

196 Match List I with List II related to digestive system of cockroach.

List I

A. The structures used for storing of food

B. Ring of 6-8 blind tubules at junction of foregut and midgut.

C. Ring of 100-150 yellow coloured thin filaments at junction of midgut and hindgut

D. The structures used for grinding the food.

List II

I. Gizzard

II. Gastric tubules

III. Malpighian tubules

IV. Crop

Choose the correct answer from the options given below :

- (1) A-I, B-II, C-III, D-IV
- (2) A-IV, B-III, C-II, D-I
- (3) A-III, B-II, C-IV, D-I
- (4) A-IV, B-II, C-III, D-I

197 Given below are two statements :

Statement I : The cerebral hemispheres are connected by nerve tract known as corpus callosum.

Statement II : The brain stem consists of the medulla oblongata, pons and cerebrum.

In the light of the above statements, choose the most appropriate answer from the options given below :

- (1) Both Statement I and Statement II are incorrect.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Both Statement I and Statement II are correct.

R3_English |

198 Match List I with List II :

List I

A. Mesozoic Era

B. Proterozoic Era

C. Cenozoic Era

D. Paleozoic Era

List II

I. Lower invertebrates

II. Fish & Amphibia

III. Birds & Reptiles

IV. Mammals

Choose the correct answer from the options given below :

- (1) A-III, B-I, C-II, D-IV
- (2) A-I, B-II, C-IV, D-III
- (3) A-III, B-I, C-IV, D-II
- (4) A-II, B-I, C-III, D-IV

199 As per ABO blood grouping system, the blood group of father is B, mother is A⁺ and child is O⁻. Their respective genotype can be

- A. I^B I^B / I^A I^A / ii
- B. I^B I^B / I^A I^A / I^D I^D
- C. I^A I^B / iI^A / I^B I^B
- D. I^A I^B / I^A I^A
- E. iI^B / iI^A / I^A I^B

Choose the most appropriate answer from the options given below :

- (1) B only
- (2) C & B only
- (3) D & E only
- (4) A only

200 Given below are two statements :

Statement I : Bone marrow is the main lymphoid organ where all blood cells including lymphocytes are produced.

Statement II : Both bone marrow and thymus provide micro environments for the development and maturation of T-lymphocytes.

In the light of the above statements, choose the most appropriate answer from the options given below :

- (1) Both Statement I and Statement II are incorrect.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Both Statement I and Statement II are correct.

| Contd...

R3_English |

186 Match List I with List II :

List I

A. P wave

B. QRS complex

C. T wave

D. T-P gap

List II

I. Heart muscles are electrically silent.

II. Depolarisation of ventricles.

III. Depolarisation of atria.

IV. Repolarisation of ventricles.

Choose the correct answer from the options given below :

- (1) A-III, B-II, C-IV, D-I
- (2) A-II, B-III, C-I, D-IV
- (3) A-IV, B-II, C-I, D-III
- (4) A-I, B-III, C-IV, D-II

187 Given below are two statements :

Statement I : Gause's competitive exclusion principle states that two closely related species competing for different resources cannot exist indefinitely.

Statement II : According to Gause's principle, during competition, the inferior will be eliminated. In the light of the above statements, choose the correct answer from the options given below :

- (1) Both Statement I and Statement II are false.
- (2) Statement I is true but Statement II are false.
- (3) Statement I is false but Statement II is true.
- (4) Both Statement I and Statement II are true.

R3_English I

28

188 Given below are two statements :

Statement I : Mitochondria and chloroplasts are both double membrane bound organelles.

Statement II : Inner membrane of mitochondria is relatively less permeable, as compared to chloroplast.

In the light of the above statements, choose the most appropriate answer from the options given below :

- (1) Both Statement I and Statement II are correct.
- (2) Statement I is correct but Statement II is incorrect.
- (3) Statement I is incorrect but Statement II is correct.
- (4) Both Statement I and Statement II are correct.

189 Choose the correct statement given below regarding juxta medullary nephron.

- (1) Renal corpuscle of juxta medullary nephron lies in the outer portion of the renal medulla.
- (2) Loop of Henle of juxta medullary nephron runs deep into medulla.
- (3) Juxta medullary nephrons outnumber the cortical nephrons.
- (4) Juxta medullary nephrons are located in the columns of Bertini.

190 Match List I with List II :

List I

A. Exophthalmic goiter

B. Acromegaly

C. Cushing's syndrome

D. Cretinism

List II

I. Excess secretion of cortisol, moon face & hyperglycaemia

II. Hypo-secretion of thyroid hormone and stunted growth.

III. Hyper secretion of thyroid hormone & protruding eye balls.

IV. Excessive secretion of growth hormone.

Choose the correct answer from the options given below :

- (1) A-IV, B-II, C-I, D-III
- (2) A-III, B-IV, C-II, D-I
- (3) A-III, B-IV, C-I, D-II
- (4) A-I, B-III, C-II, D-IV

I Contd...

191 Match List I with List II :

List I

A. Unicellular glandular epithelium

B. Compound epithelium

C. Multicellular glandular epithelium

D. Endocrine glandular epithelium

List II

I. Salivary glands

II. Pancreas

III. Goblet cells of alimentary canal

IV. Moist surface of buccal cavity

Choose the correct answer from the options given below :

- (1) A-IV, B-III, C-I, D-II
- (2) A-III, B-IV, C-I, D-II
- (3) A-II, B-I, C-IV, D-III
- (4) A-II, B-I, C-III, D-IV

192 Match List I with List II :

List I

A. RNA polymerase III

B. Termination of transcription

C. Splicing of Exons

D. TATA box

List II

I. snRNPs

II. Promotor

III. Rho factor

IV. SnRNAs, gRNA

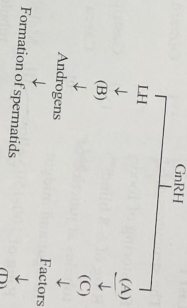
Choose the correct answer from the options given below :

- (1) A-III, B-II, C-IV, D-I
- (2) A-II, B-IV, C-I, D-II
- (3) A-IV, B-III, C-I, D-II
- (4) A-II, B-IV, C-I, D-III

R3_English I

29

193 Identify the correct option (A), (B), (C), (D) with respect to spermatogenesis.



- (1) ICSSH, Interstitial cells, Leydig cells, spermiogenesis.
- (2) FSH, Sertoli cells, Leydig cells, spermatogenesis.
- (3) ICSSH, Leydig cells, Sertoli cells, spermatogenesis.
- (4) FSH, Leydig cells, Sertoli cells, spermiogenesis

194 Regarding catalytic cycle of an enzyme action, select the correct sequential steps :

- A. Substrate enzyme complex formation.
 - B. Free enzyme ready to bind with another substrate.
 - C. Release of products.
 - D. Chemical bonds of the substrate broken.
 - E. Substrate binding to active site.
- Choose the correct answer from the options given below :
- (1) A, E, B, D, C
 - (2) B, A, C, D, E
 - (3) E, D, C, B, A
 - (4) E, A, D, C, B

195 The following are the statements about chordates :

- A. Pharynx is perforated by gill slits.
- B. Notochord is absent.
- C. Central nervous system is dorsal.
- D. Heart is dorsal if present.
- E. Post anal tail is absent.

Choose the most appropriate answer from options given below :

- (1) A, B & D only
- (2) B, D & E only
- (3) B, C & D only
- (4) A & C only

I Co

175 Consider the following statements :

- A. Arneids are true coelomates
- B. Porifera are pseudocoelomates
- C. Aschelminthes are acoelomates
- D. Platyhelminthes are pseudocoelomates

Choose the correct answer from the options given below :

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

176 Match List I with List II :

List I

- A. Axoneme
- B. Carwheel pattern
- C. Cilia
- D. Saeitlike

List II

- I. Centriole
- II. Cilia and flagella
- III. Chromosome
- IV. Mitochondria

Choose the correct answer from the options given below :

- (1) A-IV, B-III, C-III, D-I
- (2) A-II, B-IV, C-I, D-III
- (3) A-I, B-I, C-IV, D-III
- (4) A-IV, B-III, C-II, D-I

178 Match List I with List II :

List I

- A. Pons
- B. Hypothalamus
- C. Medulla
- D. Cerebellum

List II

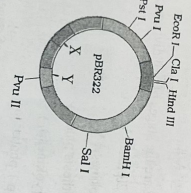
- I. Provides additional space for Neurons, regulates posture and balance.
- II. Controls respiration and gastric secretions.
- III. Connects different regions of the brain.
- IV. Neuro secretory cells

Choose the correct answer from the options given below :

- (1) A-III, B-IV, C-II, D-I
- (2) A-I, B-II, C-III, D-IV
- (3) A-II, B-I, C-III, D-IV
- (4) A-III, B-III, C-I, D-IV

179

The following diagram showing restriction sites in *E. coli* cloning vector pBR322. Find the role of 'X' and 'Y' genes :



- (1) The gene 'X' is responsible for controlling the copy number of the linked DNA and 'Y' for protein involved in the replication of Plasmid.
- (2) The gene 'X' is for protein involved in replication of Plasmid and 'Y' for resistance to antibiotics.
- (3) Gene 'X' is responsible for recognition sites and 'Y' is responsible for antibiotic resistance.
- (4) The gene 'X' is responsible for resistance to antibiotics and 'Y' for protein involved in the replication of Plasmid.

180 Given below are two statements :

Statement I : In the nephron, the descending limb of loop of Henle is impermeable to water and permeable to electrolytes.

Statement II : The proximal convoluted tubule is lined by simple columnar brush border epithelium and increases the surface area for reabsorption.

In the light of the above statements, choose the correct answer from the options given below :

- (1) Both Statement I and Statement II are false
- (2) Statement I is true but Statement II is false
- (3) Statement I is false but Statement II is true
- (4) Both Statement I and Statement II are true

181 Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R :

Assertion A : Breast-feeding during initial period of infant growth is recommended by doctors for bringing a healthy baby.

Reason R : Colostrum contains several antibodies absolutely essential to develop resistance for the new born baby.

In the light of the above statements, choose the most appropriate answer from the options given below :

- (1) Both A and R are correct but R is NOT the correct explanation of A.
- (2) A is correct but R is not correct.
- (3) A is not correct but R is correct.
- (4) Both A and R are correct and R is the correct explanation of A.

182 Following are the stages of pathway for conduction of an action potential through the heart :

- A. AV bundle
- B. Purkinje fibres
- C. AV node
- D. Bundle branches
- E. SA node

Choose the correct sequence of pathway from the options given below :

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

183 Which one is the correct product of DNA dependent RNA polymerase to the given template?

- (1) 3'-TACATGGCCAAATATCCATTGAS'-
- (2) 5'-AUGUAAAAGUUUAUAGGUUAAAGU3'-
- (3) 5'-ATGTACCCCTTATAGGTAAGT3'-
- (4) 5'-AUGUACCQUUUUAUAGGUUAAAGU3'-

184 Match List I with List II :

List I

- A. α -1 antitrypsin
- B. CRY IAB
- C. CRY IAc
- D. Enzyme replacement therapy

List II

- I. Cotton bollworm
- II. ADA deficiency
- III. Emphysema
- IV. Corn borer

Choose the correct answer from the options given below :

- (1) A-II, B-I, C-II, D-IV
- (2) A-III, B-IV, C-I, D-II
- (3) A-II, B-IV, C-I, D-III
- (4) A-II, B-I, C-IV, D-III

185

The "Ti plasmid" of *Agrobacterium tumefaciens* stands for

- (1) Tumor independent plasmid
- (2) Tumor inducing plasmid
- (3) Temperature independent plasmid
- (4) Tumour inhibiting plasmid

R3_English I

I Contd...

R3_English I

161 Match List I with List II :

- | | |
|---------------------------|--|
| List I | List II |
| A. Fibrous joints | I. Adjacent vertebrae, limited movement |
| B. Cartilaginous joints | II. Humerus and Pectoral girdle, rotational movement |
| C. Hinge joints | III. Skull, don't allow any movement |
| D. Ball and socket joints | IV. Knee, help in locomotion |
- Choose the correct answer from the options given below :

- (1) A-I, B-III, C-II, D-IV
 (2) A-II, B-III, C-I, D-IV
 (3) A-III, B-I, C-IV, D-II
 (4) A-IV, B-II, C-III, D-I

162 Which of the following is not a steroid hormone?

- (1) Testosterone (2) Progesterone
 (3) Glucagon (4) Cortisol

163 In both sexes of cockroach, a pair of jointed filamentous structures called anal cerci are present on :

- (1) 10th segment
 (2) 8th and 9th segment
 (3) 11th segment
 (4) 5th segment

164 Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R :

Assertion A : FSH acts upon ovarian follicles in female and Leydig cells in male.

Reason R : Growing ovarian follicles secrete estrogen in female while interstitial cells secrete androgen in male human being.

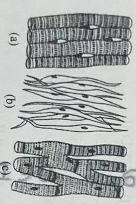
- In the light of the above statements, choose the correct answer from the options given below :
- (1) Both A and R are true but R is NOT the correct explanation of A.
 (2) A is true but R is false
 (3) A is false but R is true
 (4) Both A and R are true and R is the correct explanation of A.

165 Match List I with List II :

- | | |
|---------------------------------|---|
| List I | List II |
| A. Expiratory capacity | I. Expiratory reserve volume + Tidal volume + Expiratory reserve volume |
| B. Functional residual capacity | II. Tidal volume + Expiratory reserve volume + Residual volume |
| C. Vital capacity | III. Tidal volume + Expiratory reserve volume + Residual volume |
| D. Inspiratory capacity | IV. Expiratory reserve volume + Residual volume |
- Choose the correct answer from the options given below :

- (1) A-III, B-II, C-IV, D-I
 (2) A-I, B-I, C-IV, D-III
 (3) A-I, B-II, C-II, D-IV
 (4) A-II, B-IV, C-I, D-III

166 Three types of muscles are given as a, b and c. Identify the correct matching pair along with their location in human body.



Name of muscle/location

- (1) (a) Skeletal - Triceps
 (b) Smooth - Stomach
 (c) Cardiac - Heart
 (2) (a) Skeletal - Biceps
 (b) Involuntary - Biceps
 (c) Smooth - Heart
 (3) (a) Involuntary - Nose tip
 (b) Skeletal - Bone
 (c) Cardiac - Heart
 (4) (a) Smooth - Toes
 (b) Skeletal - Legs
 (c) Cardiac - Heart

167 Match List I with List II :

- | | |
|---------------|-------------------------|
| List I | List II |
| A. Lipase | I. Peptide bond |
| B. Nuclease | II. Ester bond |
| C. Protease | III. Glycosidic bond |
| D. Amylase | IV. Phosphodiester bond |
- Choose the correct answer from the options given below :

- (1) A-II, B-II, C-I, D-IV
 (2) A-II, B-IV, C-I, D-III
 (3) A-IV, B-I, C-III, D-II
 (4) A-IV, B-II, C-III, D-I

168 The flippers of the Penguins and Dolphins are the example of the

- (1) Natural selection
 (2) Convergent evolution
 (3) Divergent evolution
 (4) Adaptive radiation

169 Following are the stages of cell division :

- A. Gap 2 phase
 B. Cytokinesis
 C. Synthesis phase
 D. Karyokinesis
 E. Gap 1 phase
- Choose the correct sequence of stages from the options given below :
- (1) E-B-D-A-C (2) B-D-E-A-C
 (3) E-C-A-D-B (4) C-E-D-A-B

170 Which one of the following factors will not affect the Hardy-Weinberg equilibrium?

- (1) Genetic drift
 (2) Gene migration
 (3) Constant gene pool
 (4) Genetic recombination

171 Given below are two statements :

Statement I : The presence or absence of hymen is not a reliable indicator of virginity.
Statement II : The hymen is torn during the first coitus only.

- In the light of the above statements, choose the correct answer from the options given below :
- (1) Both Statement I and Statement II are false
 (2) Statement I is true but Statement II is false
 (3) Statement I is false but Statement II is true
 (4) Both Statement I and Statement II are true

172 Match List I with List II :

- | | |
|------------------|----------------|
| List I | List II |
| A. Typhoid | I. Fungus |
| B. Leishmaniasis | II. Nematode |
| C. Ringworm | III. Protozoa |
| D. Filariasis | IV. Bacteria |
- Choose the correct answer from the options given below :

- (1) A-IV, B-III, C-I, D-II
 (2) A-III, B-I, C-IV, D-II
 (3) A-II, B-IV, C-III, D-I
 (4) A-I, B-III, C-II, D-IV

173 Given below are some stages of human evolution. Arrange them in correct sequence. (Past to Recent)

- A. *Homo habilis*
 B. *Homo sapiens*
 C. *Homo neanderthalensis*
 D. *Homo erectus*
- Choose the correct sequence of human evolution from the options given below :

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

174 Which of the following is not a component of Fallopian tube?

- (1) Isthmus
 (2) Infundibulum
 (3) Ampulla
 (4) Uterine fundus

136 Spraying sugarcane crop with which of the following plant growth regulators, increases the length of stem, thus, increasing the yield?
 (A) Gibberellin
 (2) Cytokinin
 (3) Abscisic acid
 (4) Auxin

137 Given below are two statements:
Statement I : In C_3 plants, some O_2 binds to RubisCO, hence CO_2 fixation is decreased.
Statement II : In C_4 plants, mesophyll cells show very little photorespiration while bundle sheath cells do not show photorespiration.
 In the light of the above statements, choose the correct answer from the options given below:
 (1) Both Statement I and Statement II are false
 (2) Statement I is true but Statement II is false
 (3) Statement I is false but Statement II is true
 (4) Both Statement I and Statement II are true

138 Match List I with List II
List I
 A. GLUT-4
 B. Insulin
 C. Trypsin
 D. Collagen
List II
 I. Hormone
 II. Enzyme
 III. Intracellular ground substance
 IV. Enables glucose transport into cells

Choose the correct answer from the options given below:
 (1) A-I, B-II, C-III, D-IV
 (2) A-II, B-III, C-IV, D-I
 (3) A-III, B-IV, C-I, D-II
 (4) A-IV, B-I, C-II, D-III

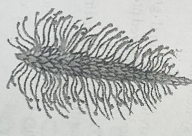
139 Read the following statements and choose the set of correct statements:
 In the members of Phaeophyceae,
 A. Asexual reproduction occurs usually by biflagellate zoospores.
 B. Sexual reproduction is by oogamous method only.
 C. Stored food is in the form of carbohydrates which is either mannitol or laminarin.
 D. The major pigments found are chlorophyll a, c and carotenoids and xanthophyll.
 E. Vegetative cells have a cellulosic wall, usually covered on the outside by gelatinous coating of algin.
 Choose the correct answer from the options given below:
 (1) B, C, D and E only
 (2) A, C, D and E only
 (3) A, B, C and E only
 (4) A, B, C and D only

140 Which of the following statement is correct regarding the process of replication in *E. coli*?
 (1) The DNA dependent RNA polymerase catalyses polymerization in one direction, that is $5' \rightarrow 3'$.
 (2) The DNA dependent DNA polymerase catalyses polymerization in $3' \rightarrow 5'$ direction.
 (3) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3'$ as well as $3' \rightarrow 5'$ direction.
 (4) The DNA dependent DNA polymerase catalyses polymerization in one direction that is $3' \rightarrow 5'$.

141 Identify the step in tricarboxylic acid cycle, which does not involve oxidation of substrate.
 (1) Succinic acid \rightarrow Malic acid
 (2) Succinyl-CoA \rightarrow Succinic acid
 (3) Isocitrate \rightarrow α -ketoglutaric acid
 (4) Malic acid \rightarrow Oxaloacetic acid

142 Match List I with List II
List I
 A. Robert May
 B. Alexander von Humboldt
 C. Paul Ehrlich
 D. David Tilman
List II
 I. Species-Area relationship
 II. Long term ecosystem
 III. experiment using out door plots
 IV. Global species diversity at about 7 million
 V. River popper hypothesis

Choose the correct answer from the options given below:
 (1) A-II, B-I, C-IV, D-III
 (2) A-I, B-III, C-II, D-IV
 (3) A-III, B-IV, C-II, D-I
 (4) A-II, B-III, C-I, D-IV

143 Identify the correct description about the given figure:


144 In an ecosystem if the Net Primary Productivity (NPP) of first trophic level is $100x$ ($kcal\ m^{-2}\ yr^{-1}$), what would be the GPP (Gross Primary Productivity) of the third trophic level of the same ecosystem?
 (1) x ($kcal\ m^{-2}\ yr^{-1}$)
 (2) $10x$ ($kcal\ m^{-2}\ yr^{-1}$)
 (3) $100x$ ($kcal\ m^{-2}\ yr^{-1}$)
 (4) $\frac{x}{10}$ ($kcal\ m^{-2}\ yr^{-1}$)

145 Match List I with List II
List I
 A. Rose
 B. Pea
 C. Cotton
 D. Mango
List II
 I. Twisted aestivation
 II. Perigynous flower
 III. Drupe
 IV. Marginal placentation

Choose the correct answer from the options given below:
 (1) A-I, B-II, C-III, D-IV
 (2) A-IV, B-III, C-II, D-I
 (3) A-II, B-III, C-IV, D-I
 (4) A-II, B-IV, C-I, D-III

146 Match List I with List II
List I
 (Types of Stamens) (Example)
 A. Monadelphous I. Citrus
 B. Diadelphous II. Pea
 C. Polyadelphous III. Lily
 D. Epiphyllous IV. China-rose
List II
 Choose the correct answer from the options given below:
 (1) A-IV, B-I, C-II, D-III
 (2) A-I, B-II, C-IV, D-III
 (3) A-III, B-I, C-IV, D-II
 (4) A-IV, B-II, C-I, D-III

106

121 The type of conservation in which the threatened species are taken out from their natural habitat and placed in special setting where they can be protected and given special care is called:

(1) Biodiversity conservation
 (2) Semi-conservative conservation
 (3) Sustainable development
 (4) *In-situ* conservation

122 Match List I with List II

List I	List II
A. Two or more alternative forms of a gene	I. Back cross
B. Cross of F_1 progeny with homozygous recessive parent	II. Ploidy
C. Cross of F_1 progeny with any of the parents	III. Allele
D. Number of chromosome sets in plant	IV. Test cross

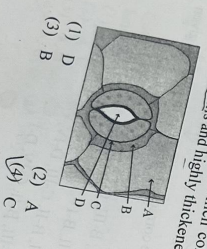
123 Formation of interfacial cambium from fully developed parenchyma cells is an example for

(1) Redifferentiation
 (2) Dedifferentiation
 (3) Maturation
 (4) Differentiation

124 Spindle fibers attach to kinetochores of chromosomes during

(1) Metaphase
 (2) Anaphase
 (3) Telophase
 (4) Prophase

18



129 In the given figure, which component has thin outer walls and highly thickened inner walls?

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

I Contd...

125 In a plant, black seed color (BB/Bb) is dominant over white seed color (bb). In order to find out the genotype of the black seed plant, which one of the following genotype will you cross it?

(1) bb
 (2) Bb
 (3) BB/Bb
 (4) BB

126 A pink flowered Snapdragon plant was crossed with a red flowered Snapdragon plant. What type of phenotypic ratio is expected in the progeny?

(1) Red flowered as well as pink flowered plants
 (2) Only pink flowered plants
 (3) Red, Pink as well as white flowered plants
 (4) Only red flowered plants

127 Inhibition of Succinic dehydrogenase enzyme by malonate is a classical example of:

(1) Feedback inhibition
 (2) Competitive inhibition
 (3) Enzyme activation
 (4) Cofactor inhibition

128 Given below are two statements:
 Statement I : Bt toxins are insect group specific and coded by a gene *cry* locus.
 Statement II : Bt toxin exists as inactive protoxin in *B. thuringiensis*. However, after ingestion by the insect the inactive protoxin gets converted into active form due to acidic pH of the insect gut.

In the light of the above statements, choose the correct answer from the options given below:

(1) Both Statement I and Statement II are false
 (2) Statement I is true but Statement II are false
 (3) Statement I is false but Statement II is false
 (4) Both Statement I and Statement II are true

130 Which one of the following can be explained on the basis of Mendel's Law of Dominance?

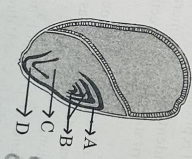
(1) Out of one pair of factors one is dominant and the other is recessive.
 (2) Alleles do not show any expression and both the characters appear as such in F_2 generation.
 (3) Factors occur in pairs in normal diploid plants.
 (4) The discrete unit controlling a particular character is called factor.

131 Identify the part of the seed from the given figure which is destined to form root when the seed germinates.

(1) A, C, D and E only
 (2) B, C and D only
 (3) A, B, C, D and E
 (4) A, B and C only

132 Auxin is used by gardeners to prepare weed-free lawns. But no damage is caused to grass as auxin promotes abscission of mature leaves only. Auxin does not affect mature monocotyledonous plants. Auxin can help in cell division in grasses, to produce growth. Auxin promotes apical dominance.

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



133 Given below are two statements:
 Statement I : Chromosomes become gradually visible under light microscope during leptotene stage.
 Statement II : The beginning of diploleone stage is recognized by dissolution of synaptonemal complex.

In the light of the above statements, choose the correct answer from the options given below:

(1) Both Statement I and Statement II are false
 (2) Statement I is true but Statement II is false
 (3) Statement I is false but Statement II is true
 (4) Both Statement I and Statement II are true

134 The capacity to generate a whole plant from any cell of the plant is called:

(1) Micropropagation
 (2) Differentiation
 (3) Somatic hybridization
 (4) Totipotency

135 Given below are two statements:
 Statement I : Parenchyma is living but collenchyma is dead tissue.
 Statement II : Gymnosperms lack xylem vessels but presence of xylem vessels is the characteristic of angiosperms.

In the light of the above statements, choose the correct answer from the options given below:

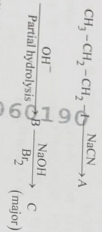
(1) Both Statement I and Statement II are false
 (2) Statement I is true but Statement II is false
 (3) Statement I is false but Statement II is true
 (4) Both Statement I and Statement II are true

R3_English I

19

I Contd...

90 Identify the major product C formed in the following reaction sequence:

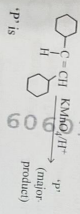


- (1) butylamine
(2) butanamide
(3) α -bromobutanoic acid
(4) propylamine

91 The pair of lanthanoids which are diamagnetic is

- (1) Ce^{3+} and Eu^{2+}
(2) Gd^{3+} and Er^{3+}
(3) Pr^{3+} and Sm^{2+}
(4) Ce^{4+} and Yb^{2+}

92 For the given reaction:



- (1) $\text{C}_6\text{H}_5\text{COOH}$
(2) $\text{C}_6\text{H}_5\text{CHO}$
(3) $\text{C}_6\text{H}_5\text{COCl}$
(4) $\text{C}_6\text{H}_5\text{CHO}$

93 A compound X contains 32% of A, 20% of B and remaining percentage of C. Then, the empirical formula of X is:

- (1) ABC_3
(2) AB_2C_2
(3) ABC_4
(4) $\text{A}_2\text{B}_2\text{C}_2$

R3_English I

94 Given below are certain cations. Using inorganic qualitative analysis, arrange them in increasing group number from 0 to VI.

- A. Al^{3+} B. Cu^{2+}
C. Ba^{2+} D. Co^{2+}
E. Mg^{2+}

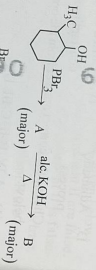
Choose the correct answer from the options given below:

- (1) B, C, A, D, E
(2) E, C, D, B, A
(3) E, A, B, C, D
(4) B, A, D, C, E

95 The work done during reversible isothermal expansion of one mole of hydrogen gas at 25°C from pressure of 20 atmosphere to 10 atmosphere is:

- (1) -413.14 calories
(2) 413.14 calories
(3) 100 calories
(4) 0 calorie

96 Major products A and B formed in the following reaction sequence are



- (1) $\text{C}_6\text{H}_5\text{COOH}$: A, $\text{C}_6\text{H}_5\text{COCl}$: B
(2) $\text{C}_6\text{H}_5\text{COOH}$: A, $\text{C}_6\text{H}_5\text{COCl}$: B
(3) $\text{C}_6\text{H}_5\text{COOH}$: A, $\text{C}_6\text{H}_5\text{COCl}$: B
(4) $\text{C}_6\text{H}_5\text{COOH}$: A, $\text{C}_6\text{H}_5\text{COCl}$: B

| Contd...

97 The rate of a reaction quadruples when temperature changes from 27°C to 57°C . Calculate the energy of activation.

Given $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$, $\log 4 = 0.6021$

- (1) 380.4 kJ/mol
(2) 3.80 kJ/mol
(3) 3804 kJ/mol
(4) 38.04 kJ/mol

98 During the preparation of Mohr's salt solution (Ferrous ammonium sulphate), which of the following acid is added to prevent hydrolysis of Fe^{2+} ion?

- (1) concentrated sulphuric acid
(2) dilute nitric acid
(3) dilute sulphuric acid
(4) dilute hydrochloric acid

99 The plot of osmotic pressure (Π) vs concentration (mol L^{-1}) for a solution gives a straight line with slope $25.73 \text{ L bar mol}^{-1}$. The temperature at which the osmotic pressure measurement is done is:

- (Use $R = 0.083 \text{ L bar mol}^{-1} \text{ K}^{-1}$)
(1) 310°C (2) 25.73°C
(3) 12.05°C (4) 3.79°C

100 Identify the correct answer:

- (1) BF_3 has non-zero dipole moment.
(2) Dipole moment of NF_3 is greater than that of NH_3 .
(3) Three canonical forms can be drawn for CO_3^{2-} ion.
(4) Three resonance structures can be drawn for ozone.

R3_English I

Botany : Section-A (Q. No. 101 to 135)

101 A transcription unit in DNA is defined primarily by the three regions in DNA and these are with respect to upstream and down stream end:

- (1) Structural gene, Transposons, Operator gene
(2) Inducer, Repressor, Structural gene
(3) Promotor, Structural gene, Terminator
(4) Repressor, Operator gene, Structural gene

102 Identify the set of correct statements:

- A. The flowers of *Vallisneria* are colourfull and produce nectar.
B. The flowers of waterlily are not pollinated by water.
C. In most of water-pollinated species, the pollen grains are protected from wetting and ribbon like.
D. In some hydrophytes, the pollen grains are carried passively inside water.
E. Choose the correct answer from the options given below:
(1) A, B, C and D only
(2) A, C, D and E only
(3) B, C, D and E only
(4) C, D and E only

103 Lecithin, a small molecular weight organic compound found in living tissues, is an example of:

- (1) Phospholipids (2) Glycerides
(3) Carbohydrates (4) Amino acids

104 These are regarded as major causes of biodiversity loss:

- A. Over exploitation
B. Co-extinction
C. Mutation
D. Habitat loss and fragmentation
E. Migration
Choose the correct option:
(1) A, B, C and D only
(2) A, B and E only
(3) A, B and D only
(4) A, C and D only

| Contd...

33 A logic circuit provides the output Y as per the following truth table:

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

The expression for the output Y is:

- (1) $A\bar{B} + \bar{A}B$
- (2) $\bar{A}B + \bar{A}\bar{B}$
- (3) $\bar{A}B + \bar{A}B$
- (4) $A\bar{B} + \bar{A}B$

34 In a uniform magnetic field of 0.049 T, a magnetic needle performs 20 complete oscillations in 5 seconds as shown. The moment of inertia of the needle is $9.8 \times 10^{-6} \text{ kg m}^2$. If the magnitude of the magnetic moment of the needle is $x \times 10^{-2} \text{ Am}^2$, then the value of 'x' is:

- (1) $128\pi^2$
- (2) $50\pi^2$
- (3) $1280\pi^2$
- (4) $5\pi^2$



35 A bob is whirled in a horizontal plane by means of a string with an initial speed of ω rpm. The while keeping the string is $\sqrt{2}$ speed becomes 2 ω rpm string becomes:

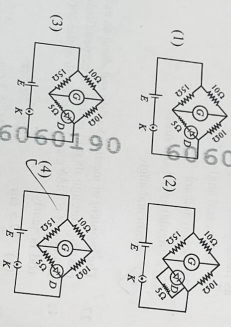
- (1) $4T$
- (2) $\frac{T}{4}$
- (3) $\sqrt{2}T$
- (4) T

$a = \omega^2 r$
 $\propto (\text{rpm})^2$

36 A metallic bar of Young's modulus, $0.5 \times 10^{11} \text{ N m}^{-2}$ and coefficient of linear thermal expansion $10^{-5} \text{ per } ^\circ\text{C}$, length 1 m and area of cross-section 10^{-3} m^2 is heated from 0°C to 100°C without expansion of bending. The compressive force developed in it is:

- (1) $50 \times 10^3 \text{ N}$
- (2) $100 \times 10^3 \text{ N}$
- (3) $2 \times 10^5 \text{ N}$
- (4) $5 \times 10^5 \text{ N}$

37 Choose the correct circuit which can achieve the bridge balance.

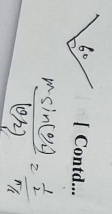


38 A small telescope has an objective of focal length 140 cm and an eyepiece of focal length 5.0 cm. The magnifying power of telescope for viewing a distant object is:

- (1) 28
- (2) 17
- (3) 32
- (4) 34

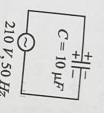
39 An iron bar of length L has magnetic moment M. It is bent at the middle of its length such that the two arms make an angle 60° with each other. The magnetic moment of this new magnet is:

- (1) $\frac{M}{2}$
- (2) $2M$
- (3) $\frac{M}{\sqrt{3}}$
- (4) M



$M = \sin(60^\circ) \cdot \frac{L}{2} = \frac{1}{2}$

40 A $10 \mu\text{F}$ capacitor is connected to a $210 \text{ V}, 50 \text{ Hz}$ source as shown in figure. The peak current in the circuit is nearly ($\pi = 3.14$):



- (1) 0.93 A
- (2) 1.20 A
- (3) 0.35 A
- (4) 0.58 A

$R = \frac{1}{\omega C} = \frac{1}{100 \times 50 \times \pi}$
 $= \frac{1}{15700}$
 $I = \frac{V}{R} = \frac{210 \times 10^3}{15700} = 13.4 \text{ A}$

41 Two heaters A and B have power ratings of 1 kW and 2 kW, respectively. Those two are first connected in series and then in parallel to a fixed power source. The ratio of power outputs for these two cases is:

- (1) 2 : 9
- (2) 1 : 2
- (3) 2 : 3
- (4) 1 : 1

42 If the mass of the bob in a simple pendulum is increased to thrice its original mass and its length is made half its original length, then the new time period of oscillation is $\frac{x}{2}$ times its original time period. Then the value of x is:

- (1) $\sqrt{2}$
- (2) $2\sqrt{3}$
- (3) 4
- (4) $\sqrt{3}$

43 The property which is not of an electromagnetic wave traveling in free space is that:

- (1) the energy density in electric field is equal to energy density in magnetic field.
- (2) they travel with a speed equal to $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$.
- (3) they originate from charges moving with uniform speed.
- (4) they are transverse in nature.

$\frac{1}{2} \epsilon_0 E^2 = \frac{1}{2} \mu_0 B^2$
 $\frac{E}{B} = \frac{1}{\mu_0 \epsilon_0}$
 $c = \frac{1}{\sqrt{\mu_0 \epsilon_0}}$

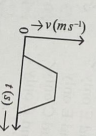
44 A sheet is placed on a horizontal surface in front of a strong magnetic pole. A force is needed to:

- A. hold the sheet there if it is magnetic.
- B. hold the sheet there if it is non-magnetic.
- C. move the sheet away from the pole with uniform velocity if it is conducting.
- D. move the sheet away from the pole with uniform velocity if it is both, non-conducting and non-polar.

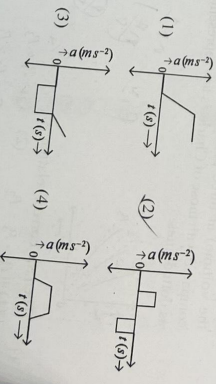
45 Choose the correct statement(s) from the options given below:

- (1) A and C only
- (2) A, C and D only
- (3) C only
- (4) B and D only

The velocity (v) - time (t) plot of the motion of a body is shown below:



The acceleration (a) - time (t) graph that best suits this motion is:



46 A parallel plate capacitor is charged by connecting it to a battery through a resistor. If I is the current in the circuit, then in the gap between the plates:

- (1) displacement current of magnitude equal to I flows in the same direction as I.
- (2) displacement current of magnitude equal to I flows in a direction opposite to that of I.
- (3) displacement current of magnitude greater than I flows but can be in any direction.
- (4) there is no current.

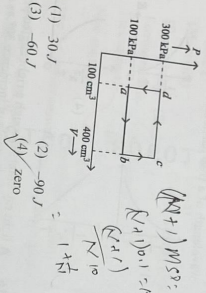
I Cor

17 A wheel of a bullock cart is rolling on a level road as shown in the figure below. If its linear speed is v in the direction shown, which one of the following options is correct (P and Q are any highest and lowest points on the wheel, respectively)?



- (1) Point P moves faster than point Q .
 (2) Both the points P and Q move with equal speed.
 (3) Point P has zero speed.
 (4) Point P moves slower than point Q .

18 A thermodynamic system is taken through the cycle $abcd$. The work done by the gas along the path bc is:



- (1) -30 J
 (2) -90 J
 (3) -60 J
 (4) zero

19 In an ideal transformer, the turns ratio is $\frac{N_p}{N_s} = \frac{1}{2}$. The ratio $V_s : I_p$ is equal to (the symbols carry their usual meaning):

- (1) 2 : 1
 (2) 1 : 1
 (3) 1 : 4
 (4) 1 : 2

20 A thin flat circular disc of radius 4.5 cm is placed gently over the surface of water. If surface tension required to take it away from the surface is:

- (1) 198 N
 (2) 1.98 mN
 (3) 99 N
 (4) 19.8 mN

R3_English |

21 The maximum elongation of a steel wire of 1 m length if the elastic limit of steel and its Young's modulus, respectively, are $8 \times 10^8 \text{ N m}^{-2}$ and $2 \times 10^{11} \text{ N m}^{-2}$, is:

- (1) 0.4 mm
 (2) 40 mm
 (3) 8 mm
 (4) 4 mm

22 The mass of a planet is $\frac{1}{10}$ that of the earth and its diameter is half that of the earth. The acceleration due to gravity on that planet is:

- (1) 9.8 m s^{-2}
 (2) 4.9 m s^{-2}
 (3) 3.92 m s^{-2}
 (4) 19.6 m s^{-2}

23 In a vernier calipers, $(N+1)$ divisions of vernier scale coincide with N divisions of main scale. If 1 MSD represents 0.1 mm, the vernier constant (in cm) is:

- (1) $\frac{1}{100(N+1)}$
 (2) $\frac{1}{100N}$
 (3) $\frac{1}{10(N+1)}$
 (4) $\frac{1}{10N}$

24 Given below are two statements:

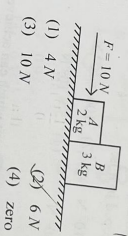
Statement I: Atoms are electrically neutral as they contain equal number of positive and negative charges.
 Statement II: Atoms of each element are stable and emit their characteristic spectrum.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Both Statement I and Statement II are incorrect.
 (2) Statement I is correct but Statement II is incorrect.
 (3) Statement I is incorrect but Statement II is correct.
 (4) Both Statement I and Statement II are correct.

| Contd...

25 A horizontal force 10 N is applied to a block A as shown in figure. The mass of blocks A and B are 2 kg and 3 kg, respectively. The blocks slide over a frictionless surface. The force exerted by block A on block B is:



- (1) 4 N
 (2) 6 N
 (3) 10 N
 (4) zero

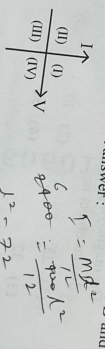
26 The quantities which have the same dimensions as those of solid angle are:

- (1) stress and angle
 (2) strain and arc
 (3) angular speed and stress
 (4) strain and angle

27 The moment of inertia of a thin rod about an axis passing through its mid point and perpendicular to the rod is 2400 g cm^2 . The length of the 400 g rod is nearly:

- (1) 17.5 cm
 (2) 20.7 cm
 (3) 72.0 cm
 (4) 8.5 cm

28 Consider the following statements A and B and identify the correct answer:



- (1) A is incorrect but B is correct.
 (2) Both A and B are correct.
 (3) Both A and B are incorrect.
 (4) A is correct but B is incorrect.

R3_English |

29

A wire of length ' l ' and resistance 100Ω is divided into 10 equal parts. The first 5 parts are connected in series while the next 5 parts are again connected in parallel. The two combinations are final combination in series. The resistance of this

- (1) 52 Ω
 (2) 55 Ω
 (3) 60 Ω
 (4) 26 Ω

30 If $x = 5 \sin \left(\pi t + \frac{\pi}{3} \right)$ represents the motion of a particle executing simple harmonic motion, the amplitude and time period of motion, respectively, are:

- (1) 5 m, 2 s
 (2) 5 cm, 1 s
 (3) 5 m, 1 s
 (4) 5 cm, 2 s

31 If c is the velocity of light in free space, the correct statements about photon among the following are:

- A. The energy of a photon is $E = hc$.
 B. The velocity of a photon is c .
 C. The momentum of a photon, $p = \frac{hc}{\lambda}$.
 D. In a photon-electron collision, both total energy and total momentum are conserved.

Choose the correct answer from the options given below:

- (1) A, B, C and D only
 (2) A, C and D only
 (3) A, B, D and E only
 (4) A and B only

Match List I with List II.

List I (Spectral Lines of Hydrogen for transitions from)	List II (Wavelengths (nm))
A. $n_2 = 3$ to $n_1 = 2$	I. 410.2
B. $n_2 = 4$ to $n_1 = 2$	II. 434.1
C. $n_2 = 5$ to $n_1 = 2$	III. 656.3
D. $n_2 = 6$ to $n_1 = 2$	IV. 486.1

Choose the correct answer from the options given below:

- (1) A-III, B-IV, C-II, D-I
 (2) A-IV, B-III, C-I, D-II
 (3) A-I, B-II, C-III, D-IV
 (4) A-II, B-I, C-IV, D-III

| Contd...

6060190

Test Booklet No. ENGLISH

Test Booklet Code

R3

GRIDU

This Booklet contains 32 pages, including Rough Page. Do not open this Test Booklet until you are asked to do so.

Important Instructions:

- The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on ORIGINAL Copy carefully with blue/black ball point pen only. The test is of 3 hours 20 minutes duration and the Test Booklet contains 200 multiple-choice questions (four options with a single correct answer) from Physics, Chemistry and Biology (Botany and Zoology). 50 questions in each subject are divided into two Sections (A and B) as per details given below:
 - Section A shall consist of 35 (Thirty-five) Questions in each subject (Question Nos - 1 to 35, 51 to 85, 101 to 135 and 151 to 185). All questions are compulsory.
 - Section B shall consist of 15 (Fifteen) questions in each subject (Question Nos - 36 to 50, 86 to 100, 136 to 150 and 186 to 200). In Section B, a candidate needs to attempt any 10 (Ten) questions out of 15 (Fifteen) in each subject.
- Candidates are advised to read all 15 questions in each subject of Section B before they start attempting answered by the candidate shall be evaluated.
- Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.
- Use Blue/Black Ball Point Pen only for writing particulars on this page/markings responses on Answer Sheet.
- Rough work is to be done in the space provided for this purpose in the Test Booklet only.
- On completion of the test, the candidate must hand over the Answer Sheet (ORIGINAL and OFFICE Copy) to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
- The CODE for this Booklet is R3. Make sure that the CODE printed on the Original Copy of the Answer Sheet is the same as that on this Test Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
- The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
- Use of white fluid for correction is NOT permissible on the Answer Sheet.
- Each candidate must show on-demand his/her Admit Card to the Invigilator.
- No candidate, without special permission of the centre Superintendent or Invigilator, would leave his/her seat.
- The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign (with time) the Attendance Sheet twice. Cases, where a candidate has not signed the Attendance Sheet second time, will be deemed not to have handed over the Answer Sheet and dealt with as an Unfair Means case.
- Use of Electronic/Manual Calculator is prohibited.
- The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Room/Hall. All cases of unfair means will be dealt with as per the Rules and Regulations of this examination.
- No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
- The candidates will write the Correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.
- Compensatory time of one hour five minutes will be provided for the examination of three hours and 20 minutes duration, whether such candidate (having a physical limitation to write) uses the facility of Scribe or not.

Name of the Candidate (in Capitals): MITHILESH KUMAR

Roll Number : In figures 1506030238
: In words

Centre of Examination (in Capitals): RADHA KRISHNA

Candidate's Signature: Mithilesh Kumar Invigilator's Signature: [Signature]

Facsimile signature of Centre Superintendent

R3 English
CENTRE CODE-150603
K.A. NEET (UG) EXAM-2024