropoiesis
c) Inhibits platelets formation d) Stimulates platelets formation

176. Small amount of …A… steroids are also secreted by …B… . Cortex which play a role in the growth of axial hair, pubic hair and facial hair during puberty.
Choose the correct combination for A and B
a) A-glucocorticoids; B-adrenal b) A-androgenic; B-adrenal
c) A-mineralocorticoids; B-adrenal d) A-cortisol; B-adrenal

177. Study the following table and select the correct option.

Endocrine	Hormone	Deficiency Disorder
I. Neurohypophysis	Vasopressin	Diabetes insipidus
II. Adrenal cortex	Corticosteroids	Addison's disease
III. Parathyroid glands	Parathormone	Myxoedema
IV. Thyroid glands	Calcitonin	Acromegaly

a) II and III b) I and II c) III and IV d) I and IV

178. Oxytocin and vasopressin is stored and released by
a) Anterior lobe of pituitary b) Posterior lobe of pituitary
c) Intermediate lobe of pituitary d) Hypothalamus lobe of pituitary

179. Glucocorticoids are the corticoids which
a) Are involved in protein metabolism b) Are involved in fat metabolism
c) Are involved in glucose metabolism d) All of the above

180. Hormone receptors are present
a) On the cell membrane b) Outside the target cell
c) Inside the target cell d) Both (a) and (c)

181. Goiter can occur as a consequence of all the following except
a) Iodine deficiency b) Pituitary adenoma
c) Grave's disease d) Excessive intake of exogenous thyroxine

182. ADH deficiency shows which of the following condition?
a) Polydipsia b) Polyuria c) Both (a) and (b) d) Glucosuria

183. Which one affects liver, muscle and adipose tissue?
a) Androgen b) Insulin c) Progesterone d) Glucagon

184. Hormones released by the neurosecretory cells in hypothalamus regulate the …A… gland. Mainly the neurosecretory hormones are of B… type

Here A and B refers to

a) A-pineal; B-two b) A-pituitary; B-three c) A-pineal; B-three d) A-pituitary; B-two

185. Which of the following statements is correct regarding hypothalamic control of pituitary function?
    a) All the hypothalamic hormones are synthesized and secreted by neurons
    b) Blood flows from the anterior pituitary to the hypothalamus in the portal vessels
    c) The hypothalamic releasing hormones reach the general circulation in significant amounts
    d) Loss of dopaminergic neurons in the hypothalamus is likely to lead to a fall in the secretion of prolactin
186. Diabetes is characterised by
    I. Polyuria II. Polydipsia
    III. Polyphagia IV. Hyperglycemia
    V. Glycosuria VI. Ketosis
    VII. Acidosis VII. Coma
    The option with correct characters is
    a) I, II, III, IV, V, VI and VIII b) I, II, III, IV, V, VII and VIII
    c) I, II, III, IV, V, VI, VII and VIII d) I, II, III, IV, VI, VII and VIII
187. Which of the following two hormones are essential for induced breeding of fishes?
    a) TSH and ACTH b) Oestrogen and progesterone
    c) FSH and LH d) Vasopressin and oxytocin
188. Which of the following statements are true/false
    I. Calcitonin regulates the metabolism of calcium.
    II. Oxytocin stimulates contraction of uterine muscles during birth.
    III. Grave's disease is caused by malfunctioning of adrenal gland.
    IV. ADH stimulates absorption of water and increase the urine production.
    a) I and III are true; II and IV are false b) I and II are true; III and IV are false
    c) I and IV are false; II and IV are true d) I, II and III are true; IV only false
189. Amino acid derivative hormone is
    a) Insulin b) Oxytocin c) Erythropoietin d) Thyroxine
190. I. Sleep-wake cycle II. Body temperature
    III. Pigmentation IV. Metabolism
    V. Defence capability
    All of the above written activities are influenced/regulated by
    a) Pineal gland b) Parathyroid gland c) Thymus gland d) Adrenal gland
191. Which of the following diseases is not related to thyroid gland?
    a) Myxodema b) Acromegaly c) Cretinism d) Goitre
192. Which of the following is true for the effect of steroid hormone?
    a) Fast and short term b) Fast and long lasting
    c) Slow and short term d) Slow and long lasting
193. A person passes much urine and drinks much water but his blood glucose level is normal. This condition may be the result of
    a) A reduction in insulin secretion from pancreas b) A reduction in vasopressin secretion from posterior pituitary
    c) A fall in the glucose concentration in urine d) An increase in secretion of glucagon
194. Volume of urine is regulated by
    a) Aldosterone b) Aldosterone, ADH and testosterone
    c) Aldosterone and ADH d) ADH alone
195. The source of somatostain is same as that of
    a) Thyroxin and calcitonin b) Insulin and glucagon
    c) Somatotrophin and prolactin d) Vasopressin and oxytocin
196. Cell division, protein synthesis, growth of muscle, growth of bones are regulated by
    a) Growth hormone b) TSH c) ACTH d) None of these
197. Which hormone is secreted in woman if pregnancy has occurred?

a) Oestrogen b) Progesterone
c) Luteinizing hormone d) Chorionic gonadotrophin

198. Disorder related with thyroid gland is
a) Diabetes mellitus b) Hypercalcemia c) Osteoporosis d) Myxoedema

199. The hormone which regulates sleep-wake cycle in man is
a) Oxytocin b) Vasopressin c) Thyroxine d) melatonin

200. Which of the following is not true for hormones?
a) They are not available again after the process is over
b) Hormones are directly poured into blood
c) They induce or inhibit bio- chemical processes
d) Each and every hormone of human is always chemically protein.

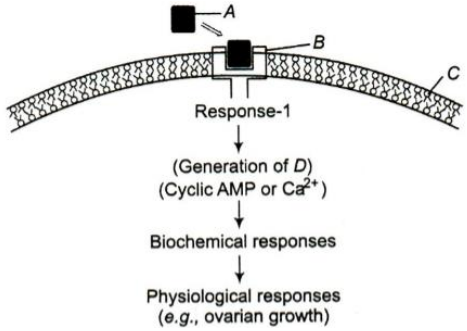
201. Thymosin hormone is secreted by
a) Thyroid gland b) Parathyroid gland c) Thymus gland d) Hypothalamus

202. Muscular tetany can be caused by deficiency of
a) Thyroxine b) Oxytocin c) STH d) Parathyroid hormone

203. Which of the following are the symptoms of hypersecretion of insulin?
I. Hypoglycemia II. Sweating
III. Irritability IV. Glycosuria
Option with correct combination is
a) I and II b) II and III c) I, III and IV d) I, II and III

204. Function of thyroxine hormone is
a) To grow b) To develop
c) Self – immunization d) To control metabolism

205. Identify *A* and *D* and choose the correct option



a) A-Hormone, B-Receptor, C-Cell membrane, D-Secondary messenger
b) A-Hormone, B-Receptor, C-Cell membrane, D-Primary messenger
c) A-Receptor, B-Hormone, C-Cell membrane, D-Primary messenger
d) A-Receptor, B-Hormone, C-Cell membrane, D-Secondary messenger

206. Identify from the following, a hormone produced by the pituitary gland in both males and females but functional only in females.
a) Vasopressin b) Relaxin
c) Prolactin d) Somatotrophic hormone

207. Cortisol is involved in
a) Maintaining cardio-vascular system b) Kidney functions
c) RBC production d) All of the above

208. Chemical disturbance in hormone secretion of thyroid gland causes
a) Goitre b) Diabetes c) Addisons's disease d) Colour blindness

209. The smallest endocrine gland is
a) Thyroid b) Parathyroid c) Pituitary d) Adrenal

210. Which of the following is not paired correctly?
a) Myxoedema - Swollen facial tissues b) Cretinism - Mentally retarded
c) Grave's disease - Exopthalamos d) Insulin - Raise blood glucose

211. Which one of the following is not a second messenger in hormone action?
a) Calcium b) Sodium c) cAMP d) cGMP

212. Acromegaly is due to hypersecretion of a hormone secreted from
a) Neurohypophysis b) Adenohypophysis c) Cells of Leydig d) Pars intermedia

213. Which one of the following is anti abortion hormone?
a) Relaxin b) Progesterone c) Estrogen d) Epinephrine

214. Which of the following hormones have the direct effect on BP (Blood Pressure)?
I. Thymosin II. PRL
III. MSH IV. Adrenaline
V. Non-adrenaline
Select the option containing the correct pair
a) I and II b) III and IV c) IV and V d) I and IV

215. A child with a weak immune system. Which of the following gland could be the cause of the problem?
a) Thyroid gland b) Parathyroid gland c) Thymus d) Pituitary gland

216. Development of epididymis, vas deference, seminal vesicles, prostate glands and urethra is controlled by
a) Estrogen b) Progesterone c) Androgen d) Pituitary hormone

217. The estrogen is synthesised and secreted mainly by growing …A… . After ovulation the ruptured follicle is converted to a structure called …B… which secretes …C… . Choose the correct option for A, B and C
a) A-corpus luteum, B-corpus callosum, C-progesterone
b) A-Graafian follicle, B-corpus luteum, C-progesterone
c) A-corpus callosum, B-corpus luteum, C-estrogen
d) A-Graafian follicle, B-corpus luteum, C-estrogen

218. Which one of the following is not a second messenger in hormone action?
a) *c*GMP b) Calcium c) Sodium d) *c*AMP

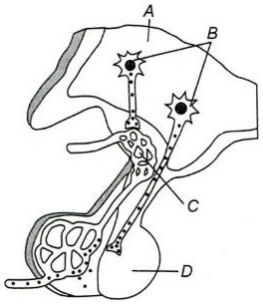
219. Chemicals which are synthesized by one organism and affect the behaviour of another member of the same species, are called
a) Enzymes b) Hormones c) Flavoids d) Pheromones

220. PTH is a
a) Hypercalcemic hormone b) Hypocalcemic hormone
c) Endocalcemic hormone d) Exocalcemic hormone

221. I. Low metabolic rate
II. Increase in body weight
III. Tendency to retain water in tissue
Which of the following disease shows the above given symptoms?
a) Gigantism b) Cretinism c) Myxoedema d) Acromegaly

222. I. Hypothyroidism causes irregularity of menstrual cycle
II. Hyperthyroidism adversely affects the body physiology
III. Hypothyroidism cause cretinism
IV. Hypothyroidism causes goitre
Which of the above statements are correct?
Choose the correct option
a) III and IV b) I, II and IV c) I, II and III d) All of these

223. Identify *A* to *D* in the given figure and choose the correct combination



a) A-Hypothalamic neuron, B-Hypothalamus, C-Portal circulation, D-Posterior pituitary
b) A-Hypothalamus, B-Hypothalamic neuron, C-Portal circulation, D-Posterior pituitary
c) A-Hypothalamus, B-Hypothalamic neuron, C-Posterior pituitary, D-Portal circulation
d) A-Hypothalamus, B-Hypothalamic neuron, C-Posterior pituitary, D-Neurohypophysis

224. I. Increased alertness
II. Pupillary dilation
III. Raising of hairs
IV. Sweating
All of the above written physiological processes are regulated by
a) Adrenaline b) Norepinephrine c) Both (a) and (b) d) Thymosin

225. Pancreas acts as
a) Exocrine gland b) Endocrine gland c) Both (a) and (b) d) Holocrine gland

226. Receptor hormone complex is formed when, the binding of
a) Hormone to its respective receptor takes place b) Enzyme to its respective receptor takes place
c) Both (a) and (b) d) Proteins to ER takes place

227. I. aldosterone
II. norephinephrine
III. Sexcorticoids
IV. Mineralocorticoids
V. Glucocorticoids
Among the given hormone those anti inflammatory effects are
a) I and II b) Only III c) IV and V d) Only V

228. Invertebrates possess very …A… endocrine systems with …B… hormones, whereas …C… number of chemicals act as hormones and provide coordination in the vertebrates
Here A to C refers to
a) A-complex, B-many, C-few b) A-complex, B-many, C-large
c) A-simple, B-few, C-large d) A- complex, B-few, C-large

229. Gastrin acts on …A… gland and …B… the secretion of HCl and …C… . Choose the correct combination. Here A, B and C refers to
a) A-pancreatic, B-inhibits, C-protease b) A-pancreatic, B-stimulates, C-pepsinogen
c) A-gastric, B-stimulates, C-pepsinogen d) A-gastric, B-inhibit, C-pepsinogen

230. Tetany is caused by
a) Hyperparathyroidism b) Hypoparathyroidism
c) Hyperthyroidism d) Hypothyroidism

231. The adrenal medulla secretes two hormones called adrenaline or …A… and noradrenaline or …B… . These are commonly called as …C… . Adrenaline and noradrenaline are rapidly secreted in response to stress of any kind and during …D… situations and are called emergency hormones or hormones of fight or flight.
Identify A to D and choose the correct option
a) A-norepinephrine, B-epinephrine, C-catecholamines, D-emergency
b) A-epinephrine, B-norepinephrine, C-catecholamines, D-emergency
c) A-epinephrine, B-norepinephrine, C-emergency, D-catecholamines
d) A-norepinephrine, B-epinephrine, C-emergency, D-catecholamines

232. Name the hormone that stimulates the secretion of gastric juice.
a) Rennin b) Enterokinase c) Enterogastrone d) Gastrin

233. Diabetic patients are successfully treated by
a) Glucagon therapy b) Insulin therapy
c) Combination of glucagon and insulin therapy d) All of the above

234. Conn's syndrome happens due to
a) Hyposecretion of aldosterone b) Hypersecretion of aldosterone
c) Hypersecretion of cortisol d) Hyposecretion of cortisol

235. Prolonged hyperglycemia leads to

a) Diabetes insipidus
b) Diabetes mellitus
c) Increase in ketone bodies
d) Both (b) and (c)

236. I. ACTH II. GH
III. MSH IV. FSH
V. LH VI. Oxytocin
Which of the above hormones are polypeptide or proteinaceous in nature?
Choose the correct option
a) I, II, III and IV
b) III, IV, V and VI
c) III, IV, V and VI
d) I, II, III and VI

237. Which is correct regarding the functions of posterior pituitary gland?
a) The posterior pituitary gland secretes growth hormone
b) The posterior pituitary secretes epinephrine
c) Vasopressin regulates the uptake of water by the cells of the collecting duct
d) Oxytocin stimulates milk production

238. Spermatogenesis is under the regulatory influence of
a) ADH b) FSH c) LH d) STH

239. Which statement is correct about the thyroid gland?
a) Thyroid hormones are essential for the early development and maturation of the central nervous system
b) T3 and T4 stimulate the secretion of TSH by the anterior pituitary
c) People who have an over active thyroid gland have a low BMR
d) Low plasma levels of thyroid hormones leads to thyrotoxicosis

240. Each receptor is …A… to one hormone only and hence, receptors are …B… . Hormone receptor complex formation leads to certain biochemical changes in the …C… . Choose the option containing correct combination of A, B and C
a) A-specific, B-non-specific, C-target tissue
b) A-specific, B-specific, C-target tissue
c) A-non-specific, B-specific, C-target tissue
d) A-non-specific, B-non-specific, C-target tissue

241. Metamorphosis in frog is fastened by
a) Thyroxine b) Insulin c) Glucagon d) Adrenaline

242. The main mineralocorticoid in human is
a) Aldosterone b) Cortisol c) Testosterone d) Progesterone

243. Which of the following is not an endocrine gland?
a) Pancreas b) Liver c) Thymus d) Adrenals

244. Chromophil cells are found in
a) Anterior pituitary b) Adrenal cortex c) Thymus d) Testes

245. Which gland secretes the most kind of hormones?
a) Adrenals b) Hypothalamus c) Pituitary d) Thyroid

246. Adrenals are located above
a) Pancreas b) Liver c) Kidney d) Stomach

247. Diagram of previous question indicates the mechanism of
a) Hydrophobic hormone
b) Catacholamines
c) Proteinacious hormone
d) Steroid hormone

248. Previous questions diagram represents the mechanism of
a) Steroid hormone action
b) Hydrophilic hormone action
c) Hydrophobic hormone action
d) Fat soluble hormone action

249. A pair of testis are present in the …… of humans (male)
a) Peritoneal cavity b) Scrotal sac c) Inguinal canal d) Isthmus

250. Immune response of old age person becomes weak due to the degeneration of ……. gland
a) Thyroid b) Parathyroid c) Thymus d) Hypothalamus

251. Epinephrine, on basis of its chemical nature, is a/an
a) Peptide hormone b) Steroid
c) Iodotyronine d) Amino acid derivative
252. Secretion of PTH is regulated by the circulating levels of …… in blood
a) Na^+ b) I^- c) Ca^{2+} d) Fe^{2+}
253. Which of the following is a mineralocorticoid?
a) Testosterone b) Progesterone c) Adrenaline d) Aldosterone
254. Hormones which interact with intracellular receptors are
I. Steroid hormones
II. ACTH
IIII. Iodothyronines
IV. MSH
Choose the option with correct combination
a) I and III b) II and IV c) II and III d) I and IV
255. Which is not involved as second messenger in Ca^{2+} mediated hormone
a) cAMP b) DAG c) Phospholipase d) IP_3
256. A health disorder that results from the deficiency of thyroxine in adults and characterized by
I.A low metabolic rate
II.Increase in body weight
III.Tendency to retain water in tissue, is
a) Hypothyroidism b) Simple goitre c) Myxoedema d) Cretinism
257. Polydipsia means …A…
Polyphagia means …B…
Glycosuria means …C…
Choose the correct option for A, B and C
a) A-Excessive thirst, B-Excessive eating, C-Glucose in urine
b) A-Excessive thirst, B-Urine in glucose, C-Excessive eating
c) A-Excessive eating, B-Urine in glucose, C-Excessive thirst
d) A-Excessive eating, B-Glucose in urine, C-Excessive thirst
258. Parathormone is secreted during
a) Increased blood calcium level b) Decreased blood calcium level
c) Increased blood sugar level d) Decreased blood sugar level
259. Vasopressin stimulates reabsorption of water and reduction of urine secretion. Hence, vasopressin is otherwise called
a) Sinovial fluid b) Neurotransmitter
c) Antidiuretic hormone d) Growth regulating substance
260. During emergency which of the following hormone is secreted?
a) Aldosterone b) Thyroxine c) Adrenaline d) Calcitonin
261. I. GH
II. PRL
III. TSH
IV. ACTH
V. LH
VI. Oxytocin
Which of the above hormones are release by anterior lobe of pituitary?
a) I, II, III and IV b) III, IV, V and VI c) I, II, V and VI d) I, II, III, IV and V
262. Steroid hormones work as
a) They enter into target cells and binds with specific receptor and activates specific genes to form protein
b) They binds to cell membrane
c) They catalyze formation of cAMP

d) None of the above

263. Name the hormone that has no role in menstruation.
a) LH b) FSH c) GH d) TSH

264. Number of parathyroid glands present on the back side of thyroid gland is
a) 2 b) 3 c) 4 d) 5

265. Aldosterone is secreted by
a) Zona glomerulosa b) Zona fasciculata c) Zona reticularis d) Zona pellucida

266. Rapid increase in the blood sugar level of a patient can be immediately reduced by
a) Injecting insulin intravenously b) Injecting insulin intramuscularly
c) Administering gucagon intravenously d) Consuming large quantity of insulin tablets

267. Due to this swelling around eyes, and large and popping eye balls are observed in an individual who has
a) Less secretion of thyroxine in adult b) Excessive secretion of thyroxine
c) Excessive secretion of calcitonin d) Less secretion of thyroxine right from birth

268. In males, LH stimulates the synthesis and secretion of hormones called
a) Gonadotropins b) Androgens c) Testosterone d) Oxytocin

269. Refer the following features.
I. Adenohypophysis produces gonadotropins.
II. Besides sex cells, hormones are also produced by testis and ovary.
III. Testosterone is produced by Leydig's cells.
IV.Oestrogen is produced by ovary.
Which of the above factors influence secondary sexual characters?
a) III and IV b) II, III and IV c) II and IV d) All of these

270. BMR is controlled by
a) Thyroxine b) ADH c) Aldosterone d) Growth hormone

271.

Gland	Secretion	Function
A	Estrogen	Secondary sexual character
α-cells of Langerhans	*B*	Increases blood sugar level
Anterior lobe of pituitary	*C*	Over secretion leads to gigantism

A B C
a) Ovary Glucagon GH b) GH Glucagon PRL
c) GH Glucagon MSH d) Ovary Glucagon MSH

272. If ADH level of blood is less then
a) Volume of urine increases b) Volume of urine decreases
c) Volume of urine is normal d) Volume of urine is unaffected

273. Congenital removal of thyroid will cause
a) Myxoedema b) Cretinism c) Both (a) and (b) d) Exopthalmic goitre

274. Different colours of frog's skin are controlled by
a) Hormones b) Melanocytes c) Nervous system d) Both (a) and (b)

275. Find the correctly matched pair.
a) Pineal gland - doesn't influence menstrual cycle
b) Interstitial cells - erythropoietic
c) Corpus luteum - secretes oxytocin
d) Cholecystokinin - stimulates pancreatic enzyme secretions

276. Hormones produce their effect on target tissue by binding to specific proteins called as
a) Target proteins b) Activator proteins c) Inhibitor proteins d) Hormone receptors

277. Ovary produces
a) One ovum at each month b) Progesterone

c) Estrogen d) All of these

278. Hormone that increases the blood calcium Ca^2 and decrease the excretion of Ca^2 by reabsorption is
a) Calcitonin b) Parathormone c) Insulin d) ACTH

279. If the pituitary gland of an adult rat is surgically removed, which of the following endocrine glands will be less affected?
a) Adrenal cortex b) Adrenal medulla c) Thyroid d) Gonads

280. Hormones provides coordination in
a) Vertebrates b) Invertebrates c) Both (a) and (b) d) None of these

281. A ten year old child, in whom anterior pituitary function is deficient, is likely to
a) Develop acromegaly
b) Be short stature but have relatively normal body proportions
c) Be in constant danger of becoming dehydrated
d) Have a high basal metabolic rate

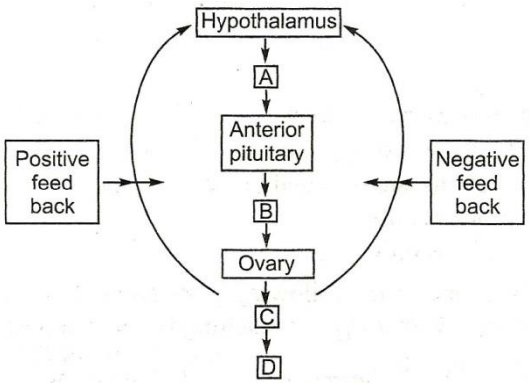
282. Moulting hormone is secreted by
a) Corpora cardiacum
b) Prothoracic gland
c) Corpora allata
d) Neurosecretory hormone

283. Which of the following hormones of the human body regulate blood calcium and phosphate?
a) Glucagon b) Growth hormone c) Parathyroid hormone d) Thyroxine

284. Which one of the following pairs correctly matches a hormone with a disease resulting from its deficiency?
a) Luteinizing hormone - Failure of ovulation b) Insulin - Diabetes insipidus
c) Thyroxine - Tetany d) Parathyroid hormone - Diabetes mellitus

285. I. Regulation of BMR
II. Supports the process of RBC formation
III. Controls the metabolism of carbohydrates, proteins and fat
IV. Maintenance of water and electrolyte balance
V. Secretion of TCT hormone
Function written above belong to which of the following gland
a) Thyroid gland b) Parathyroid gland c) Adrenal gland d) Pituitary gland

286. Choose the correct combination of labelling for the hormonal control of female reproductive system.



a) A – GnRH, B –TSH, C – LTH, D – Uterus
b) A – GnRH, B –LH/FSH, C – Oestrogen or Progesterone, D – Uterus
c) A – GnRH, B –STH, C – LH, D – Uterus
d) A – GnRH, B –ACTH, C – LH, D – Uterus

287. Foetal ejection reflex in human female is induced by
a) Pressure exerted by amniotic fluid b) Release of oxytocin from pituitary
c) Fully developed foetus and placenta d) Differentiation of mammary glands

288. Goitre disorder is due to the deficiency of
a) Iron b) Iodine c) Protein d) Retinol

289. Intracellular receptors are mostly

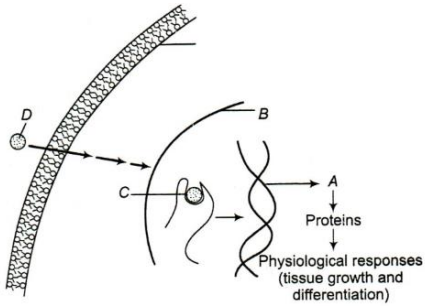
a) Cytoplasmic receptors
b) Membrane receptors
c) Nuclear receptors
d) ER receptors

290. The abbreviation TSH stands for
a) Thymine stimulating hormone
b) Thyroxine stimulating hormone
c) Thyroid stimulating hormone
d) None of the above

291. Parathormone is responsible for
a) Controlling calcium level in blood
b) Decreasing calcium level in blood
c) Filtration in nephron
d) Increasing absorption of water

292. Treatment with alloxan destroys
a) STH cells
b) Alpha cells of islets of Langerhans
c) Beta cells of islets of Langerhans
d) Cells of Leydig

293. Identify *A* to *D* and choose the correct combination



a) A-DNA, B-Nucleus, C-Hormone receptor complex, D-Hormone
b) A-*m*RNA, B-Nucleus, C-Hormone receptor complex, D-Hormone
c) A-*m*RNA, B-Nucleus, C-Hormone receptor complex, D-Protein
d) A-DNA, B-Nucleus, C-Hormone receptor complex, D-Protein

294. Accumulation and release centre of pituitary gland hormones is
a) Neurohypophysis
b) Adenohypophysis
c) Hypothalamus
d) Pars distalis

295. Gland responsible for calcium metabolism is
a) Thymus
b) Thyroid
c) Parathyroid
d) Adrenal

296. Which of the following is both exocrine and endocrine gland?
a) Liver
b) Pancreas
c) Thyroid
d) Adrenal

297. BMR of normal adult is
a) 40 cal/m^2
b) 50 cal/m^2
c) 30 cal/m^2
d) 20 cal/m^2

298. Proinsulin is a
a) Hormone
b) Vitamin
c) Prohormone
d) Enzyme

299. The Leydig's cells secrete
a) Oestrogen
b) Testosterone
c) Progesterone
d) Corticosterone

300. Hormone which is responsible for contraction of uterus is
a) Vasopressin
b) Oxytocin
c) Thyrotrophin
d) Gonadotrophin

301. Progesterone
a) Supports the pregnancy
b) Acts on the mammary gland and stimulate the formation of alveoli
c) Both (a) and (b)
d) Controls secondary sexual characters in females

302. Heterocrine glands are the glands, which
a) Work as exocrine glands
b) Work as endocrine glands
c) Have dual (exo and endocrine) mode of function
d) Are present in the hypothalamus region of brain

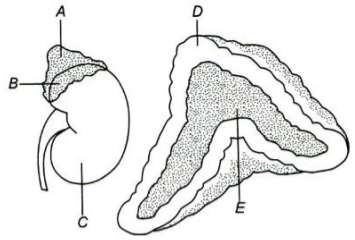
303. Damage to thymus in a child may lead to
a) A reduction in haemoglobin content of blood.
b) A reduction in stem cell production.
c) Loss of antibody- mediated immunity.
d) Loss of cell- mediated immunity.

304. In humans, testis functions as
a) Primary sex organ
b) Secondary sex organ

c) Endocrine gland d) Both (a) and (c)

305. Gland responsible for calcium metabolism is
a) Thymus b) Thyroid c) Parathyroid d) Adrenal

306. Identify A to E in the following figure and choose the correct option



a) A-Adrenal gland, B-Fat, C-Kidney, D-Adrenal cortex, E-Adrenal medulla
b) A-Fat, B-Adrenal gland, C-Kidney, D-Adrenal cortex, E-Adrenal medulla
c) A-Fat, B-Adrenal gland, C-Kidney, D-Adrenal medulla, E-Adrenal cortex
d) A-Adrenal gland, B-Fat, C-Kidney, D-Adrenal medulla, E-Adrenal cortex

307. Low Ca^{2+} in the body fluid may be the cause of
a) Tetany b) Anaemia c) Angina pectoris d) Gout

308. I. Rapid transmission of nerve impulse
II. Slower transmission and slow acting
III. Pathway is specific
IV. Pathway is not specific
From the given statements identify the statements belongs to endocrine system and choose the correct option
a) I and II b) III and IV c) II and IV d) II and III

309. Due to deficiency of which hormone, bones becomes weak in female?
a) ACTH b) TSH c) Progesterone d) Oestrogen

310. Pineal gland secretes
a) FSH b) LH c) Melatonin d) GH

311. Adrenaline and noradrenaline are hormones that act as
a) Energy producing agents b) Food storage materials
c) Neurotransmitters d) Energy storing substances

312. Pituitary gland is also called
I. smallest endocrine and gland
II. master endocrine gland
III. hypophysis
Choose the correct combination
a) I and II b) II and III c) I, II and III d) I and III

313. The macromineral essential for the formation of insulin is
a) Magnesium b) Chlorine c) Sulphur d) Iodine

314. Addison's disease results from
a) Hypertrophy of gonads b) Hyposecretion of adrenal cortex
c) Hyperactivity of cells of Leydig d) None of the above

315. The chemical nature of hormones secreted by α and δ cells of pancreas is
a) Glycolipid b) Gycoprotien c) Steroid d) Polypeptide

316. Which of the following is discovered by Kendall?
a) FSH and LH b) corticotrophin c) Thyroxine d) Insulin

317. ANF has exactly opposite function of which of hormone secreted
a) PTH b) Estrogen c) Aldosterone d) Androgen

318. The hormones that initiates ejection of milk, stimulates milk production and growth of ovarian follicles are respectively known as
a) PRL, OT and LH b) OT, PRL and FSH c) LH, PRL and FSH d) PRH, OT and LH

319. Hormone which interact with membrane bound receptors normally
a) Enters into the cell membrane b) Don't enter into the cell
c) Generate secondary messenger d) Both (b) and (c)
320. The blood calcium level is lowered by the deficiency of
a) Parathormone b) Thyroxine c) Calcitonin d) Both (a) and (b)
321. The condition in which the potassium level are increased is known as
a) Hypercholesterolemia b) Hyperkalemia
c) Osteomalacia d) Hyperexcitability
322. Corticoids are the hormones, which are secreted by
a) Kidney b) Adrenal cortex c) Adrenal medulla d) Hypothalamus
323. Somatostatin from hypothalamus gland4
a) Activates the release of growth hormone b) Inhibits the release of growth hormone
c) Inhibits the release of enzymes in the digestive tract d) Activates the release of enzymes pineal gland
324. Pineal gland is located on the
a) Ventral side of forebrain b) Lateral side of forebrain
c) Dorsal side of forebrain d) Back side of forebrain
325. Hormone prolactin is secreted by
a) Posterior pituitary b) Thyroid c) Anterior pituitary d) Hypothalamus
326. Insufficient quantities of antidiuretic hormone in blood lead to
a) Diabetes mellitus b) Glycosuria c) Diabetes insipidus d) Uremia
327. A hormone, secreted by the endocrinal cells of duodenal mucosa which influence the release of pancreatic juice, is
a) Relaxin b) Cholecystokinin c) Secretin d) Progesterone
328. Steroid hormones easily pass through the plasma membrane by simple diffusion because they
a) Are water soluble b) Contain carbon and hydrogen
c) Enter through pores d) Are lipid soluble
329. The hormone responsible for fight, fright and flight response is
a) Adrenaline b) Thyroxine c) ADH d) Oxytocin
330. Functions of oxytocin is/are
a) Smooth muscle contraction b) Contraction of uterus
c) Milk ejection d) All of the above
331. Which of the following hormones are produced in the hypothalamus and stored in the posterior pituitary?
a) FSH and LH b) ADH and oxytocin c) TSH and STH d) ACTH and MSH
332. I. Autocrine hormones
II. Endocrine hormones
III. Paracrine hormones
Among them which one is/are local regulator and don't travels through blood?
a) Only I b) I and II c) I and III d) Only II
333. Select the iodinated form of tyrosine amino acid from given options
a) Tridothyronine b) Thyroxine c) Calcitonin d) Both (a) and (b)
334. Somatostatin
a) Stimulates glucagon release while inhibits insulin release
b) Stimulates release of insulin and glucagon
c) Inhibits release of insulin and glucagon
d) Inhibits glucagon release while stimulates insulin release
335. Gastroinhibitory polypeptide is released/secreted by
a) Small intestine b) Spleen c) Hypothalamus d) Pineal gland
336. Human chorionic gonadotrophin is secreted by
a) Chorion b) Amnion c) Corpus luteum d) Placenta
337. Toxic agents, present in food which interfere with thyroxine synthesis, lead to development of

a) Toxic goitre b) Cretinism c) Simple goiter d) Thyrotoxicosis

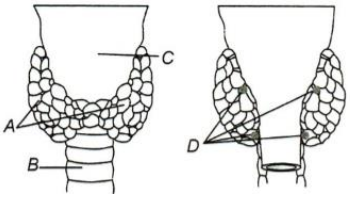
338. Which one of the following pairs is incorrectly matched?
a) Glucagon - Beta cells (source) b) Somatostatin - Delta cells (source)
c) Corpus luteum - Relaxin (secretion) d) Insulin - Diabetes mellitus (disease)

339. Cholecystokinin is secreted by
a) Large intestine b) Small intestine c) Liver d) Spleen

340. Steroid hormone is derived from
a) Corticoid b) Cholesterol c) AAD d) Protein

341. Hypothalamus contains several group of neurosecretory cells called
a) Hormones b) Pituitary gland c) Nuclei d) Protoplasm

342. Identify *A*, *B*, *C* and *D* in the given diagram and choose the correct combination



a) A-Thyroid, B-Trachea, C-Vocal cord, D-Parathyroid gland
b) A-Trachea, B-Thyroid, C-Vocal cord, D-Parathyroid gland
c) A-Trachea, B-Vocal cord, C-Thyroid, D-Parathyroid gland
d) A-Parathyroid glands, B-Thyroid, C-Vocal cord, D-Trachea

343. Androgens are secreted by
a) Pituitary b) Thyroid c) Adrenals d) Parathyroid

344. Glucagon is
a) Peptide hormone b) Increases the blood sugar
c) Hyperglycemic hormone d) All of the above

345. Given ahead is an incomplete table about certain hormones, as their source glands and one major effect of body in humans. Identify the correct option for the three blanks A, B and C

Gland	Secretion	Effect on Body
A	Oestrogen	Maintenance of secondary sexual characters
Alpha cells of islets of Langerhans	B	Raises blood sugar level
Anterior pituitary	C	Over secretion leads to gigantism

a)

Placenta	Insulin	Vasopressin

b)

Ovary	Insulin	Calcitonin

c)

Placenta	Glucagon	Calcitonin

d)

Ovary	Glucagon	Growth hormone

346. Which hormone acts on the exocrine part of pancreas and stimulates secretion of water and bicarbonate ions?
a) Gastric b) Secretin c) CCK d) GIP

347. Corpus luteum secretes
a) Progesterone and oestrogen b) LH

c) Only progesterone
d) Progesterone and LH

348. Hormones originating in the hypothalamic neurons, pass through …A… and are released from their …B… endings. These hormones reach the …C… gland through a …D… circulatory system and regulate the functions of the …E… pituitary
Select the correct combination of A, B and C in reference to above paragraph
a) A-axons, B-nerve, C-pituitary, D-portal, E-posterior
b) A-nerve, B-axons, C-pituitary, D-portal, E-anterior
c) A-nerves, B-axons, C-pituitary, D-portal, E-posterior
d) A-axons, B-nerve, C-pituitary, D-portal, E-anterior

349. Hypothalamus is the
a) Anterior part of diencephalon
b) Posterior part of diencephalon
c) Interior part of diencephalon
d) Basal part of diencephalon

350. Endocrine glands are also called
a) Exocrine glands
b) Holocrine glands
c) Heterocrine glands
d) Enzyme secreting glands

351. Steroid hormones typically alters the activity of target cells by
a) Activating primary messenger
b) Activating secondary messenger
c) Interacting with intracellular receptors
d) None of the above

352. ADH regulates the permeability of
a) Proximal convoluted tubule
b) Collecting tubule and distal convoluted tubule
c) Ascending limb of loop of Henle
d) Descending limb of loop of Henle

353. ACTH is secreted by
a) Thyroid gland
b) Thymus gland
c) Pituitary gland
d) Islets of Langerhans

354. Which one of the following is the hormone of adrenal medulla?
a) Prolactin
b) ACTH
c) Corticosterone
d) Epinephrine

CHEMICAL COORDINATION AND INTEGRATION

BIOLOGY

: ANSWER KEY :

1)	d	2)	c	3)	c	4)	a	177)	b	178)	b	179)	c	180)	d
5)	a	6)	a	7)	b	8)	c	181)	d	182)	b	183)	b	184)	d
9)	b	10)	a	11)	d	12)	b	185)	a	186)	c	187)	c	188)	b
13)	a	14)	b	15)	c	16)	a	189)	d	190)	a	191)	b	192)	b
17)	b	18)	b	19)	a	20)	c	193)	b	194)	c	195)	b	196)	a
21)	a	22)	b	23)	b	24)	a	197)	d	198)	d	199)	d	200)	d
25)	c	26)	b	27)	b	28)	a	201)	c	202)	d	203)	d	204)	d
29)	a	30)	c	31)	a	32)	a	205)	a	206)	c	207)	d	208)	a
33)	b	34)	d	35)	b	36)	c	209)	c	210)	d	211)	b	212)	b
37)	c	38)	a	39)	a	40)	c	213)	b	214)	c	215)	c	216)	c
41)	c	42)	a	43)	c	44)	b	217)	b	218)	c	219)	d	220)	a
45)	a	46)	d	47)	d	48)	c	221)	c	222)	d	223)	b	224)	c
49)	b	50)	a	51)	c	52)	d	225)	c	226)	a	227)	d	228)	c
53)	d	54)	d	55)	c	56)	b	229)	c	230)	b	231)	b	232)	d
57)	a	58)	d	59)	b	60)	d	233)	b	234)	b	235)	d	236)	d
61)	a	62)	a	63)	b	64)	b	237)	c	238)	b	239)	a	240)	b
65)	a	66)	b	67)	b	68)	b	241)	a	242)	a	243)	b	244)	a
69)	a	70)	d	71)	c	72)	b	245)	c	246)	c	247)	d	248)	c
73)	b	74)	d	75)	a	76)	c	249)	b	250)	c	251)	d	252)	c
77)	c	78)	b	79)	b	80)	d	253)	d	254)	a	255)	a	256)	c
81)	c	82)	b	83)	d	84)	d	257)	a	258)	b	259)	c	260)	c
85)	d	86)	b	87)	c	88)	c	261)	d	262)	a	263)	c	264)	c
89)	d	90)	a	91)	d	92)	d	265)	a	266)	b	267)	a	268)	b
93)	d	94)	b	95)	d	96)	a	269)	d	270)	a	271)	a	272)	a
97)	c	98)	d	99)	c	100)	a	273)	b	274)	d	275)	d	276)	d
101)	b	102)	d	103)	b	104)	a	277)	d	278)	b	279)	b	280)	b
105)	b	106)	b	107)	c	108)	b	281)	b	282)	b	283)	c	284)	a
109)	b	110)	a	111)	b	112)	b	285)	a	286)	b	287)	b	288)	b
113)	b	114)	a	115)	b	116)	d	289)	c	290)	c	291)	a	292)	c
117)	a	118)	a	119)	b	120)	d	293)	b	294)	c	295)	c	296)	b
121)	c	122)	d	123)	d	124)	d	297)	a	298)	c	299)	b	300)	b
125)	d	126)	a	127)	c	128)	c	301)	c	302)	c	303)	d	304)	d
129)	d	130)	b	131)	c	132)	d	305)	c	306)	a	307)	a	308)	c
133)	d	134)	d	135)	d	136)	c	309)	c	310)	c	311)	c	312)	c
137)	d	138)	b	139)	a	140)	a	313)	c	314)	b	315)	d	316)	c
141)	a	142)	a	143)	d	144)	d	317)	c	318)	b	319)	d	320)	a
145)	a	146)	d	147)	b	148)	d	321)	b	322)	b	323)	b	324)	c
149)	a	150)	c	151)	b	152)	a	325)	c	326)	c	327)	b	328)	d
153)	c	154)	b	155)	b	156)	a	329)	a	330)	d	331)	b	332)	c
157)	d	158)	b	159)	a	160)	a	333)	d	334)	c	335)	a	336)	d
161)	a	162)	d	163)	c	164)	d	337)	c	338)	a	339)	b	340)	b
165)	d	166)	b	167)	b	168)	b	341)	c	342)	a	343)	c	344)	d
169)	a	170)	d	171)	b	172)	b	345)	d	346)	b	347)	a	348)	d
173)	a	174)	c	175)	a	176)	b	349)	d	350)	c	351)	c	352)	b

353) c 354) d

CHEMICAL COORDINATION AND INTEGRATION

BIOLOGY

: HINTS AND SOLUTIONS :

1 **(d)**
Androgen regulate the development, maturation and functions of the male accessory sex organs like epididymis, vas deferens, seminal vesicles, prostate gland, etc. These hormones stimulate muscular growth, growth of facial and axillary hair, aggressiveness, low pitch of voice, etc. Androgens play a major stimulatory role in process of spermatogenesis (formation of spermatozoa)

2 **(c)**
Secretion of progesterone from corpus luteum, is stimulated by luteinizing hormone (LH) of anterior pituitary.

3 **(c)**
Adrenaline (epinephrine) and noredrenaline (norepinephrine) are catecholamines hormones which are secreted from adrenal medulla part of adrenal gland. As adrenal gland is divided into- adrenal cortex and adrenal medulla. These hormones are protienaceous in nature and derived from amino acids tyrosine. Thus, injury to adrenal cortex will not affect the secretion of adrenaline.

4 **(a)**
Hormones are non-nutrient chemicals which act ass intercellular messengers and are produced in trace amounts

5 **(a)**
Insulin receptors are **extrinsic proteins** these are complex of two α and two β- subunits held together by disulphide bond.

6 **(a)**
Pancreas is the Second Largest Endocrine Gland

Type of cells in islets of Langerhans	Hormones
α – cells	Glucagon
β – cells	Insulin
γ – cells	Gastrin
δ – cells	Somatostatin
f-cells	Pancreatic polypeptides

7 **(b)**
GIP (Gastro Inhibitory Polypeptide) inhibits gastric acid secretion and stimulates insulin release

8 **(c)**
A-2, B-trachea, C-isthmus

9 **(b)**
The hormones which are proteinaceous in nature generally can't pass through the cell membrane. So, they generate the secondary messenger like (Ca^{2+}, IP_3) which regulate the further changes in target cell

10 **(a)**
Insulin hormone regulates carbohydrate metabolism. Sexual reproductive system does not apparently involve it.

11 **(d)**
Estrogen produces wide ranging actions such as stimulation of growth and activities of female secondary sex organs, development of growing ovarian follicle, appearance of female secondary sex characters (*e*. *g*., high pitch voice, etc.), mammary glands development. Estrogen also regulate the female sexual behaviour

12 **(b)**
Oxytocin stimulates growth of mammary glands in human adult.

13 **(a)**
Parathormone secreted by parathyroid gland regulates the calcium and phosphate balance between the blood and the other tissues. It increases the plasma Ca^{2+}represses plasma phosphate and decreases Ca^{2+} excretion by the kidney.

14 **(b)**
There are bunch of hormones, neuropeptides and neurotransmitters that affect gastrointestinal function. The GI (gastrointestinal) endocrine system diffuses and its endocrine cells are distributed differentially in the mucosal epithelium along the length of digestive tract. Gastrointestinal hormones are proteinaceous in nature

15 **(c)**
Glucagon and epinephrine hormone are protein in nature. They produces the secondary messenger

for their action

16 **(a)**

Cortisol or hydrocortisone is the principal glucocorticoid hormone of many mammals including humans. It is secreted from zona fasiculata layer of adrenal cortex. It regulates the glucose metabolism and promotes gluconeogenesis, especially during starvation and raises blood pressure.

17 **(b)**

A-Prolactin, B-Oxytocin

19 **(a)**

Endocrine glands (ductless glands) or gland of internal secretion have no ducts and their secretion get absorbed into the immediate surrounding blood circulation to reach the specific organ to initiate a particular metabolic change.

20 **(c)**

Pheromone are chemicals used for communication amongst individual of same species. Also known as ectohormones/sex attractants/semi chemicals. Pheromones involve a specific response in other members like recognition, warning and attraction

21 **(a)**

Sertoli cells are the cells that line the seminiferous tubules in the testis. These cells protect the spermatids and convey nutrients to both the developing and mature spermatozoa. Sertoli cells are regulated by FSH (follicle stimulating hormone) as the FSH receptors are confined to the sertoli cells.

22 **(b)**

Enterogastrone hormone produced by small intestine slows down secretion of gastric juice. Enterokinase is an enzyme in intestinal juice that activates trypsinogen to trypsin.

23 **(b)**

1 to 2% pancreatic tissue

24 **(a)**

Norepinephrinc is secreted from adrenal medulla. It rises blood pressure.

25 **(c)**

General steps in hydrophilic or water soluble or protein nature hormone action

Hormone binds to plasma membrane to specific site

(Receptor)

↓

Response-I (Given by receptor)

Generation of secondary messenger (cyclic AMP or Ca^{2+} etc)

↓

Biochemical Responses

↓

Physiological Responses

e. *g*., Ovarian growth, etc.

26 **(b)**

Prolactin is a lactogenic hormone produced by anterior lobe of pituitary gland. It stimulates milk production in cow.

27 **(b)**

Follicle Stimulating Hormone (FSH) is produced from anterior pituitary lobe

28 **(a)**

Parathormone is secreted from parathyroid gland. This hormone helps to regulate the metabolism of calcium and certain other minerals like phosphate. Combined effect of parathormone and calcitonin normally maintain the blood calcium level.

29 **(a)**

(i) Leydig cells secretes testosterone hormone which enhances the spermatogenesis

(ii) Neurohypophysis secretes oxytocin and ADH. ACTH is provide cell mediated immunity secreted by adenohypophysis

30 **(c)**

Hypothyroidism causes both cretinism and myxoedema.

31 **(a)**

Thyroid gland, adrenal gland and pituitary gland are endocrine glands but kidney is an excretory organ.

32 **(a)**

Pituitary gland, pineal gland, mammary glands and medulla of adrenal gland are derived from **ectoderm**.

33 **(b)**

The atrial wall of our heart secretes very important peptide hormone called Atrial Natriuretic Factor (ANF), which is peptide in nature. ANF decreases blood pressure. When blood pressure is increased, ANF is secreted which causes dilation of the blood vessels. This reduces the blood pressure

34 **(d)**

The conversion of tyrosine to epinephrine involves four steps

(i) Ring hydroxylation

(ii) Decarboxylation
(iii) Side chain hydroxylation
(iv) N-methylation

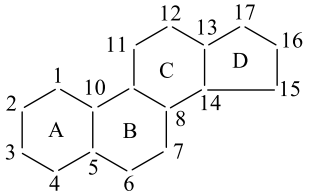
Tyrosine
↓ Tyrosine hydroxylase
(Dihydroxyphenylalanine)
↓ Dopa-decarboxylase
Dopamine
↓ Dopamine-β-Hydroxylase
Norepinephrine
↓ PNMT (Phenyl ethanolamine-N-methyl transferase)
Epinephrine

35 **(b)**

Thymus is an endocrine gland, which is active in young ones but gradually becomes inconspicuous after sexual maturity. Like other lymphoid tissues, thymus undergoes atrophy in response to adrenoglucocorticoids.

36 **(c)**

Sterol (cyclopentanoper hydrophenanthrine ring) generally gives rise to most of the steroid hormones



Steroid ring

37 **(c)**

Adrenaline (epinephrine) is a hormone produced by adrenal medulla and is secreted in great amounts during emotional stress. It elevates the glucose level in blood stream (by **glycogenolysis**) which is accompanied by **increase in oxygen consumption**, body temperature, heat production. Adrenaline also cause an increase in the flow of blood by dilating blood vessels.

38 **(a)**

Cushing's syndrome is the result of excessive secretion of cortisol by adrenal cortex. This leads to increased protein breakdown which is manifest by wasting of the skeletal muscle and a decreased skin thickness (which thus bruises easily). High level of cortisol in blood may also elevate the blood glucose level.

39 **(a)**

Progesterone is a principal female sex hormone. It is steroid and secreted during the latter half of the menstrual cycle in human females by temporary endocrine tissue, the corpus luteum.

40 **(c)**

Thymus gland secretes the peptide hormones called thymosins. Thymosin plays a major role in the differentiation of T-lymphocytes, which provides cell-mediated immunity. In addition, thymosins also promote the production of antibodies to provide humoral immunity

41 **(c)**

Endemic or simple goitre occurs due to deficiency of iodine. It is non-genetic. It is characterized by enlargement of thyroid gland due to increased in number and size of acinar cells of thyroid gland.

42 **(a)**

Tyrosine combines with iodine and is modified to form two thyroid hormones
(i) Triodothyronine (T_3) (ii) Tetraidothyronine (T_4)
Out of these two, tetraiodothyronine is popularly called thyroxine

43 **(c)**

A-dorsal, B-heart, C-immune

44 **(b)**

Vasopressin released by posterior lobe of pituitary acts mainly at the kidney and stimulates, reabsorption of water and electrolytes by the distal tubules and thereby reduces the loss of water through urine (diuresis). Hence. It is also called Anti-Diuretic Hormone (ADH)

45 **(a)**

Thyroxine is produced by thyroid gland which increases catabolism, produces energy and increases the body temperature. This process is called **calorigenic effect.**

46 **(d)**

Hormones acts as intercellular chemicals. Hormones produced in trace quantity. Hormones are non-nutrient chemicals

47 **(d)**

The thyroid gland is composed of follicles and stromal tissue. Each thyroid follicle is composed of follicular cells enclosing a cavity.
These follicle cells synthesise two hormones tetraiodothyronine or thyroxine (T_4) and triodothyronine (T_3)

48 **(c)**

Pineal gland is an endocrine gland, composed of modified nerve cells called pinealocytes.

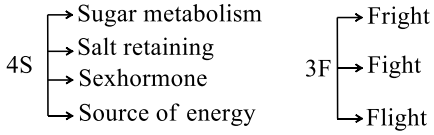
49 **(b)**

Thyroid stimulating hormone or TSH is a glycoprotienaceous hormone secreted by special basophilic cells of adenohypophysis and promotes the growth and function of thyroid gland. The secretion of TSH is regulated by thyroxine

through negative feedback mechanism.

50 **(a)**
The parathormone secreted by parathyroid gland regulates the calcium and phosphate balance between the blood and other tissues.

51 **(c)**
Adrenal gland is also called 4S gland and 3F gland



52 **(d)**
Secretion of posterior pituitary is under the control of neurosecretory nerve axons.

53 **(d)**
Insulin is a peptide hormone, which plays a major role in the regulation of glucose homeostasis. Insulin acts mainly on hepatocytes and adipocytes (cells of adipose tissue) and enhances cellular glucose uptake and utilization. As a result three is a rapid movement of glucose from blood to hepatocytes and adipocytes resulting in decreased blood glucose level (hypoglycemia). Insulin also stimulates conversion of glucose to glycogen (glycogenesis) in target cells

54 **(d)**
Melatonin is a naturally occurring compound found in animals, plants and microbes. In mammals melatonin is secreted by the pineal gland in the brain. It is commonly known as 'Hormone of darkness". It may also be produced by a variety of peripheral cells, such as bone marrow cells, lymphocytes and epithelial cells.

55 **(c)**
Thyroid gland is the largest endocrine gland.

56 **(b)**
GnRH (Gonadotropin Releasing Hormone) from hypothalamus stimulates the pituitary synthesis and release of gonadotropins. On the other hand somatostatin from hypothalamus inhibits the release of growth hormone from pituitary

57 **(a)**
The pituitary gland is located in a bony cavity called **sella tursica** attached to hypothalamus by a stalk. It is divided anatomically into an adenohypophysis and a neurohypophysis. The latter is also called pars nervosa or posterior pituitary. It stores and releases two hormone called **oxytocin** and **vasopressin**. Which are actually synthesized by the hypothalamus and are transported axonally to neurohypophysis.

Vasopressin acts mainly at the kidney and stimulates resorption of water and electrolytes by the distal convoluted tubules in the nephron and thereby reduces loss of water through urine (diuresis). Hence, it is also called as anti-diuretic hormone (ADH).

58 **(d)**
Deficiency of anti diuretic hormone (ADH) or vasopressin causes diabetes insipidus, in which urination is frequent and copious, resulting in loss of water from the body and the person becomes thirsty.

59 **(b)**
Over secretion of GH stimulates abnormal growth of the body leading to gigantism and low secretion of GH results in stunted growth resulting in dwarfism

60 **(d)**
The pineal body (gland) is small mass of tissues near the centre of the mammalian brain. The pineal secretes two biogenic hormone melatonin and serotonin. The pineal contains light sensitive cells and has nervous connections from the eyes. Melatonin regulates function related to light. It also regulates sexual behavior and regulating the period of puberty.

61 **(a)**
Cretinism is caused by deficiency of thyroid hormone in infants. This person has slow body growth and mental development with reduced metabolic rate. Myxoedema is caused by deficiency of thyroid hormone in adults.

62 **(a)**
Dwarfism is caused by deficiency of growth hormones in childhood. It is characterized by small but well proportioned body and sexual immaturity.

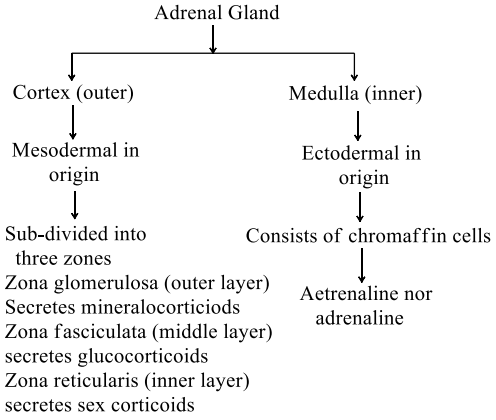
63 **(b)**
Thymus is a pyramidal shaped lymphoid organ situated in front of the heart in the upper part of sternum. Thymus is active in young ones but gradually becomes inconspicuous after sexual maturity. Hence, the decline and disappearance of this gland by the middle age is the primary causes of ageing.
Thymus is enveloped by a thin loose, fibrous connective tissue capsule. Septa extending inwards from the capsule, divide the two lobes of gland into a number of small lobules. Each lobule is distinguished into a cortical parenchyma containing numerous lymphocytes and a

medullary mass of large irregularly branched and interconnected epithelial cells (reticular cells)

64 **(b)**

A-Cortex, B-Medulla, C-Zona glomerulosas, D-Zona fusiculata, E-Zona reticulate.

Hormones secreted by cortex region of adrenal gland are commonly called corticoids



65 **(a)**

Pancreas is a mixed gland, in which pancreatic acini are exocrine and islets of Langerhans are endocrine. Islets of Langerhans consists of following three parts:

•α-cells, which produce glucagon hormone
•β- cells , which produce insulin hormone
•δ- cells, which produce somatostatin
•F cells, which produces pancreatic polypeptide

66 **(b)**

(i) Father of Endocrinology is Thomas Addison, a British physician (1793-1860). Addison's disease caused by deficiency of mineralocorticoids has been named after him

(ii) Crystalline insulin was prepared by Abel (1926)

(iii) Glucagon was discovered by Kimball and Murlin

67 **(b)**

Diabetes is a sugar disease so, advised to patient of diabetes to eat sugar free food. Blood cancer is known as leukaemia.

68 **(b)**

Prolactin is secreted by anterior pituitary gland, which stimulates mammary gland development during pregnancy and lactation after child birth. Placenta is a connection between the uterine wall of mother and their foetus. It helps in exchange of material between these two. Placenta secretes human chorionic gonadotrphin, oestrgen and progesterone.

69 **(a)**

PTH (Parathormone/Parathyroid Hormone/Collip's Hormone)

Functions

(i) Regulate calcium-phosphate level in blood

(ii) Increase the rate of calcium, absorption from intestine

(iii) Help in the bone dissolution of newly formed asymmetric bone

(iv) Affects the growth of bones, membrane permeability nerve functioning and muscular activity of blood

70 **(d)**

A-agonist, B-antagonist

71 **(c)**

Both (a) and (b)

72 **(b)**

Hormone is a chemical messenger.

73 **(b)**

Chemically, hormones are of different nature like protein hormones (hypothalamic hormones), steroid (Sex hormones) and biogenic amines (like thyroxine hormones).

74 **(d)**

MSH (Melanocyte Stimulating Hormone) is secreted from intermediate lobe of pituitary gland. Pars intermedia is the boundry between the anterior and posterior lobes of the pituitary. This hormone causes dispersal of pigment granules in the pigment cells thereby darkening the colour in certain animals like fishes and amphibians.

75 **(a)**

The nuerohypophysis or posterior lobe of pituitary gland secretes two hormones, *i*. *e*., oxytocin or pitosin and vasopressin or pitressin or antidiuretic hormone (ADH). Oxytocin is also called as birth hormone or milk ejecting hormone because it promotes contraction of the uterine muscles and myoepithelial cells of the lactating breast and helps in squeezing milk into the large ducts behind the nipple. ADH increases the reabsorption of water in the distal convoluted tubule, collecting tubules and collecting ducts.

76 **(c)**

A-CNS, B-libido, C-anabolic

77 **(c)**

The reproductive system of human male contains a pair of Cowper's gland or bulbourethral glands. These glands are approximately the size of pea, located in the floor of pelvic cavity. Their secretion which contains mucous for lubrication enters the semen through the ducts. These are

homologous to Bartholin's glands in females.

78 **(b)**

Calcitonin is secreted by thyroid gland, lowers the concentration of calcium (and phosphate) in the body by suppressing the release of calcium from bone and promoting excretion of calcium and phosphate by kidneys.

79 **(b)**

Vitamin– D and parathormone are responsible for regulation of calcium and phosphate in the body.
Vitamin- C is an antioxidants and promote wound healing.
Vitamin- A is essential for normal vision and forms the retinal pigments rhodopsin and iodopsin.

80 **(d)**

All the given statements are correct

81 **(c)**

Glucagon is a hormone, secreted by α-cells of islets of Langerhans in the pancreas. It increases the concentration of glucose in the blood by stimulating the metabolic breakdown of glycogen. It thus, antagonizes the effects of insulin.

82 **(b)**

Adrenaline causes contraction of cardiac muscles, intensify increasing both rate and force of heart beat, pulse rate, arterial pressure and cardiac output.

83 **(d)**

Pineal gland secretes two hormones – melatonin and serotonin. Melatonin concentration in the blood appears to flow a diurnal cycle.

84 **(d)**

About 99% part of pancreas is exocrine and formed of hollow pancreatic acini or lobules embedded in a connection tissue stroma. In the stroma, there are numerous, small clusters of endocrine cells, called islets of Langerhans.

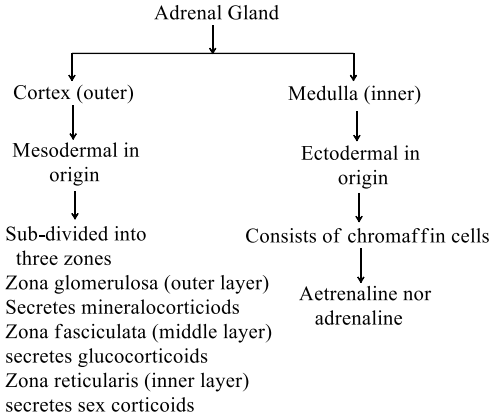
85 **(d)**

Noradrenaline and adrenaline commonly called as catecholamines controls the mentioned activities
Adrenaline and noradrenaline effects are
(i) blood pressure
(ii) basal metabolic rate
(iii) respiration rate
(iv) sugar level
(v) lipolysis (breakdown of lipids)

86 **(b)**

Chromaffin cells.
A-Cortex, B-Medulla, C-Zona glomerulosas, D-Zona fusiculata, E-Zona reticulate.

Hormones secreted by cortex region of adrenal gland are commonly called corticoids



87 **(c)**

Hypothyroidism during pregnancy causes defective development and maturation of the growing baby leading to stunted growth (cretinism), mental retardation, low intelligence quotient, abnormal skin, deaf-mutism, etc. In adult women, hypothyroidism may cause menstrual cycle to become irregular

88 **(c)**

Parathyroid hormone or **parathormone** is the single most important hormone controlling the calcium balance of the blood. Because plasma calcium ion homeostasis is essential for so many functions, including transmission of nerve impulses, muscle contraction and blood clotting, precise control of Ca^{2+} levels is critical.

89 **(d)**

Most of the trophic ($Trophe =$ nourishment) hormones are secreted by anterior lobe of pituitary.
Gonadotrophins or gonadotrophic hormones are those which stimulates the gonads (testes and ovaries), $e.g.$, FSH and LH. Follicle stimulating hormone (FSH) stimulates growth of ovarian follicles and the secretion of oestrogen in the female and spermatogenesis (formation of sperms) in the male. Luteinizing hormone (LH) stimulates corpus luteum of the ovary to secrete progesterone in the females. In male, it activates the Leydig's (interstitial) cells of testis to secrete androgens.

90 **(a)**

Pituitary gland is smallest endocrine gland. It is called master gland because. Its control all the other gland of body

91 **(d)**

Sella turcica protects pituitary gland. Pituitary lies in the sella turcica of the sphenoid bone and is

attached to the hypothalamus by a short infundibular stalk.

92 **(d)**
Vitamin-D and parathormone are responsible for regulation of calcium and phosphate level in body. Way they are similar

93 **(d)**
Growth hormone secreted by anterior lobe of pituitary gland, promotes cell division, protein synthesis and bone growth.

94 **(b)**
Parathyroid Hormone (PTH) increases the Ca^{2+} in the blood. PTH acts on bones and stimulates the process of bone resorption (dissolution/demineralisation). PTH also stimulates the reabsorption of Ca^{2+} by the renal tubules and increases Ca^{2+} absorption from the digested food. It is thus clear that PTH is hypercalcemic hormone, *i.e.,* it increases the blood Ca^{2+} level. Along with TCT, it plays a significant role in calcium balance in the body

95 **(d)**
Cyclic AMP, IP_3, Ca^{2+}, are all secondary messenger

96 **(a)**
Intracellular receptors.
Steroid hormones are the lipid soluble hormones. They are also categorized as hydrophobic hormones. They directly pass through the cell membrane and interact with intracellular receptors present inside the cell (generally into the nucleus). Generally the steroid hormone is derived from the cholesterol ring

97 **(c)**
Adrenaline is increased in blood during fear situation.

98 **(d)**
Pineal gland secretes melatonin hormone. The concentration of this hormone in blood appears to flow a diurnal (day-night) cycle as it arises in the evening and through the night, it regulates working of gonads (testes and ovaries).

99 **(c)**
Pancreas is a heterocrine gland *i*. *e*., partly endocrine and partly exocrine. The exocrine part secretes pancreatic juice. The endocrine part is formed of islets of Langerhans. Islets of Langerhans are composed of three types of cells—
Alpha cells: secrete glucagon hormone.
Beta cells: secrete insulin hormone.
Gamma cells: precursors of alpha and beta cells.

100 **(a)**

Gland	Hormone	Function
Adenohy pophysis	Prolactin	Milk production in acini of gland.
Neurohy pophysis	Oxytocin	Contraction of uterine muscles.
Adrenal medulla	Adrenaline	Meets the emergency during shock and fear.
Adrenal cortex	Aldosterone	Maintain and regulate electrolyte balance.

101 **(b)**
A-iodine, B-hypothyroidism, C-goitre

102 **(d)**
Pineal gland secretes two biogenic hormones *i.e.*, melatonin and serotonin. Melatonin is secreted in a diurnal cycle (the amount changes throughout 24 hour period) where the amount remains low during daylight hours but increases during dark hours.
Serotonin
Serotonin secretion is induced by light. It act as vasoconstrictor and helps to increase the blood pressure

103 **(b)**
(i) Liver is the exocrine gland (gland which drains out their secretion through duct)
(ii) Pancreas, testis and ovary are the heterocrine gland
(iii) Thymus, adrenal and pituitary, thyroid are the endocrine gland

104 **(a)**
Epinephrine is synthesized from amino acid tyrosine. While oestrogen and progesterone are modified steroids and prostaglandins are basically fat.

105 **(b)**
Progesterone secreted from corpus luteum, prepares uterine endometrium for receiving blastocysts for implementation. Progesterone is also called **pregnancy hormone** and anti- FSH and anti- LH. It maintains pregnancy and prevents

formation of new follicles and ovulation during gestation period. If pregnancy has not occurred, corpus luteum degenerates and next menstrual cycle is repeated.

106 **(b)**
Hyposecretion of hormones of **adrenal cortex** leads to loss of sodium and water through urine, low blood pressure and hypotension.

107 **(c)**
A-Sella tursica; B-Hypothalamus

108 **(b)**
The hormone was given by **Starling** for secretion. This is the first hormone discovered.

109 **(b)**
Somatotropic hormone (Growth hormone) is the major hormone in secretion of anterior pituitary. It is most important stimulant of normal growth of body. It promotes biosynthesis of DNA, RNA and protein in the cells. Obviously it stimulates cellular growth and proliferation, growth and repair of bones, muscles and connective tissue.

110 **(a)**
Exophthalmic goitre (Crave's disease) is thyroid enlargement in which the thyroid secretes excessive amount of thyroid hormones. It is characterized by protrusion of eye balls because of fluid accumulation behind them, loss of weight, rapid heart beat, nervousness, restlessness.

111 **(b)**
The juxtaglomerular cells of kidney produce a peptide hormone called renin, which increase blood pressure through angiotension-II

112 **(b)**
Prostaglandin does not contain polypeptide. Prostaglandins are fatty acid derivatives. They are secreted by many organs (like kidney, gonads, seminal vesicles, thymus etc.) into their tissues. It was first reported in semen of man and produced by prostate gland. It contains either contraction/relaxation of smooth muscles or dilation/ contraction of blood capillaries.

113 **(b)**
Pineal gland

114 **(a)**
Properties of hormones are
(i) They have low molecular weight
(ii) They are soluble in water and blood
(iii) They are non-nutrient
(iv) They can act in very low concentration
(v) They are intercellular messenger

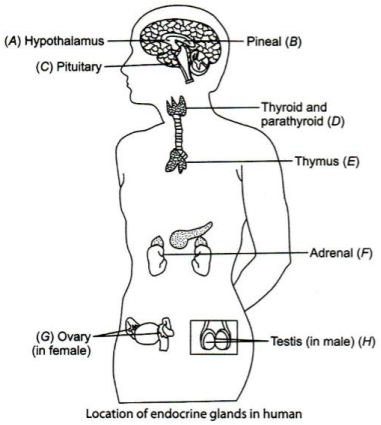
115 **(b)**
Calcitonin or Thyrocalcitonin (TCT)
(i) Regulate calcium level in blood plasma by inhibiting bone breakdown
(ii) It is non-ionised and secreted by para follicular cell of thyroid gland
(iii) Being hypocalcemic and hypophosphatemic. It checks excess plasma Ca^{2+} and phosphate by decreasing mobilization of Ca^{2+} from bones

116 **(d)**
All of the above.
The atrial wall of our heart secretes a very important peptide hormone called Atrial Natriuretic Factor (ANF), which is peptide in nature. ANF decreases blood pressure. When blood pressure is increased, ANF is secreted which causes dilation of the blood vessels. This reduces the blood pressure

117 **(a)**
Cretinism is caused hyposecretion of thyroxine during the growth years. It is called **childhood hypothyroidism**. The two important symptoms are dwarfism and mental retardation.

118 **(a)**
Hypersecration of growth hormone (STH, somatotrophic hormone) during adulthood causes acromegaly.

119 **(b)**
The endocrine glands and hormone producing diffused tissues/cells located in different part of our body constitute the endocrine system, pituitary, pineal, thyroid, adrenal, pancreas, parathyroid, thymus and gonads (testis in male and ovary females) are organised endocrine bodies in our body



Location of endocrine glands in human

120 **(d)**
ADH (antidiuretic hormone) or vasopressin hormone is produced by hypothalamic neurosecretory cells and released into posterior pituitary gland. Diabetes insipidus is a disorder, which develops due to inability of person to

secrete ADH.

121 **(c)**
Hypersecretion of thymosine (hormone of thymus) may lead to myasthenia gravis characterised by abnormal neuromuscular excitation

122 **(d)**
Hypersecretion of growth hormone (GH) or somatotrophin hormone (STH) from adenohypophysis or anterior lobe of pituitary gland causes gigantism in children and acromegaly in adulthood. Gigantism involves excessive growth (lengthening) of bones with enlargement of internal organs as well. Acromegaly causes abnormal thickening of bones (due to ossification of periosteum) especially at face and margins of hand and feet.

123 **(d)**
The father of Endocrinology is **Thomas Addison**. The first endocrine disease reported was Addison's disease (1855), caused by the destruction of adrenal cortex.

124 **(d)**
Our body has one pair of adrenal glands, one at the anterior part of each kidney. The gland is composed of two types of tissues. The centrally located tissue is called adrenal medulla and outside this lies the adrenal cortex

125 **(d)**
Thyroid gland secretes three hormones; thyroxine, tri-idothyronine, calcitonin. Thyroxine increases BMR (Basal Metabolic Rate) and stimulates growth, tissue differentiation and metamorphosis of tadpoles into adult frog.

126 **(a)**
Parathyroid and adrenals are endocrine glands.

127 **(c)**
Thyrocalcitonin and parathyroid hormone controls the calcium level in our body

129 **(d)**
Hormones acts on specific sites or receptors of target organs. So, if we remove the receptor molecule from the target organs, the target organ will not respond to hormone.

130 **(b)**
Oestrogen is responsible for the development of secondary sexual characters in female.

131 **(c)**
Hassall's corpuscles are spherical oval bodies present in the thymus and acts as phagocytes.

132 **(d)**
A-interstitial cells, B-intertubular spaces, C-Testosterone

133 **(d)**
Biochemical classification of hormones

Chemical Nature	Origin	Examples
1. Biogenic amines or amino acid derivatives	Derival from tyrosine	Thyroxin-e, adrenalin-e, noradrenaline and melatoni-n
2. Proteinaceou-s or polypeptide	Chains of amino acid	Hypothalamic hormones, ACTH, GH, vasopressin, oxytocin, parathor-mone, calcitonin, MSH, etc.
3. Glycoprotein aceous	Protein + carbohydr-ates	Thyrotro-pin, FSH, LH
4. Steroid	Derived from cholestero-l	Sex hormone and adrenoco-rticoids

134 **(d)**
Oestrogen and testosterone are female and male sex hormones respectively. Chemically, these are steroid hormones (lipid soluble) which easily pass through the cell membrane and bind to specific intracellular receptor in cytoplasm.

135 **(d)**
Somatotrophin or growth hormone (GH) is secreted from anterior pituitary. It is most important stimulant of proper normal growth body. It promotes biosynthesis of DNA, RNA and proteins in all body cells. It stimulates cellular growth and proliferation, growth and repair of bone muscles and connective tissue.

136 **(c)**
Cholecystokinin is a peptide hormone of the gastrointestinal system responsible for stimulating the digestion of fat and protein. Cholecystokinin, previously called pancreozymin is synthesised by I-cells in the mucosal epithelium

of the small intestine and secreted in the duodenum, the first segment of the small intestine, and causes the release of digestive enzymes and bile from the pancreas and gall bladder, respectively.
It also acts a hunger suppressant. Recent evidence has suggested that it also plays a major role in inducing drug tolerance to opioide like morphine and heroin and is partly implicated in experiences of pain hypersensitivity during opioid withdrawal

137 **(d)**
A – LH, B – Graafian follicles, C – Corpus luteum

138 **(b)**
Glands which have duel function due to possession of both exocrine as well as on endocrine region are called heterocrine glands. They secrete hormone in association with other substances for their respective function, *e*. *g*., ovaries, testes and pancreas

139 **(a)**
The progesterone pill affects the pituitary gland and lowers the secretion of FSH (follicle stimulating hormone) and LH (luteinizing hormone). Due to low FSH and LH, ovulation does not occur,*i*. *e*., there is no secondary oocyte to be fertilized.

140 **(a)**
Parathyroid hormone (PTH) is a **peptide** hormone secreted by the parathyroid gland in response to low levels of calcium in the blood.

141 **(a)**
1 to 2 million

142 **(a)**
Glucagon is secreted by α- cells of **islets of Langerhans** in **pancreas**.
Insulin is secreted by β- cells of **islets of Langerhans**.
Somatostatin is secreted by δ- cells of **pancreas.**

143 **(d)**
Diabetes mellitus is a common endocrine disorder caused by hyposecretion of insulin hormone. Insulin hormone is secreted by the β- cells of the pancreas. The insulin controls the glucose level in blood.

144 **(d)**
Both (a) and (c)

145 **(a)**
Hydrophilic hormones Generally are protein, polypeptide, hormones. They interact with cell membrane receptors, *e*. *g*., FSH glycogen, epinephrine.
Hydrophobic hormones Generally are steroids in nature. They interact with nuclear receptors *e*. *g*., Estrogen do thyroxine

146 **(d)**
The pineal gland (epiphysis) secretes the hormone melatonin, which regulates the working of gonads by inhibiting gonadotropins and their effects.

147 **(b)**
Atrial Natriuretic Factor (ANF) is made up of peptide

148 **(d)**
FSH (Follicle Stimulating Hormone) is secreted from anterior lobe of pituitary gland. It is secreted both in males and females. In males, FSH stimulates spermatogenesis and development of seminiferous tubules whereas in females it stimulates formation and growth of ovarian follicles in ovary.

150 **(c)**
MSH released by pars intermedia, acts on the melanocytes (melanin containing cells) and regulates pigmentation of skin

151 **(b)**
Neurohypophysis

152 **(a)**
Glucocorticoids stimulate, gluconeogenesis, lipolysis and proteolysis and inhibit cellular uptake and utilisation of amino acids

154 **(b)**
Females have a pair of ovaries located in the abdomen. Ovary is the primary female sex organ, which produces one ovum during each menstrual cycle. In addition ovary also produces two group of steroid hormones called **estrogen** and **progesterone**. Ovary is composed of ovarian follicle and stromal tissue

155 **(b)**
Prolactin is secreted by the lactotopes cells of anterior pituitary. In humans, it may act as a mild growth hormone but its main physiological effect is to activate growth of breast during pregnancy and secretion of milk by mammary glands after childbirth. That's why, it is often referred to as 'maternity hormone'.

156 **(a)**
Follicles

157 **(d)**
Cystic duct transports insulin and glucagon to target organ.

158 **(b)**

On the basis of their chemical nature, insulin, glucagon, etc. are peptide (protein) hormones; epinephrine is amino acid derivative; and estradiol, testosterone, progesterone, etc. are steroids.

159 **(a)**
Gastric inhibitory polypeptide (GIP), also known as the **glucose-dependent insulinotropic peptide** is a member of the secretin family of hormones. It has traditionally been called gastrointestinal inhibitory peptide or gastric inhibitory peptide and was believed to neutralise stomach acid to protect the small intestine from acid damage, reduce the rate at which food is transferred through the stomach and inhibit the GI motility and secretion of acid

160 **(a)**
Water is reabsorbed in distal convoluted tubules under the influence of antidiuretic hormone (ADH). ADH is secreted by posterior lobe of pituitary gland.

161 **(a)**
Functions of Parathyroid Hormone (PTH) *are*
(i) Regulate calcium and phosphate level in blood
(ii) Increase rate of calcium absorption from intestine in children to elevate blood level of calcium
(iii) Start bone dissolution (osteoclastic action) and stimulates excretion of calcium in blood
(iv) It affects the growth of bones, membrane permeability, nerve functioning and muscular activity of body

162 **(d)**
The thyroid gland is composed of two lobes, which are located on either side of trachea. Both the lobes are interconnected with a thin flap of connective tissue called isthmus

163 **(c)**
A bull is docile because of lower levels of blood testosterone

164 **(d)**
Antidiuretic hormone is also called vasopressin

165 **(d)**
Four major hormones of GI tract are
(i) **Gastrin** Acts on gastric gland and stimulates the secretion of HCl and pepsinogen
(ii) **Secretin** Acts on exocrine pancreas and stimulates secretion of water and bicarbonate ions
(iii) **CCK** (Cholecystokinin) Acts on both pancreas and gall bladder and stimulates the secretion of pancreatic enzyme and bile juice
(iv) **GIP** (Gastric Inhibitory Peptide) Inhibits gastric secretion and mortality

166 **(b)**
Liver is endodermal in origin and is the largest gland in human body. It is the busiest and largest chemical factory in the body.

167 **(b)**
The hormones of pituitary (posterior part) are synthesised in the hypothalamus; packaged in secretory granules and are transported down the axons to be stored for release by posterior lobe. The posterior pituitary is under the direct neural regulation of the hypothalamus

168 **(b)**
Pars intermedia is almost merged with the pars distalis commonly called anterior lobe of pituitary

169 **(a)**
Hyposecretion of parathormone from parathyroid gland leads to tetany disorder. It causes the lowering of blood calcium level. Insulin deficiency leads to disease diabetes mellitus (hypoglycemia). Hypersecretion of growth hormone results of gigantism in children.
Relaxin deficiency prevents the process of parturition. Low secretion of thyroid hormone results of cretinism in infants and children.
Deficiency of prolactin hinders the development of mammary glands and secretion of lactin.

170 **(d)**
The neurosecretory cells of hypothalamus secrete hormones called releasing factors. These are adrenocorticotrophic Releasing hormone, TRH, SRH, GTH, GRH etc.

171 **(b)**
Thymus is prominent gland at the time of birth but it gradually atrophies in adult. It is a soft pinkish bilobed mass of lymphoid tissue.

172 **(b)**
Endocrine glands are also called holocrine glands or ductless gland. *e*. *g*., thyroid, parathyroid, adrenals pituitary, etc.
Invertebrate possess very simple endocrine systems with few hormones, whereas a large number of chemicals act as hormones and provide coordination in the vertebrates

173 **(a)**
Characters of prostaglandins are
(i) Prostaglandins are fatty acid derivatives
(ii) They are secreted by many organs (kidney, gonads, seminal vesicle, thymus, etc.) into their

tissue
(iii) It was first reported in semen of man and produced by prostate gland
(iv) It controls either contraction/relaxation of smooth muscle or dilation **contraction of blood capillaries**

174 **(c)**
Almost all secretion by the pituitary gland are controlled by hormonal signal from hypothalamus. The neurohormones are secreted and accumulated by hypothalamus.

175 **(a)**
Erythropoietin or EPO, is a glycoprotein hormone that controls erythropoiesis or red blood cell production. It is a cytokine (protein signaling molecule) for erythrocyte (red blood cell) precursors in the bone marrow. Human EO has a molecular weight of 34 kDa.
When exogenous EPO is used as a performance-enhancing drug, it is classified as an erythropoiesis-stimulating agent (ESA). Exogenous EPO can often be detected in blood, due to slight differences from the endogenous protein

176 **(b)**
A-androgenic, B-adrenal

177 **(b)**
Vasopressin or pitressin or antidiuretic hormone (ADH) is secreted from neurohypophysis of pituitary gland. Hyposecretion of this hormone causes diabetes insipidus. Addison's disease is a condition of chronic adrenal cortex insufficiency caused due to hyposecretion of all adrenal cortex hormones. Deficiency disorder of parathormone, secreted by parathyroid glands, is tetany and deficiency of calcitonin, secreted from thyroid gland results in disturbance of calcium level.

178 **(b)**
Neurohypophysis (pars nervosa) also known as posterior lobe of pituitary, stores and releases two hormones called oxytocin and vasopressin. Which are actually synthesised by hypothalamus and are transported axonally to neurohypophysis

179 **(c)**
The corticoids which are involved in carbohydrate metabolism are called glucocorticoids. In our body, cortisol is the main glucocorticoids. Glucocorticoids stimulate, gluconeogenesis lipolysis and proteolysis. So, they are involved in carbohydrate, fat and protein metabolism

180 **(d)**
Both (a) and (c).
Hormones produce their effects on target tissue by binding to specific proteins called hormone receptors which are located in the target tissue only. Hormone receptors present on the cell membrane of the target cells are called membrane bound receptors and receptors present inside the target cell are called intracellular receptors. Intracellular receptors are mostly nuclear receptors (present in the nucleus)

181 **(d)**
Goitre can occur due to iodine deficiency, pituitary adenoma and Grave's disease (toxic goitere due to hyperthyroidism) but it is not the consequence of excessive intake of exogenous thyroxine.

182 **(b)**
ADH (Antidiuretic hormone) shows polyuria (excessive urine volume). The deficiency of ADH causes excessive secretion of urine due to lack of reabsorption at distal convoluted tubule and collecting duct.

183 **(b)**
Insulin secreted from β-cell of islets of Langerhans (endocrine part of pancreas) affects liver, muscle and adipose tissue. In the muscular tissue, it acts to promote carbohydrate metabolism and storage of glycogen. In liver cells, it favours glycogenesis, glycolysis and increases lipogenesis. In adipose tissue, it enhances the membrane transfer of glucose and promotes lipogenesis.

184 **(d)**
A-Pituitary; B-2

185 **(a)**
The hypothalamus regulates the function of the anterior pituitary by means of the hormones it secretes into the portal vessels of the hypothalamo- hypophyseal system. Blood flows from the hypothalamus to the anterior pituitary gland. The quantities of hormones secreted are very small and cannot be detected in the general circulation.

186 **(c)**
I, II, III, IV, V, VI, VII and VIII

187 **(c)**
Induced or artificial methods of breeding are used to obtain desirable eggs. In this ova from the desired female and sperms from desired male are obtained by artificial mechanical process and the ova are get fertilized by the sperms and then

fertilized eggs are collected. FSH and LH present in pituitary extract helps in induced breeding.

188 **(b)**
Grave's disease is caused by excess secretion of thyroid hormone.
ADH increases the reabsorption of water in the distal convoluted tubule, collecting ducts of the nephrons of the kidneys.

189 **(d)**

Hormone	Secreted from	Chemical nature
Oxytocin	Posterior pituitary	Peptide
Vasopressin	Posterior pituitary	Peptide
Thyroxine	Thyroid	Derivative of amino acids
Insulin	Pancreas	Polypeptide

190 **(a)**
Pineal gland helps in maintaining the normal rhythm of sleep-wake cycle, body temperature, in addition melatonin also influences metabolism, pigmentation, the menstrual cycle as well as our defence capability

191 **(b)**
Acromegaly is caused by the hypersecretion of growth hormone from pituitary gland in adults. It is characterized by disproportionate increase in size of bones of face, hands and feet. Some important disorders related to thyroid glands are Grave's disease, cretinism, myxoedema or Gull's disease, goitre, Hashimoto's disease, etc.

192 **(b)**
All steroid hormones are made up of cholesterol which is a lipid derivative, synthesized in the liver cells. These hormones are lipid soluble. The effect of these hormone is slow but it lasts longer, e.g., corticotrophin aldosterone, testosterone, oestrogen, progesterone, etc.

193 **(b)**
As the basic function of vasopressin (a hormone secreted from neurohypophysis) is to conserve body's water. Its failure or hyposecretion leads to a reduction in renal absorption of water and a consequent elimination of a large volume of dilute (hypotonic) urine, *i. e*., diabetes insipidus.

194 **(c)**
Volume of urine is regulated by aldosterone and ADH. ADH is related with concentration of urine.

195 **(b)**
The source of somatostatin is same as that of insulin and glucagon because all are secreted from pancreas. Alpha cells secrete glucagon hormone beta cell secrete insulin hormone and delta cells secrete small amount of gastrin and somatostatin. Somatostatin also secreted by hypothalamus and some cells of digestive tract. The major action of pancreatic somatostain is to inhibit the secretion of both insulin and glucagon.

196 **(a)**
Growth hormone is released by anterior lobe of pituitary. It increases the body growth by stimulating call division, protein synthesis, growth of muscle and bones

197 **(d)**
If fertilization occurs and the foetus is implanted in the endometrium, the trophoblast cells of the developing placenta secrete a hormone (hCG). This hormone, like LH maintains the corpus luteum and secretion of progesterone and oestradiol by it. These two hormones check the breakdown of the endometrium of the uterus. The absence of menstrual bleeding is the earliest sign of pregnancy.

198 **(d)**
Myxoedema is caused due to under secretion of thyroid hormone. This disorder appears in adults. It is also known as Gull's disease. It is characterized by puffy appearance due to subcutaneous accumulation of fat, low BMR, heart rate etc.

200 **(d)**
Hormones are specifically acting as organic compounds, secreted by endocrine glands directly into the blood stream from where these are transported to the target organ. These can induce or inhibit various biochemical processes and are not available again after the process is over. There are four main classes of hormones, *i. e*., protein and polypeptide hormones, steroid hormones, monoamines and lipid based hormones.

201 **(c)**
The reticular epithelial cells of thymus gland secrete a hormone, thymosin, which promotes immunocompetence in young T-lymphocytes.
Thyroid gland -Thyroxine
Parathyroid - Parathormone

Hypothalamus - Releasing and inhibitory hormones

202 **(d)**
Parathyroid hormone (PTH) deficiency causes an abnormally low level of ionised calcium in blood which leads to increased skeletal muscle tone and then hypocalcemic muscular tetany. There are very strong painful spasms of skeletal muscles, causing characteristic bending inwards of the hands, forearms and feet.

203 **(d)**
Symptoms of hypersecretion of Insulin
(a) Hypoglycemia (less sugar level in body)
(b) Sweating
(c) Irritability
(d) Double vision

204 **(d)**
Thyroxine regulates basel metabolic rate (BMR) of the body

205 **(a)**
A – hormone
B – Receptor
C – Cell membrane
D – Secondary messenger

206 **(c)**
Prolactin or luteotrophic hormone (LTH) or lactogenic hormone initiates and maintains milk secretion by mammary glands, a process called lactation.

207 **(d)**
Cortisol is involved in maintaining the cardiovascular system as well as kidney function. Glucocorticoids, particularly cortisol, produces anti-inflammatory reactions and suppresses the immune response. Cortisol stimulates the RBC production

208 **(a)**
When thyroid gland fails to secretion, it increases in size to fulfil the requirement of hormone in the body. Thus large sized neck is called **goitre**. Myxoedema and Hashimoto's disease are also caused by hyposecretion of thyroxine.

209 **(c)**
Pituitary gland is known as the smallest endocrine gland. It lies in a depression, the sella turcica of sphenoid bone of the skull.

210 **(d)**
Insulin is secreted by β-cells of pancreas. It **decreases** the **level of glucose in the blood.** It works by increasing rate at which glucose is transported out of the blood into cells. It stimulates muscle cells to take up sugar from the blood and convert it into glycogen. Insulin secretion is reduced, when blood sugar level falls.

211 **(b)**
Ca^{+}, cAMP and cGMP are secondary messenger in hormone action.

212 **(b)**
The growth hormone **somatotrophin** is secreted by anterior pituitary. In adults, the over production of this hormone results in the elongation of jaws and deformities in the bones of face, hands and feet. This condition is called **acromegaly**.

213 **(b)**
(i) Progesterone is a steroid hormone secreted by corpus luteum
(ii) Progesterone is responsible for maintenance of pregnancy, hence called pregnancy hormone by maintaining the endometrium wall
(iii) Hyposecretion of progesterone result in abortion. It is also called **anti-abortion hormone**
(iv) During pregnancy progesterone helps in attaching embryo to uterine wall, development of placenta and growth of secretory alveoli in mammary gland

214 **(c)**
Adrenaline and noradrenaline effects are
(i) blood pressure
(ii) basal metabolic rate
(iii) respiration rate
(iv) sugar level
(v) lipolysis (breakdown of lipids)

215 **(c)**
Thymus gland secretes thymosin, which increases the number of T-cells. T-cells mediated immunity. So, if a child is having weak immune system there be must a problem with its thymus gland

216 **(c)**
Development of accessory sex organs like epididymis, vas deference, seminal vesicle, prostate gland and urethra is the prime function of androgens

217 **(b)**
A-Ovarian follicle,
B-Corpus luteum,
C-Progesterone

218 **(c)**
Second messengers are the organic molecules and sometimes the metal ions, acting as intracellular signals, whose production or release usually amplifies a signal such as a hormone, received at

the cell surface.
Sodium (Na) is not a second messenger in hormone action.

219 **(d)**
Pheromones are chemicals used for communication amongst individuals of the same species. It influences the behavioral and physiological action of other member of the same species.

220 **(a)**
PTH is the hypercalcemic hormone because it increases the Ca^{2+} level in blood

221 **(c)**
Myxoedema (gull's disease) occurs due to deficiency of thyroxine in adults. *It is characterised by*
(i) Low BMR (30-40%)
(ii) Low body temperature
(iii) Tendency to retain water
(iv) Reduced heart rate/pulse rate
(v) Low sugar and iodine level in blood, muscular weakness
(vi) Oedema (accumulation of interstitial fluid that causes the facial tissue to swell and look fluffy)

222 **(d)**
Due to cancer of the thyroid gland or due to development of nodules the rate of synthesis and secretion of the thyroid hormones is increased to abnormal high levels leading to a condition called hyperthyroidism which adversely affects the body physiology

223 **(b)**
A-Hypothalamus B-Hypotha lamic neurons
C-Portal circulation D-Posterior pituitary

224 **(c)**
Adrenal medulla releases two hormones adrenaline and noradrenaline. In the stress conditions, these hormones increase alertness, pupillary dilution, piloerection (raising of hairs), sweating etc. Both of these hormones increase the heart beat. Catecholamines (adrenaline and noradrenaline) also stimulate the breakdown of glycogen resulting in an increased concentration of glucose in blood. In addition they also stimulate the breakdown of lipids and proteins

225 **(c)**
Pancreas is a composite gland, which acts as both exocrine and endocrine gland. The endocrine part consist of islets of Langerhans. There are about 1 to 2 million cells islets of Langerhans in a normal human pancreas representing only 1 to 2% of pancreatic tissue

226 **(a)**
Binding of a hormone to its receptors leads to the formation of hormone receptor complex. Each receptor is specific to one hormone only and hence the receptors are specific

227 **(d)**
At high concentration (greater than physiologic) glucocorticoids (such as hydrocortisol or prednisone) are useful for treatment or allergies and inflammation. Hence they have anti-inflammatory effects.
Glucocorticoids induce the synthesis of lipocortin, an inhibitor of phospholipase A_2 (Phospholipase A_2 is the enzyme that liberates arachidonate from membrane phospholipids, providing the precursor for prostaglanding and leukotriene synthesis). Since prostaglandins and leukotrienes are involved in the inflammatory response, glucocorticoids have anti-inflammatory properties by inhibiting formation of the precursor (arachidonate)

228 **(c)**
A – simple, B – few, C – large

229 **(c)**
A-gastric, B-stimulates, C-pepsinogen

230 **(b)**
Tetany is caused by due to hypoparathyroidism. It causes the lowering of blood calcium level. This increases the excitability of nerves and muscles which results in sustained contraction of muscles of larynx, face, hands and feet.

231 **(b)**
A-Epinephrine, B-norepinephrine, C-Catecholamines, D-Emergency

232 **(d)**
Gastrin is a hormone produced by gastrin cells of the pyloric gland, which induces gastric secretion.

233 **(b)**
Insulin therapy

234 **(b)**
Hypersecretion of mineralocorticoid (aldosterone) due to adrenal cortical tumour leads to Conn's syndrome also called aldosteronism. It is characterised by
(i) raise in blood volume and blood pressure
(ii) muscular weakness
(iii) high NA^+ and low K^+ level in blood plasma resulting in kidney damage with polyuria and

tetany and metabolic disorder

235 **(d)**

Prolonged hyperglycemia leads to a complex disorder called diabetes mellitus, which is associated with loss of glucose through urine and formation of harmful compounds known as ketone bodies. Diabetic patient are successfully treated with insulin therapy

236 **(d)**

I, II, III and IV.

Biochemical classification of hormones

Chemical Nature	Origin	Examples
1. Biogenic amines or amino acid derivatives	Derival from tyrosine	Thyroxine, adrenaline, noradrenalin-e and melatonin
2. Proteinaceou-s or polypeptide	Chains of amino acid	Hypothalamic hormones, ACTH, GH, vasopressin, oxytocin, parathormon-e, calcitonin, MSH, etc.
3. Glycoprotein-aceous	Protein + carbohyd rates	Thyrotropin, FSH, LH
4. Steroid	Derived from choleste-rol	Sex hormone and adrenocortic-oids

237 **(c)**

The posterior pituitary gland secretes two hormones, vasopressin (or ADH) and oxytocin. Vasopressin regulates the body's water balance. Oxytocin plays a role in lactation by stimulating the ejection of milk from the breast in response to sucking but milk production is promoted by prolactin secreted by the anterior pituitary.

238 **(b)**

Follicle stimulating hormone (FSH) is produced by basophilic cells of adenohypophysis pituitary gland. In females, this hormone is responsible of ovarian follicles upto ovulation , while in males, its functions are development of seminiferous tubules and maintenance of spermatogenesis.

239 **(a)**

Lack of TH in foetal and early neonatal life leads to a condition called cretinism in which there is a mental retardation. Thyroid hormones **inhibit** the secretion of TSH by negative feedback. Thyroid hormones stimulate metabolism, so when TH levels are high, BMR is elevated. Thyrotoxicosis is caused by an overactive thyroid gland. Low levels of thyroid hormones cause myxoedema.

240 **(b)**

A-specific, B-specific, C-target tissue

241 **(a)**

The changes that take place during transformation of larva into adult are collectively called **metamorphosis**. During metamorphosis of frog, tail disappearance starts, horny jaws are replaced by bony jaws, gills disappear and lungs become functional. **Thyroxine hormone** or iodine is needed for metamorphosis of frog.

242 **(a)**

The principal mineralocorticoid is aldosterone, secreted by adrenal cortex. It promotes reabsorption of sodium ions from kidney and excretion of potassium ions in urine. Aldosterone is also called salt retaining hormone.

243 **(b)**

Liver is the largest gland of vertebral body, with a wide range of functions, several of which are vital for life to continue. Pancreas, thymus and adrenals are endocrine glands.

244 **(a)**

Anterior pituitary has two types of chromophil cells (acidophils and basophils) derived from chromophobe cells.

245 **(c)**

Pituitary gland is smallest endocrine gland. It has three distinct parts (i) the anterior lobe (ii) the middle lobe (iii) the posterior lobe. Each secreted a number of hormones.

246 **(c)**

Adrenal or suprarenal gland (Gland of emergency) are paired structures located above the kidney. Each gland consists of outer cortex and inner medulla. Adrenal cortex is derived from mesoderm and release mineralocorticoids (*e*. *g*., aldosterone), glucocorticoids (*e*. *g*., cortisol) and sex corticoids (*e*. *g*., male sex hormone androgens and female oestrogen) hormones whereas adrenal medulla develops from neuro-ectoderm of embryo and releases nor-epinephrine (noradrenaline) and epinephrine (adrenaline) hormones.

247 **(d)**

Previous question represent the diagrammatic mechanism of steroid hormone action. They don't produce the secondary messenger

248 **(c)**
The previous diagram is the diagrammatic representation of the mechanism of protein hormone action (protein hormones are generally hydrophobic in nature). So, they mediate three action by messenger like, Ca^{+2}, CAMP

249 **(b)**
A pair of testis is present in the scrotal sac (outside the abdomen) of male individual

250 **(c)**
Thymus is degenerated in old individuals resulting in a decreased production of thymosin. As a result the immune responses of old persons become weak

252 **(c)**
The parathyroid glands secrete a peptide hormone called Parathyroid Hormone (PTH). The secretion of PTH regulated by the circulating levels of calcium ions in the blood

253 **(d)**
Mineralocorticoides are responsible for regulation of mineral metabolism. **Aldosterone** is one of the important mineralocorticoides in humans. Its main function is to regulate the sodium content of the body. Mineralocorticoides are secreted by zona glomerulosa region of adrenal cortex.

254 **(a)**
Hormones which interact with intracellular receptors (*e*. *g*., steroid hormones and iodothyronines) mostly regulate gene expression of chromosome function by interaction of hormone receptor complex with the genome. Cumulative biochemical actions result in physiological and development effects

255 **(a)**
Second messengers are molecules that relay signals received at receptors on the cell surface-such as the arrival of protein hormones, growth factors etc to larger in the cytosol or nucleus. The major second messengers are *c*AMP, *c*GMP, IP_3,DAG and Ca^{2+}.
*c*AMP is not involved as second messenger in Ca^{2+} mediated hormone action.

256 **(c)**
Myxoedema (Gull's disease) occurs due to the deficiency of throxine in adults. It causes low BMR (by 30-40%). Low body temperature, tendency to retain water in tissues, reduced heart rate, pulse rate, blood pressure and cardiac output, low sugar and iodine level in blood, muscular weakness and oedema (accumulation of interstitial fluid that causes the facial tissues to swell and look fluffy).

257 **(a)**
Diabetes mellitus (due to hyposecretion of insulin)
It is characterised by
(i) **Hyperglycemia** High level of blood glucose (300 to 200 mg/100 mL)
(ii) **Polyuria** Excessive urination
(iii) **Polydipsia** Excessive thirst
(iv) **Glycosuria** Glucose in urine
(v) **Polyphagia** Excessive eating
(vi) **Increased** oxidation of fat
(vii) Loss of body weight and tiredness
(vii) Dehydration

258 **(b)**
Parathormone is secreted from parathyroid gland. It maintains Ca^{2+} level in blood and lowers the serum phosphate. Parathormone caused the release of calcium from the bone and raises blood Ca^{2+} level, so parathormone is secreted during decreased blood Ca^{2+} level and maintains normal Ca^{2+} level.

259 **(c)**
Vasopressin or **pitressin** is peptide hormone, secreted by posterior lobe of pituitary gland. It stimulates reabsorption of water from glomerular filtrate and reduces urine secretion. So, it is also named as **antidiuretic hormone.** Hyposecretion of ADH causes diabetes insipidus and micturition (passing out of urine) increases.

260 **(c)**
Adrenaline is also called 'emergency hormone' because it contributes the fright, fight or flight reactions which occur in condition of emergency.

261 **(d)**
Hormones released by anterior lobe of pituitary are
(i) GH (Growth hormone)
(ii) PRL (Prolactin)
(iii) TSH (Thyroid Stimulating Hormone)
(iv) ACTH (Adrenocorticotrophic Hormone)
(v) LH (Luteinising Hormone)
(vi) FSH (Follicle Stimulating Hormone)

262 **(a)**
Steroid hormones are lipid soluble. So they can pass freely across the lipid bilayer of plasma membrane. After getting entrance into cytoplasm, molecules of steroids hormones bind to receptor

molecules, located within the cytoplasm of target cell and thus a hormone receptor complex is formed. Now, this complex moves into the nucleus of the cell and activates specific gene that ultimately produce specific proteins.

263 **(c)**
Somatotropic hormone (Growth hormone) is the important hormone for normal growth of body. The alpha submit of LH, FSH and TSH are identical and regulated menstruation.

264 **(c)**
In number human four parathyroid glands are present on the back side of the thyroid, one pair each in the two lobes of the thyroid gland

265 **(a)**
Aldesterone is a mineralocorticoid or salt retaining hormone, secreted by **zona glomerulosa** layer of adrenal cortex. Aldosterone regulates the sodium and potassium level in the blood. It accelerates the blood pressure. It regulates acid base balance in the blood.

266 **(b)**
Diabetes mellitus results from either hyposecretion or hypoactivity of insulin. When insulin is absent or deficient blood sugar level remain high after a meal because glucose is enable to enter most its cells. Circulating insulin lowers blood sugar level by enhancing membrane transport of glucose into body cells especially muscle and fat cells.

267 **(a)**
Deficiency of iodine in adult causes myxoedema. The peculiar feature of myxoedema is that face and hands become swollen due to deposition of albuminous myxomatous tissue. The main effect of thyroxine hormone is to regulate basal Metabolic rate (BMR). Deficiency of thyroxine in infants lead to cretinism.

268 **(b)**
In males, LH stimulates the synthesis and secretion of hormones called **androgens** from testis. In males, FSH and androgens regulate spermatogenesis. In females, LH induces ovulation of fully mature follicles (Graafian follicles) and maintains the corpus luteum, formed from the remnants of the Graafian follicles after ovulation

269 **(d)**
Gonadotropic hormone from adenohypophysis oestrogenfrom ovaries and testosterone from Leydig's cells influence secondary sexual characters.

270 **(a)**
BMR (Basal Metabolic Rate) of an organism is the minimum rate of energy conversion required just to stay alive during complete rest or sleep. BMR is controlled by **thyroxine** hormone secreted by thyroid gland.

271 **(a)**
Ovary secretes the estrogen hormone in females which maintains the secondary sexual characters
α-cells of Langerhans (Pancreas) Secretes glucagon hormone which increases blood glucose level by covering glycogen to glucoses
Anterior lobe of Pituitary
Secrete growth hormone which maintains the growth of an organism. Over secretion leads to giantism in childrens and acromegaly in adults

272 **(a)**
Antidiuretic hormone (ADH or vasopressin) is secreted from the posterior lobe of pituitary. The injection of extremely minute quantity of ADH (as small as 2 nanograms) can cause decreased excretion of water in the urine. In the absence of ADH, the collecting tubules and ducts become almost impermeable to water which prevent significant reabsorption of water and therefore allow extreme loss of water in urine.

273 **(b)**
Cretinism is caused by the deficiency of thyroid hormone in infants, therefore, congenital removal of thyroid will cause cretinism. It is characterized by decreased TRH and TSH dwarfism, mental retardation, decreased BMR etc.

274 **(d)**
Basically frogs have three types of pigmentations (melanophore, iridophore and xanthophores). These chromatophores are controlled by the frog's central nervous system and hormones. When needed frog could put these pigments into use. They could produce a wide variety of shades from brown to gray, green etc.

275 **(d)**
Cholecystokinin (CCK), one of the four major peptide hormones secreted by endocrine cells present in different parts of gastro-intestinal tract acts on both pancreas and gall bladder. The CCK stimulates pancreas and gall bladder to secrete pancreatic enzymes and bile juice, respectively.

276 **(d)**
Hormones produce their effects on target tissue by binding to specific proteins called hormone

receptors which are located in the target tissue only. Hormone receptors present on the cell membrane of the target cells are called membrane bound receptors and receptors present inside the target cell are called intracellular receptors. Intracellular receptors are mostly nuclear receptors (present in the nucleus)

277 **(d)**
All of the above

278 **(b)**
Parathormone secreted by parathyroid gland regulates the calcium and phosphate balance between blood and other tissues. It increases the plasma Ca^{2+} represses plasma phosphate and decreases Ca^{2+} excretion by the kidney by increasing the reabsorption in the renal tubule of Kidney by increasing the reabsorption in the renal tube

279 **(b)**
The anterior lobe of pituitary gland secretes Thyroid Stimulating Hormone (TSH), which controls the structure, and functioning of thyroid and Adreno Cortico Tropic Hormone (ACTH) which controls the structure and functioning of adrenal cortex. Besides, it secretes FSH, LH, ICSH, etc, which affect the structure and functioning of gonads.
So, if the pituitary gland of an adult rat is surgically removed, out of the four options adrenal medulla will be less affected.

280 **(b)**
Invertebrates possess very simple endocrine systems with few hormones, whereas a large number of chemicals act as hormones and provide coordination in the vertebrates

281 **(b)**
Hyposecretion of growth hormone (GH) from anterior pituitary causes dwarfismduring the skeletal growth period (i.e. during childhood). The individual is of short stature but is will proportioned and is without any mental deficiency.

282 **(b)**
Moulting hormone (ecdysone) is secreted by prothoracic gland. These glands are paired, bilateral sheet of cells in the thorax. In *periplaneta*, this endocrine gland is X-shaped. This gland is stimulated by **prothoracicotrophic hormone**.

283 **(c)**
Parathormone or collips' hormone helps to regulate the metabolism of calcium and certain other minerals like phosphate. It decreases the phosphate level in the blood by stimulating, the kindely to eliminate phosphate in the urine. It also stimulates the bone destroying cells to break down bone and release both calcium and phosphate.

284 **(a)**
Ovulation occurs under the influence of LH and FSH of anterior pituitary gland.

Disease	**Deficiency**
Diabetes mellitus	- Insulin
Tetany	- Parathormone
Diabetes Insipidus	- ADH

285 **(a)**
Functions of thyroid gland are
(i) It stimulates oxygen consumption by metabolic active tissues
(ii) Helps to regulate tissue growth and development
(b) Regulates BMR
(c) Helps in the formation of RBC
(d) Secretion of TCT (thyrocalciton) hormone
(e) Controls the metabolism of carbohydrates, proteins and fat

286 **(b)**
A – GnRH
B —LH/FSH
C – Oestrogen or Progesterone
D — Uterus

287 **(b)**
Foetal ejection reflex is an accelerated active labor and birth which is induced by release of oxytocin from pituitary. Oxytocin (child birth hormone), secreted by neurohypophysis of pituitary gland, stimulates contraction of uterus muscles, including labour pain for child birth, when secretion of progesterone hormone declines, making the end of pregnancy. As the sensory impulse of increasing labor pain reaches hypothalamus, more and more oxytocin is released from posterior pituitary under a positive feedback regulation.

288 **(b)**
Simple goitre is caused by deficiency of iodine in diet because iodine is necessary for the synthesis of thyroid hormone. It causes thyroid enlargement.

289 **(c)**
Intracellular receptors are mostly nuclear

receptors.
Hormones produce their effects on target tissue by binding to specific proteins called hormone receptors which are located in the target tissue only. Hormone receptors present on the cell membrane of the target cells are called membrane bound receptors and receptors present inside the target cell are called intracellular receptors. Intracellular receptors are mostly nuclear receptors (present in the nucleus)

290 **(c)**
TSH stands for **thyroid stimulating hormone.**

291 **(a)**
Parathormone is secreted from parathyroid gland. It controls calcium level in blood by decreasing excretion of calcium and increasing absorption of Ca^{2+} in intestine. So, parathormone maintains normal Ca^{2+} ion in blood and lowers the phosphate ion level.

292 **(c)**
Alloxan is an oxidation product of uric acid that is found in the human intestine in diarrhea. It induces diabetes experimentally by selective destruction of pancreatic beta cells.

293 **(b)**
A-*m*RNA, B-nucleus, C-Hormone receptor complex, D-hormone

294 **(c)**
Almost all secretion by the pituitary gland are controlled by hormonal signal from hypothalamus

295 **(c)**
Epithelial cells of parathyroid gland secrete parathormone. This hormone helps to regulate the metabolism of calcium and phosphate. Parathyroids are under the feedback control of blood calcium level.

296 **(b)**
Pancreas is partially exocrine and partially endocrine gland.

297 **(a)**
BMR (Basal Metabolic Rate) of a adult man and woman is 40 cal/m^2 and 37.5 cal/m^2 respectively

298 **(c)**
The hormones that are produced in inactive form called prohormone
e. *g*., Proinsulin → Insulin
(inactive form) (active form)

299 **(b)**
Leydig's cells also known as **interstitial cells** are characteristic of testes of mammal. These cells secrete male sex hormone testosterone, which influence secondary sexual characters in males.

300 **(b)**
Oxytocin hormone is secreted from posterior lobe of pituitary. It stimulates the contraction of the smooth muscles of uterus inducing labour pain for child birth. Oxytocin also induces contraction of the mammary gland muscles and helps in the flow of milk from mammary gland to mouth of child.

301 **(c)**
Progesterone supports pregnancy. Progesterone also acts on the mammary glands and stimulates the formation of alveoli (sac-like structure which store milk and milk secretion)

302 **(c)**
Heterocrine glands are the glands which have dual (exo and endocrine) mode of function. Invertebrate possess very simple endocrine systems with few hormones, whereas a large number of chemicals act as hormones and provide coordination in the vertebrates

303 **(d)**
Thymus gland secretes thymosin hormone, thymic humoral factor, thymic factor and thymopoietin. Proliferation of lymphocytes and differentiation of these lymphocytes into a variety of clones are induced by these factors. These clones are differentially specialized to destroy different specific category of antigens and pathogens. Thus, thymus gland brings fourth T-lymphocytes for cell mediated immunity.

304 **(d)**
Testis perform duel function as primary sex organs as well as an endocrine gland. Testis is composed of seminiferous tubules and stromal or interstitial tissue

305 **(c)**
Parathyroid gland is responsible for calcium metabolism. Its secretion regulates the amount of calcium and phosphate in ECF (extra cellular fluid).

306 **(a)**
A-adrenal gland, B-Fat, C-Kidney, D-Adrenal cortex, E-Adrenal medulla

307 **(a)**
The usual cause of tetany is lack of calcium. Since calcium is required for blood clotting, nerve and muscle functioning, so low level of calcium or hyposecretion of parathormone lead to tetany. But excess of phosphate can also trigger the spasms.

308 **(c)**

Nervous System	Endocrine System
Electrical and chemical transmission of nerve impulses	Chemical transmission through blood system
Rapid transmission and responses	Slower transmission and relatively slow acting
Often short term changes	After long term changes
Pathway is specific	Pathway is not specific
Response is localised	Response may be wide spread

309 **(c)**

Oestrogen regulates growth and development of female accessory reproductive organs, secondary sexual characters and sexual behaviour.

Progesterone is responsible for growth and maintenance of foetus and excessive development of endometrium of uterus.

310 **(c)**

Melatonin

311 **(c)**

There are four neurotransmitter substances identified in vertebrates, these are acetylcholine, serotonin, adrenaline and nor-adrenaline (norepinephrine).

312 **(c)**

Pituitary gland is also known as the

(i) Hypophysis

(ii) Master endocrine gland

(iii) Pituitary gland is the smallest endocrine gland

313 **(c)**

Sulphur is essential for formation of insulin

314 **(b)**

Hyposecretion of adrenal cortex causes Addison's disease. It is characterized by excessive loss of Na^+, Cl^- and HCO_3^-, increased K^+ level in blood, low BP etc.

315 **(d)**

The endocrine part of pancreas is represented by about a million of islets of Langerhans with 5 types of endocrine cells secreting different hormones-α- cells (glucagon), β- cells (insulin), γ-cells (gastrin), δ- cells (somatostatin) and F- cells (pancreatic polypeptide). Insulin, glucagon and somatostain all are polypeptides.

316 **(c)**

Thyroxine was discovered by **Kendall** in 1914.

317 **(c)**

Aldosterone is a steroid hormone (mineralocorticoid family) produced by the outer section (zona glomerulosa) of the adrenal cortex in the adrenal gland. It plays a central role in the regulation of blood pressure mainly by acting on the distal tubules and collecting ducts of the nephron, increasing reabsorption of ions and water in the kidney, to cause the conservation of sodium, secretion of potassium increased water retention and increases blood pressure.

When dysregulated, aldosterone is pathogenic and contributes to the development and progression of cardiovascular and renal disease. Aldosterone has exactly the opposite function of the atrial natriuretic hormone secreted by the heart

318 **(b)**

Pituitary gland or the master endocrine gland secretes various hormones controlling the functioning of other endocrine glands.

Follicle stimulating hormone (gonadotrophic hormone) is a proteinaceous hormone secreted by **gonadotrophs** or **gynandrotroph cells** of anterior pituitary. It stimulates spermatogenesis in testis and maturation of Graafian/ovarian follicles in ovaries with secretion of oestrogen hormone in females.

Prolactin/lactogenic or luteotrophic hormone (PRL, LTH) is a proteinaceous hormone secreted by **lactotroph cells** of anterior pituitary. It stimulates development of mammary glands (in pregnancy) and lactation (after delivery). It is also called as **maternity hormone.**

Oxytocin (OT=pitocin) is a peptide hormone secreted by posterior hormone secreted by posterior pituitary. It functions in vasodilation and in stimulating uterine contraction during delivery. Hence, it is known as **birth hormone**. Its other function is initiating ejection of milk, so called as **milk ejection hormone**.

319 **(d)**

Hormones which interact with membrane bound receptor normally do not enter the target cell, but generate second messengers (*e.g.*, cyclic AMP, IP_3, (Ca^{2+}, etc.) which in turn regulate cellular metabolism

320 **(a)**

The chief cells of the parathyroid secrete

parathormone. Its deficiency causes the lowering of blood calcium level. This increases the excitability of nerves and muscles causing cramps and convolutions. This caused parathyroid tetany characterised by sustained contractions of muscles of larynx, face, hands and feet.

321 **(b)**
An abnormal increase in blood concentration of K^+ is called hyperkalemia.

322 **(b)**
The adrenal cortex can be divided into three layers, called zona reticularis (inner layer), zona fasciculata (middle layer) and zona glomerulosa (outer layer). The adrenal cortex secretes many hormones, commonly called as corticoids

323 **(b)**
Inhibit the release of growth hormone

324 **(c)**
The pineal gland is located on the dorsal side of the forebrain. Pineal gland secretes a hormones called melatonin. Melatonin plays a very important role in regulating of 24 hour (diurnal) rhythm of our body

325 **(c)**
Prolactin hormone or luteotrophic hormone or mammotrophin hormone is secreted from anterior lobe of pituitary. Its main functions is to activate growth of breast during pregnancy and secretion of mammary glands after child birth.

326 **(c)**
Antidiuretic hormone (ADH) is secreted from neuropophysis. It promotes reabsorption of water from glomeruler filtrate. Its hyposecretion results in diabetes insipidus. Diabetes mellitus is due to hyposecretion of insulin hormone from pancreas.

327 **(b)**
Cholesystokinin- Pancreozymin (CCK-PZ) is the hormone secreted from mucosa of small intestine. It stimulates pancreas to release enzymatic (pancreatic) juice and gall bladder to eject bile.

328 **(d)**
All steroid hormones are made up of cholesterol which is a lipid derivative synthesized by the liver cells. These hormones are lipid soluble, that is why, their molecules pass freely through the lipid bilayer of the plasma membrane.

330 **(d)**
Oxytocin acts on the smooth muscles of our body and stimulates their contraction. In females, it stimulates a vigorous contraction of uterus at the time of child birth and milk ejection from the mammary gland

331 **(b)**
ADH and **oxytocin** are produced in the hypothalamus and stored in posterior pituitary gland. The posterior pituitary gland consists of pituicytes and axon terminals of the hypothalamic nerosecretory cells. The cells bodies of the neurosecretory cell are in the para-ventricular and supraoptic nuclei of the hypothalamus.

332 **(c)**
Autocrine and paracrine hormones are local regulators.
A-Axon, B-nerve, C-pituitary, D-portal, E-anterior

333 **(d)**

Hormones of Thyroid Gland	
Cells	**Hormones**
Thyroid follicles	T_3 (Triiodothyronine), T_4 (Thyroxine) — Iodinated form of tyrosine amino acid
Parafollicular cells	Calcitonin-Non-iodinated form (also called thyrocalcitonin, TCT)

334 **(c)**
δ cells of pancreas secretes small amount of peptide hormone, somatostain, which inhibits secretion of glucagon and insulin, and decreases secretion of, motility and absorption in the digestive tract.

335 **(a)**
Small intestine

336 **(d)**
Placenta is temporary endocrine gland formed during pregnancy. It secretes human chorionic gonadotropin hormone. It is also called pregnancy hormone. It maintains corpus luteum for continued secretion of progesterone so as to maintain the pregnancy.

337 **(c)**
Toxic agents in food which interfere with thyroxine synthesis will lead to simple goitre. Simple goitre, also called endemic goitre, is characterized by enlarged thyroid gland which brings about a swelling in the neck region. Thyrotoxicosis and toxic goitre are under the category of hyperthyroidism.

338 **(a)**
In pancreatic islets, alpha or α-cells constitute about 15% of pancreatic islets cells and secrete glucagon. Glucagon intensifies glycogenolysis deamination and gluconeogenesis, and inhibits glycogenesis in liver cells. It also intensifies lipolysis in adipose tissue. Thus, it is a promoter

of catabolic metabolism.

339 **(b)**
Cholecystokinin (CCK) and gastro inhibitory polypeptide (GIP) both are secreted by small intestine. Whereas gastrin by G-cells of pyrolic gland and duodenum and secretin by duodenal and jejunum mucosa

340 **(b)**
Steroid hormones are secreted by cells of adrenal cortex and endocrine cells of gonads. All steroid hormones are lipid derived from **cholesterol**.

341 **(c)**
Nuclei

342 **(a)**
A-Thyroid
B-Trachea
C-Vocal cord
D-Parathyroid gland

343 **(c)**
Androgens (secreted from adrenals) are a group of steroid hormones that stimulates the development of male sex hormones and male secondary sexual characteristic, e.g. beard growth, deepening of the voice and muscle development.

344 **(d)**
Glucagon is a peptide hormone, which plays an important role in maintaining the normal blood glucose level. Glucagon acts mainly on the liver cells (hepatocytes) and stimulates glycogenolysis resulting in an increased blood sugar (hyperglycemia).
In addition, this hormones stimulates the process of gluconeogenesis which also contributes to hyperglycemia. Glucagon reduces the cellular glucoses uptake and utilization. Thus, glucagon is hyperglycemic hormone

345 **(d)**
Ovary is the primary female sex organ that produce the female gamete (ovum) and several steroid hormones (ovarian hormone). The two steroid hormone produced by ovary are oestrogen and progesterone. Oesetrogens produce wide range of action such as stimulation of growth and activities of female secondary sex organs, of growing ovarian follicles, appearance of female secondary sex characters (*e*. *g*., high pitch of voice, etc.) mammary gland development. Oestrogens also regulate female sexual behavior. Alpha cells of islets of Langerhans of the endocrine pancrease secrete a peptide hormone called glucagon. It plays an important role in maintaining the normal blood glucose levels. It acts mainly on the liver cells (hepatocytes) and stimulates glucogenolysis resulting in an increased blood sugar (hyperglycemia). In addition this hormone stimulates the process of gluconeogensis which also contributes to hyperglycemia. Glucagon reduces the cellular glucose uptake and utilization.Thus, glucagon is a hyperglycemic hormone. The pars distalis region of pituitary, commonly called anterior pituitary, secretes Growth Hormone (GH), prolactin (PRL), Thyroid stimulating Hormone (TSH), adrenocotrophic Hormone (ACTH), Luteinizing hormone (LH) and follicle stimulating hormone (FSH). Over secretion of GH stimulates abnormal growth of the body leading to gigantism and low secretion of GH results in stunted growth resulting in pituitary dwarfism.

346 **(b)**
Secretin, a digestive hormone secreted by the wall of the upper part of the small intestine (the duodenum) acts on the exocrine pancreas and stimulates secretion of water and carbonateion. Secretin is a polypeptide made up of 27 amino acids. It was discovered in 1902 by British physiologists. Sir William M Bayliss and Ernest H Starling

347 **(a)**
Corpus luteum secretes **oestrogen** and **progesterone** during luteal phase of menstrual cycle in human female and osterous cycle of other mammals.

348 **(d)**
A-Axon, B-nerve, C-pituitary, D-portal, E-anterior

349 **(d)**
Hypothalamus is a part of forebrain and basal part of diencephalon. It regulates a wide spectrum of body functions. It contains several group of neurosecretory cells called nuclei, which produce hormones. These hormones regulate the synthesis and secretion of pituitary hormones

350 **(c)**
Types of glands on the basis of presence or absence of ducts
(i) **Exocrine Gland** Those which drain out their secretion through duct. *e*. *g*., live, gastric glands, etc.
(ii) **Endocrine Gland** Those gland which lack duct and discharge their secretion (hormones) directly into the blood stream. Due to absence of duct they are also called, ductless gland or holocrine glands,

e. *g*., thyroid, parathyroid, pituitary gland
(iii) **Heterocrine Gland** Those gland which have dual function due to possession of both exocrine as well as endocrine region. They secrete hormone in association with other substances for their respective function *e*. *g*., ovary, testes, pancreas

351 **(c)**
Steroid hormones are the lipid soluble hormones. They are also categorised as hydrophobic hormones. They directly pass through the cell membrane and interact with intracellular receptors present inside the cell (generally into the nucleus). Generally the steroid hormone is derived from the cholesterol ring

352 **(b)**
Vasopressin or ADH hormone is secreted from posterior lobe of pituitary. It causes reabsorption of water in collecting tubule and distal convoluted tubule and thus, regulates the permeability and loss of water in urine (diuresis), hence the name antidiuretic or ADH.

353 **(c)**
ACTH (Adrenocorticotropic hormone) is secreted by anterior lobe of pituitary. It stimulates the cortex of adrenal gland to produce its hormones.

354 **(d)**
The adrenal medulla secretes two hormones – norepinephrine and epinephrine. **Epinephrine** (adrenaline) is secreted at the time of emergency. Hence it is also called **emergency hormone**.