FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS
IN BPS – 17 UNDER THE FEDERAL GOVERNMENT, 2007.

BOTANY, PAPER - I

TIME ALLOWED: THREE HOURS MAXIMUM MARKS:100

NOTE: (i) Attempt FIVE questions in all including question No. 8 which is compulsory. All questions carry EQUAL marks.
(ii) Extra attempt of any question or any part of the attempted question will not be considered
(iii) Candidate must draw two straight lines (==========) at the end to separate each question attempted in Answer Books.

1. (a) Comment on the statement that "Cycas is a living fossil".
(b) Describe the distribution and habitats of conifers of Pakistan.

2. With the help of diagrams and brief notes compare the structure of dicot stem before and after the secondary growth.

3. (a) State the economic importance of yeasts and agarics
(b) Give the scientific name of yeasts and agarics.
(c) Starting with Kingdom: Plantae, classify both yeasts and agarics to the level of family.
(d) Give a brief account of the asexual/vegetative reproduction in the yeasts and sexual reproduction in agarics.

4. (a) Compare and contrast the structure of the thallus of Riccia with that of Marchantia.
(b) Draw a label diagram of the longitudinal section of the capsule of Funaria.

5. How do you differentiate the following?
Actinostele, plectostele, siphonostele, solenostele and dictiostele. Illustrate your answers with suitable examples.

6. (a) Describe briefly the various modes of sexual reproduction in algae giving examples.
(b) Give an account of the structure of a vegetative cell of Cyanophyceae and compare it with that of Chlorphyceae.
(c) Discuss the economic importance of algae.

7. (a) Describe in detail the characteristics features of the family Fabaceae or Poaceae giving their floral formula and floral diagram.

(b) Assign any five of the following plants to their respective families:

1. Cassia fistula
2. Pyrus malus
3. Cicer arietinum
4. Raphanus sativus
5. Lactuca sativa
6. Papaver somniferum
7. Hibiscus esculentus
8. Zey mays

COMPULSORY QUESTION

8. **Write only correct answer in the Answer Book. Do not reproduce the question.**

(1) Pappus found in compositae is the modification of:
(a) Calyx
(b) Bract
(c) Corolla
(d) Stamen
(e) None of these

(2) In Malvaceae androecium is characteristically:
(a) Monadelphous
(b)Didynamous
(c) Diadelphous
(d) Tetradynamous
(e) None of these

(3) The first phylogenetic system of plant classification was proposed by:
(a) Engler
(b) Prantl
(c) Wettstien
(d) Eichler
(e) None of these

(4) The androcium in Compositae is:
(a) Epitetalous and manodelphous
(b) Polyandrous and manodelphous
(c) Polyandrous and syngenesious
(d) Epitetalous and syngenesious
(e) None of these

(5) The fruit of mango is:
(a) Berry
(b) Drupe
(c) Pome
(d) Nut
(e) None of these

(6) Fungal spores produced asexually at tip or side of hyphae are called:
(a) Sporangiophore
(b) Anthrospores
(c) Conidia
(d) Spores
(e) None of these

(7) Damping off disease is caused by:
(a) Aspergillus
(b) Ustilago
(c) Pythium
(d) Puccinia
(e) None of these

(8) Obliquely placed ovary is present in the family:
(a) Rutaceae
(b) Solanaceae
(c) Malvaceae
(d) Labiatae
(e) None of these

(9) Gynobasic style arises from the base of ovary. This is characteristics of the family:
(a) Labiatae
(b) Solanaceae
(c) Compositae
(d) Malvaceae
(e) None of these

(10) Columella is present in sporangium of:
(a) Spirogyra
(b) Yeast
(c) Ulothrix
(d) Rhizopus

(11) Which of the following diseases is cause by fungus?
(a) Cholera
(b) Rust of wheat
(c) T.B
(d) Tetanus

(12) Target board effect is caused by:
(a) Alternaria
(b) Colletotrichum
(c) Pyricularia
(d) Helminthosporium

(13) Edible fungus is:
(a) Aspergillus
(b) Agaricus
(c) Penicillium
(d) None of these

(14) Clamp connections are very common in:
(a) Ascomycetes
(b) Basidiomycetes
(c) Phycomycetes
(d) None of these

(15) Penicillin was extracted by:
(a) Flemming
(b) Huxley
(c) Lamarck
(d) Brown

(16) Bacteria belong to:
(a) Schizomycetes
(b) Actinomycetes
(c) Epigynous
(d) None of these

(17) Mushroom is a:
(a) Parasite
(b) Saprophyte
(c) Photosynthetic
(d) None of these

(18) The sieve elements are the major components of:
(a) Xylem
(b) Phloem
(c) Cambuim
(d) None of these

(19) The gametes taking part in sexual reproduction of rhizopus are:
(a) Uninucleate
(b) Binucleate
(c) Multinucleate
(d) DIkaryotic
(e) None of these

(20) Blue green algae is a common name of:
(a) Xanthophyceate
(b) Chlorophyceae
(c) Cyanophycemae
(d) Charophyceae
(e) None of these

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BOTANY, PAPER - II

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NOTE: (i) Attempt FIVE questions in all including question No. 8 which is compulsory. All questions carry EQUAL marks.
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1. Write a concise account of the mechanism of transportation and its significance to plants.

2. Differentiate between mitosis and meiosis. Write a concise account of meiosis and its significance.

3. What are mutations? Give a critical account of various types of mutations.

4. What is photoperiodism? Give an account of photoperiodic induction and its possible mechanism.

5. Give a detailed account of different xerophytes and their morphological and physiological adaptation.

6. (a) Define ecology, describe applications of ecology in detail.
(b) What is plant succession? Give detailed account of process of plant succession starting in a lake.

7. (a) Briefly discuss different theories of evolution. Which theory you think explains the best process of evolution and why?
(b) Write a note on adaptive mutation.

COMPULSORY QUESTION

8. **Write only correct answer in the Answer Book. Do not reproduce the question.**

(1) In protein synthesis, amono acid molecule attaches with tRNA with help of enzyme amonoacyl tRNA:
(a) Synthetase
(b) Synthase
(c) Polymerase
(d) None of these

(2) The term polyploidy is used according to the number of chromosomes set in nucleus:
(a) One set
(b) Three sets
(c) Ten sets
(d) Many sets
(e) None of these

(3) The plant growth hormone discovered as a result of the investigations of the rice disease cause by Fusarium moliniform was:
(a) Auxin
(b) Ethylene
(c) Gibberellin
(d) None of these

(4) Transported soils deposited by the action of wind are classified as:
(a) Eolian
(b) Alluvial
(c) Colluvial
(d) None of these

(5) The RNA that acts as template in process of translation is called:
(a) rRNA
(b) mRNA
(c) rRNA
(d) None of these

(6) The movement of material with in the plant body is known as:
(a) Absorption
(b) Adsorption
(c) Transformation
(d) None of these

(7) How many ATP molecules are produced when one molecule of glucose is completely oxidized to H_2O and CO_2?
(a) 8
(b) 28
(c) 32
(d) 38
(e) None of these

(8) Seeds that require light for germination are said to be:
(a) Photoblastic
(b) Photodormant
(c) Photophile
(d) Photozoic
(e) None of these

(9) Viviparous germination is present in:
(a) Mangroves
(b) Lithophytes
(c) Both (a) and (b)
(d) None of these

(10) In eukaryotes the number of start codon is/are:
(a) 1
(b) 3
(c) 4
(d) 5
(e) None of these

(11) The basis of evolution in living organisms is:
(a) Allele
(b) Mutation
(c) Gene
(d) None of these

(12) Plant absorbs water from soil by:
(a) Root cap
(b) Root tips
(c) Root hairs
(d) None of these

(13) The percentage of moisture held in a soil after the drainage of gravitational water is the:
(a) Field capacity
(b) Hygroscopic water
(c) Permanent wilting percentage
(d) None of these

(14) Changes in the arrangement of gene loci with in a chromosome are termed as:
(a) Translocation
(b) Deficiency
(c) Duplication
(d) None of these

(15) Acquired characters are inherited according to:
(a) Darwin
(b) Lamarck
(c) Weismann
(d) Miller
(e) None of these

(16) The end product of Krebs cycle is:
(a) Citric acid
(b) Oxaloacetic acid
(c) Pyruvic acid
(d) Lactic acid
(e) None of these

(17) The function of mRNA is:
(a) Selection of amino acids
(b) Production of tRNA
(c) To synthesize DNA
(d) None of these

(18) Replication of DNA is:
(a) Conservative
(b) Semi conservative
(c) De novo
(d) None of these

(19) Oxygen released from green plant comes from:
(a) H2O
(b) CO2
(c) Glucose
(d) Proteins
(e) None of these

(20) Cacti and other succulents are typically found in:
(a) Deserts
(b) Forests
(c) Mountains
(d) Sea
(e) None of these