



Previous Year Question Paper
of

G.A.T.E. (XL) 2014

LIFE SCIENCES

XL: J Botany

Examination

(Original Question Paper with Answer Key)

GRADUATE APTITUDE TEST IN ENGINEERING



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

J : BOTANY

Q. 1 – Q. 10 carry one mark each.

- Q.1 Plant which grows attached to another plant species but is not a parasitic is known as
(A) Endophyte (B) Halophyte (C) Epiphyte (D) Lithophyte

Ans. C

- Q.2 An ideal cybrid should have
(A) both nuclear genome and cytoplasmic genome equally from both the parents
(B) nuclear genome from one of the parents and cytoplasmic genome from other parent
(C) nuclear genome predominantly/exclusively from one of the parents and cytoplasmic genome equally from both the parents
(D) nuclear genome equally from both the parents and cytoplasmic genome predominantly/exclusively from one of the parents

Ans. C

- Q.3 Transmission Electron Micrograph of fungal cell can usually be distinguished from plant cell due to lack of **P** and having less abundant **Q**. Find the correct combination of **P** and **Q**.

- (A) P- Plastid; Q-Vacuoles
(B) P- Plastid; Q-Mitochondria
(C) P- Plastid; Q-Endoplasmic reticulum
(D) P- Mitochondria; Q-Plastid

Ans. A

- Q.4 Identify the **CORRECT** answer

RNA interference (RNAi)

P. is an event of post transcriptional gene silencing

Q. works through RNA induced silencing complex

- (A) P only (B) Q only (C) Both P and Q (D) neither P nor Q

Ans. C

- Q.5 Find the odd one out

- (A) Petal (B) Sepal (C) Petiole (D) Tepal

Ans. C

- Q.6 **Plantibody** is the

- (A) **Antibody** expressed in transgenic plant
(B) **Transgenic plant** that expresses antibody
(C) **Antibody** against plant based antigen
(D) **Transgenic plant** that expresses antigen

Ans. A

- Q.7 In a typical oil-seed crop, the matured seeds are enriched with
 (A) Phospholipid (B) Galactolipid (C) Neutral lipid (D) Sphingolipid
Ans. C

- Q.8 Match the following products (Column I) with the corresponding plant species (Column II)

Column I	Column II
P. Saffron	1. <i>Garcinia sp.</i>
Q. Gamboge	2. <i>Rocella tinctoria</i>
R. Litmus	3. <i>Crocus sativus</i>
S. Turmeric	4. <i>Curcuma sp.</i>

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

- Q.9 The semi-dwarf trait of corn, wheat and rice plants used in breeding program during 1960s resulted in green revolution. Later this 'green-revolution gene' has been identified to be involved in either signal transduction pathway or biosynthesis of
 (A) Auxin (B) Gibberellin (C) Cytokinin (D) Ethylene
Ans. B

- Q.10 In classical model to explain the plant-pathogen interaction, the host will not develop the disease upon the pathogen attack when
 (A) The resistance gene (*R*) is non-functional (B) The avirulence gene (*Avr*) is non-functional
 (C) Both *R* and *Avr* are non-functional (D) Both *R* and *Avr* are functional
Ans. D

Q. 11 – Q. 20 carry two marks each.

Q.11 Select the **CORRECT** combination from the promoter (Column I), transcription machinery used (Column II) and target tissue type (Column III) to express a foreign gene in a plant system.

Column I

P. *Ubiquitin*
Q. *Napin*
R. *RbcL*
S. *RbcS*

Column II

1. Chloroplast
2. Nucleus
3. Mitochondria

Column III

i. Leaf
ii. Seed

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

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

(C) P-2-i, Q-2-ii, R-1-i, S-2-i

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

Ans. C

Q.12 In a plant species, flower colour purple is dominant over white. One such purple-flowered plant upon selfing produced 35 viable plants, of which 9 were white-flowered and the rest were purple-flowered. What fraction of these purple-flowered progeny is expected to be pure purple-flowered line?

(A) 1/2

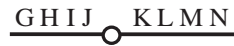
(B) 1/3

(C) 1/4

(D) 2/3

Ans. B

Q.13 Following diagram represents the sequence of genes in a normal chromosome of a plant species:



Match the **CORRECT** combination for chromosomal mutation using Column - I and Column - II.

Column-I

Column-II

- P.
- Q.
- R.
- S.

1. Tandem duplication
2. Deletion
3. Pericentric inversion
4. Non-reciprocal translocation

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

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

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

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

Ans. D

Q.14 Match the nuclei status of mutant plant (Column-I) with the typical chromosome number (Column-II), when the wild type plant species is having $2N = 46$ chromosomes.

Column-I

Column-II

- | | |
|--------------|-------|
| P. Trisomic | 1. 23 |
| Q. Triploid | 2. 45 |
| R. Monosomic | 3. 47 |
| S. Monoploid | 4. 69 |

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

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

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

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

Ans. C

Q.15 Match the following reporter genes used in plant transformation experiments with the source of gene and detection/assay system

Reporter gene

Source of gene

Detection/assay

- | | | |
|---------------------------------------|-----------------------------|----------------------|
| P. β -glucuronidase | 1. <i>Aequorea victoria</i> | i. Radioactive assay |
| Q. Green fluorescence protein | 2. <i>Photinus pyralis</i> | ii. Fluorimetric |
| R. Luciferase | 3. <i>E. coli</i> | iii. Fluorescence |
| S. Chloramphenicol acetyl transferase | | iv. Luminescence |

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

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

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

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

Ans. B

Q.16 Find the **CORRECT** statements in the context of Global warming effect on plant photosynthesis.

P. Decreasing aqueous solubility of dissolved CO₂ compared to dissolved O₂

Q. Decreasing oxygenase activity of Rubisco relative to carboxylation

R. Enhancing the ratio of CO₂ to O₂ in air equilibrated solution

S. Increasing photorespiration relative to photosynthesis

(A) P & Q

(B) R & S

(C) P & R

(D) P & S

Ans. D

Q.17 Statements given below are either **TRUE** (T) or **FALSE** (F). Find the correct combination.

P. Regulation of cell cycle progression depends on cyclin dependent kinase (CDK) and protease activity.

Q. In photosynthesis, oxidation of water produces O₂ and releases electrons required by photosystem I (PSI).

R. Photorespiratory reaction occurring in oxidative photosynthetic carbon (C₂) pathway involves a cooperative interaction among three organelles: chloroplast, peroxisome and mitochondria.

S. Ethylene acts as a promoter of senescence and cytokinins act as a senescence antagonist.

(A) P-T, Q-F, R-T, S-F

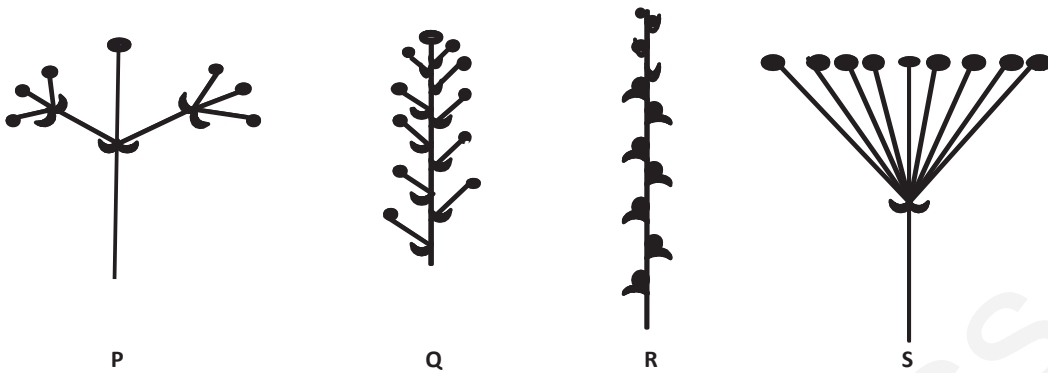
(B) P-T, Q-T, R-T, S-F

(C) P-T, Q-F, R-F, S-T

(D) P-T, Q-F, R-T, S-T

Ans. D

Q.18 Match the following diagrams P, Q, R, and S with the inflorescence type (Column I) and the corresponding plant species (Column II).

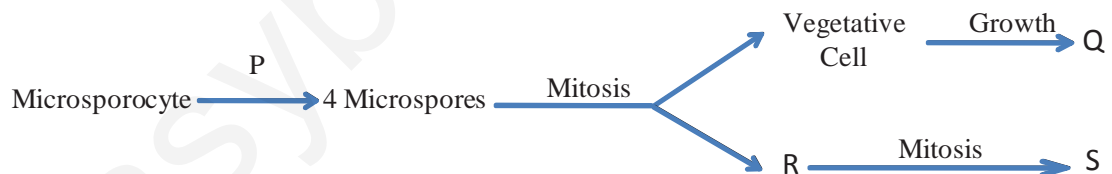


Column I	Column II
1. Umbel	i. <i>Pedicularis sp</i>
2. Raceme	ii. <i>Smilacina sp.</i>
3. Compound determinate	iii. <i>Epilobium sp.</i>
4. Spike	iv. <i>Pelargonium sp.</i>

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

Ans. B

Q.19 Find the right combination for P, Q, R and S with respect to gametophyte development in flowering plants.



- (A) P-Meiosis, Q -Generative cell , R- Pollen Tube, S- 2 Sperm Cells
- (B) P- Meiosis, Q- Pollen Tube, R- Generative Cell, S- 2 Sperm Cells
- (C) P-Mitosis, Q- Generative Cell, R- Pollen Tube, S- 2 sperm Cells
- (D) P- Growth, Q- 2 Sperm Cells, R- Pollen Tube, S- Generative Cell

Ans. B

Q.20 Match the definition (Column I) with the type of plant community (Column II)

Column I	Column II
P. The process of occupation of a particular area by different plant communities from their birth to maturity	1. Formation
Q. A major ecological unit of vegetation	2. Consociation
R. A smaller unit of plant association	3. Faciation
S. A subdivision of plant association which is related to minor differences in temperature and moisture relations	4. Plant succession

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

Ans. C

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