



Previous Year Solved Question Paper
of

G.A.T.E. (XL) 2019

Life Sciences

**Botany
Examination**

(Original Question Paper with Answer Key)

GRADUATE APTITUDE TEST IN ENGINEERING



For more question papers, please visit: www.easybiologyclass.com

XL-R: Q. 1 – Q. 10 carry one mark each

- Q.1 Which one of the following ecosystems is represented by an inverted pyramid of numbers?
 (A) Grassland (B) Pond
 (C) Desert (D) Parasitic forest

Ans. D

- Q.2 Raphides are deposits of
 (A) calcium oxalate (B) calcium carbonate
 (C) silica bodies (D) protein bodies

Ans. A

- Q.3 Which one of the following families shows bicollateral vascular bundle in the transverse section of the stem?
 (A) Rutaceae (B) Asteraceae
 (C) Cucurbitaceae (D) Malvaceae

Ans. C

- Q.4 Arbuscules are highly branched structures, formed by
 (A) ectomycorrhizae
 (B) endomycorrhizae
 (C) arbutoid mycorrhizae
 (D) monotropoid mycorrhizae

Ans. B

- Q.5 Which one of the following combinations of polysaccharides is present in plant cell wall?
 (A) Only cellulose, hemicellulose and fibroin
 (B) Only cellulose, hemicellulose and lignin
 (C) Only cellulose, hemicellulose and pectin
 (D) Only cellulose, pectin and lignin

Ans. C

- Q.6 Which one of the following statements is **INCORRECT**?
 (A) Nitrogen fixation is aerobic process
 (B) Dinitrogenase catalyzes reduction of nitrogen to ammonia
 (C) Root nodules are found in *Glycine max*
 (D) Nitrogen fixation is anaerobic process

Ans. D

- Q.7 Which one of the following statements is **INCORRECT** with respect to cyclic photophosphorylation?
 (A) ATP is generated without concomitant formation of NADPH
 (B) Electron flows from Photosystem I to cytochrome *b_f* complex
 (C) Photosystem II does not participate in cyclic photophosphorylation
 (D) Cyclic photophosphorylation occurs when NADP⁺/NADPH ratio is high

Ans. D

Q.8 The plant cells are considered totipotent. The phenomenon of a mature cell reverting to the meristematic state and forming undifferentiated callus tissue is called

- (A) redifferentiation (B) dedifferentiation
(C) organogenesis (D) recalcitrancy

Ans. B

Q.9 Glyphosate is a broad spectrum herbicide. Upon application to leaves, it is translocated to meristematic areas and underground rhizomes by

- (A) phloem (B) xylem (C) border pits (D) tracheids

Ans. A

Q.10 If a species has $2n = 16$ chromosomes, the number of chromosomes per cell in a double monosomic individual would be _____

Ans. 14 TO 14

Q. 11 – Q. 20 carry two marks each.

Q.11 Rubisco catalyzes conversion of ribulose 1,5-bisphosphate to

- P. two molecules of stable 3-phosphoglycerate
- Q. one molecule of 3-phosphoglycerate and one molecule of phosphoglycolate
- R. one molecule of ribulose 5-phosphophate
- S. one molecule of ribose 5-phosphate

Choose only the correct combination

- (A) P and S
- (B) Q and S
- (C) P and Q
- (D) R and S

Ans. C

Q.12 Select correct combination of molecules given in **Group I** with their functions in **Group II**

Group I	Group II
P. Ubiquitin	1. Cell wall loosening enzymes
Q. Phytoalexins	2. Repressors in gibberellin signaling
R. Extensins	3. Mediator of protein degradation
S. DELLA proteins	4. Noncompetitive inhibitors of polar transport of auxin

- (A) P-3, Q-4, R-1, S-2
- (B) P-3, Q-1, R-2, S-4
- (C) P-4, Q-3, R-1, S-2
- (D) P-1, Q-2, R-4, S-3

A

Q.13 Match the plant species and their corresponding families with their economically important products:

Plant species	Family	Plant product
P. <i>Cannabis sativa</i>	1. Lamiaceae	i. Oil from seeds
Q. <i>Corchorus olitorius</i>	2. Cannabaceae	ii. Eugenol from leaves
R. <i>Ocimum sanctum</i>	3. Euphorbiaceae	iii. Fibre from stem
S. <i>Ricinus communis</i>	4. Tiliaceae	iv. Marijuana from leaves

- (A) P-2-iv, Q-3-ii, R-4-iii, S-1-i
- (B) P-3-iv, Q-2-i, R-1-ii, S-4-iii
- (C) P-1-iii, Q-4-iii, R-2-i, S-3-ii
- (D) P-2-iv, Q-4-iii, R-1-ii, S-3-i

Ans. D

Q.14 Cybrids may arise through the

- (A) fusion of a normal protoplast with another nucleated protoplast of different origin
- (B) fusion between a normal protoplast and a protoplast containing viable nucleus
- (C) elimination of one of the nuclei from heterokaryon formed from two protoplasts of different origin
- (D) fusion of a normal cell with another nucleated cell

Ans. C

Q.15 Match the disease with causative organism and affected crop

Disease	Causative organism	Crop
P. Powdery mildew	1. <i>Albugo candida</i>	i. Corn
Q. White rust	2. <i>Phytophthora infestans</i>	ii. Tomato
R. Downy mildew	3. <i>Erysiphe orontii</i>	iii. Potato
S. Late blight	4. <i>Peronoscleropora phillippinensis</i>	iv. Mustard

(A) P-3-i, Q-1-iv, R-2-iii, S-4-ii

(B) P-3-ii, Q-1-iv, R-4-i, S-2-iii

(C) P-4-ii, Q-1-i, R-3-iv, S-2-iii

(D) P-2-iii, Q-3-ii, R-1-iv, S-4-i

Ans. B

Q.16 Match the options in **Group I** with that of **Group II** with respect to steps in signal transduction mechanism in plants

Group I

- P. Phospholipase C
- Q. Inositol triphosphate
- R. Diacylglycerol
- S. Phosphatidic acid

Group II

- 1. stimulates release of calcium from intracellular stores
- 2. regulates ion channels/activates various enzymes
- 3. hydrolyzes phosphatidylinositol bisphosphate (PIP₂)
- 4. phosphorylated to phosphatidic acid

(A) P-3, Q-4, R-2, S-1

(B) P-4, Q-3, R-2, S-1

(C) P-2, Q-3, R-1, S-4

(D) P-3, Q-1, R-4, S-2

Ans. D

Q.17 Which one of the following statements is **CORRECT** with respect to endosperm development? It originates

- (A) from the fusion product of three haploid nuclei - one from male gametophyte and two from the female gametophyte
- (B) from the fusion product of three haploid nuclei - two from male gametophyte and one from the female gametophyte
- (C) from the fusion product of two haploid nuclei - one from male gametophyte and one from the female gametophyte
- (D) by a phenomenon called apomixis

Ans. A

Q.18 Which one of the following methods is **INCORRECT** with respect to haploid plant production? It can be produced

- (A) from an unfertilized egg cell
- (B) from nucellar tissue
- (C) from isolated pollen culture
- (D) by distant hybridization, followed by selective elimination of chromosomes of one of the parents

Ans. B

- Q.19 Plant weight is determined by a pair of alleles at each of the two independently assorting loci (**Aa** and **Bb**) that are additive and equal in their effects. The recessive alleles do not contribute towards plant weight. Plants with genotype **aa bb** are 1 g in weight, whereas plants with genotype **AA BB** weigh 3.4 g. Plant with genotype **aa bb** is crossed with a plant of genotype **AA BB**. The weight (in g, round off to one decimal place) of an individual plant in F₁ progeny of this cross would be_____

Ans. 2.2 TO 2.2

- Q.20 A cell in G₁ of Interphase has 12 chromosomes. In Anaphase-I of meiosis, the number of DNA molecules per cell will be_____

Ans. 24 TO 24

END OF THE QUESTION PAPER

Please visit: www.easybiologyclass.com for:

- Lecture Notes
- Biology PPTs
- Biology MCQs
- Online Mock Tests (MCQ)
- Video Tutorials
- Practical Aids
- Model Question Papers of NET, GATE, DBT, ICMR Exams
- CSIR NET Life Sciences Previous Year Question Papers
- GATE Previous Year Question Papers
- DBT BET JRF Previous Year Question Papers
- ICMR JRF Entrance Exam Resources
- Jobs Notifications
- Higher Studies in Biology / Life Sciences
- Seminar / Workshop/ Conference Notifications
- And many more....



Please subscribe our **youtube** channel: **easybiologyclass**
<https://www.youtube.com/user/easybiologyclass/videos>



You can access more PDFs & PPTs from our **Slideshare** account
<http://www.slideshare.net/EasyBiologyClassEBC/>



Our sister concern: www.angiospermtaxonomy.com