5341 – F73 – VISS – S – 21

SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

BOTANY

Paper – I : (Cell Biology, Genetics and Molecular Biology)

Time : 3 Hours] [Max. Marks : 80

Instruction : *Draw* ***neat*** *labelled diagrams* ***wherever*** *necessary.*

I. Answer **any ten** of the following in **two** or **three** sentences **each** : **(10×2=20)**

1) Grana.
2) Euchromatin.
3) Tonoplast.
4) Acrocentric chromosomes.
5) Trisomics.
6) Synapsis.
7) t-RNA.
8) Translation.
9) Genotype.
10) Incomplete dominance.
11) 9 : 3 : 4.
12) Mutagens.

II. Answer **any six** of the followings : **(6×5=30)**

13) Describe the ultrastructure of mitochondrion.
14) With suitable example describe the dihybrid cross.
15) Describe the physical structure of chromosome.
16) With neat labelled diagrams describe the process of DNA replication.
17) What is interaction of genes ? Explain the inheritance of epistasis gene.
18) Give an account of spontaneous mutations and its applications.
19) Explain the properties of genetic code.
20) Write a note on a autopolyploidy.

[P.T.O.

III. Answer the followings : **(10×3=30)**

21) What is meiosis ? With neat labelled diagrams describe the sub-stages of Prophase – I.

OR

With neat labelled diagram describe the ultrastructure of prokaryotic cell.

22) Describe the process of protein synthesis.

OR

What is extra nuclear genome ? Describe the types and its functions.

23) Describe sex-determination in melandrium.

OR

What are multiple alleles ? Explain it with reference to nicotiana.

ಕನ್ನಡ ಅವತರಣಿಕೆ

ಸೂಚನೆ : ಬೇಕಾದಲ್ಲಿ ಅಂದವಾದ ಗುರುತಿಸಿದ ಚಿತ್ರಗಳನ್ನು ಬರೆಯಿರಿ.

I. ಕೆಳಗಿನ ಯಾವುದಾದರೂ **ಹತ್ತಕ್ಕೆ ಎರಡು** ಅಥವಾ **ಮೂರು** ವಾಕ್ಯಗಳಲ್ಲಿ ಉತ್ತರಿಸಿರಿ : **(10×2=20)**

1) ಗ್ರಾನಾ.
2) ಯುಕ್ರೊಮಾಟಿನ್.
3) ಟೋನೊಪ್ಲಾಸ್ಟ್
4) ಎಕ್ರೊಸೆಂಟ್ರಿಕ್ ವರ್ಣತಂತು.
5) ಟ್ರೈಜೋಮಿಕ್ಸ್.
6) ಸಿನ್ಯಾಪ್ಸಿಸ್.
7) ಟಿ.ಆರ್.ಎನ್.ಎ.
8) ಟ್ರಾನ್ಸ್‌ಲೇಶನ್.
9) ಜೀನೋಟೈಪ್.
10) ಅಪೂರ್ಣ ಪ್ರಾಬಲ್ಯ.
11) 9 : 3 : 4.
12) ಮುಟಾಜೆನ್ಸ್.

II. ಕೆಳಗಿನ ಯಾವುದಾದರೂ **ಆರು** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ : **(6×5=30)**

13) ಮೈಟೊಕಾಂಡ್ರಿಯಾದ ಸೂಕ್ಷ್ಮರಚನೆಯನ್ನು ವಿವರಿಸಿರಿ.

14) ಸೂಕ್ತ ಉದಾಹರಣೆಯೊಂದಿಗೆ ಡೈಹೈಬ್ರಿಡ್ ಕ್ರಾಸನ್ನು ವಿವರಿಸಿರಿ.

15) ವರ್ಣ ತಂತುವಿನ ಭೌತಿಕ ರಚನೆಯನ್ನು ವಿವರಿಸಿರಿ.

16) ಗುರುತಿಸಿದ ಚಿತ್ರಗಳೊಂದಿಗೆ ಡಿ.ಎನ್.ಎ. ಪುನರಾವರ್ತನೆಯ ಕ್ರಿಯೆಯನ್ನು ವಿವರಿಸಿರಿ.

17) ವಂಶವಾಹಿಗಳ ಪರಸ್ಪರ ಕ್ರಿಯೆ ಎಂದರೇನು ? ಎಪಿಸ್ಟಾಸಿಸ್ ವಂಶ ವಾಹಿನಿಗಳ ಅನುವಂಶಿಕತೆಯನ್ನು ವಿವರಿಸಿರಿ.

18) ಸ್ವಯಂಪ್ರೇರಿತ ರೂಪಾಂತರಗಳನ್ನು ವಿವರಿಸಿ ಹಾಗೂ ಅವುಗಳ ಬಳಕೆಗಳನ್ನು ವಿವರಿಸಿರಿ.

19) ಜೆನೆಟಿಕ್ ಕೋಡ್‌ದ ಗುಣಧರ್ಮಗಳನ್ನು ವಿವರಿಸಿರಿ.

20) ಆಟೋಪೊಲಿಪ್ಲಾಯಿಡಿ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

III. ಈ ಕೆಳಗಿನವುಗಳನ್ನು ಉತ್ತರಿಸಿರಿ : **(10×3=30)**

21) ಮಿಯಾಸಿಸ್ ಎಂದರೇನು ? ಗುರುತಿಸಿದ ಚಿತ್ರಗಳೊಂದಿಗೆ ಪ್ರೊಫೇಸ್ – I ರ ಪ್ರತಿ ಹಂತಗಳನ್ನು ವರ್ಣಿಸಿರಿ.

ಅಥವಾ

ಗುರುತಿಸಿದ ಚಿತ್ರದೊಂದಿಗೆ ಪ್ರೋಕ್ಯಾರಿಯಾಟಿಕ್ ಕೋಶದ ಸೂಕ್ಷ್ಮರಚನೆಯನ್ನು ವರ್ಣಿಸಿರಿ.

22) ಪ್ರೊಟೀನ್ ಸಂಶ್ಲೇಷಣೆಯನ್ನು ವರ್ಣಿಸಿರಿ.

ಅಥವಾ

ಎಕ್ಸ್‌ಟ್ರಾ ನ್ಯೂಕ್ಲಿಯರ್ ಜೀನೋಮೆ ಎಂದರೇನು ? ಅವುಗಳ ವಿಧಗಳನ್ನು ಕಾರ್ಯದೊಂದಿಗೆ ವಿವರಿಸಿರಿ.

23) ಮೆಲಾಂಡ್ರಿಯಂ ಸಸ್ಯದಲ್ಲಿ ಲಿಂಗ ನಿರ್ಧಾರವನ್ನು ವರ್ಣಿಸಿರಿ.

ಅಥವಾ

ಮಲ್ಟಿಪಲ್ ಅಲಿಲ್ಸ್ ಎಂದರೇನು ? ನಿಕೋಷಿಯಾನಾ ಸಸ್ಯದ ಸಮೀಕರಣದೊಂದಿಗೆ ಅದನ್ನು ವಿವರಿಸಿರಿ.

5342 – F73 – VISS – S – 21

SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

BOTANY

Paper – II : Evolution, Plant Breeding and Plant Biotechnology

Time : 3 Hours] [Max. Marks : 80

Instruction : *Draw **neat** labelled diagrams **wherever** necessary.*

I. Answer **any ten** of the following. **(10×2=20)**

1) Atavism.
2) Hybrid Vigour.
3) Pollen Bank.
4) Quarantine.
5) Clones.
6) Somatic hybridization.
7) Explant.
8) Autoclave.
9) Golden rice.
10) Genome.
11) Microinjection.
12) PCR.

II. Answer **any six** of the following. **(6×5=30)**

13) Explain Lamarkism.
14) Explain briefly the objectives of plant breeding.
15) Describe budding and grafting with examples.
16) What is totipotency ? Explain its role in plant tissue culture.
17) What is synthetic seed ? Explain the method of its production.
18) Describe the role of plasmids in genetic engineering.

[P.T.O.

19) What is genetic engineering ? Write a note on its applications.

20) Describe ELISA technique to detect plant diseases.

III. Answer **all** the following.

21) What is hybridization ? Describe different types. **(1×10=10)**

OR

What is germplasm ? Describe the different methods of germplasm maintenances.

22) Describe the stem cell culture technique. **(1×10=10)**

OR

Describe the various steps involved in plant tissue culture technique.

23) Describe the role of different enzymes in genetic engineering. **(1×10=10)**

OR

What is direct method of gene transfer ? Explain any four types of gene transfer methods.

ಕನ್ನಡ ಆವೃತ್ತಿ

ಸೂಚನೆ : *ಅವಶ್ಯವಿದ್ದಲ್ಲಿ ಅಂದವಾದ ಹೆಸರಿಸಿದ ಚಿತ್ರ ಬಿಡಿಸಿರಿ.*

I. ಈ ಕೆಳಗಿನ ಯಾವುದೇ **ಹತ್ತಕ್ಕೆ** ಉತ್ತರಿಸಿರಿ. **(10×2=20)**

1) ಆಟಾವಿಸಂ.

2) ಹೈಬ್ರಿಡ್ ವಿಗರ್

3) ಪರಾಗ ಖಿಜಾನೆ.

4) ಕ್ವಾರಂಟೈನ್.

5) ಕ್ಲೋನ್ಸ್.

6) ಸೊಮೇಟಿಕ್ ಹೈಬ್ರಿಡೈಜೇಶನ್.

7) ಸಸ್ಯ ಅಂಗಾಂಶ.

8) ಆಟೊಕ್ಲೆವ್.

9) ಸುವರ್ಣ ಅಕ್ಕಿ.

10) ಜೀನೊಮ.

11) ಸೂಕ್ಷ್ಮ ಚುಚ್ಚುಮದ್ದು.

12) ಪಿ.ಸಿ.ಆರ್.

II. ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಬೇಕಾದ **ಆರು** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ : **(6×5=30)**

13) ಲಮಾರ್ಕಿಸಂ ಸಿದ್ಧಾಂತವನ್ನು ವಿವರಿಸಿರಿ.

14) ಸಸ್ಯ ವಂಶಾಭಿವೃದ್ಧಿಯ ಮಹತ್ವಗಳ ಬಗ್ಗೆ ಬರೆಯಿರಿ.

15) ಬಡ್ಡಿಂಗ್ ಮತ್ತು ಗ್ರಾಫ್ಟಿಂಗನ್ನು ಉದಾಹರಣೆ ಸಹಿತ ಸಂಕ್ಷಿಪ್ತವಾಗಿ ವರ್ಣಿಸಿರಿ.

16) ಟ್ಯೊಟಪೊಟೆನ್ಸಿ ಎಂದರೇನು ? ಅಂಗಾಂಶ ಕೃಷಿಯಲ್ಲಿ ಅದರ ಪಾತ್ರವನ್ನು ವಿವರಿಸಿರಿ.

17) ಕೃತ್ರಿಮ ಬೀಜ ಎಂದರೇನು ? ಅದರ ಉತ್ಪಾದನಾ ವಿಧಾನವನ್ನು ವಿವರಿಸಿರಿ.

18) ಜೈವಿಕ ತಂತ್ರಜ್ಞಾನದಲ್ಲಿ ಪ್ಲಾಸ್ಮಿಡ್‌ಗಳ ಪಾತ್ರವನ್ನು ವರ್ಣಿಸಿರಿ.

19) ಜೈವಿಕ ತಂತ್ರಜ್ಞಾನವೆಂದರೇನು ? ಅದರ ಉಪಯೋಗಗಳ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

20) ಸಸ್ಯ ರೋಗಗಳ ಅನ್ವೇಷಣೆಯಲ್ಲಿ ELISAದ ಮಹತ್ವದ ಬಗ್ಗೆ ವಿವರಿಸಿರಿ.

III. ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.

21) ಹೈಬ್ರಿಡೈಜೇಶನ್ ಎಂದರೇನು ? ಅದರ ವಿವಿಧ ಬಗೆಗಳನ್ನು ವಿವರಿಸಿರಿ. **(1×10=10)**

ಅಥವಾ

ಜರ್ಮ್‌ಪ್ಲಾಸ್ಮ್ ಎಂದರೇನು ? ಅದರ ಸಂರಕ್ಷಣೆಯ ವಿವಿಧ ಪದ್ಧತಿಗಳನ್ನು ವಿವರಿಸಿರಿ.

22) ಸ್ಟೆಮ್ ಸೆಲ್ ಕೃಷಿಯ ತಾಂತ್ರಿಕತೆಯನ್ನು ವರ್ಣಿಸಿರಿ. **(1×10=10)**

ಅಥವಾ

ಸಸ್ಯ ಅಂಗಾಂಶ ಕೃಷಿಯ ತಾಂತ್ರಿಕತೆಯ ವಿವಿಧ ಹಂತಗಳ ಬಗ್ಗೆ ವಿವರಿಸಿರಿ.

23) ಜೈವಿಕ ತಂತ್ರಜ್ಞಾನದಲ್ಲಿ ವಿವಿಧ ಕಿಣ್ವಗಳ ಪಾತ್ರವನ್ನು ವರ್ಣಿಸಿರಿ. **(1×10=10)**

ಅಥವಾ

ನೇರ ಜೀನ್ ವರ್ಗಾವಣೆ ಪದ್ಧತಿ ಎಂದರೇನು ? ಯಾವುದಾದರೂ ನಾಲ್ಕು ಜೀನ್ ವರ್ಗಾವಣೆ ವಿಧಾನಗಳನ್ನು ವಿವರಿಸಿರಿ.

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

ZOOLOGY

Paper – I : Ecology, Zoogeography and Wild Life Biology

Time : 3 Hours] [Max. Marks : 80

Instructions : *1) Answer **all** questions.*
*2) Draw **neat** labelled diagram **necessary**.*

I. Answer **any ten** of the following : **(10×2=20)**

1) What is "Edge effect" ?
2) State Alee's principle.
3) Differentiate mortality and natality.
4) What is Lentic system ?
5) Expand CITES and WWF.
6) What is Synecology ?
7) What is sedimentary cycle ? Give an example.
8) Define Hibernation.
9) Define Wallace's line.
10) What ss de nitrification ?
11) Define Insitu Conservation.
12) Name any two zoo planktons.

II. Answer **any six** of the following : **(6×5=30)**

13) What is Bio-geochemical cycle, explain carbon cycle.
14) Write a note on Estuary.
15. What is Mutualism ? Explain with an example.

[P.T.O.

16. Explain population growth curve.
17. Give an account of fauna of Western Ghats.
18. Write a note on Ecological Succession.
19. Write an account Neotropical Realm.
20. Write a note on "Project Tiger".

III. What are barriers ? Explain types of barriers which controls the distribution of animals. **(1×10=10)**

OR

Explain light as an ecological factor.

IV. Define environmental pollution. Explain causes, effects and preventive measures of Air pollution. **(1×10=10)**

OR

Give an account of Wild Life Protection Act 1972.

V. Explain ecological adaptations of marine habitat with suitable examples. **(1×10=10)**

OR

Describe the agencies engaged in wild life conservation.

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SIXTH SEMESTER B.SC DEGREE EXAMINATION, SEPTEMBER 2021

ZOOLOGY

Paper – II : Genetics, Biotechnology and Nano-Technology

Time : 3 Hours] [Max. Marks : 80

Instruction : *Draw diagrams* ***wherever*** *necessary.*

I. Answer **any ten** of the following : **(10×2=20)**

1) What are holandric genes ?
2) Write the chromosomal compliment of Down's syndrome.
3) What is operon concept ?
4) Define transgenic animal.
5) Mention the types of nanomaterials.
6) What is a Back cross ?
7) Define interaction of genes.
8) Define crossing over.
9) What is erythroblastosis foetalis ?
10) Name the termination codons.
11) What are metamales ?
12) Define Eugenics.

II. Answer **any six** of the following : **(6×5=30)**

13) Define Aneuploidy and explain the types.
14) Define genetic code. Explain Wobble hypothesis.
15) Write an account on phenylketonuria.
16) Explain Dominant epistasis with suitable example.

[P.T.O.

17) Write a note on Bleeder's disease.

18) Write applications of Nano biotechnology.

19) Explain cytological basis of crossing over.

20) Write a note on Kappa particles.

III. Answer the following : **(1×10=10)**

21) a) Explain dihybrid cross with suitable example.

OR

b) Briefly explain human genome project.

IV. Answer the following : **(1×10=10)**

22) a) Explain multiple alleles with reference to ABO blood groups in man.

OR

b) Describe the process of translation.

V. Answer the following : **(1×10=10)**

23) a) Give an account of DNA finger printing.

OR

b) Write short note on :

1) Klinefelter's syndrome.
2) Turner's syndrome.

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

BIOTECHNOLOGY

Paper – I : Industrial and Environmental Biotechnology

Time : 3 Hours] [Max. Marks : 80

Instructions : *1) **All** questions are **compulsory**.*
*2) Draw **neat** labelled diagrams **wherever** necessary.*

I. Answer **any ten** of the following : **(10×2=20)**

1) Define primary screening.
2) What is sludge ?
3) Differentiate Natural and Synthetic media.
4) What is Bioleaching ?
5) Name any two antifoaming agents.
6) Expand COD and BOD.
7) What is Temph ?
8) Mention any two green house gases.
9) Expand SCP and SCO.
10) What is Xenobiotic compound ? Give example.
11) What is Bioreactor ?
12) Define Global Warming.

II. Answer **any six** of the following : **(6×5=30)**

13) Explain fermentation media.
14) Write a note on Bioremediation.
15) Write a note on principle of fermenters.

[P.T.O.

16) Explain production of vermicompost.

17) Briefly explain Down stream processing.

18) Give an account on treatment of municipal waste.

19) Explain microbial polysaccharides.

20) Write a short note on Biomining.

III. Answer the following :

21) Discuss screening of industrial micro-organisms.

OR

Discuss cause and impact of Air pollution. **(1×10=10)**

22) Give an account on industrial sterilization.

OR

Write a note on Solid Waste Management. **(1×10=10)**

23) Explain production of Alcohol.

OR

Give an account on renewable sources of energy. **(1×10=10)**

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

BIOTECHNOLOGY

Paper – II : Agricultural and Medical Biotechnology

Time : 3 Hours] [Max. Marks : 80

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Draw ***neat*** *labelled diagrams* ***wherever*** *necessary.*

I. Answer **any ten** of the following : **(10×2=20)**

1) What is Biopesticide ?

2) What is antibiotic ? Give an example.

3) What is transgenic plant ?

4) Define FMDV.

5) Define Intragression.

6) What is Human factor VIII ?

7) Define live stock.

8) What is Biofarming ?

9) What is Cryopreservation ?

10) Define Nanotechnology.

11) What is Cybrid ?

12) Define stem cell therapy.

[P.T.O.

II. Answer **any six** of the following : **(6×5=30)**

13) Explain applications of plant tissue culture in Horticulture.

14) Explain gene therapy and its scope.

15) Write a note on Biological nitrogen fixation.

16) Explain Interferons as a therapeutic proteins.

17) Explain production of BT-Cotton.

18) Give an account on enzymes used in diagnosis.

19) Explain role of Biotechnology in Sericulture.

20) Explain principle and application of Antisense technology.

III. Answer the following :

21) Give detailed account on Integrated Pest Management.

OR

Explain various enzymes in therapy. **(1×10=10)**

22) Explain production of Rhizobium biofertilizer.

OR

Give detailed account on production of recombinant vaccine. **(1×10=10)**

23) Explain Scope of Agriculture and Medical Biotechnology.

OR

Explain production of monoclonal antibodies. **(1×10=10)**

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

CHEMISTRY (Paper – I)

Time : 3 Hours] [Max. Marks : 80

Instructions : *1)* ***All*** *the questions are* ***compulsory****.*
2) Answer ***all*** *questions in the* ***same*** *answer book.*
3) Draw ***neat*** *diagrams and give equations* ***wherever*** *necessary.*

I. Answer **any ten** of the following : **(10×2=20)**

1) Mention any two limitations of Valance Bond Theory.

2) What are chelates ?

3) Give the structure of Haemoglobin.

4) Mention the solvent properties of liquid sulphur dioxide.

5) Write the Haworth structure of Maltose.

6) What are aminoacids ? Give any two examples.

7) Define Hormones and give any two examples.

8) What are Epimers and Epimerisation ?

9) What is electrochemical series ?

10) Give the representation of Daniel Cell.

11) Represent symbolically standard hydrogen gas electrode.

12) What are primary cells ? Give an example.

[P.T.O.

II. Answer **any six** of the following : **(6x5=3**

13) Explain the formation of $[FeF_6]^{-3}$ complex ion.

14) Explain the features of Crystal Field Theory.

15) Explain the Geometry and Magnetic properties of $[Fe(CN)_6]^{-3}$ and $[Zn(CN)_4]^{-2}$ based on VBT.

16) How are carbohydrates are classified ? Give an examples.

17) Write a note on Gabriel-phthalamide synthesis of amino acids.

18) Write a note on structure of sucrose.

19) Describe with neat diagram the working of a calomel electrode both as oxidation and reduction reference electrode.

20) Derive an equation for EMF of an electrolytic concentration cell with transference.

21) Explain the working of lead storage battery and give reactions involved during charging and discharging.

III. Answer the following questions : **(3x10=30**

22) a) Describe the splitting of d-orbitals in octahedral field according to CFT. 6

b) Discuss biological importance of Na^+ and K^+ ions. 4

OR

23) a) Explain the formation of $[Fe(CN)_6]^{-4}$ complex ion. Mention its geometry and magnetic properties on the basis of VBT. 6

b) Explain the chemical reactions of liquid ammonia as a solvent. 4

24) a) Explain glucosazone formation and write the reactions steps involved. 5

b) Explain the secondary structure of proteins. 5

OR

25) a) Explain the terms :

i) Mutarotation

ii) Epimerisation. **6**

b) Give the synthesis of Vitamin-C. **4**

26) a) Explain the construction and cell reactions of Weston standard cell. **5**

b) Explain how pH of a solution is determined by using glass electrode. **5**

OR

27) a) Mention the different types of electrodes. Give one example for each type. **5**

b) Describe hydrogen-oxygen fuel cells. **5**

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

CHEMISTRY (Paper – II)

Time : 3 Hours] [Max. Marks : 80

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Draw ***neat*** *labelled diagrams and give equations* ***wherever*** *necessary.*

I. Answer **any ten** of the following : **(10×2=20)**

1) Discuss the applications of Flame photometry.
2) What are anion exchange resins ? Give example.
3) What is Chromatography ?
4) What is the principle of AAS ?
5) What are chemically equivalent protons ? Give examples.
6) What do you understand by deshielding of protons ?
7) What is antipyretic ? Give an representative example.
8) What are Isoprenoids ? Mention its structure.
9) Define degree of polymerisation.
10) What are natural polymers ? Give an example.
11) Explain wave nature of an electron.
12) What is Orthogonality of wave function ?

II. Answer **any six** of the following : **(6×5=30)**

13) How do you determine potassium by Flame photometry ?
14) Explain the principle of Differential Thermal Analysis (DTA).
15) Explain the mechanism of Ion exchange resin.
16) Explain the term chemical shift. Why TMS is used as standard reference for NMR spectra ?

[P.T.O.

17) Mention the requirements of an Ideal synthetic drug.

18) How will you convert α–Terpineol into terphenylic acid ?

19) Explain thermosetting and thermoplastic polymers and give suitable examples.

20) Derive an expression for Schrodinger wave equation.

21) What is photoelectric effect ? Explain experimental study of it.

(3×10=30)

III. Answer the following :

22) a) Describe a neat diagram the instrumentation of Gas chromatography. 5

b) Explain in brief the main parts of HPLC with a neat diagram. 5

OR

23) a) Explain the principle of Column chromatography and mention its two applications. 5

b) Explain the principle and any two applications of gas chromatography. 5

24) a) Explain the factors affecting the chemical shifts. 5

b) Give the synthesis and use of pentothal sodium. 5

OR

25) a) How do you account for the position of C = C bonds in citral ? 5

b) Give the synthesis of Mysoline. 5

26) a) Mention the differences between addition and condensation polymers. 5

b) Write a note on compton effect. 5

OR

27) a) Sketch and explain Hydrogen spectrum. 5

b) Explain the determination of molecular weight of macromolecules by viscosity method. 5

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

COMPUTER SCIENCE (Optional)

Paper – I : Java and Internet Programming

Time : 3 Hours] [Max. Marks : 80

Instruction : *Answer* ***any five full*** *questions.*

1. a) Explain any four features of Java.
   b) Explain the structure of Java program.
   c) Explain the data types available in Java. **(4+6+6)**
2. a) Explain any four types of operators available in Java.
   b) Explain the branching statements available in Java. **(8+8)**
3. a) Explain the exception handling mechanism in Java.
   b) Write a Java program to demonstrate exception handling. **(8+8)**
4. a) Explain the types of constructors.
   b) Explain string handling.
   c) State the purpose of 'this' and 'super' keywords with syntax. **(8+4+4)**
5. a) Explain the life cycle of applet.
   b) Write program for an applet to illustrate combo box. **(8+8)**
6. a) Explain the concept of multithreading.
   b) Write a Java program to demonstrate multi threading. **(8+8)**
7. a) What do you mean by package ? Explain its types.
   b) Mention the purpose of any eight HTML tags. **(8+8)**
8. Write short notes on :
   a) Java Virtual Machine
   b) Method overriding
   c) Type conversion
   d) Java script. **(4×4=16)**

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SIXTH SEMESTER B.SC. DEGREE EXAMINATION, SEPTEMBER 2021

COMPUTER SCIENCE (Optional)

Paper – II : Database Management System

Time : 3 Hours] [Max. Marks : 80

Instruction : *Answer* ***any five full*** *questions.*

1. a) Explain the advantages of Database Management System.
   b) What is Database Management System ? Explain its characteristics. **(8+8)**

2. a) What is data independence ? Explain.
   b) Explain the Three-schema architecture with neat diagram.
   c) Explain the classification of DBMS. **(4+6+6)**

3. a) What is an entity ? Explain the Entity-Relationship model with an example.
   b) Define the following :
      1) Composite and simple attributes.
      2) Single valued and Multivalued attributes.
      3) Stored and derived attributes.
      4) Complex attributes. **(8+8)**

4. a) Explain the following :
      1) Database
      2) Domain
      3) Tuple
      4) Relation.
   b) Explain the characteristics of relation.
   c) Explain the relational model constraints. **(4+4+8)**

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5. a) Explain the following set operations.
   1) UNION
   2) INTER SECTION
   3) SET DIFFERENCE
   4) CARTESIAN PRODUCT.

   b) What is a join operation ? Explain the various join operations. **(8+8)**

6. a) What is Normalization ? Explain the Normal Forms : 1NF, 2NF, 3NF.

   b) Explain the insertion, deletion and update anomalies with examples. **(8+8)**

7. a) What is a Transaction ? Explain the ACID properties of transaction.

   b) Explain the need for concurrency control. **(8+8)**

8. Write short notes on :
   a) DBMS users
   b) Aggregate functions
   c) Functional Dependency
   d) BCNF. **(4×4=16)**
