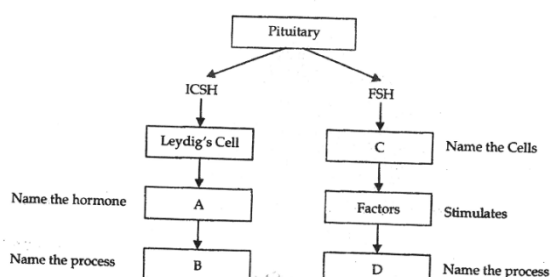
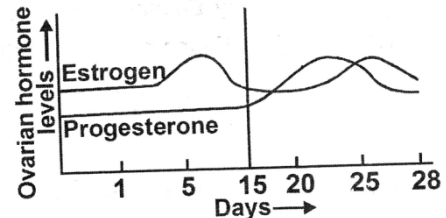


**BIOLOGY**

91. Individuals of a clone-
- Are genetically similar but morphologically different
  - Are morphologically similar but genetically different
  - Are morphologically and genetically similar
  - Are morphologically and genetically different
92. Select the correct sequences from the following
- Juvenile phase → Senescent phase → Reproductive phase
  - Juvenile phase → Reproductive phase → Senescent phase
  - Reproductive phase → Juvenile phase → Senescent phase
  - Vegetative phase → Reproductive phase → Senescent phase
- I and II
  - I and IV
  - III and IV
  - II and IV
93. Which of the following sequences is correct for microsporogenesis?
- Micro S.M.C (2N)  $\xrightarrow{\text{Mitosis}}$  Microspore tetrad (2N)  $\xrightarrow{\text{Meiosis}}$  Microspore(N)
  - Micro S.M.C (2N)  $\xrightarrow{\text{Meiosis}}$  Microspore tetrad (2N) → Microspore(N)
  - Microspore tetrad (2N)  $\xrightarrow{\text{Mitosis}}$  Microspore
  - Micro S.M.C (2N)  $\xrightarrow{\text{Mitosis}}$  Microspore tetrad (2N)  $\xrightarrow{\text{Meiosis}}$  Microspore(N)
94. As the anthers mature and dehydrate, the \_\_\_\_ separate dissociate from each other and develop into
- Megaspore, embryo sac
  - Microspores, pollen grains
  - Pollen grains, megaspore
  - Megaspores, microscopes
95. In over 60 % of angiosperms, pollen grains are shed at-
- 2-celled stage
  - 3-celled stage
  - 4- celled stage
  - 1- celled stage
96. One of the major components of cell wall of most fungi is
- cellulose
  - Hemicellulose
  - chitin
  - peptidpglycan
97. The male gamete is x and egg is 3x. The ploidy level in embryo and endosperm will be-
- 4x in embryo and 4x in endosperm
  - 4x in embryo and 7x in endosperm
  - 4x in embryo and 6x in endosperm
  - 6x in embryo and 12x in endosperm
98. Given below is an incomplete chart showing influence of hormones on gametogenesis in male. Observe carefully and fill in the blanks A, B, C and D

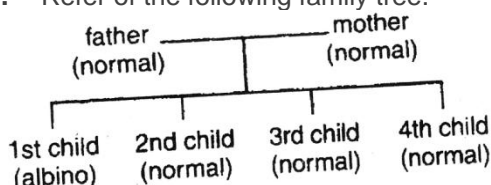


- A- LH, B – Spermatogenesis, C – Sertoli cells, D - Spermatogenesis
  - A- Testosterone , B – Spermatogenesis, C – Testis, D – Spermatogenesis
  - A – Testosterone, B – Spermatogenesis, C – Sertoli cells, D – Spermatogenesis
  - A – Testosterone, B- Spermatogenesis, C – Steroli cells, D - Spermatogenesis
99. Read the graph and correlate the uterine events that take place according to the hormonal levels on (I) 6 - 15 days (II) 16-25 days (III) 26-28 days ( if the ovum is not fertilized)



- I – Degeneration of endometrium, II – Myometrium thickness, becomes vascularised, ready to receive and implant embryo, III- Regeneration of endometrium
  - I – Degeneration of endometrium, II – Endometrium thickness, becomes vascularised, ready to receive and implant ovum, III- Regeneration of endometrium
  - I – Degeneration of endometrium, II – Endometrium thickness, becomes vascularised, ready to receive and implant embryo, III- Regeneration of endometrium
  - I- Regeneration of endometrium, II – Endometrium thickness, becomes vascularised, ready to receive and implant embryo, III – Degeneration of endometrium
100. When both ovaries of woman are removed then which hormone decreased in blood?
- Oxytocin
  - Prolactin
  - Estrogen
  - GnRH
101. Placenta in human is
- Haemochorial
  - Metadiscoidal
  - Deciduous
  - All
102. \_\_\_\_ is the hormone responsible for the expression of secondary sex characteristics in human females
- Testosterone
  - Estrogen
  - FSH
  - LH
103. In menstrual cycle, on what day the flow stage begin?
- day 5
  - day 1
  - day 28
  - day 14
104. About which day in a normal human menstrual cycle does rapid secretion of LH ( Popularly called LH – surge) normally occurs
- 5<sup>th</sup> day
  - 11<sup>th</sup> day
  - 14<sup>th</sup> day
  - 20<sup>th</sup> day
105. How many ova and sperms would be produced from 50 secondary oocytes and 50 secondary spermatocytes during gametogenesis in human?
- 100 ova, 100 sperms
  - 50 ova, 50 sperms

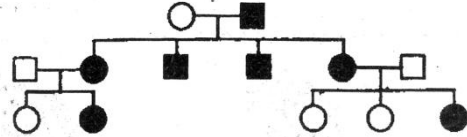
- c. 50 ova, 100 sperms      d. 100 ova, 200 sperms
106. Condoms are barriers that cover-
- Penis in male and ovary in female
  - Penis in male and cervix and vagina in females
  - Scrotum in male and cervix and vagina in female
  - Cervix in male and vagina in female
107. What is true about "Saheli"?
- Developed at the CDRI, Lucknow
  - Contains a steroidal preparation
  - "Once -a - week" pill
  - Many side effect
  - High contraceptive value
  - Very few side effect
  - Low contraceptive value
- I, II, III, V, VI
  - I, III, V, VI
  - I, II, III, IV, V
  - I, III, IV, V
108. Cu released by Cu Ts plays a role in -
- Increasing phagocytosis of sperms
  - Suppressing sperm motility
  - Suppressing fertilising capacity of sperms
  - Both b and c
109. Following statements are given regarding MTP, Choose the correct options given below.
- MTPs are generally advised during first trimester
  - MTPs are used as a contraceptive method
  - MTPs are always surgical
  - MTPs require the assistance of qualified medical personnel
- I and III
  - II and III
  - I and IV
  - I and II
110. Which of the following statements is wrong?
- In test-tube baby invitro fertilization is followed by embryo transfer
  - Test tube baby grows within mother's womb
  - Test tube baby grow within surrogate mother's womb
  - Test tube baby grows inside test tube
111. In context of amniocentesis, which of the following statement is incorrect?
- It is usually done when a woman is between 14-16 weeks pregnant
  - It can be used for prenatal sex determination
  - It can be used detection of Down syndrome
  - It can be used for detection of Cleft palate
112. A child with mother of A group and father of AB group, will not have the following blood group-
- A
  - B
  - AB
  - O
113. Multiple alleles control the character of
- only skin colour
  - Only blood groups
  - Blood groups and skin colour
  - Sickle - cell anaemia
114. Which of the following truly represents a heterozygous organism?
- XXyy
  - RRYy
  - xxYY
  - RrYy
115. Refer of the following family tree.



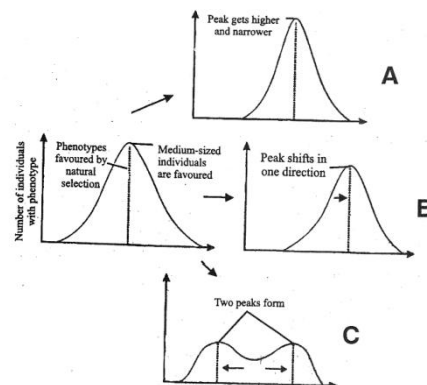
If A = normal allele and a = albino allele, the genotype of these parents are

	father	mother
(a).	Aa	AA
(b).	AA	AA
(c).	AA	Aa
(d).	Aa	AA

116. In the following pedigree chart, the mutant trait is shaded black. The gene responsible for the trait is



- dominant and sex linked
  - dominant but autosomal
  - recessive and sex linked
  - recessive and autosomal
117. The functional unit of gene that specifies synthesis of one polypeptides is
- muton
  - recon
  - cistron
  - codon
118. Bacterial nucleoid has
- one single- stranded DNA
  - one double- stranded DNA
  - two single-stranded DNA
  - many double- stranded DNAs
119. Which is the correct option of evolutionary history from reptiles to Dinosaurs-
- Early reptiles → Pelycosaurs → Synapsids → Thecodonts → Therapsids → Dinosaurs
  - Early reptiles → Synapsids → Pelycosaurs → Thecodonts → Therapsids → Dinosaurs
  - Early reptiles → Synapsids → Pelycosaurs → Therapsids → Thecodonts → Dinosaurs
  - Early reptiles → Synapsids → Thecodonts → Pelycosaurs → Therapsids → Dinosaurs
120. Following diagrammatic representation refers the natural selection on different traits. IN which all the three graphs A, B and C are identified correctly-



- A - Directional , B - Stabilising , C - Disruptive
  - A- Stabilising, B - Directional, C - Disruptive
  - A - Stabilising, B- Disruptive, C - Directional
  - A- Directional, B - Disruptive , C - Stabilising
121. The major histocompatibility complex is a
- series of complement - enhanced reactions to antigens
  - group of antigens, coded by a family of genes, on the surface of body cells
  - form of autoimmunity

d. the major causes of cancer.

122. Which one of the following options gives the correct matching of a disease with its causative organism and mode of infection

	Disease	Causative Organisms	Mode of infection
a.	Elephantiasis	Wuchereria bancrofti	With infected water and food
b.	Malaria	Plasmodium vivax	Bite of male Anopheles mosquito
c.	Typhoid	Salmonella typhi	With inspired air
d.	Pneumonia	Streptococcus Pneumoniae	Droplet infection

123. Charas or hashish is obtained from  
 a. Leaves of Cannabis  
 b. Resinous secretions of flowering tops of females Cannabis  
 c. Dried leaves of female Cannabis  
 d. Resinous secretions from bark of male plants of Cannabis

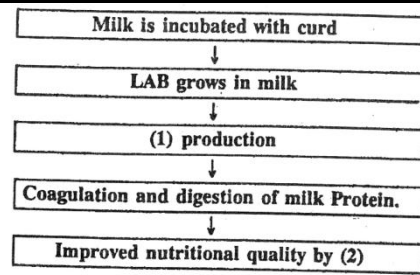
124. Neoplasms are  
 a. Nuclei with massive DNA  
 b. Cells without covering membranes  
 c. Cells capable of unlimited division  
 d. Newly produced cells formed through uncontrolled cell proliferation

125. Which of the following procedures is/are followed in dairy farm management?  
 A. Regular inspections and visits by veterinary doctors  
 B. Usage of manure to increase crop yields  
 C. Adequate environment condition is provided  
 D. Weeding away unproductive and harmful plants from the brood house  
 a. A and B are correct  
 b. A and C are correct  
 c. C and D are correct  
 d. All are correct

126. In shoot and root culture, excess of auxin in the medium will promote  
 a. shoot culture  
 b. rot culture  
 c. both shoot and root culture  
 d. none of these

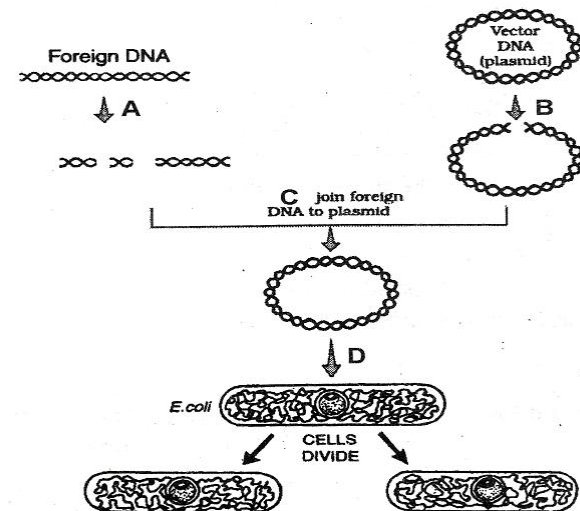
127. One of the following species of wheat was most primitive and wild  
 a. Triticum monococcum  
 b. Triticum durum  
 c. Triticum turgidum  
 d. Triticum boeoticum

128. Following is the curd formation from milk. In which of the following options, correct word for all the two numbers (1 & 2) are indicated –



- a. 1- Lactic acid; 2- Increased vitamin B<sub>1</sub>
- b. 1- Lactic acid; 2- Increased vitamin B<sub>2</sub>
- c. 1- Lactic acid; 2- Increased vitamin B<sub>12</sub>
- d. 1- Lactic acid; 2- Increased vitamin C

129. Identify the set which has all organisms used in biological control of pests.  
 a. Trichoderma, Nucleopolyhedrovirus, Bacillus thuringiensis, Ladybird  
 b. Dragonfly, Bacillus thuringiensis, Ladybird, Aphids  
 c. Ladybird, Penicillium, Baculoviruses, Aspergillus  
 d. Trichoderma, Aspergillus, Bacillus thuringiensis, Nucleopolyhedrovirus

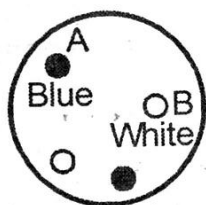


130. The above diagram refers to recombinant DNA technology. Identify A to D

	A	B	C	D
(a)	Exonuclease	Endonuclease	DNA ligase	Transformation
(b)	Exonuclease	Exonuclease	DNA ligase	Transformation
(c)	Exonuclease	Endonuclease	Hydrolase	Transduction
(d)	Restriction Endonuclease	Restriction Endonuclease	DNA ligase	Transformation

131. Restriction enzyme EcoRI cuts the DNA between bases G and A only when the sequences in DNA is  
 a. GATATC  
 b. GAATTC  
 c. GATTCC  
 d. GAAGTT

132. Given diagram shows colonies of bacteria. Find out correct statement.



- a. Colony 'B' has recombinant which shows insertion inactivation
- b. Colony 'A' has recombinant bacteria having of interest
- c. Colony 'B' has none recombinant bacteria having functional Lac- Z gene
- d. Colony 'A' has non recombinant having non functional lac- Z gene

133. Which of the following statements is /are true about genetically engineered insulin?
- A. Its name is humulin
  - B. It was manufactured by American firm Eli Lilly
  - C. It was launched on 5 July 1983
  - D. It is produced by the fermentation of appropriate recombinant E. Coli clones.

- a. A, B
- b. B, C
- c. A, B, C
- d. A, B, C, D

134. Which Indian plants have either been patented or attempts have been made to patent them by western nations their commercial uses.

- A. basmati rice
- B. turmeric
- C. neem
- D. none

- a. A, B
- b. B, C
- c. A, B, C
- d. A, B, C, D

135. Human insulin is being commercially produced from

- a. Saccharomyces
- b. Rhizobium
- c. Escherichia
- d. Mycobacterium

136. Golden rice is a genetically modified crop plant where the incorporated gene is meant for biosynthesis of

- a. Omega 3
- b. Vitamin A
- c. Vitamin B
- d. Vitamin C

137. If any protein encoding gene is expressed in a heterologous host then protein is known as

- a. Recombinant gene
- b. Recombinant protein
- c. Selectable marker
- d. Homogenous protein

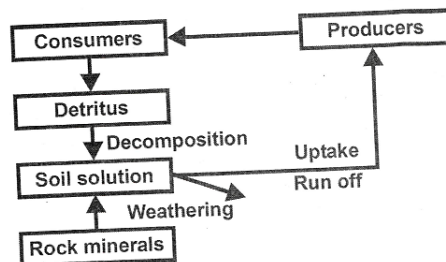
138. Temperature has direct effect on which of the following?

- I. body size
  - II. size of the extremities of the body
  - III. mutation
  - IV. Life span
  - V. Metabolism in poikilotherm
- a. I, III and IV
  - b. II, III and IV
  - c. II, III and V
  - d. I, II and V

139. Secondary productivity

- a. is measured by the standing crop
- b. is the rate of biomass production in consumers
- c. is greater than primary productivity
- d. is 10% less than primary productivity

140. Which of these process in incorrectly paired with description?
- a. nitrification – oxidation of ammonium in the soil to nitrite and nitrate
  - b. nitrogen fixation – reduction of atmospheric nitrogen into ammonia
  - c. denitrification – removal of nitrogen from organic compounds
  - d. ammonification – decomposition of organic compounds into ammonia
141. Represents-



- a. Carbon cycle
- b. N<sub>2</sub> cycle
- c. O<sub>2</sub> cycle
- d. Phosphorus cycle

142. Important characteristic that hemichordates share with chordates is

- a. Ventral tubular nerve cord
- b. pharynx with gill slits
- c. pharynx without gill slits
- d. absence of notochord.

143. Ommatidia serve the purpose of photoreception in

- a. cockroach
- b. frog
- c. humans
- d. sunflower

144. Tricarpellary, syncarpous gynoecium is found in flower of

- a. Fabaceae
- b. Poaceae
- c. Liliaceae
- d. Solanaceae

145. What will be the ploidy of aleuron layer in wheat

- a. n
- b. 2n
- c. 3n
- d. none

146. Cortex is the region found between

- a. epidermis and stele
- b. pericycle and endodermis
- c. endodermis and pith
- d. endodermis and vascular bundle.

147. Vascular bundles in monocotyledons are considered closed because

- a. there are no vessels with perforations
- b. xylem is surrounded all around by phloem
- c. a bundle sheath surrounds each bundle
- d. scattered is absent

148. The cells of the quiescent centre are characterised by

- a. having dense cytoplasm and prominent nuclei
- b. having light cytoplasm and small nuclei
- c. dividing regularly to add to the corpus
- d. dividing regularly to add to tunica.

149. Basement membrane is made up of

- a. no cell product of epithelial cell
- b. epidermis cell only
- c. glycoprotein & mucopolysacchrides
- d. both (b) & (c)

150. An epithelial tissue which has thin flat cells, arranged edge so as to appear like closely packed tiles, is found to be present at

- a. outer surface of ovary

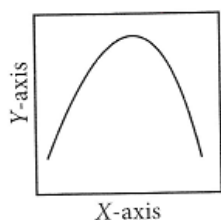
- b. inner lining of fallopian tube
- c. inner lining of stomach
- d. inner lining of cheeks

151. The shorter and longer arms of a submetacentric chromosome are referred to as
- a. m-arm and n-arm respectively
  - b. s-arm and l – arm respectively
  - c. p-arm and q –arm respectively
  - d. q-arm and p-arm respectively

152. Select the incorrect match-

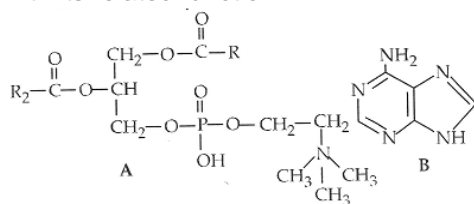
(a). Lampbrush chromosome	Diplotene bivalent
(b) Allosomes	Sex chromosome
(C). Sub- metacentric chromosome	L-shaped chromosome
(d). Polytene chromosomes	Oocytes of amphibian

153. The curve given below shows enzymatic activity in relation enzymatic activity in relation to three conditions (pH, temperature substrate concentration). What do the two axes (x and y)represents ?



X- axis	Y-axis
(a) . Enzymatic activity	pH
(b). Temperature	Enzyme activity
(c). Substrate Concentration	Enzymatic activity
(d). Enzymatic activity	Temperature

154. Which one of the following structural formulae of two organic compounds is correctly identified along with its related function?



a. B: Adenine	A nucleotide that makes up nucleic acids
b. A : Triglyceride	Major source of energy
c. B : Uracil	A component of DNA
d. A : Lecithin	A component of cell membrane

155. The correct sequence of phase of cell cycle is
- a.  $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$
  - b.  $M \rightarrow G_1 \rightarrow G_2 \rightarrow S$
  - c.  $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$
  - d.  $S \rightarrow G_1 \rightarrow G_2 \rightarrow M$

156. Anaphase Promoting Complex (APC) is a protein degradation machinery necessary for proper mitosis of animal cell. If APC is defective in a human cell, which of the following expected to occur?

- a. Chromosome will be fragmented
- b. Chromosome will not segregate
- c. Recombination of chromosome arms will occur
- d. Chromosome will not condense

157. Photosynthesis in  $C_4$  plants is relatively less limited by atmospheric  $CO_2$  levels because
- a. effective pumping of  $CO_2$  into bundle sheath cells
  - b. RuBisCO in  $C_4$  plants has higher affinity for  $CO_2$
  - c. four carbon acids are the primary initial  $CO_2$  fixation products
  - d. the primary fixation of  $CO_2$  is mediated via PEP carboxylase.

158. Conversion of glucose to glucose -6-phosphatet the first irreversible reaction of glycolysis, is catalysed by

- a. Phosphofructokinase
- b. aldolase
- c. hexokinase
- d. enolase

159. Which of the metabolites is common to respiration- mediated breakdown of fats, carbohydrates and proteins?

- a. Pyruvic acid
- b. Acetyl CoA
- c. Glucose – 6- phosphate
- d. Fructose 1, 6- biphosphate

160. In a stranded ECG which one of the following alphabtes is the correct representation of the respective activity of the human heart?

- a. S- start of systole
- b. T – end of diastole
- c. P – depolarisation of the atria
- d. R – repolarisation of ventricles

161. Globulins contained in human blood plasma are primarily involved in

- a. osmotic balance of body fluids
- b. oxygen transport in the blood
- c. clotting of blood
- d. defence mechanisms of the body.

162. Erythroblastosis fetalis is caused when fertilization takes place between gametes of

- a.  $Rh^-$  female and  $Rh^+$  male
- b.  $Rh^+$  female and  $Rh^-$  male
- c.  $Rh^+$  female and  $Rh^+$  male
- d.  $Rh^-$  female and  $Rh^-$  male

163. Sternum is connected to ribs and clavicle with the-

- a. Cartilaginous joint
- b. Angular joint
- c. Gliding joint
- d. Fibrous joint

164. The cervical vertebra in human is

- a. same as in whale
- b. more than that in rabbit
- c. double than that of horse
- d. less than in giraffe

165. Depolarization of axolemma during nerve conduction take place because of

- a. equal amount of  $Na^+$  and  $K^+$  move out across axolemma
- b.  $Na^+$  move inside  $K^+$  move more outside
- c. more  $Na^+$  outside
- d. none of these

166. First ventricle is present in the -

- a. right cerebral hemisphere  
b. diocele  
c. medulla  
d. cerebellum
- 167.** Iris is part of  
a. Sclerotic  
b. choroid  
c. choroid ad retina  
d. Sclerotic and choroid
- 168.** Calcitonin is a thyroid hormone which  
a. elevates calcium level in blood  
b. has no effect on calcium  
c. elevates potassium level in blood  
d. lowers calcium level in blood
- 169.** The hormone that stimulates the stomach to secrete gastric juice is  
a. enterokinase  
b. enterogastrone  
c. gastrin  
d, renin
- 170.** Hormones thyroxine, adrenaline and the pigment melanin are formed from  
a. tyrosine  
b. proline  
c. tryptophan  
d. glycine
- 171.** According to the accepted concept of hormone action, if receptor molecule are removed from target organs, then the target organ will  
a. continue to respond to the hormone without any difference  
b. not respond to the hormone  
c. continue to respond to the hormone but will require higher concentration  
d. continue to respond to the hormone but in the opposite way
- 172.** The two chains of functional insulin are connected with the help of  
a. ionic bond  
b. Peptide bond  
c. glycosidic bond  
d. disulphide bond
- 173.** Which hormone possesses anti-insulin effect?  
a. Cortisol  
b. Calcitonin  
c. Oxytocin  
d. Aldosterone
- 174.** Which of the following structure of eye help in the accommodation  
a. lens  
b. Ciliary muscle  
c. iris  
d. cornea
- 175.** Photosensitive compound in human eye is made up of  
a. opsin and retinol  
b. transducin and retinene  
c. guanosine and retinol  
d. opsin and retinal
- 176.** A gymnast is able to balance his body upside down even in the total darkness because of  
a. tectorial membrane  
b. organ of corti  
c. cochlea  
d. vestibular apparatus
- 177.** Which of the following regions of the brain is incorrectly paired with its function?  
a. Corpus callosum – communication between the left and right cerebral cortices  
b. Cerebrum – calculation and contemplation  
c. Medulla oblongata – homeostatic control  
d. Cerebellum – language comprehension
- 178.** The human hind brain comprises three parts, one of which is  
a. spinal cord  
b. Corpus callosum  
c. cerebellum  
d. hypothalamus
- 179.** Organ of corti are present on  
a. basilar membrane  
b. resienner membrane  
c. tympanic membrane  
d. olfactory membrane
- 180.** Which of the following hormone play role in erythropoeisis  
a. erythropoeitin  
b. testosterone  
c. cortisol  
d. all