

Time: 20 Minutes

OBJECTIVE Code: 8465 40J-41-2 Marks: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank.

1. 1. Period of life cycle of cell between two consecutive divisions is termed as
(A) resting phase (B) interphase (C) G1-phase (D) S-phase
2. 2. Reproduction is necessary for the survival of
(A) individual (B) species (C) community (D) biome
3. 3. Which of the following is a renewable resource?
(A) oil and air (B) water and oil (C) oil and gas (D) air and water
4. 4. The basic functional unit of ecology is
(A) ecosystem (B) population (C) niche (D) community
5. 5. Expression of a trait is termed as
(A) phenotype (B) genotype (C) wild type (D) mutant type
6. 6. A plant adapted to remove the flooding of its cells in fresh water is
(A) xerophyte (B) mesophyte (C) hydrophyte (D) geophyte
7. 7. A group of bacteria that can tolerate temperature upto 120°C.
(A) eubacteria (B) mycoplasma (C) E-Coli (D) archaeobacteria
8. 8. Which bone does provide attachment site for muscle?
(A) spongy bone (B) soft bone (C) cartilage (D) compact bone
9. 9. Recombinant DNA is introduced into the host cell by means of a
(A) phage (B) vector (C) bacterium (D) fungus
10. 10. Which one is not a mesophyte?
(A) cactus (B) mango (C) rose (D) brassica
11. 11. Movement and rearrangement of the cells in the embryo is called
(A) gastrulation (B) cleavage (C) fertilization (D) blastula
12. 12. Bundle caps in sunflower stem are formed by
(A) parenchyma (B) sclerenchyma (C) mesenchyma (D) collenchyma
13. 13. The average rainfall in temperate deciduous forest is between
(A) 600 - 1500 mm (B) 650 - 1500 mm (C) 750 - 1500 mm (D) 700 - 1500 mm
14. 14. For the formation of phragmoplast, the vesicles originate from
(A) endoplasmic reticulum (B) ribosome (C) golgi complex (D) chloroplast
15. 15. Primary growth in plants is caused by
(A) lateral meristem (B) intercalary meristem (C) apical meristem (D) secondary meristem
16. 16. Chromosomes appear inside the nucleus at the time of
(A) cell elongation (B) cell maturation (C) cell differentiation (D) cell division
17. 17. Plant hormones, which are indole acetic acid or its variants are
(A) auxins (B) gibberellins (C) ethene (D) abscisic acid

Time: 2:40 Hours

SUBJECTIVE

Marks: 68

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION - I)

GUJ-41-21

2. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- i. What is lithotripsy?
- ii. Define panting with one example.
- iii. Define dialysis. Give its types.
- iv. Distinguish between origin and insertion of muscles.
- v. What is hematoma formation?
- vi. What are floating ribs?
- vii. What is follicle atresia?
- viii. Define parthenocarpy with examples.
- ix. Give the name of some major ecosystems in Pakistan.
- x. Compare littoral zone with limnetic zone.
- xi. What is acid rain?
- xii. What are two main sources of water pollution?

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- i. What are diurnal rhythms and circannual rhythms?
- ii. Write down any two functions of ethene.
- iii. What are neurotransmitters? Give one example.
- iv. Differentiate between genotype and phenotype.
- v. What is over dominance?
- vi. What are secretors?
- vii. Write down a note on restriction endonuclease and give its one function.
- viii. What is probe? Write down its role.
- ix. Write down a note on Taq Polymerase.
- x. What is niche?
- xi. Write down biotic components.
- xii. Write down a note on root nodules.

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- i. Write down the role of auxins and cytokinins in apical dominance.
- ii. How development is affected by ionizing radiations and nutritional deficiency?
- iii. Define promoter region. Which binding sites are present in this region?
- iv. Which is true DNA replicating enzyme in E.Coli? Also write its structural features.
- v. How eukaryotic m RNA is modified? What is the significance of this modification?
- vi. What is the cause of Klinefelter's syndrome? Write down the symptoms of this disease.
- vii. Differentiate between G₀ and G₁ phases of cell cycle.
- viii. Define population and population's gene pool.
- ix. What is endosymbiont hypothesis? Who proposed this hypothesis?

(SECTION - II)

5. (a) Give a detailed account of nitrogen cycle.

4

(b) Define nephron. Discuss its structure and function in detail.

4

6. (a) Write down a note on sclerenchyma cells and collenchyma cells.

4

(b) Explain Watson and Crick's model of DNA.

4

7. (a) Describe in detail the role of adrenal glands.

4

(b) Describe the causes and effects of acid rain.

4

8. (a) Discuss the process of birth in human female.

4

(b) Explain codominance with the help of MN blood group system in man.

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9. (a) Define regeneration. Describe the mechanism of regeneration in planaria and salamander.

4

(b) Explain the evolution of eukaryotes by endosymbiotic hypothesis and membrane invagination hypothesis.

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321-421-18000

G

Time: 20 Minutes

OBJECTIVE Code: 8468 **405-42-21** Marks: 17

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank.

1. The most common chronic arthritis which is a degenerative joint disease, also caused by
 (A) hormonal defects (B) genetic defects (C) nutritional defects (D) neural defects
2. Chromosomes appear inside the nucleus at the time of
 (A) cell elongation (B) cell maturation (C) cell differentiation (D) cell division
3. Genomic fragments can be separated according to their lengths during
 (A) PCR (B) gene cloning (C) gel electrophoresis (D) chemical cleavage
4. Who defined "Niche" as species occupation?
 (A) Grinnell (B) Charles Elton (C) Cuvier (D) Haeckel
5. Establishing new forests where no forests existed before
 (A) desertification (B) deforestation (C) reforestation (D) afforestation
6. Fruit ripening is often accompanied by a burst of respiratory activity called as
 (A) photoperiod (B) fertilization (C) climacteric (D) reproduction
7. Haemophilia ' C '
 (A) affects both sexes equally (B) affects men more than women
 (C) affects women more than men (D) is non-allelic sex linked recessive
8. The change in frequency of alleles at a locus that occurs by chance is
 (A) gene pool (B) mutations (C) genetic drift (D) migration
9. Synapsis takes place in
 (A) leptotene (B) zygotene (C) pachytene (D) diplotene
10. The beginning of bone formation, starts after injury
 (A) 3 - 4 weeks (B) 2 - 3 months (C) 8 weeks (D) 8 - 12 weeks
11. The nature of shivering thermogenesis adaptation is
 (A) structural (B) physiological (C) psychological (D) behavioral
12. Northern coniferous forests are called as
 (A) alpine (B) boreal (C) taiga (D) prairies
13. Multicellular alga, Acetabularia is attached to the ground by
 (A) roots (B) hold fast (C) rhizoid (D) base
14. Increased plasma level of urea is an indication of
 (A) renal failure (B) urinary tract infection
 (C) kidney stones (D) sexually transmitted disease
15. If a person has 44 autosomes and xyy, he will suffer from
 (A) klinefelter's syndrome (B) turner's syndrome
 (C) down's syndrome (D) mongolism
16. The most prominent structure found in 18 hrs chick embryo is
 (A) primitive streak (B) notochord (C) hensen's node (D) neurocoel
17. In mitochondria, the codon UGA signals for
 (A) stop (B) start (C) tryptophan (D) methionine

Time: 2:40 Hours

SUBJECTIVE

6

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION - I)

GUT-62-21

(2 x 8 = 16)

2. Write short answers to any EIGHT questions.

- Differentiate between hypotonic and hypertonic environments.
- Which nitrogenous wastes are produced by the metabolism of purine and pyrimidine?
- Differentiate between ureter and urethra.
- What are collenchyma cells?
- Write down any two major functions of the skeletal system.
- Write down a note on hematoma formation.
- Differentiate between oviparous and viviparous.
- Define gonorrhoea in detail.
- How temperate deciduous forests were affected by human impact?
- Write down a note on productivity.
- How forests play their role on climate?
- What are two main sources of water pollution?

(2 x 8 = 16)

3. Write short answers to any EIGHT questions.

- Give the commercial applications of gibberellins.
- What are effectors? Give their types.
- What is Parkinson's disease?
- Compare Allele with multiple alleles.
- What is product rule?
- Differentiate between sex chromosomes and autosomes.
- What are transgenic plants?
- What is cystic fibrosis?
- What is gene sequencing?
- Differentiate between Biomes and Biosphere.
- What are producers and consumers?
- What is commensalism?

(2 x 6 = 12)

4. Write short answers to any SIX questions.

- Differentiate between maturation and differentiation.
- Define growth correlations.
- Differentiate between heterochromatin and euchromatin.
- What are okazaki fragments?
- Differentiate between nucleotides and nucleosides.
- Explain briefly prophase in mitosis.
- How malignant tumor or cancer is caused?
- Differentiate between homologous organs and analogous organs.
- What is theory of special creation?

(SECTION - II)

- (a) Describe osmoregulation in the animals of marine environment.
(b) Describe the biotic components of an ecosystem.
- (a) Describe major functions of human skeletal system.
(b) Explain Meselson - Stahl experiment for DNA replication.
- (a) Describe the functions of abscisic acid as growth hormone in plants.
(b) Write down a note on ozone layer and ozone layer depletion.
- (a) Write down a note on identical twins and fraternal twins.
(b) Discuss diabetes mellitus and its genetic basis.
- (a) What are growth correlations?
(b) Write down the contributions of Darwin in evolution.

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