COMPETITIVE EXAMINATION FOR
RECRUITMENT TO POSTS IN BPS-17 UNDER
THE FEDERAL GOVERNMENT, 2008

Roll No.

BOTANY, PAPER-I

TIME ALLOWED:	(PART-I)	30 MINUTES	MAXIMUM MARKS:20
	(PART-II)	2 Hours & 30 Minutes	MAXIMUM MARKS:80

NOTE:	(i) **First** attempt **PART-I (MCQ)** on separate **Answer Sheet** which shall be taken back after **30 minutes**. (ii) **Overwriting/cutting of the options/answers will not be given credit.**

PART – I (MCQ)
(COMPULSORY)

Q.1 Select the best option /answer and fill in the appropriate box on the Answer Sheet. (20)

(i) The scientific names of plants are written:
- (a) In italic font style
- (b) Underline both generic and specific epithet separately
- (c) In capital letters
- (d) All of these
- (e) None of these

(ii) After two years of secondary growth in a dicot root, the cortex will:
- (a) Remain as such
- (b) Be totally lost
- (c) Be converted into cork
- (d) Be mostly lost
- (e) None of these

(iii) Botanical name of bread wheat is:
- (a) *Triticum durum*
- (b) *Triticum aestivum*
- (c) *Triticum indicum*
- (d) *Triticum vulgare*
- (e) None of these

(iv) Father of Botany is called:
- (a) Linneus
- (b) Theophrastus
- (c) Crick
- (d) Ostward Tippo
- (e) None of these

(v) Carl Linneus is famous due to his:
- (a) Binomial system of classification
- (b) Law of limiting factors
- (c) Law of classification of plants and animal
- (d) Rules of nomenclature
- (e) None of these

(vi) Thallophyta includes:
- (a) Algae, fungi and lichens
- (b) Algae and bryophytes
- (c) Only algae and fungi
- (d) Bryophytes and Pteridophytes
- (e) None of these

(vii) In cryptogams, the sex organs are:
- (a) Absent
- (b) Primitive
- (c) Primitive and hidden
- (d) Primitive and exposed
- (e) None of these

(viii) Phanerogams are the plants which have:
- (a) Exposed sex organ
- (b) Most primitive sex organs
- (c) More or less hidden organs
- (d) All of these
- (e) None of these

(ix) Angiosperms are those plants which have:
(a) Covered flowers and seeds (b) Naked flowers and seed
(c) Naked flowers and covered seeds (d) Covered flowers and naked seeds
(e) None of these

(x) Plants which increase the fertility of soils belong to the family:
(a) Mimosaceae (b) Caesalpiniaceae
(c) Scrophulariaceae (d) Fabaceae
(e) None of these

(xi) Fruits are developed from:
(a) Ovule (b) Ovary
(c) Carpel (d) Inflorescence
(e) None of these

(xii) Which of the following represents a taxon?
(a) Species (b) Genus
(c) Family (d) All of these
(e) None of these

(xiii) Cotton and gram belong respectively to families:
(a) Graminae and Malvaceae (b) Malvaceae and Fabaceae
(c) Leguminosae and Malvaceae (d) Solanaceae and Cruciferae
(e) None of these

(xiv) Which of the following is a monocotyledonous family?
(a) Solanaceae (b) Paoceae
(c) Brassicaceae (d) Malvaceae
(e) None of these

(xv) Which of the following is true for fungi?
(a) They are heterotrophic (b) Their cell wall is made up of chitin
(c) Their plant body is hyphae (d) All of these
(e) None of these

(xvi) Which of the following types of inflorescences is found in Leucus and Ocimum?
(a) Catkin (b) Corymb
(c) Verticillaster (d) Cyathium
(e) None of these

(xvii) When margins of the petals are just touching each other without any overlap, aestivation is called:
(a) Twisted (b) Marginal
(c) Imbricate (d) Valvate
(e) None of these

(xviii) The centripetal growth of metaxylem results in protoxylem being:
(a) Endarch (b) Exarch
(c) Mesarch (d) Any of these
(e) None of these

(xix) A closed vascular bundle differs from an open bundle in:
(a) Absence of phloem (b) Absence of xylem
(c) Absence of cambium (d) Absence of bundle sheath
(e) None of these

(xx) Stomatal complex in which subsidiary cells can not be differentiated from the neighboring epidermal cells is called:
(a) Anomocytic (b) Diacytic
(c) Paracytic (d) Anisocytic

PART – II

NOTE:	**(i)** **PART-II** is to be attempted on the separate **Answer Book**. **(ii)** Attempt **ONLY FOUR** questions from **PART-II**. All questions carry **EQUAL** marks. Illustrate your answers with suitable **DIAGRAMS** where necessary. **(iii)** Extra attempt of any question or any part of the attempted question will not be considered.

Q.2. (a) Discuss the methods of reproduction in algae. (10)
(b) Write an essay on the economic importance of algae. (6)
(c) What are the affinities of algae with the land plants? (4)

Q.3. (a) Describe general characteristics of fungi.
(b) Compare and contrast the characteristics of Basidiomycetes with that of Zygomycetes. (10)
(c) Write short note on parasexuality. (6)
(4

Q.4. (a) What are the affinities of Bryophytes with that of Pteridophytes and algae? (8)
(b) Draw a labeled diagram of longitudinal section of the sporophyte of *Anthocerose*. (8)
(c) Write a note on asexual reproduction of Bryophytes. (4)

Q.5. (a) Describe the evolutionary trends in the structure of sporophyte among Pteridophytes. (10)
(b) Describe the characteristic features of *Selaginella* towards seed habit. (6)
(c) Draw a labeled diagram of transverse section of stem of Equisetum. (4)

Q.6. (a) "Ginkgo is a living fossil" Comment on this statement. (10)
(b) What affinities of Gymnosperms have with Angiosperms? (6)
(c) Draw a labeled diagram of transverse section of the leaf of *Cycas*. (4)

Q.7. (a) Describe in detail the cell types present in xylem. (11)
(b) Write notes on the following: (9)
(i) Nodal anatomy
(ii) Sieve tubes
(iii) Laticifers

Q.8. (a) What is Nomenclature? Describe the history of principles of nomenclature. (10)
(b) Write the names of the families of any five of the following plants: (10)
(i) *Cassia fistula*
(ii) *Tribulus aestivum*
(iii) *Triticum terristris*
(iv) *Hibiscus esculantum*
(v) *Eleagnus angustifolia*
(vi) *Saccharum officinarum*
(vii) *Punica grantum*

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FEDERAL PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17 UNDER THE FEDERAL GOVERNMENT, 2008

Roll No.

BOTANY, PAPER-II

TIME ALLOWED:	**(PART-I)**	**30 MINUTES**	**MAXIMUM MARKS:20**
	(PART-II)	**2 Hours & 30 Minutes**	**MAXIMUM MARKS:80**

NOTE:	**(i) First** attempt **PART-I (MCQ)** on separate **Answer Sheet** which shall be taken back after **30 minutes**. **(ii) Overwriting/cutting of the options/answers will not be given credit.**

PART – I (MCQ)
(COMPULSORY)

Q.1 Select the best option /Answer and fill in the appropriate Box on the Answer Sheet. (20)

(i) Plants growing in extremely dry conditions are called:
(a) Hydrophytes (b) Xerophytes
(c) Mesophytes (d) Halophytes
(e) None of these

(ii) Desert plants have elongated root system, because:
(a) Roots grow in search of water
(b) High temperature of soil encourages root grow
(c) Soil does not contain water hence becomes compact presses the roots to grow longer
(d) Roots run more opposite to the sun heat
(e) None of these

(iii) Recessive alleles are expressed only in the:
(a) Homozygous condition (b) Presence of supporting gene
(c) Heterozygous condition (d) Dekaryotic condition
(e) None of these

(iv) The law that alleles for two different phenotypic characters are distributed into gametes randomly is termed:
(a) Law of segregation (b) Law of independent assortment
(c) Law of dominance (d) Law of definite entity
(e) None of these

(v) If tall pea plants of F1 generation of the monohybrid cross are self crossed, the progeny F2 generation will have tall and dwarf plants in the ratio of:
(a) 3:1 (b) 1:3
(c) 1:1 (d) 2:1
(e) None of these

(vi) The science that deals with the study of living organisms in relation to their environment is called:
(a) Environmental science (b) Ecology
(c) Evolutionary biology (d) Systematic biology
(e) None of these

(vii) Which of the following is increased due to vegetation in an area?
(a) Rainfall (b) Temperature
(c) Wind velocity (d) All of these
(e) None of these

(viii) Plant show maximum photosynthesis in:

(a) Pure blue light (b) Pure red light
(c) Red and blue light (d) Green light
(e) None of these

(ix) The seat of metabolic processes in the cell is mainly:

(a) Cell wall (b) Protoplasm
(c) Mitochondria (d) Vacuole
(e) None of these

(x) Carbon dioxide in the photosynthesis is:

(a) Oxidized (b) Reduced
(c) Decarboxylated (d) Dehydrogenated
(e) None of these

(xi) The enzymes that can be hydrolyse proteins are called:

(a) Peroxidases (b) Proteases
(c) Amlases (d) Catalases
(e) None of these

(xii) Which of the following will be higher in a sugar solution of 1M as compared to 2M solution?

(a) Turgour pressure (b) Osmotic pressure
(c) Diffusion pressure of solvent (d) Diffusion pressure of sugar
(e) None of these

(xiii) Synthesis of chlorophyll in plants is adversely affected by:

(a) Mg deficiency (b) Ca deficiency
(c) Oxygen deficiency (d) Fe deficiency
(e) None of these

(xiv) Which of the following promotes more vegetative growth in plants?

(a) Nitrogen (b) Calcium
(c) Iron (d) Zinc
(e) None of these

(xv) Assimilatory power of plants refers to:

(a) Formation of ATP and NADPH (b) Reduction of CO_2
(c) Splitting of water (d) Solar energy
(e) None of these

(xvi) The rate of transpiration in leaves of the apple plant will be:

(a) Higher on lower side (b) Higher on upper side
(c) Equal on both sides (d) Alternately high on both sides
(e) None of these

(xvii) Mutation and natural selection are considered complementary to each other in the theory called:

(a) Classical Darwinism (b) Neo-Darwinism
(c) Lamarckism (d) Weismannism
(e) None of these

(xviii) In which type of fossils, original organism undergoes complete mineralization?

(a) Impression (b) Compression
(c) Mould (d) Petrification
(e) None of these

(xix) If forests are cleared for economic activity biodiversity of the area will be:

(a) Increased (b) Decreased
(c) Unaffected (d) Fluctuating
(e) None of these

(xx) Which of the following affects the plants but less the animals?

(a) Air pollution (b) Water pollution
(c) Soil pollution (d) All of these
(e) None of these

PART – II

NOTE:	(i) **PART-II** is to be attempted on the separate **Answer Book**. (ii) Attempt **ONLY FOUR** questions from **PART-II**. All questions carry **EQUAL** marks. Illustrate your answers with suitable **DIAGRAMS** where necessary. (iii) Extra attempt of any question or any part of the attempted question will not be considered.

Q.2. (a) Define plant growth hormone. Discuss the role of auxins in plant growth. (2+10)
(b) Describe the role of ethylene in fruit ripening. (8)

Q.3. (a) Discuss the process of CO fixation in C_3 and C_4 plants. (6+6)
(b) Draw the Z-scheme of photosynthesis. (8)

Q.4. Write notes on the following: (5x4)
(i) TCA cycle
(ii) Micronutrients
(iii) Mechanism of enzyme action 4
(iv) Photophosphorylation

Q.5. (a) What is plant succession? Describe the process of plant succession starting in lake. (2+8)
(b) Write notes on: (5+5)
(i) Soil texture
(ii) Food chain

Q.6. Write short notes on the following: (5x4)
(i) Air pollution
(ii) Energy flow in ecosystem
(iii) Natural resources
(iv) Climate zones

Q.7. (a) Describe the ultra structure of Mitochondria. (10)
(b) Enlist the functions of Mitochondria. (6)
(c) What do you know about the evolution of Mitochondria? (4)

Q.8. (a) Describe the basis of laws of Segregation and Independent assortment presented by Gregore Mendle. (14)
(b) What are the characteristics of a model plant organism to study genetics? (6)

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