T – 11

ENTRANCE EXAMINATION – 2019

M.Sc. Plant Biology & Biotechnology

Time: 2 hours Maximum Marks: 100

HALL TICKET NO.

INSTRUCTIONS

Please read carefully before answering the questions:

1. Enter your Hall Ticket number both on the top of this page and on the OMR answer sheet.

2. Answers are to be marked only on the **OMR answer sheet** following the instructions provided there upon.

3. Hand over the OMR answer sheet to the Invigilator before leaving the examination hall.

4. The question paper contains **100** questions (**Part-A**: Question Nos. **1-25** and **Part-B**: Questions Nos. **26-100)** of multiple-choice printed in **21** pages, including this page. One OMR answer sheet is provided separately. **Please check**.

5. The marks obtained in **Part-A** will be used for resolving the tie cases.

6. Each question carries one mark.

7. There is **Negative marking** for wrong answers, in **Parts A and B**. For each wrong answer, 0.33 mark will be deducted.

8. Calculators and mobile phones are NOT allowed.

PART – A

1. Which of the following systems of plant classification does not use botanical names above the levels of order

   A. Angiosperm Phylogeny Group
   B. Cronquist
   C. Takhtajan
   D. Bentham and Hooker

2. Stomata are completely absent in the plants which are

   A. Grasses
   B. Submerged aquatics
   C. Conifers
   D. Floating aquatics

3. Pick the correct match of protic or aprotic nature of the following solvents

   Solvent-i $CHCl_3$
   Solvent-ii CH_3COOH:
   Solvent-iii $CH_3CH_2OCH_2CH_3$
   Solvent-iv $CH_3(CH2)_4CH_3$

A.	i-protic,	ii-protic	iii-protic	iv-aprotic
B.	i-aprotic,	ii-protic	iii-aprotic	iv-protic
C.	i-aprotic,	ii-aprotic	iii-protic	iv-aprotic
D.	i-protic,	ii-aprotic	iii-protic	iv-protic

4. Which among the following are sterilizing gas

   A. Ethylene oxide; Betapropiolactone
   B. Ethylene oxide; Hexachlorophene
   C. Chlorine; Bromine
   D. Halazone; Isoproponol

5. Cyanogen bromide is a pseudo halogen compound with a formula CNBr is used to cut protein molecules at the C-terminus of

   A. Arginine B. Lysine C. Glutamic acid D. Methionine

6. Considering the cross **Aa BB Cc DD EE × aa Bb cc Dd Ee** with all the genes independently assorting, the proportion of progeny that will phenotypically resemble the first parent is

   A. 1/32 B. 1/64 C. 3/32 D. 3/64

7. When bacteria are grown on a medium containing 35S as the source of sulphur, 35S gets accumulated in

   A. DNA B. Protein C. RNA D. mRNA

8. For the peptide bond which is **not true**

   A. There is perfectly free rotation about the peptide bond
   B. A partial double bond
   C. The peptide bond is shorter than a normal carbon-nitrogen single bond
   D. Peptide bonds are made via condensation of an amine and a carboxylic acid with loss of water

9. In which of the following systems is the entropy the greatest

   A. Liquid water at pH 7.0 at 37^0C
   B. Supercooled water (liquid water at a temperature less than 0^0)
   C. Ice
   D. Water vapour

10. Which is the correct order of decreasing acidity

   A. $CH_3\text{-}\underset{\underset{F}{|}}{CH}\text{-}OH > CH_2\text{-}\underset{\underset{F}{|}}{CH_2}\text{-}OH > CH_2\text{-}\underset{\underset{Cl}{|}}{CH_2}\text{-}OH > CH_3\text{-}CH_2\text{-}OH$

   B. $CH_3\text{-}\underset{\underset{F}{|}}{CH}\text{-}OH > CH_2\text{-}\underset{\underset{Cl}{|}}{CH_2}\text{-}OH > CH_2\text{-}\underset{\underset{F}{|}}{CH_2}\text{-}OH > CH_3\text{-}CH_2\text{-}OH$

   C. $CH_3\text{-}\underset{\underset{F}{|}}{CH}\text{-}OH > CH_3\text{-}CH_2\text{-}OH > CH_2\text{-}\underset{\underset{Cl}{|}}{CH_2}\text{-}OH > CH_2\text{-}\underset{\underset{F}{|}}{CH_2}\text{-}OH$

   D. $CH_3\text{-}\underset{\underset{F}{|}}{CH}\text{-}OH > CH_2\text{-}\underset{\underset{F}{|}}{CH_2}\text{-}OH > CH_3\text{-}CH_2\text{-}OH > CH_2\text{-}\underset{\underset{Cl}{|}}{CH_2}\text{-}OH$

11. Eye color of *Drosophila melanogaster* (fruit flies) is sex-linked with red-eye color being dominant to white-eye color. In a cross between a red-eyed male and a heterozygous female, all of the following progeny are expected **except**

   A. Red-eyed fertile females
   B. Red-eyed fertile males
   C. White-eyed fertile males
   D. White eyed fertile females

12. Maintaining the normal glucose level is very important for normal function of cells. Insulin is very important hormone and a has vital role in maintaining the blood sugar level. The process of maintaining blood glucose levels through degradation of glycogen is known as:

   A. Glycogenolysis
   B. Gluconeogenesis
   C. Glycolysis
   D. Glycogenesis

13. The transfer of undesirable traits through introgressive hybridization from parents to offspring is resulting from

A. Linkage drag
B. Gene erosion
C. Complementation
D. Gene pyramiding

14. The progeny of a single self-fertilized homozygous individual is known as

A. Inbred
B. Pureline
C. Clone
D. Hybrid

15. The physical co-localization of genetic loci on the same chromosome within an individual or species is known as

A. Recombination
B. Segregation
C. Synteny
D. Dysgeny

16. Iron and magnesium are needed for the

A. Opening of flowers
B. Translocation of carbohydrates
C. Opening and closing of stomata
D. Synthesis of chlorophyll

17. Identify the **mismatch** between the type of enzyme and its example

A. Oxidoreductase – Lactate dehydrogenase
B. Hydrolase – Glucose-6-phosphatase
C. Ligase – Glutamate synthetase
D. Transferase – Fumarate hydratase

18. The presence of a catalyst in a reaction mixture may affect

A. The activation energy
B. The standard free energy change
C. The structure of the catalyst permanently
D. The equilibrium constant

19. Voges-Proskauer test is a procedure that detects the presence of

A. Butanediol
B. Lactate
C. Acetoin
D. Pyruvate

20. Chromosomes primarily consist of DNA and proteins. These proteins are of two major classes called Histones and Non-Histone chromosomal protein. Histone proteins are rich in which amino acid/s?

A. Serine & Histidine
B. Lysine & Arginine
C. Glutamic Acid & Aspartic Acid
D. Alanine & Aspartic Acid

21. Which is the sunshine hormone

A. Vitamin D
B. Estrogen
C. Auxin
D. Gibberllin

22. The allelic variants or forms of an enzyme which differ structurally but not functionally are known as

A. Allozymes
B. Isozymes
C. Holozymes
D. Mesozymes

23. Which among the following is the most appropriate equation for N_2 fixation

A. $N_2 + 12H^+ + 12e^- + 12ATP \rightarrow 2NH_3 + 4H_2 + 12ADP + 12P_i$
B. $N_2 + 10H^+ + 10e^- + 14ATP \rightarrow 2NH_3 + 2H_2 + 14ADP + 14P_i$
C. $N_2 + 8H^+ + 8e^- + 14ATP \rightarrow 2NH_3 + H_2 + 14ADP + 14P_i$
D. $N_2 + 8H^+ + 8e^- + 16ATP \rightarrow 2NH_3 + H_2 + 16ADP + 16P_i$

24. A ribonucleic acid that catalyzes a chemical reaction in a cells in a similar way to that of an enzymes is known as:

A. Abzyme
B. Synzyme
C. Ribozyme
D. Protozyme

25. Which of the following statements are **not true** for Inulin

P. It is a storage carbohydrate found in bulb of many plants
Q. It contains fructofuranose units joined together
R. It is protein highly glycosylated
S. It is structural carbohydrate containing lignin

A. P and Q
B. P and S
C. R and S
D. Q and R

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PART B

26. The time of first opening of a flower or a spikelet in a spike is known as

A. Prosthesis B. Anthesis C. Hybridization D. Pollination

27. Stickland reaction is

A. Between two amino acids, in which one amino acid is oxidized and a second amino acid acts as an electron acceptor.
B. Between an amino acid and a keto-acid, in which the amino acid is oxidized and the keto-acid acts as an electron acceptor
C. Between an amino acid and a keto-acid, in which the amino acid donates amino group and the keto-acid acts as an amino acceptor
D. Between two keto-acids, in which one keto-acid is oxidized and a second keto-acid acts as an electron acceptor.

28. The proportion of total variance contributed by the genotype of an organism is called as

A. Genetic advance B. Selection differential
C. Panmixis D. Heritability

29. The largest family of the angiosperms in the world is

A. Rubiaceae B. Asteraceae C. Orchidaceae D. Rosaceae

30. Geitonogamy is a type of pollination where

A. Transfer of pollen grains from the anther to the stigma takes place between different flowers in the same plant or genetically similar plants
B. Transfer of pollen grains from the anther to the stigma takes place between different flowers of genetically different plants
C. Transfer of pollen grains from the anther to the stigma takes place within the same flower
D. Transfer of pollen grains from the anther of one plant species to the stigma of the flower of a non-related plant species

31. In protocooperation, two organisms get mutually benefited and the relationship (is)

A. Obligatory B. Not obligatory
C. May or may not be obligatory D. Depend on the organisms

32. Identify the mismatch from the following

A. Halophile – Salt
B. Osmophile – Solute
C. Alkaliphile – pH
D. Oligophile – Pressure

33. After agarose gel electrophoresis of plasmids which forms of plasmid follow the sequence in decreasing molecular weight?

A. Open circular, super coiled, linear plasmid DNA
B. Linear plasmid, open circular, super coiled plasmid
C. Open circular, super coiled, linear plasmid DNA
D. Open circular, linear plasmid, super coiled plasmid

34. Corn has a diploid number of 20. How many chromosomes would be expected in a) a meiotic product b) a polar nucleus, c) a mature embryo sac d) an endosperm cell

A. 10, 10, 30, 30
B. 10, 20, 10, 30
C. 10, 10, 10, 10
D. 20, 30, 10, 30

35. A species of plant is discovered in which individual plants produce either white or purple flowers. True breeding plants that have short stems with white flowers are crossed with true breeding plants that have tall stems and purple flowers. The resulting offspring all have tall with purple flowers. When one of these tall, purple-flowered offspring is crossed with a short, white-flowered plant, plants with the following characteristics were obtained in equal proportions. White flowers on tall stems, purple flowers on tall stems, white flowers on short stems, purple flowers on short stems. Given the information above, which of the following is most likely **true**

A. The white-flower allele and the tall-stem allele occur at the same locus
B. The genes for flower color and stem length are closely linked
C. Extensive crossing-over between the purple flower allele and the white-flower allele has occurred
D. The genes for flower color and stem length are not linked

36. The general expression for the appearance of a solute in an effluent is (where V is the elution volume of a substance, V_0 void volume, k_D distribution constant and V_i internal water volume)

A. $V = V_0 + k_D V_i$
B. $V = V_0/V_i$
C. $V = V_0 - k_D V_i$
D. $V/V_0 = k_D V_i$

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37. Which of the following statements is **not** consistent with the principle of totipotency

A. Plant cells can differentiate into any cell type
B. Plant cells can regenerate entire plants by mitosis
C. Cell specialization is based on position
D. Cell specialization is based on gene content

38. DNA methyltransferase adds the methyl group to the 5^{th} position of

A. Adenine B. Cytosine C. Guanine D. Thymine

39. A polycistronic mRNA refers to

A. mRNA which is transcribed by multiple RNA polymerases
B. mRNAs that are simultaneously translated
C. mRNA that is translated by many ribosomes simultaneously
D. mRNA with multiple open reading frames

40. The calcium is very essential element for organism growth and development; change in Ca^{2+} concentration can initiate various responses in plants. Which one of the following responses is **not** known to be initiated by change in Ca^{2+} concentration

A. Closure of stomata
B. Reorientation of growth in pollen tubes
C. Thickening of cell walls in young tobacco seedlings in response to wind
D. Lateral root formation

41. Due to high level of pollution, the gases like SO_2 and CO_2 concentration increased drastically it can cause the acid precipitation. The acid precipitation has lowered the pH of a particular lake to 4.0. What is the hydrogen ion concentration of the lake

A. 10^{-4} M B. 4.0 M C. 10^{-10} M D. 10^{4} M

42. If the coding region of a gene is estimated to consist nucleotides of 300 base pairs, how many amino acids would the corresponding polypeptide chain?

A. 150 B. 120 C. 300. D.100

43. Symbiotic biological nitrogen fixation takes place with the association between a plant and a nitrogen fixing prokaryote as shown in the following table:

List of plants	**Nitrogen fixing**
a. *Glycine max*	i. *Azotobactor*
b. *Datisca*	ii. *Bradyrhizobium*
c. *Gunnera*	iii. *Anabaena*
d. *Azolla*	iv. *Gluconacetobacter*
	v. *Frankia*
	vi. *Nostoc*

The correct combination is:

A.	a-i	b-v	c-vi	d-iv
B.	a-ii	b-v	c-vi	d-iii
C.	a-iii	b-ii	c-i	d-iv
D.	a-ii	b-vi	c-v	d-i

44. Which of the following plant is best suitable for *in situ* phytoremediation of heavy metals in an inland pond/lake

A. Water hycianth
B. Lotus
C. Water Lily
D. Brown mustard

45. After pollination, which of the following events is vital for fertilization to occur in flowering plants?

A. Sperms swim to the egg and the polar nuclei
B. Petals close around the reproductive parts
C. Meiosis occurs within the pollen grain
D. A pollen tube grows from the stigma to the ovule

46. When a diploid embryo sac is formed from a megaspore mother cell without a regular meiotic division, then the process is called

A. Parthenogamy
B. Polyspermy
C. Polygamy
D. Diplospory

47. The phenomenon leading to the development of embryo from synergids or antipodal cells without fertilization is known as:

A. Apospory B. Apogamy C. Autogamy D. Diplospory

48. Match the following research institute with correct places

a. Bose Institute	i. Lucknow
b. Indian Institute of Science	ii. New Delhi
c. Indian Agricultural Research Institute	iii. Bangalore
d. National Institute of Nutrition	iv. Chennai
	v. Hyderabad
	vi. Kolkata

A.	a-iv	b-i	c-vi	d-iii
B.	a-vi	b-iii	c-ii	d-v
C.	a-v	b-i	c-iii	d-ii
D.	a-iv	b-ii	c-i	d-v

49. Okazaki fragments are formed on

A. Lagging strand of DNA
B. Leading strand of DNA
C. Both leading and lagging strands of DNA
D. Only on uncoiled DNA double helix

50. Find the correct match of Nobel prize and section

Winner	**Section**
a. Jeffrey C. Hall, Michael Rosbash, Michael W. Young	i. 2017-Chemistry
b. Denis Mukwege, Nadia Murad	ii. 2018-Chemistry
c. Frances H. Arnold, George P. Smith, Sir Gregory P. Winter	iii. 2018-Medicine
d. Arthur Ashkin, Gérard Mourou, Donna Strickland	iv. 2017-Medicine
	v. 2018-Physics
	vi. 2018-Peace

A.	a-v	b-vi	c-iii	d-iv
B.	a-iv	b-vi	c-ii	d-v
C.	a-iii	b-v	c-ii	d-i
D.	a-ii	b-iii	c-v	d-vi

51. Match the following

Group A	**Group B**
a. *Dendrobium*	i. Rosaceae
b. *Tradescantia*	ii. Asclepedace
c. *Fragaria*	iii. Orchidaceae
d. *Syzygium*	iv. Commelinaceae
	v. Solanace
	vi. Myrtaceae

A.	a-ii	b-iv	c-i	d-v
B.	a-iv	b-iii	c-ii	d-i
C.	a-iv	b-ii	c-i	d-iii
D.	a-iii	b-iv	c-i	d-vi

52. Cultivated bananas are sterile because

A. Male flowers are not produced
B. Pollinators are not available
C. They are triploid and therefore seeds are not set
D. Female flowers are not produced

53. Match the types of ovule (**group A**) with the corresponding plant (**group B**)

Group A	**Group B**
a. Orthotropous	i. *Lemna*
b. Anatropous	ii. *Opuntia*
c. Amphitropous	iii. *Polygonum*
d. Circinotropous	iv. *Ricinus*

A.	a-ii	b-iv	c-i	d-iii
B.	a-iv	b-ii	c-iii	d-i
C.	a-iii	b-iv	c-i	d-ii
D.	a-iv	b-iii	c-i	d-ii

54. "Die back of shoots" disease is caused by deficiency of

A. Chlorine
B. Manganese
C. Copper
D. Molybdenum

55. Which of the following is an anaplerotic reaction?

A. Conversion of pyruvate to acetyl CoA
B. Conversion of pyruvate to lactic acid
C. Conversion of pyruvate to acetaldehyde
D. Conversion of pyruvate to oxaloacetate

56. Match the following

Enzymes	**Co-factors**
a. Urease	i. Se^{+2}
b. DNA polymerase	ii. Ni^{+2}
c. Nitrogenase	iii. Mn^{+2}
d. Carbonic anhydrase	iv. Mo^{+3}
	v. Zn^{+2}
	vi. Mg^{+2}

A.	a-iv	b-ii	c-v	d-i
B.	a-ii	b-vi	c-iv	d-v
C.	a-iii	b-iv	c-i	d-ii
D.	a-iv	b-vi	c-i	d-ii

57. One mole of CO_2 contains

A. 6.023×10^{23} atoms of Carbon
B. 6.023×10^{23} atoms of Oxygen
C. 6.023×10^{23} molecules of CO_2
D. 18.069×10^{23} molecules of CO_2

58. Find the most appropriate match

Group I	**Group II**
a. β-Oxidation	i. Nucleus
b. 50S ribosomes	ii. Peroxisomes
c. Light reaction	iii. Smooth ER
d. Steroid biosynthesis	iv. Chloroplast
	v. Microsomes
	vi. Mitochondria

A.	a-vi	b-iii	c-iv	d-ii
B.	a-i	b-vi	c-v	d-iii
C.	a-ii	b-iv	c-vi	d-i
D.	a-v	b-vi	c-i	d-iii

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59. In angiosperms the ABC model pertains to

A. Root development
B. Leaf development
C. Flower development
D. Shoot development

60. In *Drosophila*, which of the following types of chromatin modifications is associated with dosage compensation?

A. Histone H_4 acetylation
B. Histone H_3 methylation
C. Histone H_1 demthylation
D. Histone H_2A deacetylation

61. To amplify the DNA sequence (5' ATCTTGCTACG.....AAGCTTGCGGC 3') by PCR, which of the following primer sets would you use?

A. 5' ATCTACTACGG3' and 5'AAGCTTGCGTT3'
B. 5'TAGAAGTATGC3' and 5'GCCGCAAGCTT3'
C. 5'TATATCTTCTAC3' and 5'CGGCCGCAAGCTT3'
D. 5'TATCTTCTACGG3' and 5'TTCGAACGCCGG3'

62. Presence of vessel less wood with tricolpate pollen grains in tetracentron is an example of

A. Heteroplasy
B. Heterobathmy
C. Homoplasy
D. Parallelism

63. A Natural silk is a polymer derived from

A. Amino acids
B. Nucleotides
C. Nucleosides
D. Adipic acid

64. The element that acts as a cellular cation and is involved in osmotic regulation is

A. Phosphorous
B. Potassium
C. Sulphur
D. Calcium

65. The radioactive isotope of hydrogen is

A. Protium B. Deuterium C. Tritium D. O-Hydrogen

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66. Which statement/s is/are **true** for glycocalyx

P. Highly fibrous network of carbohydrates that covers the membrane of cells, many bacteria
Q. Calcium deposits on the surface of the cells
R. Lipid soluble compounds present on the cell surface
S. It is not present in plant cells

A. Only P B. P and Q C. Only Q D. Only S

67. Which one among the following inhibits the cell wall synthesis?

A. Methicillin B. Gentamicin C. Refampin D. Fusidic acid

68. One among the following is not a food preservative

A. Propionic acid
B. Benzoic acid
C. Sodium diacetate
D. Cinnamic acid

69. Match the following

Group A	**Group B**
a. Loktak lake	i. Elephant reserve
b. Ghana	ii. Ramsar site
c. Kanha	iii. Biosphere reserve
d. Nokrek	iv. National Park
	v. Tiger sanctuary
	vi. Bird sanctuary

A.	a-ii	b-vi	c-iv	d-iii
B.	a-iv	b-ii	c-iii	d-i
C.	a-vi	b-v	c-i	d-ii
D.	a-iii	b-i	c-v	d-iv

70. All the plant groups possess phloem parenchyma except

A. Gymnosperms
B. Pteridophytes
C. Dicots
D. Monocots

71. Fermentation: a word with many meanings for microbiologist and for a biochemist, it is

A. Growth dependent on substrate-level phosphorylation
B. Use of an organic substrate as the electron donor and acceptor
C. A biological process that occurs in the absence of oxygen
D. Any process involving mass culture of microorganisms under anaerobic conditions.

72. A seed protein was isolated and purified, in the purification methods used the purification material Sephadex G-150. Which of the technique used in above purification?

A. Gel Electrophoresis
B. Ion exchange Chromatography
C. Affinity Chromotography
D. Gel Filtration Chromatography

73. Which of the plant live cell-type is devoid of nucleus at maturity?

A. Xylem parenchyma
B. Vessels
C. Companion cells
D. Sieve tube elements

74. Match the appropriate pair

a. Asafoetida	i. *Syzygium aromaticum*
b. Santonin	ii. *Vitis vinifera*
c. Resveratrol	iii. *Curcuma longa*
d. Caryophyllene	iv. *Artemisia maritime*
	v. Terminalia chebula
	vi. Ferula sps

A.	a-iii	b-vi	c-ii	d-i
B.	a-v	b-i	c-ii	d-iii
C.	a-i	b-iv	c-ii	d-v
D.	a-vi	b-iv	c-ii	d-i

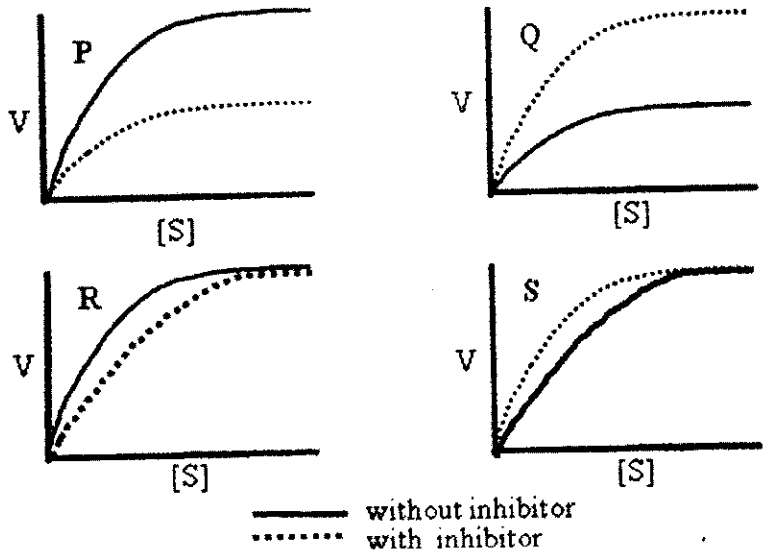
75. An aldehyde without α-hydrogens in presence of a strong base form an alcohol and a carboxylic acid the reaction is called

A. Grignard reaction
B. Cannizaro reaction
C. Claisen condensation
D. Perkin condensation

76. The maximum number of hydrogen bonds a water molecule can have

A. 1 B. 3 C. 2 D. 4

77. Which is Michaelis-Menten graph for competitive inhibition



A. Graph R B. Graph P C. Graph Q D. Graph S

78. What is C-value?

A. This is the number of Cytosine nucleotide present in a gene
B. This is the number of crossing over occurred on a specific locus of the genome
C. This is the value of codon bias in a defined gene
D. This is the amount of DNA contained within haploid nucleus of an organism

79. Agarose gel electrophoresis is used for DNA/RNA detection. What is the nature of this agarose and from where it is obtained?

A. It is a polysaccharide in nature and obtained from waxy leaf of desert plants
B. It is a lipoprotein in nature and obtained from brown algae
C. It is a polysaccharide in nature and obtained from red algae
D. It is a glycoprotein in nature and obtained from green algae

80. Which of the following technique is **NOT** related to gene expression analysis?

A. Amplified fragment length polymorphism (AFLP)
B. Northern hybridization
C. Real time polymerase chain reaction
D. Microarray

81. In which of the following techniques restriction endonuclease is **NOT** used?

A. Amplified fragment length polymorphism (AFLP)
B. Random Amplified Polymorphic DNA (RAPD)
C. Cleaved Amplified Polymorphic Sequences (CAPS)
D. Restriction fragment length polymorphism (RFLP)

82. What is "Aleurone layer" and what is its nature?

A. It is the outermost layer of endosperm and made up of protein
B. It is the outermost layer of endosperm and made up of carbohydrate
C. It is the outermost layer of stomata and made up of protein
D. It is the outermost layer of stomata and made up of glycoprotein

83. The male sex organ of the bryophytes is called

A. Archegonium
B. Antheridium
C. Phycobiont
D. Carpogonia

84. What is "Perennation"?

A. It is the ability of plants, to survive from one germinating season to another, especially under unfavourable conditions
B. It is the process of germination of seeds in drought condition
C. It is the process of phytoremediation where plant can survive in heavy metal containing harardous waste soil
D. It is the process of extraction of heavy metals from contaminated plants

85. If the enthalpy change for a reaction is zero, ΔG° is equal to

A. $T\Delta S^\circ$ B. $-T\Delta S^\circ$ C. $-\Delta H^\circ$ D. lnKeq

86. In which of the following experiment, a probe is required?

A. Polymerase chain reaction(PCR)
B. Pulsed-field Gel Electrophoresis (PFGE)
C. Southern hybridization
D. DNA isolation

87. Which of the amino acid's oxidative/reductive state determines a protein's migration on SDS-PAGE?

A. Methionine B. Tryptophan C. Cysteine D. Tyrosine

88. A reactants P and Q spontaneously reacts and forms a products R and S, the products R and S have less energy than the reactants P and Q, then above reaction is

A. Exergonic
B. Endergonic
C. Isogonic
D. Adiabatic

89. Match the commercial microbial sources in Group I with the products in Group II.

Group I	**Group II**
a. *Corynebacterium lilium*	i. Methanol
b. *Klebsiella oxytoca*	ii. Poly-β-hydroxybutyric acid
c. *Aspergillus niger*	iii. 2,3-Butane di-ol
d. *Alcaligenese utrophus*	iv. Citric acid
	v. Acetophenone
	vi. Glutamic acid

A.	a-iii	b-v	c-ii	d-iv
B.	a-vi	b-iii	c-iv	d-ii
C.	a-i	b-v	c-ii	d-iv
D.	a-vi	b-iii	c-iv	d-v

90. Which of the following are considered to be the best source material for *in vitro* mutant isolation in plants?

A. Shoot meristems
B. Root meristems
C. Cell suspension cultures
D. Seeds

91. All of the following are true about plant growth regulators **except**

A. They are simple organic substances
B. Their effects would vary depending on the interaction with other growth regulators
C. Specific organs are involved in synthesis of plant growth regulators
D. They are transported through xylem, phloem or diffusion

92. Sugar beet (*Beta vulgaris* ssp. *vulgaris*) is diploid with 2n = 18 chromosomes. How many chromosomes will be found in a monosomic mutant of this species?

A. 8 B. 10 C. 19 D. 17

93. Match the entries in the **group I** with the elution conditions in **group II**

Group I	**Group II**
a. Ion-exchange chromatography	i. Isocratic solvent
b. Hydrophobic column chromatography	ii. Specific ligand
c. Gel filtration chromatography	iii. Ampholytes
d. Chromatofocusing	iv. Decreasing gradient of polarity
	v. Increasing gradient of salt

A.	a-iv	b-i	c-ii	d-v
B.	a-iv	b-iii	c-i	d-ii
C.	a-v	b-iv	c-i	d-iii
D.	a-i	b-iv	c-iii	d-ii

94. Match the following

Group I	**Group II**
a. Acid value	i. Iodine number
b. Biuret test	ii. Reducing sugar
c. Kilani Synthesis	iii. Free fatty acids
d. Benedict's test	iv. Cerebrosides
	v. Monosaccharides
	vi. Protein

A.	a-iii	b-vi	c-v	d-ii
B.	a-vi	b-iii	c-ii	d-i
C.	a-ii	b-iii	c-v	d-iv
D.	a-iv	b-iii	c-vi	d-i

95. A certain species of plant produces flowers with petals that are normally blue. Plant with a nuclear mutation '**w**' produce white petals in homozygous condition. In a plant of genotype '**ww**', one w allele reverts to wild type during the early stages of plant development. The detectable outcome that this reversion produces in the resulting petals is

A. Blue petals
B. White petals
C. Blue petals with white sectors
D. White petals with blue sectors

T-11

96. What are the possible peptides obtained by digestion with trypsin

Sequence $^{+}H_3N$-ASKLYPPASTKYSATTPYESLPKTYW-COO^{-}

A. $^{+}H_3N$-AS-COO^{-}
$^{+}H_3N$- KYSATTPYESLPK-COO^{-}
$^{+}H_3N$- KLYPPAST-COO^{-}
$^{+}H_3N$-TYW-COO^{-}

B. $^{+}H_3N$ -ASK-COO^{-}
$^{+}H_3N$-YSATTPYESLPKTYW-COO^{-}
$^{+}H_3N$ -LYPPASTK-COO^{-}

C. $^{+}H_3N$ -AS-COO^{-}
$^{+}H_3N$- YSATTPYESLPK-COO^{-}
$^{+}H_3N$- KLYPPASTK-COO^{-}
$^{+}H_3N$- TYW-COO^{-}

D. $^{+}H_3N$ -ASK-COO^{-}
$^{+}H_3N$ -KYSATTPYESLP-COO^{-}
$^{+}H_3N$- LYPPAST-COO^{-}
$^{+}H_3N$- KTYW-COO^{-}

97. Pseudominance is

A. The expression of recessive mutation in a heterozygous individual in the absence of wile-type allele
B. Caused by the presence of extra gene copy resulting in expression of dominant mutation in homozygous individual with wild-type alleles
C. The expression of dominant allele only in homozygous individuals and not in heterozygous individuals
D. The expression of dominant mutation which always leads to lethality

98. The transfer of a gene from one organism to another or transfer of genetic variation from one population to another is known as

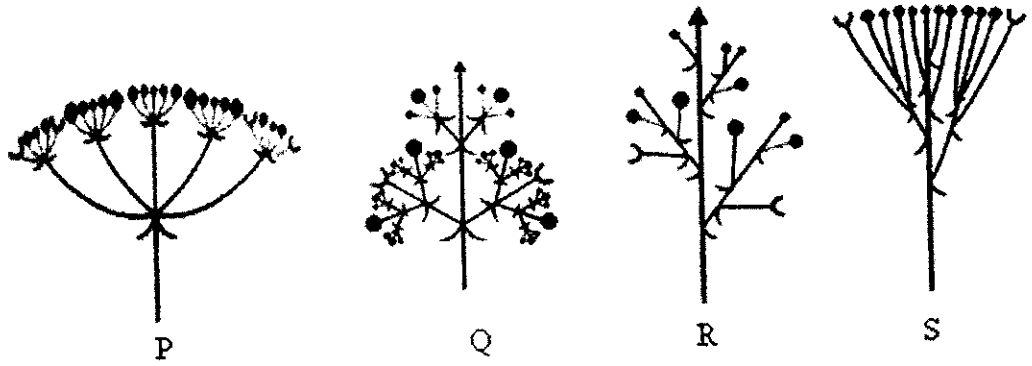
A. Gene flow
B. Gene conversion
C. Gene substitution
D. Genetic redundancy

99. Expansins are involved in

A. Involved in reaction methylation
B. Involved in transglycosylation
C. Involved in acetylation
D. Cross-linking network in cell walls

T-11

100. Which is the correct order of inflorescence



A. P –Compound raceme, Q-Compound umbel, R-Compound corymb, S-Thyrse
B. P –Compound corymb, Q-Compound raceme, R-Thyrse, S-compound umbel
C. P –Compound umbel, Q-Thyrse, R-Compound raceme, S-Compound corymb
D. P –Compound umbel, Q-Compound corymb, R-Thyse, S-Compound raceme

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Revised Keys

Entrance Examination-2019

M Sc. Plant Biology and Biotechnology

Q No	Ans.	Q No	Ans.	Q No	Ans.	Q No	Ans.
1	A	26	B	51	D	76	D
2	B	27	A	52	C	77	A
3	C	28	D	53	C	78	D
4	A	29	B	54	C	79	C
5	D	30	A	55	D	80	A
6	A	31	B	56	B	81	B
7	B	32	D	57	C	82	A
8	A	33	**B**	58	A	83	B
9	D	34	A	59	C	84	A
10	B	35	D	60	**A**	85	B
11	D	36	B	61	B	86	C
12	A	37	D	62	B	87	C
13	A	38	B	63	A	88	A
14	B	39	**C or D***	64	B	89	B
15	C	40	*	65	C	90	C
16	D	41	A	66	*	91	C
17	D	42	D	67	A	92	D
18	A	43	B	68	D	93	C
19	C	44	A	69	A	94	A
20	B	45	D	70	D	95	A
21	A	46	D	71	B	96	B
22	A	47	B	72	D	97	A
23	D	48	B	73	D	98	A
24	C	49	A	74	D	99	D
25	C	50	B	75	B	100	C

* Benefit is given to all.