

- 1 Answer the following : (two out of three) 14
- (i) Write note on origination and domestic plant breeding.
  - (ii) Role of cross pollination in crop improvement.
  - (iii) Explain different methods of plant breeding.

## SECTION - I

- Instructions : (1) The question paper consists of two sections, each has three questions.  
 (2) All questions are compulsory and internal choice is provided.  
 (3) Write each SECTION in separate answer sheet.  
 (4) Illustrate your answers with necessary diagrams.
- Time : 3 Hours] [Total Marks : 70

(Plant Breeding &amp; Horticulture)

Botany : CBO-504

April / May - 2016

M. Sc. (Sem. IV) Examination

PZ-844

Seat No. \_\_\_\_\_



- 4 Answer any two out of three : 14
- (i) Explain briefly seed and bud Dormancy.  
 (ii) Describe anatomical and physiological aspect of layering.  
 (iii) Explain briefly about cultivation of horticultural crop of India.

## SECTION - II

- 3 Answer any four out of six each of 02, 02, 02 and 01 marks. 7
- (i) What is self pollinated crop ? 2  
 (ii) Give differences between beggins and tagging. 2  
 (iii) Write two objectives of plant breeding. 2  
 (iv) Define the word patent. 2  
 (v) Define biosafety and bioethics. 2  
 (vi) What is GM crop ? 1  
 (vii) Give full form of GATT and TRIPS. 1
- 2 Answer any three out of five each of 05, 05 and 04 marks. 14
- (i) Describe concept and benefits of IPR.  
 (ii) Discuss briefly various risk assessment of biosafety and bioethics.  
 (iii) Write note on GATT.  
 (iv) Discuss on seed certification.  
 (v) Write various plants breeder's right.

- 5 Answer any three out of five each with 05, 05, 04 14 marks.
- (i) Write note on principles, types and planning of landscape. 5
  - (ii) Describe various advantages of green house. 5
  - (iii) Write note on organic farming. 5
  - (iv) Discuss on indoor gardening. 4
  - (v) Explain briefly about gardens of India. 4
- 6 Answer any four out of six each of 02, 02, 02 and 01 marks.
- (i) Name two types of budding. 2
  - (ii) Name two plants propagated by grafting. 2
  - (iii) Give two advantages of IMP. 2
  - (iv) Define the term indoor and outdoor gardening. 2
  - (v) Name hormones used for breaking seed dormancy. 2
  - (vi) What is rooting of cutting? 1
  - (vii) What is mulching? 1



PZ-851

Seat No. \_\_\_\_\_

M. Sc. (Sem. IV) Examination

April / May - 2016

CBO-505 : Botany

(CC - Mycorrhize, Mushroom, Ethno Botany & Plant Geography) (New Course)

Time : 3 Hours]

[Total Marks : 70

Instructions : (1) The question paper consists of two sections, each has three questions.

(2) All questions are compulsory. In each section first two questions carry 14 marks and last question carry 7 marks.

(3) Write answer of each section in separate answer sheet.

(4) Illustrate your answers with necessary diagrams, if required.

### SECTION - I

1 Answer the following : (any two)

14

(1) Explain : AM Fungi

(2) Describe : Recent trends in mycorrhizal taxonomy.

(3) Describe : Phosphate solubilizing fungi (PSF).

PZ-851]

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- 4 Answer the following : (any two) 14
- (1) Write the comparison of ethnobotany and economic botany.
  - (2) Write on medico-ethno-botanically importance of Tulsi and Amla.
  - (3) Describe : Ethnobotany in context of Health Care Programme.

## SECTION - II

- 3 Answer the following : (any four) each 02, 02, 02 and 01 marks. 7
- (1) Define : Mycorrhizae. 2
  - (2) Write in short : Mycorrhizae role in crop productivity. 2
  - (3) Write the name of main groups of mycorrhizae. 1
  - (4) Write in short : Paddy straw. 2
  - (5) Write in short : Nutritional value of mushrooms. 2
  - (6) Mushrooms contain \_\_\_\_\_ % protein on dry weight basis. 1
- 2 Answer the following : (any three) each of 05, 05 and 04 marks. 14
- (1) Explain : Poisonous mushrooms.
  - (2) Describe : Method of cultivation of *Agaricus bisporus*.
  - (3) Explain : Edible mushrooms.
  - (4) Write the chemical factors on mushroom formation.
  - (5) Write on white button mushrooms.

- 5 Answer the following : (any three) each of 05, 05 14  
and 04 marks.
- (1) Write on importance of phytogeography.
  - (2) Describe : Continental drift.
  - (3) Describe : Endemism.
  - (4) Write on vegetation types of India.
  - (5) Explain: Land flora of Gujarat.
- 6 Answer the following : (any four) each of 02, 02, 02  
and 01 marks.
- (1) Define : Ethnobotany. 2
  - (2) What is the meaning of national priority ? 2
  - (3) Define : Conservation. 1
  - (4) Write the name of forest types of Gujarat. 2
  - (5) Write in short : Climate of India. 2
  - (6) Give the definition of discontinuity. 1



PZ-841

Seat No. \_\_\_\_\_

M. Sc. (Sem. IV) Examination

April / May - 2016

Organic Chemistry : Paper - CHN-701(O)

Time : \_\_\_\_\_ Hours] [Total Marks : 70

Instructions : (1) All questions are compulsory.  
(2) All questions carry equal marks.

1 Answer any two of the following :

- (i) Giving differences between starch and cellulose, explain the molecular weight determination of cellulose through chemical method.
- (ii) Explain importance of methylation and hydrolysis in proving structure of Amylopectin.
- (iii) Giving differences in DNA and RNA, explain importance of RNA in biosynthesis of protein.
- (iv) Evidences for the nature of sugar ring and its linkage in pyrimidine nucleoside.

2 Answer any two of the following :

- (i) Discuss the conformational analysis of bicyclo [2,2,1] heptane.
- (ii) Draw and name all conformers of cyclohexanol and explain their stabilities.
- (iii) Explain the terms constitution, configuration and conformation with examples.
- (iv) Give conformational analysis of 1,2 and 1,3 dimethyl cyclohexanes.

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PZ-841]

- 14 Answer any two of the following :
- (i) Evidences for the presence of "Gem-Dimethyl" group in Lanosterol.
  - (ii) Discuss the constitution of progesterone.
  - (iii) What are oestrogens ? Discuss the chemical relationship between oestrone, oestriol and oestradiol.
  - (iv) Write note on : Adrenocortical hormones.
- 14 Answer any two of the following :
- (i) Write note on NMR shift reagents.
  - (ii) Describe the  $^1\text{H}$ - $^{13}\text{C}$  heteronuclear correlation spectroscopy.
  - (iii) Discuss the ROESY spectrum of lactose.
  - (iv) Explain the carbon connectivities for carophyllene oxide using the INADEQUATE spectrum.
- 14 Answer any seven of the following :
- (i) Give name and structure of two purine based present in DNA.
  - (ii) What are reducing and non-reducing sugars ?
  - (iii) Give the structural formula of gun cotton.
  - (iv) What is configuration ?
  - (v) Draw the structure of bicyclo [2,1,1] hexane.
  - (vi) Give the synthesis of oestriol from oestrone.
  - (vii) Draw the structure and nomenclature of steroids.
  - (viii) What is HETCOR spectroscopy ?
  - (ix) What is COSY technique ?
  - (x) Give the full form of NOESY and HMBS spectrum.





CHN-702(O) : Organic Chemistry

April / May - 2016

M. Sc. (Sem. IV) Examination

PZ-848

Seat No. \_\_\_\_\_

Time : 3 Hours] [Total Marks : 70

1 Answer any two :

- (a) Write a note on refining of crude oil for getting fuels. What is carbonization ?
- (b) What are important requirements of fibres ?
- (c) Give an account of manufacture of Nylon-6. Write a note on aromatic chemicals production. What is Kapron ?

2 Answer any three :

- (a) Give an account of application methods of paints in brief. What are thinners ?
- (b) Give any two reasons for paint failure. Discuss the manufacture of varnishes.
- (c) Describe the manufacture of TNT and picric acid.
- (d) Give an account on screening smokes. What is napalm ?

3 Answer any three :

- (a) Which are uses and industrial manufacturing processes of poly methyl methacrylate ? Define a graft copolymer.
- (b) Give an account on addition polymers : their uses and productions.
- (c) Write a note on cyclization reactions. What is a chain transfer reaction ?
- (d) Give the classification of plastics. Distinguish isotactic, syndiotactic and atactic polymers.

PZ-848]

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- 4 Answer any four :
- How can you manufacture naphthalene balls and wax candles in a small scale industry ?
  - Write a note on small scale detergent manufacture. Which are the classes of detergents ?
  - Explain the terms surfactants and adsorption. Discuss their role in cleansing action.
  - Give the small scale manufacture of safety match.
  - How can you prepare shoe polish ?
- 5 Answer any seven in brief :
- Distinguish between permanent inks and semi-permanent inks
  - Explain what is rosin ?
  - Give full forms and structures of RDX, HMX and DNB.
  - Which are disinfectants in commercial phenyls ?
  - What is a propellant ?
  - Give one example of cross linkage reaction.
  - How can you prepare poly vinyl alcohol ?
  - Which are uses of urotropin ?
  - Explain explosion temperature and heat of explosion.
  - Explain cloud point.
  - Describe the significance of PVC (pigment volume concentration)
  - What are emulsion paints ?



PZ-855

Seat No. \_\_\_\_\_

M. Sc. (Sem. IV) Examination

April / May - 2016

CHN-703 (O) - Organic Chemistry : Paper-III

Time : 3 Hours]

[Total Marks : 70

1 (a) Write any two : 8

- (1) Explain the cycle of malarial parasite. Classify the antimalarial drugs on the basis of chemotherapy.
- (2) Give account for some antibiotics which are very useful as antifungal agents.
- (3) Write a note on antiameobic drugs.

6 (b) Write any one : 6

- (1) Give the synthesis and physiological activity of chloroquine and chemogquine.
- (2) Write a note on anti-leprotic drugs.

2 (a) Write any two : 8

- (1) What are the sedative and hypnotics ? Give account on barbiturates.
- (2) Give an account on antidepressant drugs.
- (3) What is general anaesthetics ? Give details about non-volatile general anaesthetics.

PZ-855]

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(b) Write any one :

- (1) Write type of drugs for (i) Meproramate and (ii) chlordinazepoxide. Give synthesis of both.
- (2) Write a note on anticonvulsants.

3 Write any two :

- (1) Classify cardiovascular drugs. Give account on anti-arrhythmic drugs. Write synthesis of quinidine.
- (2) Give classification of diuretics. Give at least one drug from each class with their name and structure.
- (3) Give synthesis of (i) Acetazolamide (ii) Furosemide (iii) Ethacrynic acid.

4 Write any two :

- (1) What is diabetes ? Classify oral antidiabetic agents. Give synthesis of (i) Tolbutamide, (ii) Glyburide, (iii) Phenformin.
- (2) Define hypertension. Which type of alkaloids are used in the treatment of hypertension. Give synthesis of (i) Clonidine, (ii) Methyl dopa (iii) Diazoxide.
- (3) What is cancer ? Discuss the cancer causing agents. Explain cancer chemotherapy.

- (1) Which is the natural source of quinine ?
- (2) What is full form of INH ? Write the class of drug for it.
- (3) Write a name and structure of drug, which is useful in amoebic dysentery.
- (4) Define hallucinogenic agents.
- (5) What is cardiotonic drugs ? Which type of compounds generally uses as cardiotonic drugs ?
- (6) Write name of anti-tubercular drugs from each of the following classes :
- (i) Diamines
- (ii) Thioamide
- (7) Write the symptoms of Parkinsonism.
- (8) Give two names of  $\beta$ -Adrenergic blocking agents.
- (9) Write the different symptoms of diabetic patient.
- (10) What are characteristics for an ideal antihypertensive drugs ?

5 Answer any seven :



PZ-862

Seat No. \_\_\_\_\_

M. Sc. (Sem. IV) Examination

April / May - 2016

CHN-704(A) : Chemistry

(Organometallic Chemistry)

(Elective)

Time : Hours] [Total Marks : 50

1 (a) Answer any two : 10

- (1) Discuss the methods of preparation and application of O.M.C. of copper.
- (2) Write down the methods of preparation, structure and bonding in Zeise's salt.
- (3) Give the classification of OMC based on M-C bond in detail.
- (4) Write a note on Schrock Carbene complexes.

6 (b) Answer any two : 6

- (1) Write note on transition metal aryl compounds.
- (2) Define and characterized : Transition metal hydrides.
- (3) Write note on : Correv house synthesis

4 (c) Answer any two : 4

- (1) What is sandwich bonded compounds ?
- (2) Give the example of Insertion reaction.
- (3) Write the application of Tebbe's reagent.

PZ-862]

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[Contd...

- 2 (a) Answer any two : 10
- (1) Write a note on Zeigler-Natta Polymerization.
  - (2) Discuss the hydrometallation of alkene by using  $\text{CO}_2(\text{CO})_8$
  - (3) Discuss the fluxionality of  $\eta^3$ -allyl complexes.
  - (4) Distinguish between carbyne and Alkylidene complexes.
- (b) Answer any two : 6
- (1) Discuss the structure of Ferossin.
  - (2) Explain with example of Haptotropic shift.
  - (3) Discuss the use of ZSM-5.
- (c) Answer any two : 4
- (1) What are the limitation of 18-electron rule ?
  - (2) What is Homogeneous catalysis ?
  - (3) Give the structure of bisbenzene chromium compound.
- 3 Answer the following : 10
- (1) What is catalytic reaction ?
  - (2) Draw the structure of  $\text{Fe}(\text{CO})_5$  and  $\text{Fe}_2(\text{CO})_9$
  - (3) What is activation energy ?
  - (4) Draw the structure of  $\text{Al}_2(\text{CH}_3)_6$  and give the nature of bonding in it.
  - (5) Give the example of  $\eta^3$  and  $\eta^5$  complexes.