

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **2192** **IC**

Unique Paper Code : 32161201

Name of the Course : **B.Sc. (Hons.) Botany**

Name of the Paper : Mycology and
Phytopathology

Semester : II

Time : 3 Hours

Maximum Marks : 75

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt any **six** questions in all including question **No.1** which is compulsory.
- (c) Please attempt **all** parts of a question together.
- (d) Draw suitable diagrams wherever necessary.

1. (a) Fill in the blanks :

1×10=10

- (i) is a coprophilous fungus.
- (ii) is commonly known as red mold.

P.T.O.

- (iii) A fungus used in flavouring of cheese is
 - (iv) Yellow stripe rust of Wheat is caused by
 - (v) Coenocentrum is found in
 - (vi) is an example of a holocarpic fungus.
 - (vii) Thallus of slime mold is called
 - (viii) Isidia are vegetative propagules of
 - (ix) Angular leaf spot of cotton is caused by
 - (x) Perfect stage of *Aspergillus* is
- (b) Define any **five** of the following : 1×5=5
- (i) Capillitium
 - (ii) Appresorium
 - (iii) Myxamoeba
 - (iv) Hymenium
 - (v) Arbuscles
 - (vi) Soredia
 - (vii) Sporodochium

2. Differentiate between any **three** of the following :

- 4×3=12
- (i) Amphigynous and paragynous antheridial development

- (ii) Cleistothecium and Perithecium
 - (iii) Endomycorrhiza and Ectomycorrhiza
 - (iv) Homoeomerous and Heteromerous lichen
3. Write short notes on any **three** of the following :
4×3=12

- (i) Spermatization
- (ii) Fairy ring of mushroom
- (iii) Plant quarantine regulations
- (iv) Chytridiomycetes
- (v) Sexual reproduction in *Rhizopus*

4. Discuss briefly any **two** of the following :
6×2=12

- (i) Classification of plant diseases
- (ii) External symptoms of viral diseases
- (iii) Bioluminescence in fungi

5. Write notes on any **three** of the following :

4×3=12

- (i) Asexual reproduction in *Albugo*
- (ii) Sexual reproduction in *Phytophthora*
- (iii) Sexual reproduction in *Neurospora*
- (iv) Sexual reproduction in *Saccharomyces cerevisiae*
- (v) Parasexual cycle in a fungus.

6. Draw well labelled diagrams of any **three** of the following : $4 \times 3 = 12$
- (i) V.S. thallus of lichen
 - (ii) V.S. apothecium of *Peziza*
 - (iii) L.S. of a gill of *Agaricus*
 - (iv) Sporangium of *Stemonitis*
7. (i) Explain the life cycle of *Puccinia graminis tritici* with well labelled diagrams. 6
- (ii) Discuss role of fungi in agriculture and food industry. 6
8. Explain any **three** of the following : $4 \times 3 = 12$
- (a) Symptoms of bacterial diseases
 - (b) Conidiophore of *Penicillium*
 - (c) Hyphae modification in fungi
 - (d) Asexual reproduction in *Alternaria*
 - (e) Types of Plasmodium

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **2193** **IC**

Unique Paper Code : 32161202

Name of the Course : **B.Sc. (Hons.) Botany**

Name of the Paper : Archegoniatae

Semester : II

Time : 3 Hours **Maximum Marks : 75**

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt **five** questions in all.
- (c) Question **No. 1** is compulsory.
- (d) Attempt **all** parts of question together .
- (e) Draw neat labelled diagrams wherever necessary.

1. (a) Fill in the blanks : 1×5=5

(i) The term gymnosperms was coined by.....

(ii) Telome theory was given by.....

P.T.O.

(iii)is a gymnosperm showing double fertilization.

(iv) Kidney shaped sporangia are seen in.....

(v) Canada balsam is obtained from.....

(b) Match the following : 1×5=5

- | | |
|--------------------------|-----------------|
| (i) Retort cells | <i>Cycas</i> |
| (ii) Synangium | <i>Pteris</i> |
| (iii) Amphigastria | <i>Sphagnum</i> |
| (iv) Stomium | <i>Porella</i> |
| (v) Diploxylic condition | <i>Psilotum</i> |

(c) Give the botanical names of : 1×5=5

- (i) Whisk fern
- (ii) Peat moss
- (iii) A living fossil
- (iv) Hornwort
- (v) Scouring rushes

2. Differentiate between any **three** of the following :

3×5=15

- (i) Thallus of *Riccia* and *Pellia*
- (ii) Gametophyte of *Equisetum* and *Pteris*

(iii) Stem of *Cycas* and *Pinus*

(iv) Gametophyte of *Porella* and vegetative
Sporophyte of *Selaginella*

(v) Capsule of *Marchantia* and *Riccia*

3. Draw neat labelled diagrams of any **three** of the
following : $3 \times 5 = 15$

(i) T.S. internode of *Equisetum* stem

(ii) V.S. needle of *Pinus*

(iii) T.S. coralloid root of *Cycas*

(iv) L.S. capsule of *Funaria*

(v) V.S. sporophyll of *Pteris*

4. Write short notes on any **three** of the following :

$3 \times 5 = 15$

(i) Spore dispersal in *Pteris*

(ii) Hydrophytic characters of *Equisetum*

(iii) Primitive features of *Cycas*

(iv) Asexual reproduction in *Marchantia*

5. (a) Enumerate the general characteristics of Pteridophytes. How are they different from Bryophytes? 8
- (b) Enumerate the morphological features of *Rhynia*. 4
- (c) What is a seed-scale complex? Explain. 3
6. (a) What are the differences between the ovule of *Cycas* and *Pinus* at the time of fertilization? Draw diagrammatic sketches to support your answer. 7
- (b) Briefly enumerate the evolution of stelar system in Pteridophytes. 5
- (c) Discuss the ecological importance of Bryophytes. 3
7. (a) What are the evolutionary tendencies of *Gnetum*? 5
- (b) The sporophyte of *Anthoceros* is partially independent. Comment. 5
- (c) What is the significance of heterospory? Explain. 5

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : 2194 **IC**

Unique Paper Code : 32161401

Name of the Course : **B.Sc. (Hons.) Botany**

Name of the Paper : Molecular Biology

Semester : IV

Time : 3 Hours

Maximum Marks : 75

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
 - (b) Question **No. 1** is compulsory and attempt **five** questions in all.
 - (c) Attempt all parts of the question together.
1. (a) Give major contributions of the following (any **five**) : $5 \times 1 = 5$
- (i) M. Meselson and F. W. Stahl
 - (ii) H. G. Khorana
 - (iii) F. Meischer
 - (iv) J. H. Taylor
 - (v) R. W. Holley

P.T.O.

(vi) C. Yanofsky

(vii) M. Kozak

(b) Expand the following (any **five**) : $5 \times 1 = 5$

(i) SSB

(ii) GTF

(iii) CRP

(iv) IGS

(v) UTR

(vi) ORC

(c) Define (any **five**) : $5 \times 1 = 5$

(i) Hyperchromicity

(ii) Ribozyme

(iii) Shine-Dalgarno sequence

(iv) Operon

(v) Okazaki fragment

(vi) Catenation

2. Differentiate between any **five** of the following with the help of labelled diagrams :

$5 \times 3 = 15$

(i) A-DNA and Z-DNA

(ii) Pribnow box and Hogness box

(iii) Constitutive and facultative Heterochromatin

- (iv) Nucleotide and Nucleoside
- (v) DNA Pol I and DNA Pol III
- (vi) Eukaryotic and Prokaryotic ribosome

3. Write short notes on any **three** of the following and draw labelled diagram : $3 \times 5 = 15$

- (i) Nucleosome structure
- (ii) Inhibitors of protein synthesis
- (iii) Rolling circle model of DNA replication
- (iv) Mitochondrial genome
- (v) Gene silencing

4. (a) Briefly describe the regulation of Tryptophan synthesis in *E. coli*. 10

(b) Discuss the experiments that helped in deciphering the genetic code. 5

5. (a) Discuss the role of various proteins that assemble at the replication fork during prokaryotic DNA replication. 9

(b) Describe Fraenkel-Conrat's experiment which proved that RNA is the genetic material. 6

6. (a) Explain in detail the initiation of translation in Prokaryotes and Eukaryotes. 9
- (b) Name and compare the three classes of RNA splicing. 6
7. (a) Explain transcription termination in prokaryotes and eukaryotes. 10
- (b) Briefly describe exon shuffling. 5

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **2195** **IC**

Unique Paper Code : 32161402

Name of the Course : **B.Sc. (Hons.) Botany**

Name of the Paper : Ecology

Semester : IV

Time : 3 Hours

Maximum Marks : 75

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt **five** questions in all.
- (c) Question **No.1** is compulsory.
- (d) **All** questions carry equal marks.
- (e) All parts of questions must be attempted together.

1. (a) Define any **five of the following : $5 \times 1 = 5$**

- (i) Endemism
- (ii) Carrying capacity
- (iii) Soil texture

P.T.O.

- (iv) Ecotone
- (v) Weathering
- (vi) Ecesis
- (vii) Ecological amplitude
- (viii) Mortality

(b) Fill in the blanks : 5×1=5

- (i) The amount of inorganic substances present in the environment of an ecosystem is called.....
- (ii)is an instrument used to measure light intensity.
- (iii) The soils transported by wind is called as.....
- (iv) is an example of stem parasite.
- (v) The ability of an organism for self regulation which enables them to adjust to changing environment is called.....

(c) Match the following : 5×1=5

Column A

- (i) Holard
- (ii) Epiphyte
- (iii) Serotiny

Column B

- (a) *Pinus*
- (b) Warmer uppermost layer of water body
- (c) Total water in soil

(iv) Psammosere

(d) A plant growing on another plant

(v) Epilimnion

(e) Succession occurring on sand

2. Write short notes on any **three** of the following :
 $3 \times 5 = 15$

(a) Habitat and Ecological Niche

(b) Vegetation of Delhi

(c) Raunkiaer's life forms

(d) Survivorship curves

(e) Precipitation types

3. Differentiate between any **five** of the following :
 $5 \times 3 = 15$

(a) Net primary productivity & Gross primary productivity

(b) Mor humus & Mull humus

(c) Primary succession & Secondary succession

(d) Food chain & Food web

(e) Heliophytes & Sciophytes

(f) Natural ecosystem & Artificial ecosystem

4. (a) Define Biogeochemical cycle. Explain nitrogen cycle with suitable diagram. 5

(b) Discuss the beneficial effects of fire. 5

- (c) Define age pyramid. Describe briefly the different types of age pyramids along with the suitable diagrams. 5
5. (a) Define Endemism. Give a brief account of any **two** phytogeographical zones of India. 5
- (b) Write an account on analytical characteristics of a community. 5
- (c) What is soil profile ? Briefly explain with the help of suitable diagram. 5
6. (a) Briefly discuss the "Thermal Stratification" in a standing water body. 5
- (b) Explain the different forms of water in soil. 5
- (c) Give an account on Y- shaped energy flow model. 5

OR

Comment on "Wind as an ecological factor".

7. (a) What is Ecological Succession ? Explain various stages of hydrosere with the help of suitable diagram. 8
- (b) Describe various types of positive interactions amongst the living organisms by citing suitable examples. 7

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[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **2196** **IC**

Unique Paper Code : 32161403

Name of the Course : **B.Sc. (Hons.) Botany**

Name of the Paper : Plant Systematics

Semester : IV

Time : 3 Hours

Maximum Marks : 75

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt **five** questions in all.
- (c) Question **No.1** is compulsory.
- (d) Attempt **all** parts of a question together.
- (e) **All** questions carry equal marks.

1. (a) Fill in the banks : 5

- (i) has given sexual system of classification.
- (ii) is the author of *Theorie elementaire de la botanique*.
- (iii) is the alternative name of Umbelliferae.

P.T.O.

- (iv)is the author of 'The Flora of Delhi'.
- (v) is the father of Genus Concept.
- (vi) The taxonomic category indicated by the suffix '-opsida' is.....

(b) Expand the following (any **five**) : 5

- (i) nom. nud.
- (ii) IAPT
- (iii) ICN
- (iv) DC.
- (v) nom. cons.
- (vi) ICNCP

(c) Where are the following located : 2

- (i) National Botanical Research Institute
- (ii) Royal Botanical Garden

(d) Define the following (any **three**) : 3

- (i) Holotype
- (ii) Heterobathmy
- (iii) Plesiomorphy
- (iv) Taxon

2. Write short note on any **three** of the following : 3×5=15

- (a) Principle of priority and its limitations
- (b) Polyclaves

- (c) Roles of a herbarium
- (d) Co-evolution of angiosperms and animals
3. (a) Describe the system of classification given by Bentham and Hooker for seed plants upto series. Explain the merits and demerits of this classification system. $7+4=11$
- (b) What is a flora ? Give **one** example each of local, regional and continental flora with their authors. 4
4. Differentiate between any **three** : $3 \times 5 = 15$
- (i) Phenetic and phylogenetic classification
- (ii) Primitive and Advanced characters
- (iii) Parallelism and Convergence
- (iv) Phenogram and Cladogram
5. (a) What cytological data are used in plant systematics ? Discuss their role in solving taxonomic problems with examples. 8
- (b) Write Principles of numerical taxonomy. Give any **three** merits and demerits. 7
6. Briefly discuss any **three** : $3 \times 5 = 15$
- (i) The herbaceous origin hypothesis of angiosperm.
- (ii) Rejection of scientific names.

(iii) Biological species concept.

(iv) APG (III) classification

7. (a) Interpret the following :

- | | | |
|-------|---|---|
| (i) | <i>Delphinium viscosum</i> Hook. et. Thomson | 1 |
| (ii) | X <i>Triticose-calc</i> | 1 |
| (iii) | <i>Rosa webbiana</i> + <i>Rosa floribunda</i> | 1 |
| (iv) | <i>Cynodon dactylon</i> (Linn.) Pers. <i>Panicum dactylon</i> Linn. | 2 |

(b) Name the authors who have used the following groups name in their classification (any **five**) : $5 \times 1 = 5$

- (i) *Ordines anomali*
- (ii) Liliopsida
- (iii) Gamopetalae
- (iv) Heteromerae
- (v) Diandria
- (vi) Embryophyta

(c) Give an example for the following (any **five**) : $5 \times 1 = 5$

- (i) Autonym
- (ii) Species name after the name of a taxonomist
- (iii) Generic name based on a place
- (iv) Monotypic family
- (v) Monograph
- (vi) Index

This question paper contains 4 printed pages]

Roll No.

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S. No. of Question Paper : 2361

Unique Paper Code : 32163404

IC

Name of the Paper : Medicinal Botany

Name of the Course : B.Sc. (Hons.) Botany/B.Sc. Prog. : SEC

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all including

Question No. 1 which is compulsory.

Write botanical names wherever applicable.

1. (a) Write suitable answers for the following : 5×1=5

(i) A plant used as an expectorant and bronchodilator in cough syrups.

(ii) A plant source of reserpine.

(iii) A plant used as a tonic for female reproductive issues.

(iv) A critically endangered medicinal plant.

(v) Expand the abbreviation-TBGRI.

P.T.O.

(b) Match the following :

5×1=5

- | | |
|----------------------------------|--------------------|
| (i) <i>Terminalia chebula</i> | (a) Asphodelaceae |
| (ii) <i>Phyllanthus emblica</i> | (b) Menispermaceae |
| (iii) <i>Piper longum</i> | (c) Combretaceae |
| (iv) <i>Tinospora cordifolia</i> | (d) Phyllanthaceae |
| (v) <i>Aloe vera</i> | (e) Piperaceae |

(c) Define any five of the following terms :

5×1=5

- (i) Bioprospecting
- (ii) Ethnotaxonomy
- (iii) Greenhouse
- (iv) Pharmacopoeia
- (v) Traditional medicine
- (vi) Adaptogen.

2 Write short notes on the following (any three) : 3×5=15

- (i) Ethnobotany as an interdisciplinary science
- (ii) IUCN Red List Categories
- (iii) *Curcuma longa*
- (iv) Polyherbal formulations
- (v) A plant used as a nootropic drug.

3. (a) Explain the concepts of health and disease in the Unani system of medicine. How does the system differ from the 'Tridoshas' concept of Ayurveda ? 7
- (b) What are the threats to biodiversity ? Discuss the various strategies used for conservation of endangered and endemic medicinal plants of India. 8
4. (a) Mention *two* medicinal plants and explain their importance in the treatment of each of the following diseases : 3×3=9
- (i) Cardiac ailments
- (ii) Skin diseases
- (iii) Jaundice.
- (b) What are the objectives of a nursery ? What is the difference between a temporary and permanent nursery ? List the important components of a nursery. 6
5. Write the botanical name, family, part used, major active constituents and medicinal uses for the following (any *three*) : 3×5=15
- (a) Cinnamon
- (b) Periwinkle
- (c) Holy basil
- (d) Indian ginseng.

6. (a) Write a note on the 'Jeevani' drug based on the traditional knowledge of Kani tribe of Kerala. 5
- (b) What is the role of ethnobotanical surveys and documentation in relation to medicinal plants ? 5
- (c) Discuss the various asexual methods used for the propagation of medicinal plants. 5

This question paper contains 4+2 printed pages]

Roll No.

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S. No. of Question Paper : 2920

Unique Paper Code : 32165201 IC

Name of the Paper : Plant Ecology and Taxonomy

Name of the Course : Botany : G.E. for Honours

Semester : II

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt Section A and B on SEPARATE SHEETS

Q. No. 1 of both sections is compulsory.

Attempt *three* questions from Section A and *three* questions from Section B including question number 1 of both sections.

Attempt *All* parts of the question together:

Section A

1. (a) Define any *five* of the following :

5×1=5

(i) Pedogenesis

(ii) Humus

(iii) Edge effect

P.T.O.

(iv) Basal cover

(v) Homeostasis

(vi) Thermocline

(vii) Chresard.

(b) Fill in any *five* of the blanks :

$5 \times \frac{1}{2} = 2.5$

(i) Instrument used to measure relative humidity is called

(ii) Pyramid of energy is always

(iii) is an example of hydrophyte.

(iv) is the study of relation between organisms and their natural environment.

(v) cycle is a sedimentary biogeochemical cycle.

(vi) is the successful establishment of a species in a bare area.

(vii) The diameter of clay particle is less than mm.

2. Differentiate between any *three* of the following : $3 \times 5 = 15$

- (i) Primary and secondary succession.
- (ii) Food chain and food web.
- (iii) Neo-endemism and palaeo-endemism.
- (iv) Soil texture and soil structure.

3. Write short notes on any *three* of the following : $3 \times 5 = 15$

- (i) Weathering.
- (ii) Soil profile.
- (iii) Shelford's law of tolerance.
- (iv) Quantitative analytical characters of plant communities.
- (v) Soil water.

4. (a) List the different botanical provinces of India. Describe any *one* in detail. 7

(b) What are biogeochemical cycles ? Explain Nitrogen cycle with a suitable diagram. 8

Section-B

1. (a) Match the following : 2.5

- | | |
|----------------------------------|-------------------------------|
| (i) Binomial Nomenclature | (a) Takhtajan |
| (ii) Bubble Diagram | (b) Engler & Prantl |
| (iii) Flora of Delhi | (c) Linnaeus |
| (iv) Phylogenetic Classification | (d) Botanical Survey of India |
| (v) Herbaria | (e) J. K. Maheshwari |

(b) Give the alternative names of any *three* of the following families : 3

Labiatae, Graminae, Umbelliferae, Cruciferae

(c) Expand any *two* of the following abbreviations : $2 \times 1 = 2$
IAPT, ICNCP, nom.cons, Hook. f.

2. Write short notes on any *three* of the following : $3 \times 5 = 15$

- (i) Principle of priority and its limitations.
- (ii) Botanical garden and its functions

- (iii) Rejection of names
 - (iv) Procedure of Numerical taxonomy
 - (v) Role of cytology in plant systematics with examples
3. (a) Define any *five* of the following : 5
- (i) Diagnosis
 - (ii) Herbarium
 - (iii) Valid Publication
 - (iv) OTU
 - (v) Taxon
 - (vi) Flora
 - (vii) Holotype.
- (b) Interpret any *five* of the following : 5
- (i) X *Triticosecale*
 - (ii) *Lupinus* [Tourn.] Linn.
 - (iii) *Solanum nigrum* L.
 - (iv) *Carex kashmirensis* Clark in Hook.f.
 - (v) *Cynodon dactylon* (Linn.) Pers.
 - (vi) *Rosa floribunda* cv. Blessings

- (c) Define dichotomous keys ? Discuss two types of dichotomous keys. 5
4. (a) Differentiate between natural and phylogenetic system of classification. Give an outline of Bentham and Hooker's system of classification. Discuss its merits and demerits. 10
- (b) Discuss Typification in detail. 5

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3043

IC

Unique Paper Code : 32165401

**Name of the Paper : Economic Botany and
Biotechnology**

Name of the Course : Botany : G.E. for Honours

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. This question paper has seven questions. All questions carry equal marks.
3. Attempt five questions in all.
4. Question No. 1 is compulsory.

1. (a) Define the following terms :

- (i) Adulterant
- (ii) Lathyrism
- (iii) Non-drying Oil

P.T.O.

(iv) Condiments

(v) CTC

(5×1=5)

(b) Expand the following :

(i) NBPGR

(ii) IARI

(iii) ICRISAT

(iv) FRI

(v) CIMMYT

(5×1=5)

(c) Define the following terms :

(i) Callus

(ii) Restriction Enzyme

(iii) Primer

(iv) Antibody

(v) cDNA

(5×1=5)

2. Write short notes on the following :

(a) Haploid Production

- (b) DNA Fingerprinting and its Applications
- (c) Chemistry and Processing of Tea (3×5=15)
3. Explain the following :
- (a) Harvesting and Milling of Wheat
- (b) Classification of Oils
- (c) Micropropagation (3×5=15)
4. Draw well labelled diagrams of the following :
- (a) L.S. Clove
- (b) L.S. Cotton seed
- (c) L.S. Peppercorn (3×5=15)
5. Differentiate between the following :
- (a) Grain Legume and Forage Legume
- (b) Surface Fibre and Bast Fibre
- (c) Alcoholic Beverages and Non-Alcoholic Beverages
- (d) RAPD and RFLP
- (e) ELISA and Western Blotting (5×3=15)

P.T.O.

6. Write the Botanical Name, Family, Part Used, Chemical Constituents and Uses of the following :

(a) Black Pepper

(b) Cotton

(c) Clove

(3×5=15)

7. (a) Outline the steps in PCR Cycle and discuss the applications of PCR.

(b) What is ELISA? Explain its types and applications.

(c) Briefly discuss the contributions of the following :

(i) Frederic Sanger

(ii) Guha and Maheshwari

(3×5=15)

A

This question paper contains 4 printed pages]

Roll No.

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S. No. of Question Paper : 2411

Unique Paper Code : 42163601

IC

Name of the Paper : Intellectual Property Rights (IPR)

Name of the Course : B.Sc. (Prog.) : SEC

Semester : VI

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any five questions including

Question No. 1, which is compulsory

Attempt all parts of a question together.

I. (A) Define the following (any five) : $5 \times 1 = 5$

- (a) Trade secrets
- (b) Industrial designs
- (c) Copyrights
- (d) Geographical indications
- (e) Patents
- (f) Trademarks.

P.T.O.

(B) State True or False (any five) :

5×1=5

- (a) Patents are territorial rights.
- (b) Registration of trademark does not render exclusive rights to the company to commercialize its products in the market.
- (c) Makrana marble has a registered GI tag.
- (d) Copyright is an unregistered right.
- (e) A design can be registered under the Design Act (2000), only if it is new or original.
- (f) A telephone directory is copyright protected.
- (g) The criteria for patentability of an invention are novelty, inventive step and industrial applicability.

(C) Fill in the blanks with the appropriate names of protocols/ treaty or conventions (any five) :

5×1=5

- (a) is an international system for obtaining trade mark protection for a number of countries and/ or regions using a single application.
- (b), adopted in 1883, applies to industrial property in the widest sense, including patents, trademarks, industrial designs, utility models, service marks, trade names, geographical indications and the repression of unfair competition.

- (c) is for the protection of Literary and Artistic Works.
- (d) allows deposits of microorganisms at an international depository authority to be recognized for the purposes of patent procedure.
- (e) covers international trade in goods.
- (f) is an internationally recognized system, which allows the breeder to hold intellectual property rights in the propagation of a new variety for commercial use.

2. Write short notes on any *three* of the following : $3 \times 5 = 15$

- (a) Plant Breeders' Right
- (b) How are semi-conductor chips protected under IPR ?
- (c) Why is it important to protect IP ?
- (d) Procedure for obtaining patents in India.

3. Differentiate between the following :

$5 \times 3 = 15$

- (a) Service mark and Collective mark

- (b) Copyright and Patent
 - (c) Infringement and Passing off
 - (d) Trademark and GI
 - (e) Discovery and Invention
4. (a) Explain Intellectual Property infringement issues. How are Indian laws involved in licensing and technology transfer ? 7.5
- (b) Describe International Treaties and Conventions on Intellectual Property. 7.5
5. (a) Define Trade Secret. Give the legal aspects and risk involved in Trade Secret Protection. 7.5
- (b) What is biopiracy ? Why is it important to protect Traditional Knowledge ? Explain the role of TKDL in protection of Traditional Knowledge. 7.5
6. (a) Describe basic and associated rights of patent. Comment on The Patent Act, 1970. 7.5
- (b) Describe the features of Industrial Design. How to obtain registration of International Industrial Design ? 7.5