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G—126—2015

FACULTY OF ARTS/SCIENCE

B.A./B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

MATHEMATICS

Paper XIII (301)

(Metric Spaces)

(Friday, 10-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *five* of the following : 2 each

(*a*) Define open sphere in a metric space (X, *d*).

(*b*) Define Neighbourhood of a point in a metric space (X, *d*).

(*c*) Define Cauchy sequence.

(*d*) Define continuous function on metric space.

P.T.O.

(e) If A is any subset of metric space (X, d), define open cover of A.

(f) Define relatively compact set of a metric space (X, d).

2. Attempt any *two* of the following : 5 each

(a) Let (X, d) be any metric space. Prove that a subset F of X is closed if and only if its complement in X is open.

(b) Let A and B be any two subsets of a metric space (X, d), then prove that $\bar{A}$ is the smallest closed super set of A.

(c) Prove that every closed sphere is a closed set.

3. Attempt any *two* of the following : 5 each

(a) Let (X, d) be any metric space and A be any non-empty subset of X, then prove that $x \in \bar{A}$ if and only if there exists a sequence $\{x_n\}$ in A such that $x_n \to x$ as $n \to \infty$.

(b) Let (X, d_1) and (Y, d_2) be any two metric spaces and f is a function from X into Y. Then prove that f is continuous at a if and only if for every sequence $\{a_n\}$ converging to 'a', we have.

$$\lim_{n\to\infty} f(a_n) = f(a).$$

(*c*) For any non-empty subset A of a metric space (X, *d*). Show that the function $f : x \to R$ given by :

$$f(x) = d(x, A), \text{ for } x \in X$$

is uniformly continuous.

4. Attempt any *two* of the following : 5 each

(*a*) Prove that every compact subset A of a metric space (X, *d*) is bounded.

(*b*) Prove that continuous image or a connected set is connected.

(*c*) Prove that a subset A of a metric space (X, *d*) is totally bounded if and only if $\overline{A}$ is totally bounded.

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G—129/130—2015

FACULTIES OF ARTS/SCIENCE

B.A./B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

MATHEMATICS

Paper XV(A) : (Operation Research)

OR

Paper XV(B) (MT-303) : [Mechanics—I (Statistics)]

(Theory)

(Monday, 13-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

Paper XV(A) : (Operation Research)

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *five* of the following : 2 each

(*a*) What is linear programming ?

(*b*) Define surplus variable.

P.T.O.

(c) What is canonical form ?

(d) Define convex set.

(e) Define basic feasible solution.

(f) What is reduced matrix method ?

2. Attempt any *two* of the following : 5 each

(a) Explain the major steps of graphical solution method.

(b) Use the graphical method to solve the following LPP :

Minimize :

$$Z = - x_1 + 2x_2,$$

Subject to the constraints :

$$- x_1 + 3x_2 \leq 10,$$

$$x_1 + x_2 \leq 6,$$

$$x_1 - x_2 \leq 2,$$

and

$$x_1 \geq 0, \; x_2 \geq 0.$$

(c) A company makes two kinds of leather belts. Belt A is a high quality belt, and belt B is of lower quality. The respective profits are Rs. 4.00 and Rs. 3.00 per belt. Each belt of type A requires twice as much time as a belt of type B, and if all belts were of type B, the company could make 1000 belts per day. The supply of leather is sufficient for only 800 belts per day (Both A and B combined). Belt A requires a fancy buckle and only 400 buckles per day are available. There are only 700 buckles a day available for belt B. Determine the optimum product mix.

3. Attempt any *two* of the following : 5 each

(a) Prove that the set of n unit vector $e_i (i = 1, 2, \ldots\ldots, n)$ form a basis for R^n.

(b) Find all the basic feasible solutions of the equations :

$$2x_1 + 6x_2 + 2x_3 + x_4 = 3$$

$$6x_1 + 4x_2 + 4x_3 + 6x_4 = 2.$$

(*c*) The column vector [1, 1, 1] is a feasible solution to the system of equations :

$$x_1 + x_2 + 2x_3 = 4$$

$$2x_1 - x_2 + x_3 = 2$$

Reduce the given feasible solution to a basic feasible solution.

4. Attempt any *two* of the following : 5 each

(*a*) Explain Hungarian assignment method.

(*b*) A department head has four tasks to be performed and three subordinates, the subordinates differ in efficiency. The estimates of the time, each subordinate would take to perform, is given below in the matrix. How should he allocate the tasks one to each man, so as to minimize the total man hours ?

Task	**Men**		
	1	**2**	**3**
I	9	26	15
II	13	27	6
III	35	20	15
IV	18	30	20

(c) In the modification of a plant layout of a factory, four new machines M_1, M_2, M_3 and M_4 are to be installed in a machine shop. There are five vacant places A, B, C, D and E available. Because of the limited space, machine M_2 cannot be placed at C and M_3 cannot be placed at A. The cost of placing of machine i at place j (in hundred rupees) is shown below :

Location

Machine	A	B	C	D	E
M_1	9	11	15	10	11
M_2	12	9	–	10	9
M_3	–	11	14	11	7
M_4	14	8	12	7	8

Find the optimal assignment schedule.

P.T.O.

OR

Paper XV(B) (MT-303) : [Mechanics—I (Statistics)]

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *five* of the following : 2 each

(*a*) Define equilibrium.

(*b*) Define unlike parallel forces.

(*c*) State converse of the triangle law of forces.

(*d*) State polygon of forces.

(*e*) Define motion of translation.

(*f*) Define equivalent couples.

2. Attempt any *two* of the following : 5 each

(*a*) Determine the magnitude and direction of the resultant $\vec{R}$ of two forces $\vec{P}$ and $\vec{Q}$ acting at an angle θ. Deduce this result for $\theta = \pi$.

(*b*) Find components and resolved parts of forces.

(c) Let 'O' be a point within the quadrilateral, find the resultant of forces represented by $\vec{OA}, \vec{OB}, \vec{OC}$ and $\vec{OD}$ and hence find the position of this point O so that the forces may be in equilibrium.

3. Attempt any *two* of the following : 5 each

(a) State and prove converse of the triangle law of forces.

(b) State and prove triangle law of forces.

(c) A particle is placed at the center O of the circle inscribed in a Δ ABC. Forces $\vec{P}, \vec{Q}, \vec{R}$ acting along $\vec{OA}, \vec{OB}$ and $\vec{OC}$ respectively are inequilibrium. Prove that :

$$P : Q : R = \cos\frac{A}{2} : \cos\frac{B}{2} : \cos\frac{C}{2}.$$

4. Attempt any *two* of the following : 5 each

(a) Find the vector moment which is represented by magnitude and direction as well.

(*b*) Prove the condition of equilibrium of forces acting on a rigid body (cartesian form).

(*c*) Find the vector moment of forces $\vec{F}$ of magnitude 10 units acting at a point (1, 2, 3) in the direction of the vector $2\vec{i} + \vec{j} + 2\vec{k}$ about the point (2, 3, 1).

This question paper contains 7 printed pages]

G—37—2015

FACULTY OF SCIENCE

B.Sc. (First Year) (First Semester) EXAMINATION

MARCH/APRIL, 2015

MATHEMATICS

Paper II

(Algebra and Trigonometry)

(MCQ+Theory)

(Monday, 13-4-2015) **Time : 10.00 a.m. to 12.30 p.m.**

Time—2½ *Hours* *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) First thirty minutes for Question No. 1 (M.C.Q.) and remaining time for other questions.

(*iii*) Figures to the right indicate full marks.

(*iv*) Use black pen to darken the circle on OMR sheet for Q. No. 1 (M.C.Q.).

(*v*) Negative marking system is applicable for Q. No. 1 (M.C.Q.)

P.T.O.

(MCQ)

1. Choose the *correct* alternative for each of the following : 1 each

(1) Which of the following statements is *not* correct ?

(*a*) Matrix addition is commutative

(*b*) Matrix addition is associative

(*c*) Matrix multiplication is commutative

(*d*) Matrix multiplication is associative

(2) If A and B are two non-singular matrices of same order, then adj(AB) = ...

(*a*) (adj A) (adj B)

(*b*) (adj B) (adj A)

(*c*) (adj A) + (adj B)

(*d*) (adj A) – (adj B)

(3) If the matrices A and B are conformable for multiplication, then which of the following is *true* ?

(*a*) $(AB)^{\theta} = A^{\theta}B^{\theta}$

(*b*) $(AB)' = A'B'$

(*c*) $\overline{(AB)} = \bar{A}\bar{B}$

(*d*) $(AB)^{-1} = A^{-1}B^{-1}$.

(4) For any non-singular matrix A, A^{-1} = ...

(a) $|A|(\text{adj } A)$

(b) $\frac{|A|}{(\text{adj } A)}$

(c) $\frac{(\text{adj } A)}{|A|}$

(d) $(\text{adj } A)|A|$

(5) If I_n is an identity matrix of order n, then $\rho(I_n)$ = ...

(a) one

(b) two

(c) zero

(d) n

(6) The system AX = B, where $B \neq 0$ of m linear non-homogeneous equations in n unknowns has a unique solution if .....

(a) $\rho(A) = \rho(A : B) = n$

(b) $\rho(A) \neq \rho(A : B)$

(c) $\rho(A) = \rho(A : B) < n$

(d) $\rho(A) = \rho(A : B) > n$

(7) For what values of λ, the system :

$$\begin{bmatrix} 1 & 2 \\ 3 & \lambda \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$$

has a unique solution ?

(a) $\lambda = 6$

(b) $\lambda \neq 6$

(c) for all λ

(d) the system is inconsistent for all λ

(8) If $x + \sqrt{-1}\, y = r[\cos\theta + \sqrt{-1} \sin\theta]$, then $\cos\theta$ = ...

(a) $\dfrac{y}{\sqrt{x^2 + y^2}}$

(b) $\dfrac{\sqrt{x^2 + y^2}}{y}$

(c) $\dfrac{\sqrt{x^2 + y^2}}{x}$

(d) $\dfrac{x}{\sqrt{x^2 + y^2}}$

(9) Modulus of $1 + \sqrt{-1}$ is .....

(a) 1

(b) $\sqrt{2}$

(c) -1

(d) -2

(10) If $x = \cos\theta + i \sin\theta$, then $x^n + \frac{1}{x^n} =$ .....

(*a*) $2 \cos n\theta$

(*b*) $2i \sin n\theta$

(*c*) $2i \cos n\theta$

(*d*) $2 \sin n\theta$

(Theory)

2. Attempt any *two* of the following : 10

(*i*) Prove the necessary and sufficient condition for a square matrix A to possess the inverse is that $|A| \neq 0$ i.e. A is non-singular.

(*ii*) If A and B are square matrices of order n, then prove that AB is inversible if and only if A and B are invertible and then $(AB)^{-1} = B^{-1}A^{-1}$.

(*iii*) Prove that the adjoint of a non-singular matrix is non-singular.

3. Attempt any *two* of the following : 10

(*i*) Prove that a system AX = B of n non-homogeneous equations in n unknowns has a unique solution provided A is non-singular *i.e.* $\rho(A) = n$.

(*ii*) Prove that λ is a characteristic root of a matrix A if and only if there exists a non-zero vector X such that $AX = \lambda X$.

(*iii*) Solve the following equations :

$$x + 2y + 3z + 4t = 0$$

$$8x + 5y + z + 4t = 0$$

$$5x + 6y + 8z + t = 0$$

$$8x + 3y + 7z + 2t = 0.$$

4. Attempt any *two* of the following : 5 each

(*i*) For positive integer n, prove that :

$$(\cos\theta + \sqrt{-1}\sin\theta)^n = \cos n\theta + \sqrt{-1}\sin n\theta.$$

(*ii*) Expand $\sin^8\theta$ in a series of cosines of multiples of θ.

(*iii*) If $2\cos\theta = x + \frac{1}{x}$ and $2\cos\phi = y + \frac{1}{y}$, then prove that

$$x^m y^n + \frac{1}{x^m y^n} = 2\cos(n\theta + n\phi).$$

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G—133—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

PHYSICS

Paper XII (Phy-302)

(Quantum Mechanics)

(Friday, 17-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Given data :

$h = 6.63 \times 10^{-34}$ J.s

$m = 9.1 \times 10^{-31}$ kg.

1 Å = 10^{-10}m

1. Attempt any *four* : 8

(*a*) State Heisenberg's uncertainty principle.

(*b*) Define probability current.

P.T.O.

(c) Write an expression for expectation value $\bar{p}$ of the particle trapped in a one-dimensional box.

(d) Define orbital quantum number.

(e) A microscope is used to locate an electron in an atom at a distance of 0.2 Å. What is the uncertainty in the momentum of electron located in this way ?

(f) Find deBroglie wavelength associated with 46 grams golf-ball moving with velocity 36 m/s.

2. Solve any *two* : 8

(a) Set up Schrodinger's wave equation for Hydrogen atom in spherical polar coordinate system.

(b) Starting from Schrodinger's wave equation for hydrogen atom, separate radial, azimuthal and zenith part by method of separation.

(c) Write a note on electron probability density.

3. Attempt any *two* : 8

(a) Derive wave function for a particle in one-dimensional box.

(*b*) Explain momentum quantization of a particle in one-dimensional box.

(*c*) Derive an equation for wave function of a particle in three-dimensional box.

4. Solve any *one* : 8

(*a*) Derive time dependent Schrodinger's wave equation.

(*b*) Write a note on eigenvalues and eigenfunctions.

5. Write notes on (any *two*) : 8

(*a*) Quantum theory of light;

(*b*) Experimental setup of G.P. Thompson's method;

(*c*) Expression for Compton shift;

(*d*) Uncertainty principle and its applications.

This question paper contains 4 printed pages]

G—135—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

PHYSICS

Paper XIII (Phy-302)

(Solid State Physics)

(Saturday, 18-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks—40*

N.B. :— (*i*) Attempt *All* questions.

(*ii*) Non-programmable calculator is allowed.

(*iii*) Figures to the right indicate full marks.

(*iv*) Symbol used have their usual meaning.

1. Attempt any *four* questions : 8

(*a*) Define primitive and non-primitive translational vectors.

P.T.O.

(*b*) Draw the neat labelled diagrams of two-dimensional bravais lattices.

(*c*) State Dulong-Petit's law of specific heat.

(*d*) State Wiedemann-Franz law.

(*e*) What do you mean by Donor level ?

(*f*) Enlist assumptions of the classical theory of specific heat.

(*g*) Define intrinsic and extrinsic semiconductors.

2. Attempt any *two* : 8

(*a*) Draw the neat labelled diagrams of any *four* crystal systems in three-dimensional along with their bravais lattices.

(*b*) Assuming the expression of energy as :

$$E = 9NK_BT\left(\frac{T}{\theta_D}\right)^3 \int_0^{\frac{\theta_D}{T}} \frac{x^3 \, . \, dx}{e^x - 1} .$$

Derive the expressions for the specific heat at high and low temperatures.

(*c*) Derive an expression for the electrical conductivity.

3. Attempt any *two* : 8

(*a*) Describe Drnde-Lorentz theory.

(*b*) Explain the difference between conductors, insulators and semiconductors.

(*c*) What are the different types of symmetry operations ? Show that five fold rotational axis is not permissible in case of lattice.

4. Attempt any *one* : 8

(*a*) Derive an expression for the density of electrons in the conduction band for the N-type semiconductor.

(*b*) Derive an expression for the lattice heat capacity of a solid following Einstein's model. Discuss the assumptions and predictions of this model and compare it with the experimental observations.

5. Write short notes on any *two* : 8

(*a*) Bragg's law;

(*b*) Limitations of Debye's theory of specific heat of solids;

(*c*) Thermal conductivity;

(*d*) Acceptor and donor levels.

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G—127—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

BOTANY

Paper XIII (Optional)

(Plant Pathology-I)

Or

(Systematic Botany-I)

Or

(Herbal Technology-I)

(Saturday, 11-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

(Plant Pathology-I)

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

P.T.O.

1. Write notes on (any *four*) : 8

(*i*) Define pathogenicity.

(*ii*) Dispersal of plant pathogens by water.

(*iii*) Causal organism of Green ear of Bajra.

(*iv*) Characteristic symptoms of Grain smut of Jowar.

(*v*) Control measures of *Citrus canker*.

(*vi*) Characteristic symptoms of *Bean mosaic*.

2. Write notes on (any *two*) : 8

(*i*) Classification of plant diseases on the basis of causal organisms.

(*ii*) Isolation of plant pathogens from infected plant parts.

(*iii*) Entry of plant pathogens through root-hairs.

(*iv*) Effect of moisture on disease development.

3. Write notes on (any *two*) : 8

(*i*) Koch's Postulates;

(*ii*) Scope and importance of plant pathology.

(*iii*) Entry of plant pathogens through buds.

(*iv*) Effect of soil pH on disease development.

4. Describe in detail symptoms, causal organism, disease cycle and control measures of Red-rot of Sugarcane. 8

Or

Describe in detail symptoms, causal organism disease cycle and control measures of whip-smut of sugarcane.

5. Write short notes on (any *two*) : 8

(*i*) Symptoms of white rust of mustard;

(*ii*) Control measures of powdery mildew of pea;

(*iii*) Yellow vein mosaic of Bhendi;

(*iv*) Symptoms of leaf spot of Turmeric.

P.T.O.

OR

(Systematic Botany-I)

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with well labelled diagrams wherever necessary.

1. Write notes on (any *four*) : 8

(*i*) Define Botanical Garden.

(*ii*) What is Nomenclature ?

(*iii*) Define Taxonomy.

(*iv*) Give any *two* principles of ICBN.

(*v*) Natural system of classification.

(*vi*) What is plant identification ?

2. Explain (any *two*) : 8

(*i*) Artificial system of classification;

(*ii*) Species concept;

(*iii*) Importance of Botanical Garden;

(*iv*) Economic importance of cucurbitaceae.

3. Describe in a brief (any *two*) : 8

(*i*) Merits of Engler's and Prantl's system of classification.

(*ii*) Scope of Plant Taxonomy.

(*iii*) Role of cytology in relation to Taxonomy.

(*iv*) Effective and valid Publication

4. Describe in detail any *one* : 8

(*i*) Botanical garden and their role in plant taxonomy.

(*ii*) Explain morphological characters of the family Combretaceae. Give floral formulae and economic importance of any *two* plants.

5. Write short notes on (any *two*) : 8

(*i*) Importance of Herbarium;

(*ii*) Role of keys in a plant identification;

(*iii*) Economic importance of family Myrtaceae.

(*iv*) Floral characters of family Capparidaceae.

P.T.O.

OR

(Herbal Technology-I)

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagrams wherever necessary.

1. Write notes on (any *four*) : 8

(*i*) Ayurvedic system of medicine;

(*ii*) Resin as plant drugs;

(*iii*) Collection of crude drugs;

(*iv*) Root drugs;

(*v*) Standardization of drugs;

(*vi*) Biomedicines.

2. Write notes on (any *two*) : 8

(*i*) History and importance of Homeopathic system of medicine.

(*ii*) Importance of Unani system of medicine.

(*iii*) Drying and storage of crude drugs.

(*iv*) Cultivation and harvesting of Herbal drugs.

3. Write notes on (any *two*) : 8

(*i*) Demand and Supply of MAP in India.

(*ii*) Importance of Naturopathy.

(*iii*) Chemical classification of plant drugs.

(*iv*) Unorganized drugs.

4. Solve any *one* : 8

(*a*) Describe in detail distribution, morphology chemical constituents and uses of Ashwagandha.

(*b*) Discuss various methods of drug evaluation.

5. Write notes on (any *two*) : 8

(*i*) Chemistry and uses of turmeric;

(*ii*) Entire plant drugs;

(*iii*) Importance of tissue culture of medicinal plants;

(*iv*) Drug adulterations.

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FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

ZOOLOGY

Paper XIII

(Aquaculture)

OR

[Applied Parasitology (Parasitic Protozoa and

Platyhelminthes)]

OR

(Entomology—I)

OR

(Environmental Biology—II)

(Theory)

(Saturday, 18-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

(Aquaculture)

N.B. :— (*i*) Attempt *All* questions.

(*ii*) Draw well labelled diagrams wherever necessary.

P.T.O.

1. Write notes on any *four* of the following : 8

   (*a*) Definition of aquaculture

   (*b*) Monoculture

   (*c*) Domestic sewage

   (*d*) Marginal aquatic weeds

   (*e*) Significance of aquarium keeping

   (*f*) Aquarium fishes.

2. Write notes on any *two* of the following : 8

   (*a*) Importance of aquarium

   (*b*) Polyculture

   (*c*) Fish cum pig farming

   (*d*) Paddy cum fish culture.

3. Write notes on any *two* of the following : 8

   (*a*) Cage culture

   (*b*) Pen culture

   (*c*) Use of sewage in aquaculture

   (*d*) Agricultural sewage and its hazards.

4. Write notes on any *two* of the following : 8

(*a*) Advantges and disadvantages of aquatic weeds.

(*b*) Control of aquatic weeds by chemical and biological methods.

(*c*) Pearl oyster culture

(*d*) Fresh water prawn culture.

5. Solve any *one* of the following : 8

(*a*) Describe chemical and biological properties of water.

(*b*) Explain setting up and maintenance of aquarium.

OR

[Applied Parasitology (Parasitic Protozoa and Platyhelminthes)]

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with suitable labelled diagrams wherever necessary.

1. Write notes on any *four* of the following : 8

(*a*) Biological vector

(*b*) Facultative host

(*c*) Sporozoite of *Eimeria tenella*

(*d*) Host-parasite relation

(*e*) Gynaecophoric canal

(*f*) Cirrus sac.

2. Write notes on any *two* of the following : 8

(*a*) General organization of parasitic protoza.

(*b*) Life-cycle of *Giardia intestinalis*

(*c*) Morphology of *Trichomonas vaginalis*

(*d*) African sleeping sickness and its control measures.

3. Write notes on any *two* of the following : 8

(*a*) Life-cycle of *Balantidium coli*

(*b*) Pathogenicity and control measures of *Entamoeba histolytica*

(*c*) Morphology of *Entamoeba Coli*

(*d*) Life-cycle of *Sarcocystis cruzi.*

4. Write notes on any *two* of the following : 8

(*a*) General organization of trematodes.

(*b*) Life-cycle of *Taenia saginata*

(*c*) Morphology of *Echinococcus granulosus*

(*d*) Reproductive organs of cestode.

5. Write long answer of any *one* of the following : 8

(*a*) Describe morphology, life-cycle and pathogenicity of *Gastrodiscoides hominis*.

(*b*) Give an account of host specificity in helminthes.

OR

(Entomology—I)

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw well labelled diagrams wherever necessary.

1. Write notes on any *four* of the following : 8

(*i*) Medical entomology

(*ii*) Spiracles of cockroach

(*iii*) Elytra

(*iv*) Honeybee

(*v*) Parametabola

(*vi*) Hypermetabola.

2. Write notes on any *two* of the following : 8

   (*i*) Forest entomology

   (*ii*) General characters of class insecta

   (*iii*) Traping of insect

   (*iv*) Pinning of insect.

3. Write notes on any *two* of the following : 8

   (*i*) Discuss in detail external morphology of Cockroach.

   (*ii*) Discuss in detail Nervous system of Cockroach.

   (*iii*) Discuss in detail alimentary canal of Cockroach.

   (*iv*) Discuss in detail female reproductive system of Cockroach.

4. Write notes on any *two* of the following : 8

   (*i*) Give the salient features of order Thysanura with suitable examples.

   (*ii*) Give the salient features of order Orthoptera with suitable examples.

   (*iii*) Give the salient features of order Odonata with suitable examples.

   (*iv*) Give the salient features of order Coleoptera with suitable examples.

5. Describe in detail any *one* of the following : 8

(*i*) Hormonal control of metamorphosis in insects.

(*ii*) Effect of light and temperature on insect life.

OR

(Environmental Biology—II)

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

1. Write short notes on any *four* of the following : 8

(*a*) Non-biodegradable pollutants

(*b*) Effects of air pollution

(*c*) Radioactive pollution

(*d*) Infiltration

(*e*) Ozone as protector

(*f*) Sources of noise pollution.

2. Write short notes on any *two* of the following : 8

(*a*) Sources of water pollution

(*b*) Eutrophication

(*c*) Sources of mercury pollution

(*d*) Biodegradable pollutants.

3. Write short notes on any *two* of the following : 8

(*a*) Soures of air pollution

(*b*) Sources of carbon dioxide and carbon monoxide as pollutant.

(*c*) CFC's

(*d*) Automobile exhaust.

4. Write short notes on any *two* of the following : 8

(*a*) Effects of radioactive pollution.

(*b*) Effects of noise pollution.

(*c*) Pollution by solid waste.

(*d*) Sources of radioactive pollution.

5. Solve any *one* of the following : 8

(*a*) Environmental education in India.

(*b*) Water treatment methods.

This question paper contains 2 printed pages!

G—136—2015

FACULTY OF SCIENCE

B.Sc. (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

PHYSICS

Paper XIII (Phy-303)

(Astrophysics)

(Theory)

(Saturday, 18-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

1. Attempt any *four* : 8

(*a*) What are various types of galaxies ? Write the name of our galaxy.

(*b*) What are different parts of our galaxy ?

(*c*) What do you mean by Black body radiation ?

(*d*) For what wavelengths are the Rayleigh-Jeans and Wien's law valid ?

(*e*) What is a meteor ?

P.T.O.

(f) What is a Faculae ?

(g) Write down the names of planets of our solar system with their distances from sun.

2. Attempt any *two* : 8

(a) Explain in brief luminosity classification of stars.

(b) Discuss condensation theory.

(c) Describe the composition and atmosphere of Earth.

3. Attempt any *two* : 8

(a) Discuss distance measurement by parallex method.

(b) Explain H-R diagram.

(c) Describe Enosphere and Ionosphere.

4. Attempt any *one* : 8

(a) Explain structure, composition and atmosphere of venus.

(b) Explain in detail Milky Way Galaxy.

5. Write short notes on any *two* : 8

(a) Steady state cosmology

(b) Asteroids

(c) Spectral classification of stars

(d) Solar corona.

This question paper contains 4 printed pages]

G—131—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

CHEMISTRY

Paper XII (A + B)

(Organic and Inorganic Chemistry)

(Theory)

(Wednesday, 15-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) Figures to the right indicate full marks.

(*iii*) Use separate answer-books for Section A and Section B.

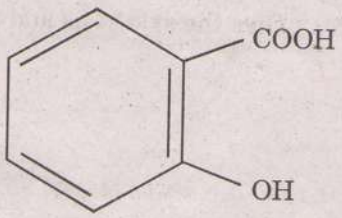
Section A

(Organic Chemistry)

1. Answer any *Five* of the following : 5×2=10

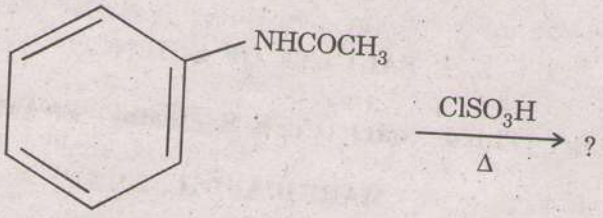
(*a*) Predict the product(s) :

(*i*)



+ $\xrightarrow[(CH_3CO)_2O/\Delta]{\text{Conc. } H_2SO_4}$?

P.T.O.

(*ii*) 

(*b*) What happens when thiophene is treated with formaldehyde ?

(*c*) How will you prepare pyrrole from succinamide ?

(*d*) Give the synthesis of ephedrine from 1-phenyl-propane-1,2,-dione.

(*e*) How will you obtain pyridine from Pentamethylenediamine hydrochloride ?

(*f*) What are chromophores ? Give *two* examples.

(*g*) Write the structural formula of vitamin 'C'. Mention its sources and diseases caused by its deficiency.

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

(*a*) What are fungicides ? Give the synthesis and uses of the following pesticides :

(*i*) 2, 4-D

(*ii*) BHC

(*b*) How will you convert :

(*i*) Mucic acid to furan

(*ii*) 2-aminobenzaldehyde to quinoline

(*iii*) Furan to 2-acetyl furan ?

(*c*) Give the synthesis and uses of the following drugs :

(*i*) Sulphadizine

(*ii*) Tolbutamide.

3. Answer any *one* of the following : 1×7=7

(*a*) Describe the classification of dyes on the basis of their applications with at least *one* example of each dye (any *five*) :

(*b*) Discuss the constitution of Nicotine.

Section B

(Inorganic Chemistry)

4. Solve any *three* of the following : 3×3=9

(*a*) Define Molecular compound, Effective Atomic Rule and Isomerism.

(*b*) Give the postulates of Werner's theory of coordination compound.

(c) What is difference between metal complex and metal chelate.

(d) Give the characteristics of Hard and Soft base.

(e) Explain, Hard-Hard interaction are generally ionic and soft-soft interaction are generally covalent.

5. Solve any *two* of the following : 2×2=4

(a) What is ligand isomerism ? Give its example.

(b) Classify double salt and complex compound :

(i) Carnallite

(ii) Potassium pentachloro mono-amine platinate (IV)

(iii) Dichloro tetraamine cobalt (III) chloride

(iv) Potash alum.

(c) Draw the structure of cis and trans form of dichloro tetramine platinum (IV) ion.

(d) Classify the following hard acid and soft acids :

(i) Na^+

(ii) Ti^+

(iii) Ti^{4+}

(iv) Pt^{4+}

This question paper contains 3 printed pages]

G—125—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

BOTANY

Paper XII

(Cell and Molecular Biology)

(Theory)

(Friday, 10-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with well labelled diagrams wherever necessary.

1. Write notes on (any *four*) : 8

(*i*) Significance of mitosis;

(*ii*) Nucleoid;

P.T.O.

(iii) Nucleotide;

(iv) Karyokinesis;

(v) Polyribosome;

(vi) Amniocentesis.

2. Write notes on (any *two*) : 8

(i) Ultrastructure of Eukaryotic cell.

(ii) Interphase.

(iii) Structure of typical chromosome.

(iv) Nucleus.

3. Write notes on (any *two*) : 8

(i) Pachytene and Diplotence of Prophase-I.

(ii) Golgi bodies;

(iii) Types of Endoplasmic reticulum.

(iv) Differentiate between the Metaphase-I and Metaphase-II of Meiosis.

4. What are Nucleic acids ? Describe the various types of RNA and their functions. 8

Or

What is mutation ? Describe gene mutation in detail.

5. Write short notes on (any *two*) : 8

(*i*) Semi-conservative method of DNA replication;

(*ii*) DNA double helix;

(*iii*) Classical concept of gene;

(*iv*) Phenylketonuria.

This question paper contains 3 printed pages]

G—122—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

MICROBIOLOGY

Paper XII

(Microbial Genetics)

(Wednesday, 8-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Neat and well labelled diagrams wherever needed will carry marks.

1. Write on (any *four*) : 8

(*i*) RNA in some cases is the genetic material.

(*ii*) Enzymes of DNA replication.

(*iii*) Definition of Genetic Recombination.

P.T.O.

(*iv*) Competence in transformation.

(*v*) Transposons and their role.

(*vi*) Methylation during replication.

2. Describe in brief (any *two*) : 8

(*i*) Role of helicases;

(*ii*) B-clamp polymerases;

(*iii*) Function of primase.

3. Illustrate in brief (any *two*) : 8

(*i*) Various stages in general recombination.

(*ii*) Enzymes needed for genetic recombination.

(*iii*) Rec BC proteins and its role.

4. Take a detailed account (any *one*) : 8

(*i*) Mechanism of generalised and specialised Transduction.

(*ii*) Gierer and Schram experiment proving importance of RNA as genetic material.

5. Write short notes on (any *two*) : 8

(*i*) Role of *E.coli* as model organism;

(*ii*) Homologus and Non-Homologus recombination;

(*iii*) Conjugation as a replicative process;

(*iv*) Role of plasmids in Hfr formation.

This question paper contains 3 printed pages]

G—124—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

MICROBIOLOGY

Paper XIII

(Microbial Metabolism)

(Thursday, 9-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Illustrate your answers with suitable diagram, graphs or schemes wherever necessary.

1. Attempt any *four* of the following : 8

(*i*) What is biocatalyst ?

(*ii*) What is activation energy ?

P.T.O.

(iii) What is isoenzyme ?

(iv) Define catabolism.

(v) Define fermentation.

(vi) What is ATP ?

2. Attempt any *two* of the following : 8

(i) Explain optical specificity of enzymes along with example.

(ii) Explain effect of substrate concentration on enzyme activity.

(iii) Write on proton motive force.

3. Attempt any *two* of the following : 8

(i) Write on non-competitive inhibition.

(ii) Write on HMP.

(iii) Butanediol fermentation.

4. Attempt any *one* of the following : 8

(i) Define enzyme. Give classification of enzyme with example.

(ii) Explain in detail TCA.

5. Write short notes on any *two* of the following : 8

(*i*) General properties of enzymes

(*ii*) Effect of enzyme concentration

(*iii*) Nomenclature of enzymes

(*iv*) Homolactate fermentation.

This question paper contains 2 printed pages]

G—134—2015

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

ZOOLOGY

Paper XII

(Ecology and Zoogeography)

(Theory)

(Friday, 17-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Draw neat and well-labelled diagrams wherever necessary.

(*iii*) *All* questions carry equal marks.

1. Write notes on any *four* of the following : 8

   (*a*) Consumers

   (*b*) Predation

   (*c*) Tidal energy

   (*d*) Australian realm

   (*e*) Solar energy.

2. Write notes on any *two* of the following : 8

   (*a*) Hydrosphere

   (*b*) Oxygen cycle

   (*c*) Xerach succession

   (*d*) Decomposers.

P.T.O.

3. Write notes on any *two* of the following : 8

(*a*) Commensalism

(*b*) Parasitism

(*c*) Age distribution

(*d*) Population density.

4. Write notes on any *two* of the following : 8

(*a*) Sources and effects of noise pollution.

(*c*) Limitations of fossil fuel.

(*c*) Control measures of water pollution.

(*d*) Advantages of conventional and non-conventional energy sources.

5. Explain any *one* of the following : 8

(*a*) What is wildlife ? Explain necessity of wildlife conservation.

(*b*) Adaptations of animals in aquatic habitat.

This question paper contains 3 printed pages]

M—39—2015

FACULTY OF COMPUTER SCIENCE

B.Sc. (CS) (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

COMPUTER SCIENCE

(Java Programming–I)

(Friday, 17-4-2015) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Assume suitable data, if necessary.

(*iii*) Figures to the right indicate full marks.

1. Attempt the following : 20

(*i*) Explain data types in Java.

(*ii*) What is object ? Explain.

(*iii*) Explain stream classes.

(*iv*) What is swing ? Differentiate between AWT and Swing ?

P.T.O.

2. (*a*) Explain variables and constants in detail. 8

(*b*) What is an array ? Explain static and dynamic. 7

Or

(*c*) What is inheritance ? Explain the types of inheritance. 8

(*d*) W.A.P. implement wrapper class. 7

3. (*a*) What is stream classes ? Explain bytes stream and character stream. 8

(*b*) W.A.P. in Java to accept five number of user sort in descending order using array. 7

Or

(*c*) What is AWT ? Explain Jmenu and the Jpopupmenu class. 8

(*d*) Explain Applet HTML tags. 7

4. (*a*) Explain history of Java. Give comparison between Java and C++. 8

(*b*) W.A.P. for overloading constructor. 7

Or

(*c*) Explain the types of comments in Java. 8

(*d*) Explain access specifiers in Java. 7

5. Write short notes on (any *three*) : 15

(*a*) Object and class;

(*b*) Wrapper class;

(*c*) Object cloning and inner classes;

(*d*) Using the file class;

(*e*) Dealing errors.

This question paper contains 3 printed pages]

G—120—2015

FACULTY OF ALL

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

ENVIRONMENTAL STUDIES

(Compulsory)

(Theory)

(Tuesday, 7-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Draw neat and well labelled diagram wherever necessary.

(*i*) **सर्व** प्रश्न सोडवा.

(*ii*) **सर्व** प्रश्नांना समान गुण आहेत.

(*iii*) आवश्यक तेथे नामनिर्देशित आकृती काढणे गरजेचे आहे.

1. Attempt any *two* of the following questions : 10

(*a*) Distribution of Biodiversity on Earth

(*b*) Agricultural pollution

(*c*) Value of biodiversity

(*d*) Depletion of forest.

P.T.O.

खालीलपैकी कोणत्याही **दोन** प्रश्नांची उत्तरे लिहा :

(अ) पृथ्वीवरील जैवविविधता

(ब) शेतीचे प्रदूषण

(क) जैवविविधतेचे महत्व

(ड) जंगलांचा नाश.

2. Write an essay on solid waste management. 10

घनकचरा व्यवस्थापनावर निबंध लिहा.

Or

(किंवा)

Write in detail causes and effects of Noise Pollution.

ध्वनी प्रदूषणाची कारणे व परिणाम विशद करा.

3. Write in detail the scope and importance of natural resources. 10

नैसर्गीक संसाधनाची व्याप्ती आणि महत्व सविस्तर लिहा.

Or

(किंवा)

Write in detail overexploitation of mineral resources and their effects on environment.

खनिज संसाधनाचा अतिरिक्त वापर आणि त्याचा पर्यावरणावर होणारा परिणाम सविस्तर लिहा.

4. Write short notes on (any *four*) : 10

(*a*) Decomposer

(*b*) Flood

(*c*) Waterlogging

(*d*) Pond

(*e*) Chemical pollution

(*f*) Wildlife.

खालीलपैकी कोणत्याही **चार**वर थोडक्यात टीपा लिहा :

(अ) विघटक

(ब) पूर

(क) पानथळ

(ड) तळे

(इ) रासायनिक प्रदूषण

(फ) वन्यजीव.

This question paper contains 3 printed pages]

AO—2—2015

FACULTY OF SCIENCE

B.Sc. (F.T.) (Third Semester) EXAMINATION

MARCH/APRIL, 2015

FOOD TECHNOLOGY

Paper No. 201

(Fruit and Vegetable Processing)

(Wednesday, 8-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Draw diagram wherever necessary.

1. Solve any *two* : 10

(*a*) Discuss on the scope of fruit preservation industry in India.

P.T.O.

(*b*) Give the procedure of bitter gourd pickle.

(*c*) Write on the production of raisin and wine from grapes.

(*d*) State the procedure of drying of green leafy vegetables.

2. Solve any *two* : 10

(*a*) Enlist the products made from mango and state the manufacturing of mango squash.

(*b*) Give the commercial processing of tomato sauce and soup.

(*c*) State the manufacturing of dried garlic powder.

3. Solve any *one* : 10

(*a*) Discuss in detail on the manufacturing of various products made from fig.

(*b*) Give the manufacturing process of wood apple jelly and orange marmalade.

4. Write short notes (any *two*) :

(*a*) Potato papad; 6

Or

Amla candy.

(*b*) Banana puree; 4

Or

Amchur powder.

This question paper contains 2 printed pages]

AO—8—2015

FACULTY OF SCIENCE

B.Sc. (F.T.) (Third Semester) EXAMINATION

APRIL/MAY, 2015

FOOD TECHNOLOGY

Paper 202

(Wheat Milling and Baking Technology)

(Friday, 10-4-2015) **Time : 2.00 p.m. to 4.00 p.m.**

Time—Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

1. Solve any *two* : 10

(*a*) Write on roller flour milling process.

(*b*) Discuss on wheat flour improvers.

(*c*) Write on pastry and its types.

(*d*) State the bakery norms.

P.T.O.

2. Solve any *two* : 10

(*a*) Enlist the baked products from soft wheat and write on cookies.

(*b*) State the principles of conditioning of wheat.

(*c*) State the importance of wheat production.

3. Solve any *one* : 10

(*a*) Write on testing of final products.

(*b*) Write in detail on bread making.

4. Write short notes on any *three* :

(*a*) Bread faults. 6

Or

Marketing of products.

(*b*) Rheological properties of wheat. 4

Or

Pizza making.

This question paper contains 3 printed pages]

M—50—2015

FACULTY OF COMPUTER STUDIES

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

APRIL/MAY, 2015

(Revised Course)

COMPUTER SCIENCE

(Oracle 10g SQL and PL/SQL)

(Monday, 20-4-2015) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt the following : 20

(*a*) Explain users of DBMS.

(*b*) Explain define and verify.

(*c*) Explain select command.

(*d*) Explain date functions.

2. (*a*) Explain structure of DBMS. 8

(*b*) Explain working with views. 7

P.T.O.

Or

(c) Explain single key function with example. 8

(d) Explain group by and having clause. 7

3. Base on the given table and data write SQL statement to perform the following : 15

Student-detail

Roll-No.	Name	Class
1	Aditi	BCA-I
2	Avanti	BCA-II
3	Anamika	BCA-III

(a) Insert the given records in student detail.

(b) Remove the record from student detail whose Roll-no = 3.

(c) Display the table.

(d) Add the new column.

(e) Change the name from Class-II.

Or

(c) What is privileges ? Explain types of privileges. 8

(d) Explain PL/SQL conditional logic. 7

4. (a) What is trigger ? Explain types of triggers. 8

(b) Explain PL/SQL loops in detail. 7

Or

(c) (*i*) Create emp table with four columns. 8

(*ii*) Insert four records.

(*iii*) Delete one row.

(*iv*) Add the new column.

(*d*) Explain data types in SQL. 7

5. Write short notes on any *three* : 15

(*a*) DDL

(*b*) DML

(*c*) Transaction control command

(*d*) Rowid

(*e*) Natural Join.

This question paper contains 2 printed pages]

M—28—2015

FACULTY OF COMPUTER STUDIES

B.Sc. (C.S.) (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

COMPUTER STUDIES

(Cloud Computing)

(Wednesday, 15-4-2015) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

N.B. :—(*i*) *All* questions are compulsory.

(*ii*) Assume suitable data if necessary.

(*iii*) Figures to the right indicate full marks.

1. Attempt the following : 20

(*a*) Explain advantages of using cloud.

(*b*) Discuss internet technology in detail.

(*c*) Explain SOAP an detail.

(*d*) Explain parallel computing.

2. (*a*) Explain concept of 3-tier architecture. 8

(*b*) Explain Amazon EC-2 in detail. 7

P.T.O.

Or

(*c*) Explain the use of Azure platform. 8

(*d*) Explain concept of Big table. 7

3. (*a*) Explain limits of Dev-200. 8

(*b*) Explain the use of map reduce. 7

Or

(*c*) Explain the concept of dynamo. 8

(*d*) What do you mean by parallel efficiency. 7

4. (*a*) Explain the use of force-cum-platform. 8

(*b*) Discuss TCS Instant Apps in detail. 7

Or

(*c*) Explain the concept of Pass in detail. 8

(*d*) Explain HDFS cloud file system. 7

5. Write short notes on any *three* : 15

(*a*) TP monitors

(*b*) Internet

(*c*) Servers

(*d*) Saas

(*e*) 'rich' interface.

This question paper contains 3 printed pages]

M—7—2015

FACULTY OF SCIENCE

B.Sc. (C.S.) (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

COMPUTER SCIENCE

Paper S5.1

(Cyber Security)

(Thursday, 9-4-2015) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks*—80

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Assume suitable data if necessary.

1. Attempt the following : 20

(*a*) Explain symmetric cryptography.

(*b*) Explain reverse hijacking.

(*c*) Explain scope and object of IT Act.

(*d*) Explain offenses related to digital signature certificate.

P.T.O.

2. (*a*) What is digital signature ? Explain creating and verifying digital signature. 8

(*b*) Explain RSA algorithm with example. 7

Or

(*c*) Explain digital signature and PKI. 8

(*d*) Explain the powers of adjudicating officer to award compensation. 7

3. (*a*) What is domain name ? Explain the concept of domain names. 8

(*b*) Explain the concept of hacking with computer system. 7

Or

(*c*) Explain new concepts in Trademark Jurisprudence. 8

(*d*) Explain establishment and composition of appellate tribunal. 7

4. (*a*) Explain the following : 8

(*i*) Meta tag

(*ii*) Framming.

(*b*) Explain the difference between symmetric and asymmetric cryptography. 7

Or

(*c*) Explain the powers Adjudicating Officer to impose penalty. 8

(*d*) Explain digital signature and the law. 7

5. Write short notes on (any *three*) : 15

(*a*) Tamparing with computer source document

(*b*) Cyber squatting

(*c*) Spamming

(*d*) Offences related to breach of confidentiality and privacy

(*e*) Genesis.

This question paper contains 2 printed pages]

M—17—2015

FACULTY OF SCIENCE

B.Sc. (C.S.) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2015

(Revised Course)

COMPUTER SCIENCE

(Digital Image Processing)

(Saturday, 11-4-2015) **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours *Maximum Marks—80*

N.B. :— (*i*) Assume suitable data if necessary.

(*ii*) Figures to the right indicate full marks.

1. Write the answers of the following : 20

(*a*) Explain the advantages of DSP.

(*b*) Explain the concept of 16-bit color image.

(*c*) Explain the concept of data classes.

(*d*) What are the different types of images ?

2. (*a*) Discuss the elements of visual perception. 8

(*b*) Explain the concept of adaptation. 7

P.T.O.

Or

(*c*) What is filtering ? Explain spatial filtering. 8

(*d*) Explain the concept of Histogram. 7

3. (*a*) Discuss intensity of transformation function. 8

(*b*) Explain 2D-discrete Fourier transform. 7

Or

(*c*) Explain the concept of image degradation. 8

(*d*) Discuss the concept of noise model.

4. (*a*) Explain the disadvantages of MATLAB.

(*b*) Explain the concept of geometric transformation. 7

Or

(*c*) Explain the concept of MATLAB Scratch Pad. 8

(*d*) Discuss various array operations. 7

5. Write short notes on the following (any *three*) : 15

(*a*) Writing images

(*b*) Command Window

(*c*) Background of intensity transformation

(*d*) Scalar

(*e*) Variables in MATLAB.