



UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part-II
Annual Exam - 2017

Roll No.

Subject: Botany-II

TIME ALLOWED: 30 Mints

PAPER: A (Cell Biology, Genetics and Evolution)

MAX. MARKS: 14

USE SEPARATE ANSWER SHEET FOR SECTION-I & SECTION-II

Section – I (Objective Type)

Note: Attempt all questions of this section in the first 30 minutes and return the script to the supervisory staff. Marks may be deducted for wrong spellings, erasing or overwriting.

Q. 1. Fill in the blanks (8 marks)

Please fill in the blanks with appropriate terms/words

- The fluid part of nucleus is called _____.
- The next stage after S-stage during cell cycle is _____.
- The condition termed as _____, when an organism gains or loses one or more complete set of chromosomes.
- The independently assorted genes are located on _____ chromosomes.
- The black melanic form of peppered moth had _____ advantage in industrial areas.
- A mutation may be _____ whose effect is drastic enough to eliminate the individual before reproductive age.
- A tripeptide has _____ peptide bonds.
- The two most popular types of vectors are plasmid and _____.
- The _____ involve the new positioning of genes relative to other genes.
- ABO blood grouping is an example of _____ alleles.
- There is a specific _____ for each amino acid to carry it to ribosome.
- The subunits of any polymer are called _____.
- The phage virus is able to infect _____.
- Mendel worked _____ characters, each represented by two definite forms.
- _____ are known as proteins synthesizing factories.
- Heterochromatin remains condensed during _____.

Q. 2. True or False statements (3 marks)

Please select true or false statement by encircling 'T' or 'F' as appropriate

- | | | |
|---|---|---|
| i. Genetic drift is the change in allele frequency that results not by chance | T | F |
| ii. The seed bank preserves dried seed by storing at very low temperature | T | F |
| iii. Chloroplast is a self-replicating organelle | T | F |
| iv. ATP is required for transport of molecules by active transport | T | F |
| v. Cell divisions do not cause increase in size and complexity of plant body | T | F |
| vi. Linked genes can be separated by crossing over. | T | F |

Q. 3. Multiple Choice Questions (3 marks)

Please encircle the appropriate letter (a, b, c or d) of the correct answer.

- DNA and RNA contain
 - pentoses.
 - hexoses.
 - fructoses.
 - maltoses.
- Chromosomal theory of inheritance, first formulated by the American scientist.
 - Mendel
 - Correns
 - Sutton
 - Fleming
- Thymine forms _____ hydrogen bonds with Adenine.
 - 2
 - 3
 - 4
 - 5
- Wheat is an example of
 - diploid
 - monoploid
 - hexaploid
 - tetraploid
- Theory of special creation was first proposed by
 - Lamarck
 - Darwin
 - Linnaeus
 - Aristotle
- Callus is group of undifferentiated
 - Tissues
 - Cells
 - Proteins
 - DNA



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PAPER: A (Cell Biology, Genetics and Evolution)

MAX. MARKS: 21

Section – II (Subjective Type)

Note: Attempt any three questions. All questions carry equal marks. Draw neat and labeled diagrams along with captions where necessary. (3×7=21)

Q.1

- a) Describe Meselson&Stahal experiment 4
- b) Name three polysaccharides 3

Q.2

- a) Give any four advantages of selective breeding 4
- b) Name three basis on which Gel electrophoresis separates Macromolecules. 3

Q.3

- a) Simply introduce methods of bacterial recombination 3
- b) Write a note on proteins levels of organizations 4

Q.4

- a) Differentiate between followings: 4
 - i. Continuous and dis-continuous variations
 - ii. chloroplast and leucoplast
- b) Describe genomic library 3

Q.5

- a) Explain Lamarck's Theory of Evolution. 4
- b) Give any three practical uses of Genetic Engineering 3



UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part-II
Annual Exam - 2017

Roll No. _____

Subject: Botany-II
PAPER: B (Physiology and Ecology)

TIME ALLOWED: 30 Mints
MAX. MARKS: 14

Attempt Section-I on this Questions sheet Only

Section I Objective Type

Note: Attempt all questions of this section in the first 30 minutes and return the script to the Examiner. Marks may be deducted for wrong spellings, erasing or overwriting.

Q1. Fill in the Blanks (8 Marks)

Please fill in the blanks with appropriate terms/words.

1. The difference between the free energy of water in that system and the free energy of pure water at atmospheric pressure and a defined temperature is called _____.
2. A _____ solution is also called a false solution.
3. Premature dropping of fruits, sterility or fruits are weak is due to _____ of Nitrogen.
4. In the chloroplasts the light energy is harvested by two different functional units called _____.
5. The production of ATP in the chloroplast or in other membranes during light reaction is called _____.
6. _____ is an oxidation reduction process in which one glucose molecule is broken down into two molecules of pyruvic acid.
7. Krebs cycle is also called _____ cycle because formation intermediate compound citric acid.
8. Fermentation is a sequential series of reactions that occurs in the absence of _____.
9. Soil is the upper and biochemically _____ portion of the regolith.
10. The primary source of soil organic matter is _____.
11. _____ refers to presence of salts in root zone of the soil.
12. Removal of soil from one part to another usually down hill, by the action of water is known as _____.
13. If the community development is proceeding in an area from which a community was removed is called _____.
14. The transfer of food energy from the source in plants through a series of organisms with repeated eating and being eaten is referred to as the _____.
15. _____ or production refers to rate at which energy is accumulated by green plants in unit time.
16. The more or less circular pathways in which chemical elements circulate in the biosphere in characteristic paths from environment to organisms and back to the environment are called _____.

P.T.O.



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Subject: Botany-II

PAPER: B (Physiology and Ecology)

TIME ALLOWED: 30 Mints

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P.T.O.

Q2. True or False Statements (3 Marks)

Please select true or false statement by encircling 'T' or 'F' as appropriate

- | | | |
|---|---|---|
| 1. The cyclosis is due to phase reversal colloidal property of cytoplasm. | T | F |
| 2. Water potential can be measured in energy units, joules/ m. | T | F |
| 3. Phytochrome occurs attached to mitochondrial membranes. | T | F |
| 4. Humus acts as buffer and helps in maintaining a uniform pH in the soil in slightly acidic, neutral and alkaline soils. | T | F |
| 5. The denitrifiers are algae and bacteria Pseudomonas. | T | F |
| 6. A measure sampling diameter or plot is called quadrat. | T | F |

3. Multiple Choice Questions (3 Marks)

Please Encircle the Appropriate Letter (a, b, c or d) of the Correct Answer

- The maximum pressure exerted by cell sap on cell wall is called
 - Diffusion pressure
 - osmotic pressure
 - turgor pressure
 - solute pressure
- The negative logarithm of the hydrogen ion concentration is
 - pH
 - TCE
 - buffer
 - acid
- NAD is
 - Coenzyme
 - Prosthetic group
 - Cofactor
 - None of these
- The soil erosion caused by falling rain drops is called as
 - splash erosion
 - sheet erosion
 - rill erosion
 - sheet erosion
- The quality of saline irrigation water can be improved by adding
 - lime
 - gypsum
 - CO₂
 - HCl
- The root nodules bacteria fix _____ in soil from air
 - nitrogen
 - phosphorous
 - sulphur
 - iron



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PAPER: B (Physiology and Ecology)

MAX. MARKS: 21

ATTEMPT SECTION-II ON THE SEPARATE ANSWER PROVIDE

Section II Subjective Type

Note: Attempt any Three questions. All questions carry equal marks. Draw neat and labeled diagram along with captions where necessary. (3x7=21)

- Q1. a) Define buffers and pH. What is the role of buffers in biological systems? 3
b) Give an account on light reaction. What are the end products of light reaction? 3
c) Draw Water Cycle. 1
- Q2. a) What is Aerobic and Anaerobic respiration? Describe different steps involved in break down of glucose to pyruvic acid. 3
b) What are the factors that affect photosynthesis. 2
c) Differentiate between long day and short day plants 2
- Q3. a) What are growth regulators and growth inhibitors? Describe role of Auxins and Giberellins on plant growth. 4
b) Give an account on soil organic matter and its importance. 3
- Q4. a) Compare transect and quadrat Method of sampling in plant community. 3
b) What is soil erosion? Give different methods of soil erosion by water. 2
c) Define enzyme. Describe properties of enzyme. 2
- Q5. a) Differentiate between 3
i. Electrolytes and Non electrolytes
ii. Phototropism and Geotropism
iii. Air and Water Pollution
b) Write note on 4
i. Law of limiting factors ii. Methods of seed dispersal



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15. Excretion through Malpighian tubules involves active transport of which ions into tubules from the surroundings
- | | |
|--------------|-----------------|
| a) Potassium | b) Chloride |
| c) Sodium | d) All of above |
16. Telencephalon is part of the
- | | |
|----------------|--------------|
| a) Hind brain | b) Midbrain |
| c) Spinal cord | d) Forebrain |
17. Point of entry of sperm in frog egg
- | | |
|-----------------------|------------------|
| a) Animal pole | b) Vegetal pole |
| c) Gray crescent area | d) None of these |
18. Thermoregulatory center in mammals is located in:
- | | |
|-------------------|------------------|
| a) Pituitary body | b) Skin |
| c) Hypothalamus | d) Diencephalon. |
19. Muscle contraction is stimulated by
- | | |
|------------------|----------------|
| a) Troponin | b) Tropomyosin |
| c) Acetylcholine | d) Myosin |
20. Protein produces number of calories per gram
- | | |
|--------|--------|
| a) 3.3 | b) 4.4 |
| c) 4.6 | d) 9.5 |

Q2 Fill in the blanks

$\frac{1}{2} \times 20 = 10$

1. -----includes all of those processes by which an animal takes in digest, absorbs, stores, and uses food (nutrients) to meet its metabolic needs.
2. In amphibians the cortical changes result in the formation of a -----on the egg, opposite to the point of sperm penetration.
3. Leeches and some insect larvae exhibit -----movement.
4. Pheromones are-----that affect the behavior of another individual of the same species.
5. -----occur when an animal is one sex during one phase of its life cycle and the opposite sex during another phase.
6. A -----consist of one motor nerve fibers and all the muscle fibers with which it communicates.
7. The gallbladder stores the greenish fluid called-----.
8. Heat generation by shivering is called -----.
9. The controlling center for ovulation and menstruation is the -----.
10. -----respond to mechanically induced changes.
11. All photoreceptors possess light sensitive pigments. These pigments are -----.
12. The -----is the external covering of an animal.
13. The ----- of echinoderm provides a unique mean of locomotion.
14. The functional unit of a muscle myofibril is the -----.
15. Baleen plates are present in -----.
16. In a chemical synapse two cells communicate by means of a chemical agent called a - -----.
17. Flatworm's nervous system contains -----.
18. The endocrine system of a crustaceans, such as crayfish controls functions such as---- ----- and color change.
19. All vertebrates have a ----- circulatory system.
20. The outer protective covering of heart is -----.