FINAL NEET(UG)–2021 EXAMINATION

(Held On Sunday 12th SEPTEMBER, 2021)

BOTANY

TEST PAPER WITH ANSWER

Section-A (Biology : Botany)

101. Inspite of interspecific competition in nature, which mechanism the competing species might have evolved for their survival ?

(1) Resource partitioning (2) Competitive release

(3) Mutualism (4) Predation

Ans. (1)

102. Match **List - I** with **List - II.**

	List -I		List - II
(a)	Cells with active cell division capacity	(i)	Vascular tissues
(b)	Tissue having all cells similar in structure and function	(ii)	Meristematic tissue
(c)	Tissue having different types of cells	(iii)	Sclereids
(d)	Dead cells with highly thickened walls and narrow lumen	(iv)	Simple tissue

Select the **correct** answer from the options given below.

	(a)	(b)	(c)	(d)
(1)	(ii)	(iv)	(i)	(iii)
(2)	(iv)	(iii)	(ii)	(i)
(3)	(i)	(ii)	(iii)	(iv)
(4)	(iii)	(ii)	(iv)	(i)

Ans. (1)

103. During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out:

(1) RNA (2) DNA

(3) Histones (4) Polysaccharides

Ans. (2)

104. Match **List - I** with **List - II.**

	List -I		List - II
(a)	Cohesion	(i)	More attraction in liquid phase
(b)	Adhesion	(ii)	Mutual attraction among water molecules
(c)	Surface tension	(iii)	Water loss in liquid phase
(d)	Guttation	(iv)	Attraction towards polar surfaces

Choose the **correct** answer from the options given below.

	(a)	(b)	(c)	(d)
(1)	(ii)	(iv)	(i)	(iii)
(2)	(iv)	(iii)	(ii)	(i)
(3)	(iii)	(i)	(iv)	(ii)
(4)	(ii)	(i)	(iv)	(iii)

Ans. (1)

105. The term used for transfer of pollen grains from anthers of one plant to stigma of a different plant which, during pollination, brings genetically different types of pollen grains to stigma, is :

(1) Xenogamy (2) Geitonogamy

(3) Chasmogamy (4) Cleistogamy

Ans. (1)

106. Which of the following stages of meiosis involves division of centromere ?

(1) Metaphase I (2) Metaphase II

(3) Anaphase II (4) Telophase II

Ans. (3)

107. Which of the following is a **correct** sequence of steps in a PCR (Polymerase Chain Reaction) ?

(1) Denaturation, Annealing, Extension

(2) Denaturation, Extension, Annealing

(3) Extension, Denaturation, Annealing

(4) Annealing, Denaturation, Extension

Ans. (1)

108. Gemmae are present in :

(1) Mosses

(2) Pteridophytes

(3) Some Gymnosperms

(4) Some Liverworts

Ans. (4)

109. The production of gametes by the parents, formation of zygotes, the F_1 and F_2 plants, can be understood from a diagram called :

(1) Bullet square (2) Punch square

(3) Punnett square (4) Net square

Ans. (3)

110. The factor that leads to Founder effect in a population is:
(1) Natural selection
(2) Genetic recombination
(3) Mutation
(4) Genetic drift

Ans. (4)

111. Genera like *Selaginella* and *Salvinia* produce two kinds of spores. Such plants are known as :
(1) Homosorus (2) Heterosorus
(3) Homosporous (4) Heterosporous

Ans. (4)

112. Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called :
(1) Elasticity (2) Flexibility
(3) Plasticity (4) Maturity

Ans. (3)

113. Which of the following are **not** secondary metabolites in plants ?
(1) Morphine, codeine (2) Amino acids, glucose
(3) Vinblastin, curcumin (4) Rubber, gums

Ans. (2)

114. Complete the flow chart on central dogma.

(a) DNA $\xrightarrow{(b)}$ mRNA $\xrightarrow{(c)}$ (d)

(1) (a)-Replication; (b)-Transcription; (c)-Transduction; (d)-Protein
(2) (a)-Translation; (b)-Replication; (c)-Transcription; (d)-Transduction
(3) (a)-Replication; (b)-Transcription; (c)-Translation; (d)-Protein
(4) (a)-Transduction; (b)-Translation; (c)-Replication; (d)-Protein

Ans. (3)

115. When the centromere is situated in the middle of two equal arms of chromosomes, the chromosome is referred as :
(1) Metacentric (2) Telocentric
(3) Sub-metacentric (4) Acrocentric

Ans. (1)

116. DNA strands on a gel stained with ethidium bromide when viewed under UV radiation, appear as :
(1) Yellow bands (2) Bright orange bands
(3) Dark red bands (4) Bright blue bands

Ans. (2)

117. The site of perception of light in plants during photoperiodism is :
(1) Shoot apex (2) Stem
(3) Axillary bud (4) Leaf

Ans. (4)

118. When gene targetting involving gene amplification is attempted in an individual's tissue to treat disease, it is known as :
(1) Biopiracy (2) Gene therapy
(3) Molecular diagnosis (4) Safety testing

Ans. (2)

119. Which of the following plants is monoecious ?
(1) *Carica papaya*
(2) *Chara*
(3) *Marchantia polymorpha*
(4) *Cycas circinalis*

Ans. (2)

120. Which of the following is **not** an application of PCR (Polymerase Chain Reaction) ?
(1) Molecular diagnosis
(2) Gene amplification
(3) Purification of isolated protein
(4) Detection of gene mutation

Ans. (3)

121. Match **List -I** with **List - II.**

	List -I		**List -II**
(a)	Cristae	(i)	Primary constriction in chromosome
(b)	Thylakoids	(ii)	Disc-shaped sacs in Golgi apparatus
(c)	Centromere	(iii)	Infoldings in mitochondria
(d)	Cisternae	(iv)	Flattened membranous sacs in stroma of plastids

Choose the **correct** answer from the options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iv)	(iii)	(ii)	(i)
(2)	(i)	(iv)	(iii)	(ii)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(ii)	(iii)	(iv)	(i)

Ans. (3)

122. Diadelphous stamens are found in:
(1) China rose (2) Citrus
(3) Pea (4) China rose and citrus

Ans. (3)

123. Match **List -I** with **List - II.**

List -I		List - II	
(a)	Protoplast fusion	(i)	Totipotency
(b)	Plant tissue culture	(ii)	Pomato
(c)	Meristem culture	(iii)	Somaclones
(d)	Micropropagation	(iv)	Virus free plants

Choose tho **correct** answer from the options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iii)	(iv)	(ii)	(i)
(2)	(ii)	(i)	(iv)	(iii)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(iv)	(iii)	(ii)	(i)

Ans. (2)

124. Amensalism can be represented as :
(1) Species A (–); Species B (0)
(2) Species A (+); Species B (+)
(3) Species A (–); Species B (–)
(4) Species A (+); Species B (0)

Ans. (1)

125. Which of the following is an **incorrect** statement?
(1) Mature sieve tube elements possess a conspicuous nucleus and usual cytoplasmic organelles.
(2) Microbodies are present both in plant and animal cells.
(3) The perinuclear space forms a barrier between the materials present inside the nucleus and that of the cytoplasm.
(4) Nuclear pores act as passages for proteins and RNA molecules in both directions between nucleus and cytoplasm.

Ans. (1)

126. A typical angiosperm embryo sac at maturity is :
(1) 8-nucleate and 7-celled
(2) 7-nucleate and 8-celled
(3) 7-nucleate and 7-celled
(4) 8-nucleate and 8-celled

Ans. (1)

127. Which of the following algae contains mannitol as reserve food material ?
(1) *Ectocarpus* (2) *Gracilaria*
(3) *Volvox* (4) *Ulothrix*

Ans. (1)

128. The plant hormone used to destroy weeds in a field is :
(1) IAA (2) NAA (3) 2,4-D (4) IBA

Ans. (3)

129. The amount of nutrients, such as carbon, nitrogen, phosphorus and calcium present in the soil at any given time, is referred as :
(1) Climax (2) Climax community
(3) Standing state (4) Standing crop

Ans. (3)

130. Mutations in plant cells can be induced by:
(1) Kinetin (2) Infrared rays
(3) Gamma rays (4) Zeatin

Ans. (3)

131. Which of the following statements is **not** correct ?
(1) Pyramid of biomass in sea is generally inverted.
(2) Pyramid of biomass in sea is generally upright.
(3) Pyramid of energy is always upright.
(4) Pyramid of numbers in a grassland ecosystem is upright.

Ans. (2)

132. In the equation GPP–R = NPP
R represents :
(1) Radiant energy (2) Retardation factor
(3) Environment factor (4) Respiration losses

Ans. (4)

133. Which of the following algae produce Carrageen ?
(1) Green algae (2) Brown algae
(3) Red algae (4) Blue-green algae

Ans. (3)

134. The first stable product of CO_2 fixation in sorghum is :
(1) Pyruvic acid (2) Oxaloacetic acid
(3) Succinic acid (4) Phosphoglyceric acid

Ans. (2)

135. Match **List -I** with **List - II.**

List -I		List - II	
(a)	Lenticels	(i)	Phellogen
(b)	Cork cambium	(ii)	Suberin deposition
(c)	Secondary cortex	(iii)	Exchange of gases
(d)	Cork	(iv)	Phelloderm

Choose the **correct** answer from the options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iv)	(i)	(iii)	(ii)
(2)	(iii)	(i)	(iv)	(ii)
(3)	(ii)	(iii)	(iv)	(i)
(4)	(iv)	(ii)	(i)	(iii)

Ans. (2)

Section-B (Biology : Botany)

136. Which of the following statements is **incorrect** ?

(1) During aerobic respiration, role of oxygen is limited to the terminal stage.

(2) In ETC (Electron Transport Chain), one molecule of NADH + H^+ gives rise to 2 ATP molecules, and one $FADH_2$ gives rise to 3 ATP molecules.

(3) ATP is synthesized through complex V.

(4) Oxidation-reduction reactions produce proton gradient in respiration.

Ans. (2)

137. Match **Column -I** with **Column - II.**

Column -1	**Column - II**
(a) $\%\,♀\,K_{(5)}C_{1+2+(2)}A_{(9)+1}\underline{G}_1$	(i) Brassicaceae
(b) $\oplus\,♀\,K_{(5)}\overset{\frown}{C_{(5)}A_5}\underline{G}_2$	(ii) Liliaceae
(c) $\oplus\,♀\,\overset{\frown}{P_{(3+3)}A_{3+3}}\underline{G}_{(3)}$	(iii) Fabaceae
(d) $\oplus\,♀\,K_{2+2}C_4A_{2-4}\underline{G}_{(2)}$	(iv) Solanaceae

Select the **correct** answer from the options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iii)	(iv)	(ii)	(i)
(2)	(i)	(ii)	(iii)	(iv)
(3)	(ii)	(iii)	(iv)	(i)
(4)	(iv)	(ii)	(i)	(iii)

Ans. (1)

138. Match **List -I** with **List - II.**

List -I		**List -II**	
(a)	S phase	(i)	Proteins are synthesized
(b)	G_2 phase	(ii)	Inactive phase
(c)	Quiescent stage	(iii)	Interval between mitosis and initiation of DNA replication
(d)	G_1 phase	(iv)	DNA replication

Choose the **correct** answer from the options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iii)	(ii)	(i)	(iv)
(2)	(iv)	(ii)	(iii)	(i)
(3)	(iv)	(i)	(ii)	(iii)
(4)	(ii)	(iv)	(iii)	(i)

Ans. (3)

139. Plasmid pBR322 has PstI restriction enzyme site within gene amp^R that confers ampicillin resistance. If this enzyme is used for inserting a gene for β-galactoside production and the recombinant plasmid is inserted in an *E.coli* strain

(1) it will not be able to confer ampicillin resistance to the host cell.

(2) the transformed cells will have the ability to resist ampicillin as well as produce β-galactoside.

(3) it will lead to lysis of host cell.

(4) it will be able to produce a novel protein with dual ability.

Ans. (1)

140. Identify the **correct** statement.

(1) In capping, methyl guanosine triphosphate is added to the 3' end of hnRNA.

(2) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.

(3) The coding strand in a transcription unit is copied to an mRNA.

(4) Split gene arrangement is characteristic of prokaryotes.

Ans. (2)

141. Now a days it is possible to detect the mutated gene causing cancer by allowing radioactive probe to hybridise its complimentary DNA in a clone of cells, followed by its detection using autoradiography because:

(1) mutated gene partially appears on a photographic film.

(2) mutated gene completely and clearly appears on a photographic film.

(3) mutated gene does not appear on a photographic film as the probe has no complimentarity with it.

(4) mutated gene does not appear on photographic film as the probe has complimentarity with it.

Ans. (3)

142. In the exponential growth equation $N_t = N_0e^{rt}$, e represents:
(1) The base of number logarithms
(2) The base of exponential logarithms
(3) The base of natural logarithms
(4) The base of geometric logarithms

Ans. (3)

143. Select the **correct** pair.
(1) Large colorless empty cells in the epidermis of grass leaves – Subsidiary cells
(2) In dicot leaves, vascular bundles are surrounded by large thick-walled cells – Conjunctive tissue
(3) Cells of medullary rays that form part of cambial ring – Interfascicular cambium
(4) Loose parenchyma cells rupturing the epidermis and forming a lens-shaped opening in bark – Spongy parenchyma

Ans. (3)

144. In some members of which of the following pairs of families, pollen grains retain their viability for months after release ?
(1) Poaceae ; Rosaceae
(2) Poaceae; Leguminosae
(3) Poaceae; Solanaceae
(4) Rosaceae ; Leguminosae

Ans. (4)

145. What is the role of RNA polymerase III in the process of transcription in eukaryotes ?
(1) Transcribes rRNAs (28S, 18S and 5.8S)
(2) Transcribes tRNA, 5s rRNA and snRNA
(3) Transcribes precursor of mRNA
(4) Transcribes only snRNAs

Ans. (2)

146. Which of the following statements is **incorrect** ?
(1) Both ATP and NADPH + H^+ are synthesized during non-cyclic photophosphorylation.
(2) Stroma lamellae have PS I only and lack NADP reductase.
(3) Grana lamellae have both PS I and PS II.
(4) Cyclic photophosphorylation involves both PS I and PS II.

Ans. (4)

147. Which of the following statements is **correct** ?
(1) Fusion of two cells is called Karyogamy.
(2) Fusion of protoplasms between two motile on non-motile gametes is called plasmogamy.
(3) Organisms that depend on living plants are called saprophytes.
(4) Some of the organisms can fix atmospheric nitrogen in specialized cells called sheath cells.

Ans. (2)

148. Match **List - I** with **List - II.**

List -I		**List - II**	
(a)	Protein	(i)	C = C double bonds
(b)	Unsaturated fatty acid	(ii)	Phosphodiester bonds
(c)	Nucleic acid	(iii)	Glycosidic bonds
(d)	Polysaccharide	(iv)	Peptide bonds

Choose the **correct** answer from the options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iv)	(i)	(ii)	(iii)
(2)	(i)	(iv)	(iii)	(ii)
(3)	(ii)	(i)	(iv)	(iii)
(4)	(iv)	(iii)	(i)	(ii)

Ans. (1)

149. DNA fingerprinting involves identifying differences in some specific regions in DNA sequence, called as :
(1) Satellite DNA (2) Repetitive DNA
(3) Single nucleotides (4) Polymorphic DNA

Ans. (2)

150. Match **Column - I** with **Column - II.**

Column -I		**Column - II**	
(a)	*Nitrococcus*	**(i)**	Denitrification
(b)	*Rhizobium*	**(ii)**	Conversion of ammonia to nitrite
(c)	*Thiobacillus*	**(iii)**	Conversion of nitrite to nitrate
(d)	*Nitrobacter*	**(iv)**	Conversion of atmospheric nitrogen to ammonia

Choose the **correct** answer from options given below.

	(a)	**(b)**	**(c)**	**(d)**
(1)	(ii)	(iv)	(i)	(iii)
(2)	(i)	(ii)	(iii)	(iv)
(3)	(iii)	(i)	(iv)	(ii)
(4)	(iv)	(iii)	(ii)	(i)

Ans. (1)