WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2022-23

BOTACOR05T-BOTANY (CC5)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: $1\times6 = 6$

   (a) What is Caryopsis?

   (b) Differentiate between Gynostegium and Gynostemium.

   (c) What is Tylosis?

   (d) Distinguish between Leptocentric and Hadrocentric vascular bundle.

   (e) What is Kranz anatomy? Where it is found?

   (f) Define Plasmodesmata.

2. Answer the following questions (any ***eight***) taking at least ***one*** question from each group: $3\times8 = 24$

GROUP-A

(a) Mention the families where you find the following $\frac{1}{2}\times6 = 3$

(i) Syngenesious stamen (ii) Tetradynamous stamen

(iii) Verticillaster Inflorescence (iv) Siliqua type of fruit

(v) Basal Placentation (vi) Gynobasic style

(b) Mention different types of aestivation with diagrams. 2+1

(c) (i) Differentiate between Definite and Indefinite Inflorescence. $1\frac{1}{2}+1\frac{1}{2}$

(ii) Distinguish between Aggregate and Multiple fruit.

GROUP-B

(d) (i) Define Idioblast. 1+2

(ii) How would you differentiate Dicot stem from Monocot stem anatomically?

(e) What is Periderm? Draw and describe the structure of Periderm. 1+2

(f) Comment on the role of plant anatomy in Taxonomy. 3

(g) Briefly discuss the anatomical adaptation of Xerophytes. 3

(h) Mention the stomatal types found in the following families

(i) Ranunculaceae (ii) Brassicaceae

(iii) Rubiaceae (iv) Caryophyllaceae

(v) Lamiaceae (vi) Poaceae.

(i) Mention the prime differences between stomata and hydathode. 2+1

State the living component of Xylem and non-living component of Phloem.

(j) State the Korper-Kappe theory of root apex. 3

(k) (i) Differentiate between Collateral and Bicollateral vascular bundles with example. 2+1

(ii) Distinguish between ring porous and diffuse porous wood.

(l) What are the different types of parenchyma? State their functions. 2+1

3. Answer any ***two*** questions from the following (***one*** from each group): 5×2 = 10

GROUP-A

(a) (i) Mention different types of dry dehiscent fruit with examples. 3+2

(ii) Mention the edible parts of Litchi, Apple, Orange and Pomegranate.

(b) Define cohesion and adhesion of stamens. With suitable diagram and examples mention the different types of cohesion of stamens. 2+3

GROUP-B

(c) Describe in brief the secondary growth of a typical root. 5

(d) (i) Write the difference between adcrustation and incrustation. 3+2

(ii) What is Fusiform and Ray initials?

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2022-23

BOTACOR06T-BOTANY (CC6)

ECONOMIC BOTANY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer ***all*** the following questions: 1×6 = 6

(a) What is opium?
(b) Name the rice research centre situated in West Bengal.
(c) What is meant by 'Bagasse'?
(d) What is 'shahi zaafraan'?
(e) What are the uses of bast fiber?
(f) Write the scientific name of clove.

2. Answer any ***eight*** of the following questions: 3×8 = 24

(a) Write a short note on sugarcane processing. 3
(b) Differentiate between fats and oils with suitable example. 3
(c) Mention the scientific name and nutritional values of pigeon pea. 1+2
(d) Discuss the technique of tea processing. 3
(e) Mention the uses and health implications of groundnut and mustard. $1\frac{1}{2}+1\frac{1}{2}$
(f) Indicate the difference between spice and condiments with suitable example. 2+1
(g) Name the family, part used and economic importance of fennel and black pepper. $1\frac{1}{2}+1\frac{1}{2}$
(h) What are the uses of *Santalum* oil and *Eucalyptus* oil? Piperaceae. $1\frac{1}{2}+1\frac{1}{2}$
(i) Classify plant fibres based on origin and examples. 3
(j) Explain how latex is processed to obtain natural rubber. 3
(k) What is meant by therapeutic and habit forming drug? Give examples. 2+1
(l) What is the difference between timber and lumber? Give the family name of sal. 2+1

3. Answer any ***two*** of the following questions: 5×2 = 10

(a) Distinguish between essential and fatty oil. Write the process of steam distillation for the extraction of essential oil. 3+2
(b) Discuss in detail the extraction process of jute fiber. What are the uses of this fiber? 3+2
(c) Describe briefly the different methods of cultivation of rice. Mention a few important uses of rice plant. 3+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2022-23

BOTACOR07T-BOTANY (CC7)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer the following questions in brief: 1×6 = 6

(a) What is nullisomy?

(b) Define the position effect.

(c) Name two intercalating agents.

(d) How many bivalents can be observed in meiotic metaphase I of a double monosomic individual of an organism having normal diploid chromosome number $2n = 18$?

(e) Determine the probability of drawn a card of diamond at random from a standard deck of 52 playing cards.

(f) How duplication loop differs from deletion loop?

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) What do you mean by pedigree analysis? Write down all symbols used in the pedigree analysis. 1+2

(b) What is amphidiploidy? Enumerate the evolution of *Raphanobrassica*. 1+2

(c) Distinguish between paracentric and pericentric inversion. What will be the meiotic products of paracentric inversion? 2+1

(d) Explain photoreactivation in DNA repair mechanism with diagram. 3

(e) Briefly describe CIB method to detect sex-linked lethality. 3

(f) What is dominant epistasis? Explain with proper example the reason of modification of F_2 ratio from 9:3:3:1. 1+2

(g) Distinguish between Polygenic inheritance and Mendelian inheritance. 3

(h) Mention the role of transposons in mutation. 3

(i) What is inheritance pattern of shell coiling in snails? Explain your answer with proper reason. 1+2

(j) Write a brief note on methyl directed mismatch repair. 3

(k) Hardy-Weinberg principle might not apply to a particular population— Explain the possible reasons. 3

(l) Write down the significance of chi-square test for the prediction of progenies. 3

3. Answer any ***two*** questions from the following:

(a) How is mutation in rII locus used for complementation test? Explain intragenic recombination in bacteriophage with the help of mutation in rII locus.

(b) With suitable diagram briefly describe the cytological basis of crossing over. 5

(c) What is mutagenesis? Write the different mechanisms of chemical mutagens in mutagenesis. 1+4

(d) An F_1 individual heterozygous of P, Q, R genes were test crossed and the following progenies were obtained — 1+3+1

PqR / pqr = 72

pqR / pqr = 4

PQR / pqr = 400

PQr / pqr = 6

pQr / pqr = 83

pqr / pqr = 350

Pqr / pqr = 25

pQR / pqr = 60

Construct a linkage map with correct order of loci and calculate the map distance of all the three loci with co-efficient of correlation.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2021-22

BOTACOR05T-BOTANY (CC5)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: 1×6 = 6

(a) Name one plant with Monadelphous Androecium.

(b) Draw Quincuncial Aestivation.

(c) Define Quiescent centre.

(d) What is Rhytidome?

(e) Differentiate between ring porous and diffuse porous wood.

(f) Define Lodicules. Where it is found?

2. Answer the following questions (any ***eight***) taking at least ***one*** question from each Group: 3×8 = 24

GROUP-A

(a) Mention the type of Inflorescence present in the following families– $\frac{1}{2}\times 6 = 3$

(i) Asteraceae (ii) Lamiaceae (iii) Apiaceae

(iv) Euphorbiaceae (v) Poaceae (vi) Araceae

(b) What is an achlamydeous and dichlamydeous flowers? Give example. 2+1

(c) Discuss briefly different types of adhesion of stamens with diagram and example. 3

GROUP-B

(d) Draw and describe open collateral and bicollateral vascular bundle. 3

(e) Discuss briefly the anatomical adaptations of hydrophytes. 3

(f) Discuss briefly the cytodifferentiation of tracheary elements. 3

(g) Mention the scope of plant anatomy in Pharmacognosy. 3

(h) What is Tunica Corpus theory of shoot apex?

(i) Name the types of stomata with examples.

(j) State the anatomical differences between a dicot leaf and a monocot leaf.

(k) Write a short note on secondary growth in Stem. 3

(l) What is procambium and cambium? $1\frac{1}{2} \times 2 = 3$

3. Answer any ***two*** questions from the following (***one*** from each Group): $5 \times 2 = 10$

GROUP-A

(a) Draw and label the different types of placentation with one example for each type. Mention the advanced and primitive type of placentations. 4+1

(b) Write a note on the Schizocarpic fruits with diagrams and examples. 5

GROUP-B

(c) State few differences between sap wood and heart wood. How would you distinguish between monocot and dicot stem anatomically? $2\frac{1}{2} + 2\frac{1}{2} = 5$

(d) (i) Distinguish between Sclereid and Fibre. 2

(ii) Differentiate between ray and axial parenchyma. State their functions. 2+1

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2021-22

BOTACOR06T-BOTANY (CC6)

ECONOMIC BOTANY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer ***all*** the following questions: 1×6 = 6

   (a) Write the Vavilov's concept for centre of origin.

   (b) Write two uses of millets.

   (c) What part of clove plant is used as spice?

   (d) Give an example of introduced plant.

   (e) What is meant by maceration process?

   (f) Which is the commercial fibre of jute?

2. Answer any ***eight*** of the following questions: 3×8 = 24

   (a) Explain the origin and two uses of pigeon pea. 2+1

   (b) Describe briefly the processing of cane sugar. 3

   (c) How is linseed is extracted? 3

   (d) Draw a schematic diagram of classification of fats and oils. 3

   (e) Write the therapeutic uses of cinchona and cannabis. 3

   (f) Write the active constituents and health hazards of *Digitalis* and *Papaver*. $1\frac{1}{2}+1\frac{1}{2}$

   (g) What do you understand by genetic diversity loss? 3

   (h) Write the scientific names and uses of Soybean and Chick pea. $1\frac{1}{2}+1\frac{1}{2}$

   (i) Differentiate spices and condiments with two examples for each. 2+1

   (j) Write scientific name and families for Tobacco and Potato. $1\frac{1}{2}+1\frac{1}{2}$

   (k) Distinguish between natural fibres and synthetic fibres giving one example for each. 2+1

   (l) Give a brief idea on extraction of cotton. 3

3. Answer any ***two*** of the following questions:

(a) Explain how crop domestication is responsible for loss of genetic diversity of Plants. What are the centres of 'old world' and 'new world' according to Vavilov.

(b) Describe in brief the method of extraction of para-rubber. Write two of its uses. 4+1

(c) What exactly are coffee beans? Write a short note on processing of coffee. 1+4

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2021-22

BOTACOR07T-BOTANY (CC7)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer the following questions in brief: 1×6 = 6

   (a) What are different types of point mutation available in nature?

   (b) What is dosage compensation? How it is related to Barr body?

   (c) Distinguish between dominant and recessive epistasis.

   (d) What is tautomerism?

   (e) What do you mean by random genetic drift?

   (f) State the Hardy-Weinberg Law for allele and genotype frequency.

2. Answer any ***eight*** questions from the following: 3×8 = 24

   (a) Colour blindness is a sex-linked inheritance — Explain. 3

   (b) What is coupling and repulsion? In a three point cross why are double crossover types expected less frequently than either of the single crossover types? 2+1

   (c) Wheat is a hexaploid of three genome — Explain. 3

   (d) What is complementation test for allelism? Why it is used? 2+1

   (e) In a dihybrid cross, we are getting a phenotypic ratio 9:7, instead of 9:3:3:1 — Explain. 3

   (f) Explain the addition rule and multiplication rule in probability. 3

   (g) Define deletion and deletion loop. How deletion loop help in chromosome mapping? 1+2

   (h) Describe the cytoplasmic inheritance pattern in petite strain of yeast. 3

   (i) What is Robertsonian translocation? Describe the meiotic behavior of it.

   (j) Describe the genetic event that can produce XXXY individual. 3

   (k) How do you determine sex-linked recessive inheritance from a pedigree chart? 3

   (l) What do you mean by bottleneck population? 3

3. Answer any ***two*** questions from the following:

(a) Discuss the three major mechanism of DNA repair system. What is ROS?

(b) An F_1 individual heterozygous of A, B and C genes was test crossed and the following progenies were obtained —

ABC / abc = 370

abc / abc = 385

Abc / abc = 45

aBC / abc = 50

ABc / abc = 2

abC / abc = 3

AbC / abc = 75

aBC / abc = 70

Construct the linkage map with correct order of loci and calculate the map distance of all three loci along with coefficient of correlation.

(c) Define Trisomics. Mention different types of trisomics with their all possible meiotic behavior. 1+4

(d) Compare the mutagenic effects of deaminating agents and base analogue. Why are X-rays a more potent mutagen than is UV-radiation? 3+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

BOTACOR05T-BOTANY (CC5)

MORPHOLOGY AND ANATOMY OF ANGIOSPERMS

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: 1×6 = 6

(a) What do you mean by adelphy? Give example.
(b) What is an albuminous seed?
(c) Draw a diacytic stomata.
(d) What is a bicollateral vascular bundle?
(e) What are tyloses?
(f) Mention one function of hydathodes.

2. Answer the following questions (any ***eight***) taking at least ***one*** question from each Group: 3×8 = 24

GROUP-A

(a) Distinguish between gynostegium and gynostemium. 3
(b) Write a note on the morphological nature of Hesperidium. 3
(c) Differentiate between Imbricate and Vexillary Aestivation with diagram. 2+1

GROUP-B

(a) State the salient features of Histogen theory regarding the organization of shoot apex. 3
(b) What is Kranz anatomy? Where do you find it? 2+1
(c) Write a short note on Adcrustration and Incrustration. 3
(d) Briefly explain the role of anatomy in plant systematic mentioning at least three examples. 3
(e) Distinguish between Heart wood and Sap wood. What is rhytidome? 2+1
(f) State the differences between vascular bundles of a dicot and monocot stem. 3
(g) Write a short note on Periderm with a diagram. 2+1
(h) Briefly mention the anatomical adaptations of Xerophytes. 3
(i) Discuss briefly the cytodifferentiation of sieve elements. 3

3. Answer the following questions (***one*** from each Group):

GROUP-A

(a) Briefly discuss the concept of primitive and advanced type of inflorescences. 5

(b) What do you mean by cohesion of stamens? Mention the different types of cohesion of stamens with examples. 1+3+1

GROUP-B

(a) What are pits and plasmodesmata? Mention their functions. 3+2

(b) Explain Korper-Kappe theory of root apex organization. Define quiescent centre. 3+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

BOTACOR06T-BOTANY (CC6)

ECONOMIC BOTANY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: 1×6 = 6

   (a) Name two byproducts obtained from Sugarcane industry.

   (b) Write the scientific name of the plant that yields morphine.

   (c) Write two examples of major plant introduced according to Vavilov's work.

   (d) Expand IRRI.

   (e) What is coconut milk?

   (f) From where the cotton of commerce is yielded?

2. Answer any ***eight*** of the following questions: 3×8 = 24

   (a) Write the names of the six centres of 'Old World' as described by Vavilov. 3

   (b) Describe briefly the propagation and uses of potato. 3

   (c) What are the health implications of Tea and Coffee? 3

   (d) Mention scientific name, family, active constituents and morphological nature of plant parts where from 'Charas' is obtained. $1+\frac{1}{2}+1+\frac{1}{2}$

   (e) Write the scientific name and family of Turmeric and Asafoetida. 3

   (f) Differentiate spices from condiments citing examples. What is the morphological nature of spice clove? 2+1

   (g) Write the botanical name, family and uses of Coconut. $1+\frac{1}{2}+1\frac{1}{2}$

   (h) What is plant introduction? Give two examples of primary introduced plant species (scientific name) in India. 1+2

   (i) Briefly describe the tapping method for rubber cultivation. 3

   (j) How is Groundnut oil extracted? 3

   (k) Differentiate between Teak wood and Pine wood. 3

   (l) Give the scientific name of Tossa jute and White jute. State their differences. 1+1+1

3. Answer any ***two*** of the following questions:

(a) Classify fibers based on their origin. Describe the process of extraction of Cotton.

(b) Describe the cultivation practices of any Rice variety.

(c) What are beverages? Enumerate the steps involved in the processing of any one non-alcoholic beverage studied by you. 1+4

(d) Write the botanical name, their respective families, parts used, and uses of Teak and Linseed. $(1+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}) \times 2$

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

BOTACOR07T-BOTANY (CC7)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer the following questions in brief: 1×6 = 6

   (a) Define expressivity.

   (b) What do you mean by complete linkage? How it is related to crossing over?

   (c) Assume that an organism has $2n = 6$ chromosomes. How many chromosomes would be present in a trisomic organism of this species?

   (d) Differentiate between multiple allele and polygene.

   (e) What do you mean by complete linkage? How it is related to crossing over?

   (f) Distinguish between nullisomics and double monosomics.

2. Answer any ***eight*** questions from the following: 3×8 = 24

   (a) Discuss maternal effect with reference to inheritance pattern of shell coiling in snails.

   (b) Distinguish between true allopolyploid and segmental allopolyploid.

   (c) Give the molecular mechanism by which alkylating agents cause mutation.

   (d) What is the basis for the green white colour variegation in the leaves of four o'clock plant (*Mirabilis jalapa*)? If the following cross is made: Variegated (Female) × Green (Male).

   (e) Briefly discuss the genetic significance of F_2 phenotypic ratios 9:3:4 and 13:3.

   (f) Distinguish between pericentric and paracentric inversions. What are the meiotic products of paracentric inversion? 2+1

   (g) Briefly describe the CIB method of detection of sex linked lethal.

   (h) Why is the DNA repair extremely important? What will happen if RecBCD is mutated in a cell?

   (i) What is pedigree analysis? Write all the symbols used in pedigree analysis.

   (j) What is the difference between a transition mutation and a transversion mutation?

   (k) What are cistron, recon and muton?

   (l) How many A and a alleles are present in a sample of organisms consisting of 10 AA, 15Aa and 4aa individuals? What are the allele frequencies in this sample?

3. Answer any ***two*** questions from the following:

(a) A cross was made between purple leaf (pl), glossy seedling (gl) draft (t) variety and (+++) type. F_1 plants were test crossed and the following proportions were obtained when a sample of 1000 plants were counted:

Wild type	310
Purple leaf, glossy seedling, dwarf	305
Purple leaf	140
Glossy seedling, dwarf	145
Purple leaf, dwarf	42
Glossy seedling	43
Dwarf	09
Purple leaf, glossy seedling	06

Determine the correct order of the genes. Calculate the map distance between the genes, Coefficient of coincidence and Interference.

(b) With suitable diagram briefly describe the cytological basis of crossing over. 5

(c) Mention the various types of DNA repair mechanisms known to counteract the effects of UV rays. What is the role of visible light in photoreactivation? 4+1

(d) Briefly describe the rII locus in T4 phage. How could rII locus be divided into two cistrons? 3+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2019

BOTACOR05T-BOTANY (CC5)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer the following questions: $1\times6 = 6$

   (a) What is an apocarpous pistil?
   (b) What is false fruit?
   (c) Define quiescent centre.
   (d) What is meant by Kranz anatomy?
   (e) Name an inflorescence type where spathe bract is present.
   (f) What is aerenchyma?

2. Answer any ***three*** questions from the following: $3\times3 = 9$

   (a) Write a note on the adhesion of stamens with examples.
   (b) Write down the different types of placentation with examples.
   (c) Distinguish between cyathium and hypanthodium inflorescence.
   (d) With one example each, explain the simple, aggregate and multiple fruits.
   (e) Write down the different types of aestivation in floral buds with examples.

3. Answer any ***five*** questions from the following: $3\times5 = 15$

   (a) Explain the role of plant anatomy in pharmacognosy.
   (b) Write a note on the different types of stomata according to Metcalfe and Chalk.
   (c) Write in brief the anatomical adaptations in hydrophytes.
   (d) With the help of schematic diagrams, give a brief account on the different types of vascular bundles.
   (e) What is hydathode? Briefly describe the structure of the same. 1+2
   (f) What is periderm? Distinguish between ring porous wood and diffuse porous wood. 1+2
   (g) Write a note on the role of cambium in secondary growth in dicotyledonous plants.
   (h) Explain in brief the tunica-corpus theory with schematic diagram.

4. Answer any ***two*** questions from the following: $5\times2 = 10$

   (a) Write down the concept of primitive and advanced carpel types.
   (b) Characterise with illustrations and examples, the different types of schizocarpic fruits.
   (c) Describe the tracheary elements with suitable diagrams.
   (d) What is Calyptrogen? Explain the Korper-Kappe theory with illustration.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2019

BOTACOR06T-BOTANY (CC6)

ECONOMIC BOTANY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: 1×6 = 6

   (a) Write the botanical name of Sal.

   (b) Mention use of the eyes of Potato.

   (c) Rubber is obtained from which part of rubber tree?

   (d) Give the scientific name of a plant rich in caffeine content.

   (e) Write the botanical name of chickpea.

   (f) Mention the source of digitoxin.

2. Answer any ***eight*** of the following questions: 3×8 = 24

   (a) What do you mean by center of origin of crops? 3

   (b) How would you compare volatile oil with fixed oil? Give an example of each. $2+\frac{1}{2}+\frac{1}{2}=3$

   (c) How are leguminous plants beneficial to the environment? Describe with example. 3

   (d) Why are millets called lazy mans' crop or poor mans' cereal? Mention the use of two main cereals. 1+2 = 3

   (e) Mention the therapeutic uses of *Digitalis* and *Papaver*. 3

   (f) Write in brief about the health hazards of Tobacco. 3

   (g) Write down the botanical names and the health implications of groundnut and linseed. $1\frac{1}{2}+1\frac{1}{2}=3$

   (h) Mention the scientific name, family, part used and economic importance of mustard plant or soyabean. 3

   (i) Name the plant parts used and the uses of the following: 3
   Saffron, Clove and Black pepper.

   (j) What is latex? Write briefly how latex of rubber yielding plant is processed to produce natural rubber. 1+2=3

   (k) Mention in brief regarding the uses of *Santalum* and *Eucalyptus* oil. 3

   (l) Briefly describe the process of retting in jute. 3

3. Answer any *two* of the following questions:

(a) Give the family name, part used, active constituent and medicinal use of the following plants: $2\frac{1}{2}+2\frac{1}{2}=5$

(i) *Cinchona*

(ii) *Cannabis*

OR

(i) *Digitalis*

(ii) *Papaver*

(b) Explain the importance of crop domestication to man. How does crop domestication influences the loss of genetic diversity of plants? 2+3 = 5

(c) Write briefly on Vavilov's concept of centres of origin of crops with examples of the major centres as outlined by Vavilov. 5

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 3rd Semester Examination, 2019

BOTACOR07T-BOTANY (CC7)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer the following questions in brief: 1×6 = 6

(a) Define complete linkage. 1
(b) What is monosomy? 1
(c) What is frame shift mutation? 1
(d) Name one intercalating agent. 1
(e) Define epistasis. 1
(f) What is recombination frequency? 1

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) Briefly describe the difference between dominance and co-dominance. 3
(b) Differentiate between back cross and test cross. 3
(c) What are Kappa particles? Explain the inheritance pattern in *Paramecium*. 1+2
(d) Describe the meiotic behaviour of paracentric inverted chromosome. 3
(e) What are base analogues? How do they cause mutation? 1+2
(f) State the laws of probability. 3
(g) Distinguish between autopolyploids and allopolyploids. 3
(h) Mention the major types of DNA repair mechanisms. Name one DNA repair enzyme. 2+1
(i) Colour blindness is a sex linked inheritance. Explain. 3
(j) What are trisomics? Draw types of primary trisomics chromosome configurations at metaphase I. 1+2
(k) Explain the origin of bread wheat. 3
(l) What does the Hardy Weinberg's law state? What factors affect the Hardy Weinberg's equilibrium? 1+2

3. Answer any ***two*** questions from the following: 5×2 = 10

(a) What is *r*II locus? Explain the *cis-trans* complementation test in *r*II locus of T_4 Phage. 1+4
(b) How does chromosomal basis of inheritance justify Mendel's Law. 5
(c) Female Drosophila heterozygous for ebony (e^+/e), scarlet (st^+/st) and spineless (ss^+/ss) were test crossed and the following progenies are obtained – 2+3

Wild type-	67
Ebony-	8
Ebony, scarlet-	68
Ebony, spineless-	347
Ebony, scarlet, spineless-	78
Scarlet-	368
Scarlet, Spineless-	10
Spineless-	54

Determine the correct order of the genes. Calculate the map distances between the genes.

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