FACULTY OF SCIENCES

M.Sc. (BOTANY) III – SEMESTER REGULAR EXAMINATION, DEC- 2016

CELL BIOLOGY, GENETICS, ECOLOGY AND PHYTOGEOGRAPHY

PAPER – 01

Time: 3 hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

Answer the following questions in not more than **ONE** page each: (5x4=20)

1. Homeostasis and Self-regulation
2. Basic Principle of Light microscope
3. Programmed cell death
4. Raunkier's Life forms
5. Endemism

Section – B

Answer the following questions in not more than **FOUR** pages each: (5x10=50)

6. a) Write briefly about DNA replication and transcription.

(OR)

   b) Discuss about regulation of gene expression in prokaryotes.

7. a) Describe the cell cycle and its control mechanisms.

(OR)

   b) Give an account of gene mutations.

8. a) Describe the dominance and similarity indices of plant communications.

(OR)

   b) Define primary productivity and explain the methods of measurement of primary production.

9. a) What are the green house gases and explain the causes and consequence of global warming.

(OR)

   b) Write the climate classification of Thronthwaite's and mention its merits.

10. a) Define pollution and discuss the causes and consequences of eutrophication.

(OR)

   b) What are the Ozone depleters and explain the consequences of Ozone layer depletion.

--oOo--

FACULTY OF COMMERCE

M.Com. (E-Commerce) III – SEMESTER REGULAR EXAMINATIONS, DEC-2016

QUANTITATIVE TECHNIQUES FOR MANAGERIAL DECISIONS

PAPER – I

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

<u>Section – A</u>   (5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Meaning of Quantitative Techniques.
2. Estimation.
3. Assumptions of Chi Square test.
4. Conditions for Applying Game theory.
5. Advantages of software packages over manual methods of computation.

<u>Section – B</u>   (5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Explain the role of quantitative techniques in management decision making.

(OR)

   b) In the estimation of regression equations of two variables X and Y the following results were obtained: $\Sigma X=900$, $\Sigma Y=700$, n = 10; $\Sigma X^2 = 6360$, $\Sigma Y^2=2860$ $\Sigma XY=3900$, where x and y are deviations from respective means. Obtain the two regression equations.

7. a) Explain the steps in formulation and testing hypothesis in detail.

(OR)

   b) In a hospital 480 female and 520 male babies were born in a week. Do these figures confirm the hypothesis that males and females are born in equal number? Conduct a test for number of successes.

8. a) Following are the responses to the question "How many hours do you study before a major mathematics test".

        6   5   1   2   3   5   7   5   3   7   4   7

   Use the sign test to test the hypothesis at the 0.05 level of significance that the median number of hours a student studies before a mathematics test is 3.

(OR)

   b) An inspection of 10 samples of size 400 each from 10 lots revealed the following number of defective units:

Lot Number	1	2	3	4	5	6	7	8	9	10
Number of Defectives	17	15	14	26	9	4	19	12	9	15

   Draw a the 'np' chart and comment on the process.

P.T.O.

9. a) A management is faced with the problem of choosing one of the three products for manufacturing. The potential demand for each product may turn out to be good, fair or poor. The probabilities for each type of demand were estimated as follows;

Demand → Product ↓	Good	Fair	Poor
A	0.75	0.15	0.10
B	0.60	0.30	0.10
C	0.50	0.30	0.20

The estimated profit or loss (in Rs) under the three states of demand in respect of each product may be taken as:

A	35,000	15,000	5,000
B	50,000	20,000	3,000
C	60,000	30,000	20,000

Prepare the expected value table and advise the management about the choice of the product.

(OR)

b) Consider the payoff matrix of player A and solve.

Player B

$$
\begin{array}{c c}
 & \begin{array}{cccccc} 1 & 2 & 3 & 4 & 5 & 6 \end{array} \\
\text{Player A} \begin{array}{c} 1 \\ 2 \end{array} & \left(\begin{array}{cccccc} 6 & 3 & 7 & -4 & 6 & 8 \\ 7 & -11 & 8 & 4 & 7 & 9 \end{array}\right)
\end{array}
$$

10. a) How do you perform ANOVA Two-Way analysis with imaginary figures using Excel?

(OR)

b) Explain the various features of SPSS helpful for research in social sciences.

--oOo--

FACULTY OF SOCIAL SCIENCES
M.A. (ECONOMICS) III – SEMESTER REGULAR EXAMINATIONS, DEC-2016
ECONOMETRICS - I
PAPER – I

Time: 3 hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

Answer the following questions in not more than **ONE** page each: (5x4=20)

1. State the significance of error term in econometric analysis.
2. Explain the relation between simple and multiple regression co-efficients.
3. Analyze the Durbin-Watson'd' – statistic.
4. State the meaning of Hetroscedasticity.
5. Analyze the significance of dummy variables in economic analysis.

Section – B

Answer the following questions in not more than **FOUR** pages each: (5x10=50)

6. a) "Econometrics is defined as qualification of Economic Laws"-Discuss.
    (OR)
    b) Examine the Gauss-Markov theorem and show how OLS estimates are considered as BLUEs.

7. a) Enumerate the testing procedure of hypothesis in multiple regression model.
    (OR)
    b) Make distinction between the multiple co-efficient correlation (R) and multiple co-efficient of determination (R^2) and state which one is an important while analyzing the statistical significance of multiple regression co-efficients.

8. a) Define auto-correlation and explain the reasons for the presence of auto-correlation and suggest some solutions to over come the problem of auto-correlation.
    (OR)
    b) Explain the problem of multi-collinearity, state the consequences of multi-collinearity and discuss the methods to over come the problem of multi-collinearity.

9. a) Analyse the consequences of heteroscedasticity on the estimates of the parameters in a normal regression model and mention a test for detecting its presence in the given data.
    (OR)
    b) Enumerate the reasons for the occurrence of errors in variables. Mention some methods to overcome this problem.

10. a) Describe how the dummy variables can be used to take into account the seasonal effect.
    (OR)
    b) Examine the basic features of logit model.

--oOo--

FACULTY OF ARTS
M.A. (ENGLISH) III – SEMESTER REGULAR EXAMINATIONS, DEC- 2016
AMERICAN LITERATURE - I
PAPER – I

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A   (5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Brief note on the rise of the American novel.
2. Sketch the character of Willie.
3. Significance of the title *The Scarlet Letter*.
4. Pen the images used in *Out of the Cradle endlessly*.
5. How according to Emerson, does the mind of the past, influence the spirit of the scholar?

Section – B   (5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Discuss in elaborate about the American Renaissance.
    (OR)
    b) Write an essay on American Puritanism.

7. a) Bring out the central idea of Emily Dickenson's *After a Great Pain a Formal Feeling Comes.*
    (OR)
    b) Attempt a critical appreciation on Walt Whitman's *when Lilacs Last in the Dooryard Bloom'd* as an Elegy.

8. a) Is *The Scarlet Letter* a protofeminist novel, comment on it.
    (OR)
    b) Comment on Huckleberry Finn as the protagonist of the novel the Adventures of Huckleberry Finn?

9. a) Bring out the theme of alienation in O'Neill's The Hairy Ape.
    (OR)
    b) How are the characters influenced by the social milieu in Miller's The Death of a Sales Man?

10. a) What are the main duties of the The American Scholar that Emerson mentions in the Speech?
    (OR)
    b) Discuss Thoreau's view "That government is best which governs least".

--oOo--

FACULTY OF COMMERCE
M.Com (GENERAL) III – SEMESTER REGULAR EXAMINATIONS, DEC-2016
RESEARCH METHODOLOGY AND STATISTICAL ANALYSIS
PAPER –I

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A   (5x4=20)

Answer the following questions in not more than **ONE** page each:
1. Need and importance of Quantitative Techniques.
2. Skewness.
3. Essentials of Interpretation.
4. Relative of sequency approach.
5. Uses and limitations of chi-square.

Section – B   (5x10=50)

Answer the following questions in not more than **FOUR** pages each:
6. a) Explain the stages in hypothesis testing.

(OR)

   b) Explain the role of Quantitative techniques in Decision making.
7. a) Explain random and non-random sampling methods.

(OR)

   b) Write about measurement and scaling techniques.
8. a) What are the methods of reports? Explain the stages in preparation of reports.

(OR)

   b) With suitable examples explain the statistical fallacies.
9. a) Rard corporation produces electrical components utilizing three non-overlapping work shifts. It is observed that 50%, 30% and 20% of the components produced during shift 1,2 &3 respectively. Furthermore 6%,10% & 8% components produced in shift 1,2 and 3 respectively. If a randomly friched component is selected and is found to be defective what is the probability that it belonged to shift 1,2 or 3.

(OR)

   b) A set of marks is normally distributed with a mean of 90 an SD of 6. If the total 5% of the students get grade A and bottom 25% get grade F, find the lowest A and the Highest F.
10. a) An international airline analyzed the data on 200 randomly selected booblings off seats according to the method used for matring reservations and the class of travel. The results are presented below.

Reservation method

Class of Travel	Travel agent	Internet	Toll free number
Business class	18	11	9
Economy class	55	65	42

   Test at 5% level of significance the airlines belief that class of travel is unrelated with the method used for reservation.

(OR)

   b) Calculate Yule's coefficient of association between marriage and failure of students from the following data pertaining to 525 students.

	Passed	Failed	Total
Married	90	65	155
Unmarried	260	110	370

--oOo--

FACULTY OF SCIENCE
MCA III – SEMESTER REGULAR EXAMINATIONS, DEC- 2016
SOFTWARE ENGINEERING

PAPER – I

Time: 3 hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

Answer the following questions in not more than **ONE** page each: (5x4=20)

1. Describe Component Software Process?
2. Discuss the importance of SRS?
3. Differentiate between Cohesion and Coupling?
4. Discuss the Metrics of Coding?
5. What is SPI return on investment?

Section – B

Answer the following questions in not more than **FOUR** page each: (5x10=50)

6. a) What is a Software Cost? Discuss any two Software Development Process Models?

(OR)

  b) What is a Software Problem? Explain the Project Schedule and Quality with the Project Management Process?

7. a) What is functional specification? Explain the Requirements Specification and other Approaches with use cases?

(OR)

  b) Explain the Role of Software Architecture? Explain the Architectural views?

8. a) Discuss Quality Planning and Risk Management Planning.

(OR)

  b) How to design Software? Differentiate between object oriented design and function oriented design.

9. a) What is Software Testing? Differentiate between Black box testing and white box testing.

(OR)

  b) What are the programming principles and guidelines available in coding? Discuss the metrics and managing evolving code.

10. a) What are the steps involved in a software maintenance? Explain the difference between forward engineering and Reverse Engineering.

(OR)

  b) Explain CMMI?

--oOo--

FACULTY OF SCIENCE
M.Sc. (MATHEMATICS) III – SEMESTER REGULAR EXAMINATIONS, DEC-2016
COMPLEX ANALYSIS
PAPER – I

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

<u>Section – A</u>   (5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Show that an analytic function cannot have a non-zero constant absolute value without reducing to a constant.

2. Define orientation of a circle. With respect to the orientation $1, 0, \infty$ determine the position of the point i.

3. Compute $\int_{\gamma} x \, dz$, where γ is in the directed line segment from 0 to 1+i.

4. Define simply connected region. Prove that a non constant analytic function maps open sets in to open sets.

5. Evaluate $\int_{|z|=2} z^n (1 - z)^n dz$.

<u>Section – B</u>   (5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) State and prove the sufficient condition for analytic functions.

    (OR)

    b) i) For what values of z in $\sum_0^\infty (\frac{z}{1+z})^n$ convergent?

    ii) If $f(z) = \sum a_n z^n$, what is $\sum n^3 a_n z^n$?

7. a) Prove that the cross ratio (z_1, z_2, z_3, z_4) is real if and only if the four points lie on a circle or on a straight line.

    (OR)

    b) i) State and prove symmetry principle.

    ii) Find the fixed points of the transformations. $w = \frac{z}{2z-1}, w = \frac{2z}{3z-1}, w = \frac{3z-4}{z-1}, w = \frac{z}{2-z}$ classify them.

8. a) State and prove Cauchy's theorem for a rectangle.

    (OR)

    b) i) State and prove Cauchy's integral formula.

    ii) Evaluate $\int_{|z|=2} \frac{dz}{z^2-1}$

9. a) i) State and prove Weierstrass theorem on essential singular points.

    ii) Prove that an isolated singularity of $f(z)$ cannot be a pole of exp $f(z)$.

    (OR)

    b) State and prove Cauchy's general theorem.

10. a) Find the most general harmonic polynomial of the form $ax^3 + bx^2 y + cxy^2 + dy^3$. Determine the conjugate harmonic function and the corresponding analytic function by integration and by the formal method.

    (OR)

    b) Define singularity. Define different types of singular points with examples.

--oOo--

FACULTY OF SCIENCE

M.Sc. (CHEM-OC/PCH-2YPGP) III – SEMESTER REGUALAR EXAMINATIONS, DEC- 2016

CONFORMATIONAL ANALYSIS, ASYMETRIC SYNTHESIS AND BIOMOLECULES

PAPER – 01

(*Common paper*)

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all the following questions from Section-A and Section-B

<u>Section – A</u>   (5x4=20)

Answer all the following questions in not more than **ONE** page each:

1. Draw the preferred conformations of 2-Methyl-4-t-butyl cyclohexanone and cyclopentane.
2. Explain the following terms with suitable examples.
   i) Enantiotopic faces   ii) Diastereotopic ligands.
3. What is 1,4-asymmetric induction? Explain it with prelog's rule.
4. Explain the mechanism of enzyme catalysis by lock & key model and induced-fit model.
5. What are Chiral auxiliaries? Explain α-alkylation using a chiral hydrazine.

<u>Section – B</u>   (5x10=50)

Answer all the following questions in not more than **FOUR** pages each:

6 a) i)Trans decalin is optically inactive where as cis decalin is unresolvable (dl) pair. Explain?

   ii) Neomenthyl chloride undergoes faster E_2-elimination than menthyl chloride. Explain.

(OR)

   b) i) Discuss briefly the conformational analysis of hydrindane.

   ii) Acetolysis of both cis and trans isomers 2-acetoxy cyclohexyltosylate gave the same product i.e. trans-1,2-diacetoxy cyclohexane. Explain.

7 a) i) Assign prochiral descriptions to the following
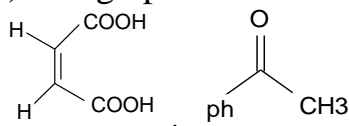
   ii) What are diastereo selective reactions? Give two examples.

(OR)

   b) Discuss briefly the following:

   i) Determination of % ee by chiral NMR.

   ii) Transition state criteria for Stereoselectivity.

8 a) i) What is 1,2-asymmetric induction? Explain.

   ii) Discuss Cram's rule in 1,2 asymmetric induction.

(OR)

   b) i)Write a brief note on Asymmetric hydroboration.

   ii) Explain diastereoselective aldol reaction by Zimmerman-Traxel Model.

9 a) Discuss briefly the following:
    i)   Enzyme inhibition.
    ii)   Synthesis of lipids.

(OR)

  b) i) Protein biosynthesis.
    ii) Primary and Secondary Structure of DNA.

10 a) i) Discuss briefly the Stereochemistry of addition to rigid cyclohexanone.
          ii)Define and explain Stereospecific reaction with a suitable example.
(OR)
  b) i) Discuss the Sharpless asymmetric epoxidation.
    ii) Give the structures of anyone phospholypid and Sphingolipid.

--oOo--

FACULTY OF SCIENCE
M.Sc. (PHYSICS/PE) III – SEMESTER REGULAR EXAMINATIONS, DEC- 2016
SOLID STATE PHYSICS - II
PAPER – I

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all the following questions from Section – A and Section – B

<u>Section – A</u>   (5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Discuss the assumptions of Einstein's theory of specific heat and its results.
2. Explain ferroelectric hysteresis.
3. What are ferrites? Discuss their applications.
4. State and explain Meissner effect.
5. Explain energy gap in super conductors.

<u>Section – B</u>   (5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6 a) Derive dispersion relations for vibrational modes of a diatomic linear lattice. Explain acoustic and optical modes.

(OR)

   b) Derive an expression for the specific heat of solid based on Debye model. Discuss the results at high and low temperatures. What is Debye T^3 law?

7 a) Explain electronic, ionic and orientational polarizabilities. Derive an expression for the orientational polarizability.

(OR)

   b) Discuss the dipole theory of ferroelectricity.

8 a) Based on Weiss theory of ferromagnetism, discuss the special properties of ferromagnetic materials.

(OR)

   b) Describe the quantum theory of paramagnetism and explain how it removes the short comings of the Langevin's theory.

9 a) What are Type-I and Type-II superconductors? Discuss heat capacity and thermal conductivity in super conductors.

(OR)

   b) Derive London's equations in super conductivity and define penetration depth.

10 a) Explain lattice thermal conductivity. Derive an expression for lattice thermal conductivity in terms of phonon mean free path.

(OR)

   b) What are cooper pairs? Describe the phenomenon of super conductivity based on BCS theory.

--oOo--

FACULTYOF SCIENCES

M.Sc.,-(ZOO) III – SEMESTER REGULAR EXAMINATIONS, DEC- 2016

INSTRUMENTATION AND COMPUTER APPLICATIONS IN BIOLOGY

PAPER – I

Time: 3 Hours]   [Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A   (5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Affinity chromatography
2. Scintillation Counter
3. Microtome
4. MRI
5. Internet

Section – B   (5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Explain centrifugation and write a note on principle and application of ultra centrifugation.

(OR)

   b) Write an essay on X-ray distraction, its principle and applications.

7. a) Write an essay on immune electrophoresis and add a note on its applications.

(OR)

   b) Explain in detail the principles and applications of ESR and NMR techniques.

8. a) Describe in detail the principle and application of Northern blot techniques.

(OR)

   b) Write an essay on principle and application of ELISA techniques.

9. a) Provide a detailed account on immunological techniques.

(OR)

   b) Explain the principle and application of mass radioscopy.

10. a) Write an essay on operating system and user interface in computers.

(OR)

    b) Explain how computer application in biology has helped the progress of science.

--oOo--