B.Sc. (Physics) – I year
Semester - II
Paper – II:: Thermal Physics Practicals
(DSC - Compulsory)

1. Co-efficient of thermal conductivity of a bad conductor by Lee's method.
2. Measurement of Stefan's constant.
3. Specific heat of a liquid by applying Newton's law of cooling correction.
4. Heating efficiency of electrical kettle with varying voltages.
5. Calibration of thermo couple
6. Cooling Curve of a metallic body
7. Resistance thermometer
8. Thermal expansion of solids
9. Study of conversion of mechanical energy to heat.
10. Determine the Specific of a solid (graphite rod)

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastava

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B.Sc. (Physics) – I year
Semester - I
Paper – I:: Mechanics and Oscillations Practicals
(DSC - Compulsory)

1. Measurement of errors –simple Pendulum.
2. Calculation of slope and intercept of a Y= mX +C graph by theoretical method (simple pendulum experiment)
3. Study of a compound pendulum- determination of 'g' and 'k'.
4. Y' by uniform Bending
5. Y by Non-uniform Bending.
6. Moment of Inertia of a fly wheel.
7. Rigidity moduli by torsion Pendulum.
8. Determine surface tension of a liquid through capillary rise method.
9. Determination of Surface Tension of a liquid by any other method.
10. Determine of Viscosity of a fluid.
11. Observation of Lissajous figures from CRO-Frequency ratio.Amlitude and phase difference of two waves.
12. Study of oscillations of a mass under different combination of springs-Series and parallel
13. Study of Oscillations under Bifilar suspension-Verification of axis theorems

***Note**: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.*

Suggested Books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
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B.Sc. (Physics) – II year
Semester - III
Paper – III:: Electromagnetic Theory Practicals
(DSC - Compulsory)

PHYSICS LABORATORY

1. To verify the Thevenin Theorem
2. To verify Norton Theorem
3. To verify Superposition Theorem
4. To verify maximum power transfer theorem.
5. To determine a small resistance by Carey Foster's bridge.
6. To determine the (a) current sensitivity, (b) charge sensitivity, and (c) CDR of a B.G.
7. To determine high resistance by leakage method.
8. To determine the ratio of two capacitances by De Sauty's bridge.
9. To determine self-inductance of a coil by Anderson's bridge using AC.
10. To determine self-inductance of a coil by Rayleigh's method.
11. To determine coefficient of Mutual inductance by absolute method.

Note: Minimum of eight experiments should be performed.
Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books for Reference:

1. B. L. Worsnop and H. T. Flint, Advanced Practical Physics, Asia Publishing House, New Delhi.
2. InduPrakash and Ramakrishna, A Text Book of Practical Physics, KitabMahal

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B.Sc. (Physics) – II year
Semester - IV
Paper – IV:: Waves and Optics Practicals
(DSC - Compulsory)

1. Thickness of a wire using wedge method.
2. Determination of wavelength of light using Biprism.
3. Determination of Radius of curvature of a given convex lens by forming Newton's rings.
4. Resolving power of grating.
5. Study of optical rotation-polarimeter.
6. Dispersive power of a prism
7. Determination of wavelength of light using diffraction grating minimum deviation method.
8. Wavelength of light using diffraction grating – normal incidence method.
9. Resolving power of a telescope.
10. Refractive index of a liquid and glass (Boys Method).
11. Pulfrich refractometer – determination of refractive index of liquid.
12. Wavelength of Laser light using diffraction grating.
13. Verification of Laws of a stretched string (Three Laws).
14. Velocity of Transverse wave along a stretched string
15. Determination of frequency of a bar-Melde"s experiment

Note: Minimum of eight experiments should be performed Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
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B.Sc. (Physics Practical) – III year
Semester – V
Paper: V:: A. Modern Physics Practicals
(DSE)

1. Measurement of Planck's constant using black body radiation and photo-detector
2. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
3. To determine the Planck's constant using LEDs of at least 4 different colors.
4. To determine the ionization potential of mercury.
5. To determine the absorption lines in the rotational spectrum of Iodine vapour.
6. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
7. To setup the Millikan oil drop apparatus and determine the charge of an electron.
8. To show the tunneling effect in tunnel diode using I-V characteristics.
9. To determine the wavelength of laser source using diffraction of single slit.
10. To determine the wavelength of laser source using diffraction of double slits.
11. To determine (1) wavelength and (2) angular spread of He-Ne laser using plane diffraction grating
12. To determine the value of e/m for electron by long solenoid method.
13. Photo Cell – Determination of Planck's constant.
14. To verify the inverse square law of radiation using a photo-electric cell.
15. To find the value of photo electric work function of a material of the cathode using a photo-electric cell.
16. Measurement of magnetic field – Hall probe method.
17. To determine the dead time of a given G.M. tube using double source.
18. Hydrogen spectrum – Determination of Rydberg's constant
19. Energy gap of intrinsic semi-conductor
20. G. M. Counter – Absorption coefficients of a material.
21. To draw the plateau curve for a Geiger Muller counter.
22. To find the half-life period of a given radioactive substance using a G.M. Counter.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, I. Prakash& Ramakrishna, 11th Edn, 2011,Kitab Mahal

Note: Minimum of eight experiments should be performed.

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B.Sc. (Physics)- III Year

Semester – V

Paper – V :: B Computational Physics Practicals

(DSE – Elective II)

1. Jacobi Method of Matrix Diagonalization
2. Solution of transcendental or polynomial equations by the Newton Raphson method
3. Linear curve fitting and calculation of linear correlation coefficient
4. Matrix summation, subtraction and multiplication
5. Matrix inversion and solution of simultaneous equation
6. Lagrange interpolation based on given input data
7. Numerical integration using the Simpson's method
8. Numerical integration using the Gaussian quadrature method
9. Solution of first order differential equations using the Runge-Kutta method
10. Numerical first order differentiation of a given function
11. Fast Fourier Transform
12. Monte Carlo integration
13. Use of a package for data generation and graph plotting.
14. Test of randomness for random numbers generators

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

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B.Sc. (Physics Practical) – III year
Semester – VI
Paper: VI::A. Electronics

1. Construction of logic gates (AND, OR, NOT, gates) with discrete components – Truth table Verification
2. AND, OR, NOT – gates constructions using universal gates – Verification of truth tables.
3. Construction of NAND and NOR gates with discrete components and truth table verification
4. Characteristics of a Transistor in CE configuration
5. R.C. coupled amplifier – frequency response.
6. Verification of De Morgan's Theorem.
7. Zener diode V-I characteristics.
8. P-n junction diode V- I characteristics.
9. Zener diode as a voltage regulator
10. Construction of a model D.C. power supply
11. R C phase shift Oscillator –determination of output frequency

❖ Every student should complete minimum 06 experiments.

Suggested Books

1. B.Sc. Practical Physics – C. L. Arora – S. Chand & Co.
2. Viva-voce in Physics – R.C. Gupta, Pragathi Prakashan, Meerut.
3. Laboratory manual for Physics Course by B.P. Khandelwal.
4. Practical Physics by M. Arul Thakpathi by Comptex Publishers.
5. B.Sc. practical physics – Subbi Reddy.

Note: Minimum of eight experiments should be performed.

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Subject : (Physics)

B.Sc. Semester VI-Theory Syllabus

(DSE- Elective-II)

Paper-VI:: B.APPLIED OPTICS Practical

Applied Optics

1. Study of the profile of a laser beam.
2. Determination of the diameter of a thin wire using laser.
3. Determination of wavelength of He-Ne laser by transmission grating.
4. Construction and recording of a hologram.
5. Study of Fourier transforming properties of lenses.
6. Study of second harmonic generation by KDP crystal.
7. Measurement of numerical aperture of an optical fiber.
8. Measurement of coupling losses in optical fibers.
9. Measurement of bending losses in optical fibers.
10. Study of audio signal transmission through optical fibers.
11. To study the interference of light using optical fibers.

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books:

1) Introduction to Fourier Optics – J. Goodman
2) Optical Fiber Communications- John M. Senior
3) Principles of Lasers- O. Svelto
4) Modern Optics- Grant Fowles.
5) Principles of Optics – Born & Wolf
6) Fundamentals of Optics- Jenkins & White

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3. Text Book of Organic Chemistry by Morrison And Boyd.
4. Text Book of Organic Chemistry by Graham Solomons.
5. Text Book of Organic Chemistry by Bruice Yuranis Powla.
6. Text Book of Organic Chemistry by Soni.
7. Text Book of Physical Chemistry by Soni And Dharmahara..
8. Text Book of Physical Chemistry by Puri And Sharma.
9. Text Book of Physical Chemistry by K. L. Kapoor.

Laboratory Course

45h (3 h / week)

Paper I - Qualitative Analysis - Semi micro analysis of mixtures

Analysis of two anions (one simple, one interfering) and two cations in the given mixture.

Anions: $CO_3^{2-}, SO_3^{2-}, S^{2-}, Cl^-, Br^-, I^-, CH_3COO^-, NO_3^-, PO_4^{3-}, BO_3^{3-}, SO_4^{2-}$. .

Cations: Hg_2^{2+}, Ag^+, Pb^{2+}

$Hg^{2+}, Pb^{2+}, Bi^{3+}, Cd^{2+}, Cu^{2+}, As^{3+/5+}, Sb^{3+/5+}, Sn^{2+/4+}$

$Al^{3+}, Cr^{3+}, Fe^{3+}$

$Zn^{2+}, Ni^{2+}, Co^{2+}, Mn^{2+}$

$Ba^{2+}, Sr^{2+}, Ca^{2+}$

Mg^{2+}, NH_4^+

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6. Practical chemistry by V K Ahluwalia, Sunitha Dhingra and AdarshGulati.

45hrs (3 h / week)

Laboratory Course

Paper II- Quantitative Analysis

Acid - Base titrations

1. Estimation of Carbonate in Washing Soda.
2. Estimation of Bicarbonate in Baking Soda.
3. Estimation of Carbonate and Bicarbonate in the Mixture.

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4. Estimation of Alkali content in Antacid using HCl.
5. Estimation of NH_4^+ by back titration

Redox Titrations

1. Determination of Fe(II) using $K_2Cr_2O_7$
2. Determination of Fe(II) using $KMnO_4$ with sodium oxalate as primary standard.
3. Determination of Cu(II) using $Na_2S_2O_3$ with $K_2Cr_2O_7$ as primary standard

Complexometric Titrations

1. Estimation of Mg^{2+}
2. Estimation of Cu^{2+}

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Laboratory Course **45 h (3h/week)**

Paper III (Organic Synthesis)

1. **Synthesis of Organic compounds:**

Acetylation: Acetylation of salicylic acid, Benzoylation of Aniline.

Aromatic electrophilic substitution: Nitration: Preparation of nitro benzene and m-dinitro benzene.

Halogenation: Preparation of p-bromo acetanilide, Preparation of 2,4,6-tribromo phenol

Oxidation: Preparation of benzoic acid from benzyl chloride.

Esterification: Preparation of n-butyl acetate from acetic acid.

Methylation: Preparation of - naphthyl methyl ether.

Condensation: Preparation of benzilidine aniline and Benzaldehyde and aniline.

Diazotisation: Azocoupling of β-Naphthol.

2. **Microwave assisted synthesis of Asprin – DEMO (demonstration only)**

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Laboratory Course

Paper IV-

Qualitative Analysis of Organic Compounds: 45hrs (3 h/week)

Qualitative analysis: Identification of organic compounds through the functional group analysis - ignition test, determination of melting points/boiling points, solubility test, functional group tests and preparation of suitable derivatives of the following: Carboxylic acids, phenols, amines, urea, thiourea, carbohydrates, aldehydes, ketones, amides, nitro hydrocarbons, ester and naphthalene.

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Semester - V

Laboratory Course

Experiments in Physical Chemistry-I

Paper V (Physical Chemistry) 45hrs (3 h / w)

1. Distribution law

a) Determination of distribution coefficient of iodine between water and carbon Tetrachloride/determination of molecular status and partition coefficient of benzoic acid in Toluene and water.

b) Determination of distribution coefficient of acetic acid between n-butanol and water.

2. Electrochemistry

a) Determination of cell constant of conductivity cell.

b) Determination ofdissociationconstant (Ka) ofaceticacidbyconductivity measurements.

3. Colorimetry

Verification of Beer'slaw using $KMnO_4$ and determination of the concentration of the given solution.

4. Adsorption

Adsorption of acetic acid on animal charcoal, Verification of Freundlich adsorption isotherm.

5. Physical constants

Surface tension and viscosity of liquids. (Demonstration Experiment)

$K = \frac{C\alpha^2}{(1-\alpha)}$

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Semester - VI

Laboratory course

Experiments in Physical Chemistry-II

45hrs (3 h/w)

Paper VII (Physical Chemistry)

1. Kinetics

a) Determination of specific reaction rate of the hydrolysis of methyl acetate catalyzed by hydrogen ion at room temperature.

b) Determination of rate of decomposition of hydrogen peroxide catalyzed by $FeCl_3$.

2. Electrochemistry

A. Potentiometry:

a) Determination of redox potential of Fe^{2+}/Fe^{3+} by potentiometric titration of ferrous ammonium sulphate vs. potassium dichromate.

b) Precipitation titration of KCl vs. $AgNO_3$ -Determination of given concentration of silver nitrate.

B. pH metry:

a) pH metric titration of strong acid (HCl) vs. strong base- Determination of the concentration of the given acid.

b) pH metric titration of weak acid(acetic acid) with strong base(NaOH).- Determination of acid dissociation constant (K_a) of weak acid.

3. Conductometry:

Determination of overall order: Saponification of ethyl acetate with NaOH by conductance measurements.

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B.A/B.Sc. I Year I Semester (CBCS) : Statistics Syllabus
(With Mathematics Combination)
(Examination at the end of Semester - I)

Practical-1 : Descriptive Statistics and Probability
[3 HPW :: 1 Credit :: 50 Marks]

Part - 1 (Using Calculator)

1. Graphical presentation of data (Histogram, frequency polygon, Ogives) and its interpretation.
2. Diagrammatic presentation of data (Bar and Pie).
3. Computation of central tendency and dispersion measures for ungrouped and grouped data.
4. Computation of non-central and central moments – Sheppard's corrections for grouped data.
5. Computation of coefficients of Skewness - Karl Pearson's, Bowley's, β_1 and Kurtosis – β_2 and their interpretation.

Part - 2 (Using MS-Excel)

1. Basics of Excel - Data entry, editing and saving, establishing and copying formulae, Built in Functions - copy and paste, Find and Replace, Sorting.
2. Basics of Excel - Built in Functions - Filtering, Conditional formatting and creating Hyperlinks, Exporting to MS word document
3. Computation of descriptive Statistics using Pivote table - Univariate.
4. Data visualization through diagrams.
5. Computation of central tendency and dispersion measures, Coefficient of Variation for ungrouped and grouped data.
6. Computation of Coefficients of Skewness, Kurtosis using MS-Excel and interpretation.

B.A/B.Sc. I Year II Semester (CBCS) : Statistics Syllabus
(With Mathematics Combination)
(Examination at the end of Semester - II)

Practical-2 : Probability Distributions
(3 HPW :: 1 Credit :: 50 Marks)

Part - 1 (Using Calculator)

1. Fitting of Binomial distribution-Direct method.
2. Fitting of Binomial distribution-Recurrence relation Method.
3. Fitting of Poisson distribution-Direct method
4. Fitting of Poisson distribution-Recurrence relation Method.
5. Fitting of Negative Binomial distribution.
6. Fitting of Geometric distribution.
7. Fitting of Normal distribution-Areas method.
8. Fitting of Normal distribution - Ordinates method.
9. Fitting of Exponential distribution.

Part - 2 (Using MS-Excel)

1. Data Visualization through graphs (Histogram, frequency polygon, Ogives) using MS-Excel and their interpretation.
2. Computation of descriptive Statistics using Pivote table – Bivariate.
3. Fitting of Binomial distribution-Direct method.
4. Fitting of Poisson distribution-Direct method.
5. Fitting of Normal distribution-Areas method.
6. Fitting of Exponential distribution.

B.A/B.Sc. II Year III Semester (CBCS): Statistics Syllabus
(With Mathematics Combination)
(Examination at the end of Semester - III)

Practical – 3 : Statistical Methods and Theory of Estimation
(3 HPW, Credits 1 and Marks 50)

Part – A (Using Calculator)

1. Generation of random samples from Uniform (0,1), Uniform (a,b), Normal and Poisson and Exponential Distributions.
2. Fitting of straight line and parabola by the method of least squares.
3. Fitting of power curves of the type y= a xb , y=a bx and y=a ebx by the method of least squares.
4. Computation of Yule's coefficient of association and Pearson's, Tcherprows coefficient of contingency.
5. Computation of correlation coefficient and regression lines for ungrouped data.
6. Computation of correlation coefficient, forming regression lines for ungrouped data.
7. Computation of correlation coefficient, forming regression lines for grouped data.
8. Computation of multiple and partial correlation coefficients.
9. Computation of correlation ratio

Part – B (Using Excel)

1. Simulation of random samples from Uniform (0,1), Uniform (a,b), Exponential, Normal and Poisson distributions using MS Excel.
2. Fitting of straight line and parabola by the method of least squares using MS Excel.
3. Fitting of power curves of the type y= a xb , y=a bx and y=a ebx by the method of least squares using MS Excel.
4. Computation of correlation coefficient, forming regression lines using MS Excel.
5. Computation of multiple and partial correlation coefficients using MS Excel.

B.A/B.Sc. II Year IV Semester (CBCS) : Statistics Syllabus
(With Mathematics Combination)
(Examination at the end of Semester - IV)

Practical – 4 : Statistical Inference
[3 HPW, Credits 1 and Marks 50]

Part – A (Using Calculator)

1. Large sample tests for mean(s), proportion(s), Standard deviation(s) and correlation coefficient.
2. Small sample tests for single mean and difference of means and correlation coefficient.
3. Paired t-test.
4. Small sample test for single and difference of variances.
5. 2 – test for goodness of fit and independence of attributes.
6. Nonparametric tests for two independent samples (Median test,Wilcoxon Mann Whitney - U test, Wald - Wolfowitz's runs test)

Part – B (Using Excel)

1. Use of Look up and Reference functions for data analysis.
2. Creating and assigning Macros.
3. Small sample tests for mean(s), paired t-test and correlation coefficient using MS Excel.
4. Small sample test for single and difference of variances using MS Excel.
5. 2 – test for goodness of fit and independence of attributes using MS Excel.
6. Nonparametric tests for single and related samples (sign test and Wilcoxon signed rank test) and one sample runs test.

B.A/B.Sc. III Year V Semester (CBCS) : Statistics Syllabus
(With Mathematics Combination)
(Examination at the end of Semester - V)

Practical – 5(A) : Applied Statistics - I
[with 3 HPW, Credits 1 and 50 Marks]

Practical using R – Software and MS – Excel

R – Software : Overview of R, R data types and objects, reading and writing data, sub setting R Objects, Essentials of the R Language, Running R, Packages in R, Variable names and assignment, Operators, Integers, Factors, Logical operations. Operations of Scalars, Vectors, Lists, Arrays, Matrices, Data Frames. Control structures, Functions.

1. Data Visualization using R - Frequency polygons and curves, Ogives, Histogram using R.
2. Data Visualization using R - Bar diagrams (simple, compound, percentage and multiple) and Pie diagram (single and multiple) using R.
3. Computation of Descriptive Statistics using R (Measures of Central tendencies and Dispersion, Moments, Skewness and Kurtosis) using R.
4. Computation of expected frequencies for Binomial, Poisson, Normal and Exponential distributions using R.
5. Computation of Karl Pearson's coefficient of correlation and rank correlation using R.
6. Computation of partial and multiple correlations using R.
7. Time series Analysis : Computation of Secular trend by least squares and moving averages methods using R and MS-Excel.
8. Computation of Seasonal variations by Ratio to moving averages, Ratio to trend and Link Relatives methods using R and MS-Excel.
9. Construction of control charts for variables (x , R and - charts) using R and MS – Excel.
10. Construction of control charts for attributes (p, np with fixed and varying sample size, C and u charts) using R and MS – Excel.

B.A/B.Sc. III Year VI Semester (CBCS) : Statistics Syllabus
(With Mathematics Combination)
(Examination at the end of Semester - VI)

Practical – 7(A) : Applied Statistics - II
[with 3 HPW, Credits 1 and Marks 50]

Practical using R – Software and MS – Excel

1. Generation Random Samples from the Uniform, Binomial, Poisson, Normal and Exponential distributions using R.
2. Fitting of straight line, parabola and power curves of the type y= a xb , y=a bx and y=a ebx using R.
3. Large sample tests : Testing population means, proportions, variances based on single and two samples using R.
4. Parametric Tests : Testing means, variances based on single and two samples using R.
5. Tests based on 2 distribution using R using R.
6. Nonparametric Tests : one sample run test, Sign test and Wilcoxon sign rank test for one and two samples using R.
7. Nonparametric Tests : Median test, Wilcoxon Mann Whitney - U test, Wald - Wolfowitz's runs Test using R.
8. Analysis of Variance for CRD and RBD data using R and MS - Excel.
9. Analysis of Variance for RBD without and with one missing observation using R and MS - Excel.
10. Analysis of Variance for LSD without and with one missing observation using R and MS - Excel.
11. Computation of Morality rates, Fertility rates and Reproduction rates using MS-Excel.
12. Construction of life tables using MS-Excel.

With Effect from the Academic Year 2019–2020

CLab BS106

Practical 3 Hours/Week 1credit

1 Write a program to find the largest two (three) numbers using if and conditionaloperator.

2 Write a program to print the reverse of a givennumber.

3 Write a program to print the prime number from 2 to n where n is given byuser.

4 Write a program to find the roots of a quadratic equation using switchstatement.

5 Write a program to print a triangle of stars as follows (take number of lines fromuser):

```
*
***
*****
*******
*********
```

6 Write a program to find largest and smallest elements in a given list ofnumbers.

7 Write a program to find the product of twomatrices..

8 Write a program to find the GCD of two numbers using iteration andrecursion.

9 Write a program to illustrate use of storageclasses.

10 Write a program to demonstrate the call by value and the call by referenceconcepts.

11 Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.

12 Write a program to illustrate use of data typeenum.

13 Write a program to demonstrate use of string functions string.h headerfile.

14 Write a program that opens a file and counts the number of characters in afile.

15 Write a program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.

16 Write a program that opens an existing text file and copies it to a new text file with all lowercase letters changed to capital letters and all other characters unchanged.

Note : Write the Pseudo Code and draw Flow Chart for the above programs.

Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.

With Effect from the Academic Year 2016–2017

C++Lab BS206

Practical 2 Hours/Week 1credit

1 Write a programto.

a. Print the sum of digits of a givennumber.

b. Check whether the given number is Armstrong ornot

c. Print the prime number from 2 to n where n is natural numbergiven.

2 Write a program to find largest and smallest elements in a given list of numbers and sort the given list.

3 Write a program to read the student name, roll no, marks and display the same using class and object.

4 Write a program to implement the dynamic memory allocation and de-allocation using new and delete operators using class and object.

5 Write a program to find area of a rectangle, circle, and square usingconstructors.

6 Write a program to implement copyconstructor.

7 Write a program using friend functions and friendclass.

8 Write a program to implementconstructors
- Default Constructor, Parameterized Constructor, Copy Constructor
- Define the constructor inside/outside of theclass
- Implement all three constructors within a single class as well as use multiple classes(individual classes)

9 Write a program to implement the following concepts using class andobject
- Function overloading
- Operator overloading (unary/binary(+ and-))

10 Write a program to demonstrate single inheritance, multilevel inheritance and multipleinheritances.

11 Write a program to implement the overloaded constructors ininheritance.

12 Write a program to implement the polymorphism and the following concepts using class andobject.
- Virtual functions
- Pure virtualfunctions

13 Write a program to implement the virtual concepts for followingconcepts
- Constructor (notapplied)
- Destructor (applied)

14 Write a program to demonstrate static polymorphism using methodoverloading.

15 Write a program to demonstrate dynamic polymorphism using method overriding and dynamic method dispatch.

16 Write a program to implement the template (generic)concepts
- Without template class andobject
- With template class andobject

Note : Write the Pseudo Code and draw Flow Chart for the above programs.

Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows.

With Effect from the Academic Year 2019–2020

DataStructuresLab BS306

Practical 2 Hours/Week 1credit

1 Write programs to implement the following using an array: a) Stack ADT b) QueueADT.

2 Write a program to convert the given infix expression to postfix expression using stack.

3 Write a program to evaluate a postfix expression usingstack.

4 Write a program to ensure the parentheses are nested correctly in an arithmeticexpression.

5 Write a program to find following usingRecursion
a) Factorial of +ve Integer b) n^{th}term of the Fibonacci Sequence c) GCD of two +veintegers

6 Write a program to create a single linked list and write functions to implement the following operations.
a) Insert an element at a specifiedposition
b) Delete a specified element in thelist
c) Search for an element and find its position in thelist
d) Sort the elements in the list ascendingorder

7 Write a program to create a double linked list and write functions to implement the following operations.
a) Insert an element at a specifiedposition
b) Delete a specified element in thelist
c) Search for an element and find its position in thelist
d) Sort the elements in the list ascendingorder

8 Write a program to create singular circular linked lists and function to implement the following operations.
a) Insert an element at a specifiedposition
b) Delete a specified element in thelist
c) Search for an element and find its position in thelist

9 Write programs to implement the following using a single linkedlist:
a) Stack ADT b) QueueADT.

10 Write a program to implement Binary search technique using Iterative method and Recursive methods.

11 Write a program for sorting the given list numbers in ascending order using the following technique: Bubble sort and Selectionsort

12 Write a program for sorting the given list numbers in ascending order using the following technique: Insertion sort and Quicksort

13 Write a program for sorting the given list numbers in ascending order using the following technique: Merge sort and Heapsort

14 Write a program to traverse a binary tree in followingway.
a) Pre-order b)In-order c)Post-order

15 Write a program to the implementation graph traversals – BFS andDFS.

16 Write a program to find the minimum spanning tree for a weighted graphusing
a) Prim'sAlgorithm b) Kruskal'sAlgorithm.

Note : Write the Pseudo Code for the above programs.

Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows.

With Effect from the Academic Year 2019–2020

Database ManagementSystemsLab BS406

Practical 2 Hours/Week 1 credit

Consider the relational schema for part of the **Dream Home** case studyis:

Branch (branchNo, street, city, postcode)
Staff (staffNo, fName, IName, position, sex, DOB, salary, branchNo)
Property For Rent (propertyNo, street, city, postcode, type, rooms, rent, ownerNo, staffNo, branchNo)
Client (clientNo, fName, IName, telNo, prefType, maxRent, eMail)
Private Owner (ownerNo, fName, IName, address, telNo, eMail, password)
Viewing (clientNo, propertyNo, viewDate, comment)
Registration (clientNo, branchNo, staffNo, dateJoined)

1. Create a database with name "DreamHome" and now create all the tables listed above withconstraints.
2. Insert a new row into the table supplying data for allcolumns.
3. Modify data in the database usingUPDATE
4. Delete data from the database usingDELETE
5. Changing a table definition usingALTER
6. Removing a table usingDROP
7. Removing rows in table usingTRUNCATE
8. Create an index and removing anindex
9. Practice other standard SQL commands for creating, modifying, displaying data oftables.
10. List full details of allstaff.
11. List all staff with a salary greater than£10000.
12. List the property numbers of all properties that have beenviewed.
13. Produce a list of salaries for all staff, showing only the staffNo, fName, IName, and salarydetails.
14. List all cities where there is either a branch office or a property forrent.
15. List all cities where there is a branch office but no properties forrent.
16. List all cities where there is both a branch office and at least one property forrent.
17. List the names and comments of all clients who have viewed a property forrent.
18. Produce a status report on propertyviewings.
19. List complete details of all staff who work at the branch inGlasgow.
20. List the addresses of all branch offices in London orGlasgow
21. List all staff with a salary between £20,000 and£30,000.
22. Identify all clients who have viewed all properties with threerooms.
23. How many properties cost more than £350 per month torent?
24. How many different properties were viewed in May2013?
25. Find the total number of Managers and the sum of theirsalaries.
26. Find the minimum, maximum, and average staffsalary.
27. Find the number of staff working in each branch and the sum of theirsalaries.
28. List all managers andsupervisors.
29. Find all owners with the string 'Glasgow' in theiraddress.
30. List the details of all viewings on property PG4 where a comment has not beensupplied.
31. Produce a list of salaries for all staff, arranged in descending order ofsalary.
32. Produce an abbreviated list of properties arranged in order of propertytype.
33. Find the number of staff working in each branch and the sum of theirsalaries.
34. For each branch office with more than one member of staff, find the number of staff working in each branch and the sum of theirsalaries.
35. List the staff who work in the branch at '163 MainSt'.
36. List all staff whose salary is greater than the average salary, and show by how much their salary is greater than theaverage.
37. List the properties that are handled by staff who work in the branch at '163 MainSt'.
38. Find all staff whose salary is larger than the salary of at least one member of staff at branchB003.
39. Find all staff whose salary is larger than the salary of every member of staff at branchB003
40. List the names of all clients who have viewed a property, along with any comments supplied.
41. For each branch office, list the staff numbers and names of staff who manage properties and the properties that theymanage.
42. For each branch, list the staff numbers and names of staff who manage properties, including the city in which the branch is located and the properties that the staffmanage.

43. Find the number of properties handled by each staff member, along with the branch number of the member ofstaff.
44. List all branch offices and any properties that are in the samecity.
45. List all properties and any branch offices that are in the samecity.
46. List the branch offices and properties that are in the same city along with any unmatched branches or properties.
47. Find all staff who work in a London branchoffice.
48. Construct a list of all cities where there is either a branch office or aproperty.
49. Construct a list of all cities where there is both a branch office and aproperty.
50. Create a view so that the manager at branch B003 can see the details only for staff who work in his or her branch office.
51. Create a view of the staff details at branch B003 that excludes salary information, so that only managers can access the salary details for staff who work at theirbranch.
52. Create a view of staff who manage properties for rent, which includes the branch number they work at, their staff number, and the number of properties theymanage.
53. Removing a view using DROPVIEW
54. Give the user with authorization identifier Manager all privileges on the Stafftable.
55. Give users Personnel and Director the privileges SELECT and UPDATE on column salary of the Stafftable.
56. Revoke the privilege SELECT on the Branch table from allusers.
57. Revoke all privileges you have given to Director on the Stafftable.
58. Demonstrate exceptions inPL/SQL
59. Demonstrate cursors inPL/SQL
60. Write PL/SQL queries to createprocedures.
61. Write PL/SQL queries to createfunctions.
62. Write PL/SQL queries to createpackage.
63. Write PL/SQL queries to createtriggers.
64. Write PL/SQL queries usingrecursion.

Consider the relational schema for part of the **Hotel** case study is:

Hotel (hotelNo, hotelName, city)
Room (roomNo, hotelNo, type, price)
Booking (hotelNo, guestNo, dateFrom, dateTo, roomNo)
Guest (guestNo, guestName, guestAddress)

65. Create a database with name "Hotel" and now create all the tables listed above withconstraints.
66. Insert a new row into the table supplying data for allcolumns.
67. Modify data in the database usingUPDATE
68. Delete data from the database usingDELETE
69. Changing a table definition usingALTER
70. Removing a table usingDROP
71. Removing rows in table usingTRUNCATE
72. Practice other standard SQL commands for creating, modifying, displaying data oftables.
73. List full details of allhotels.
74. List full details of all hotels inLondon.
75. List the names and addresses of all guests living in London, alphabetically ordered byname.
76. List all double or family rooms with a price below £40.00 per night, in ascending order ofprice.
77. List the bookings for which no dateTo has beenspecified.
78. How many hotels arethere?
79. What is the average price of aroom?
80. What is the total revenue per night from all doublerooms?
81. How many different guests have made bookings forAugust?
82. List the price and type of all rooms at the GrosvenorHotel.
83. List all guests currently staying at the GrosvenorHotel.
84. List the details of all rooms at the Grosvenor Hotel, including the name of the guest staying in theroom.
85. What is the total income from bookings for the Grosvenor Hoteltoday?
86. List the rooms that are currently unoccupied at the GrosvenorHotel.
87. What is the lost income from unoccupied rooms at the GrosvenorHotel?
88. List the number of rooms in eachhotel.
89. List the number of rooms in each hotel inLondon.
90. What is the average number of bookings for each hotel inAugust?
91. What is the most commonly booked room type for each hotel inLondon?
92. What is the lost income from unoccupied rooms at each hoteltoday?
93. Insert rows into each of thesetables.

94. Update the price of all rooms by5%.
95. Demonstrate that queries written using the UNION operator and same can be rewritten using theOR.
96. Apply the syntax for inserting data into atable.
97. Create a view containing the cheapest hotels in theworld.
98. Create the Hotel table using the integrity enhancement features ofSQL.
99. Create a database trigger for the followingsituations:
    (a) The price of all double rooms must be greater than£100.
    (b) The price of double rooms must be greater than the price of the highest singleroom.
    (c) A booking cannot be for a hotel room that is already booked for any of the specifieddates.
    (d) A guest cannot make two bookings with overlappingdates.
    (e) Maintain an audit table with the names and addresses of all guests who make bookings for hotels in London (do not store duplicate guestdetails).

Given relation schemas are

Sailors (sid : integer, sname : string, rating : integer, age : real)
Boats (bid : integer, bname : string, color : string)
Reserves (sid : integer , bid : integer, day : date)

100. Find the names and ages of allsailors.
101. Find all sailors with a rating above7.
102. Find the names of sailors who have reserved boat103.
103. Find the sids of sailors who have reserved a redboat.
104. Find the names of sailors who have reserved a redboat.
105. Find the colors of boats reserved byLubber.
106. Find the names of sailors who have reserved at least oneboat.
107. Find the names of sailors who have reserved at least twoboats.
108. Compute increments for the ratings of persons who have sailed two different boats on the sameday.
109. Find the ages of sailors whose name begins and ends with B and has at least threecharacters.
110. Find the names of sailors who have reserved a red or a greenboat.
111. Find the names of sailors who have reserved a red and a greenboat.
112. Find the sids of all sailors who have reserved red boats but not greenboats.
113. Find all sids of sailors who have a rating of 10 or have reserved boat104.
114. Find the names of sailors who have not reserved a redboat.
115. Find sailors whose rating is better than some sailor calledHoratio.
116. Find sailors whose rating is better than every sailor calledHoratio.
117. Find the names of sailors who have reserved allboats.
118. Find the names of sailors who have reserved at least twoboats.
119. Find the names of sailors who have reserved all boats calledInterlake.
120. Find sailors who have reserved all redboats.
121. Find the sailor name, boat id, and reservation date for eachreservation.
122. Find the sids of sailors with age over 20 who have not reserved a redboat.
123. Find the average age of allsailors.
124. Find the average age of sailors with a rating of10.
125. Find the name and age of the oldestsailor.
126. Count the number of different sailornames.
127. Find the names of sailors who are older than the oldest sailor with a rating of10.
128. Find the sailors with the highestrating.
129. Find the age of the youngest sailor for each ratinglevel.
130. Find age of the youngest sailor who is eligible to vote for each rating level with at least 2 suchsailors.
131. Find the average age of sailors for each rating level that has at least twosailors.
132. For each red boat, find the number of reservations for thisboat.
133. Find the average age of sailors who are of voting age (i.e., at least 18 years old) for each rating level that has at least twosailors.
134. Delete the records of sailors who have rating 8 (deleting some rows in atable).
135. Loading data which is present in the text into thetable.

Note : Recommended to use open source database software like MySQl, MongoDB, PostgreSQL, etc…
In practical examination, students have to

- Create database
- Create tables with their integrityconstraints.
- Insert the data into tables and then execute thequeries.
- Answer any **six** queries from **ten** queries given by theexaminer.

JavaLab BS505

Practical 3 Hours/Week 1credit

1	Write java programs to find the following a) largest of given three numbers b) reverses the digits of anumber c) given number is primeornot d) GCD of given twointegers
2	Write java programs that implement the following a) default constructor b) parameterized constructor c) constructor overloading
3	a) Write a java program to find the smallest of given list integers using array and scannerclass. b) Write a java program for multiplication of twomatrices.
4	a) Write a java program for demonstrating an inner classes or nestedclasses. b) Write a java program to implement method overloading, method overriding, dynamic method dispatch
5	Write a java program to implement single, multilevel, hierarchal, multiple, hybridinheritances.
6	Write java programs that demonstrate the use of abstract, this, super, static, finalkeywords
7	a) Write a java program for creating a package and using apackage. b) Write a java program to demonstrate the use of wrapperclasses.
8	a) Write a java program using all five keywords of exception handlingmechanism. b) Write a java program for creating customized (user) exception
9	a) Write a java program that checks whether a given string is a palindrome ornot. b) Write a java program for sorting a given list of names in ascending order.
10	a) Write a java program to create a file, write the data and display thedata. b) Write a java program that reads a file name from user and displays its information.
11	a) Write a java program for controlling mainthread. b) Write a java program for creating new thread by extending Thread class.
12	a) Write a java program for creating new thread by implementing Runnableinterface. b) Write a java program for thread synchronization.
13	a) Write a java program to create following AWT components: Button, Checkbox, Choice, andList. b) Write java programs to create AWT application using containers and layouts.
14	a) Write java programs to create a simple Applet and create swing basedApplet. b) Write a java program to handle different types of events in a swing application.
15	Write java programs to create a swing application using swing components andlayouts.
16	Write a java program to store and retrieve data from database usingJDBC.

Note :

Write the program using simple text editors (not IDE), compile and run from command prompt.

Encourage students to develop small java applications using IDE, like giving as assignment.

Write a small java application using some features of java.

WebTechnologiesLab BS606

Practical 2 Hours/Week 1credit

1. a. Write a HTML program using basic text formatting tags, <hn>, <p>, <br>, <pre>.
   b. Write a HTML page for Example Cafe using above text formatting tags.
2. a. WriteaHTMLprogramusingpresentationalelementtags<b>,<i>,<strike>,<sup>,<sub>, <big>, <small>,<hr>
   b. WriteaHTMLprogramusingphraseelementtags<blockquote>,<cite>,<abbr>,<acronym>, <kbd>, <address>
3. a. Write a HTML program using different listtypes.
   b. Write a HTML page that displays ingredients and instructions to prepare a recipe.
4. a. Write a HTML program using grouping elements and.
   b. Write a HTML Menu page for Example cafe site.
5. a. Write a HTML program using images, audios,videos.
   b. Write a HTML program to create your time table.
6. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file selectboxes.
7. Write a HTML program to create a frames and links betweenframes.
8. Write a HTML program to create different types of stylesheets.
9. Write a HTML program to create CSS on links, lists, tables and generatedcontent.
10. Write a HTML program to create your college web site using multi columnlayouts.
11. Write a HTML program to create your college web site using for mobiledevice.
12. Write a HTML program to create login form and verify username and password using DOM
13. a. Write a JavaScript program to calculate area of rectangle using function.
    b. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the currenttime.
14. a. Write a JavaScript program using switchcase?.
    b. Write a JavaScript program to print multiplication table of given number usingloop.
15. a. Write a JavaScript programs using any 5events.
    b. Write a JavaScript program using JavaScript built inobjects.
16. Write a JavaScript program to create registration form and validate all fields using formvalidation
17. Write a XML Program to represent Student Data using DTD.
18. Write a XML Program to represent Data using XML Schema Definition.

PHP with MySQLLab BS606

Practical 3 Hours/Week 1credit

1	a) Write a PHP script to find the factorial of a givennumber. b) Write a PHP script to find the sum of digits of a given number.
2	a) Write a PHP script to find whether the given number is a prime ornot. b) Write a PHP script to demonstrate the use of break, continue statements using nested loops.
3	a) Write a PHP script to display the Fibonacci sequence with HTMLpage. b) Write a PHP script to create a chessboard.
4	a) Write a PHP script using built-in string function like strstr(), strops(), substr_count(), etc... b) Write a PHP script to transform a string to uppercase, lowercase letters, make a string's first character uppercase.
5	a) Write a PHP script that inserts a new item in an array in anyposition. b) Write a PHP function to check whether all array values are strings ornot.
6	a) Write a PHP script to count number of elements in an array and display a range of arrayelements. b) Write a PHP script to sort a multi-dimensional array set by a specifickey.
7	a) Write a PHP script using a function to display the entered string inreverse. b) Write a PHP script using function for sorting words in a block of text bylength.
8	a) Write a PHP script for creating the Fibonacci sequence with recursivefunction. b) Write a PHP script using pass by value and pass by reference mechanisms in passing arguments to functions.
9	a) Write a PHP script to demonstrate the defining and using objectproperties. b) Write a PHP script to demonstrate theinheritance.
10	a) Write a PHP script to demonstrate the object overloading with _get(), _set(), and_call(). b) Write a PHP script to demonstrate the overloading property accesses with _get() and _set().
11	a) Write a PHP script to demonstrate the method overloading and method overridingmechanisms. b) Write a PHP script to demonstrate the use of final classes and final methods.
12	a) Write a PHP script to demonstrate the useinterfaces. b) Write a PHP script using constructors and destructors.
13	Write a PHP application to handling HTML forms with PHPscript.
14	a) Write a PHP script to create a file, write data into file and display the file'sdata. b) Write a PHP script to check and change file permissions, copying, renaming and deleting files.
15	a) Write a PHP application for connecting to MySQL and reading data from databasetable. b) Write a PHP application for inserting, updating, deleting records in the database table.
16	Write a PHP application for student registrationform.

FACULTY OF COMMERCE
OSMANIA UNIVERSITY

Practical Question bank for B.Com Comp Applications (CBCS) I-Semester w.e.f 2019

Subject : Fundamentals of Information Technology

Total Marks: 35

Record: 10
Computer Practical: 10
Viva : 15

Total Marks: **35**

MS-Word

1. Create a word document to generate the following output:

   $(a+b)^2=a^2+2ab+b^2$

   H_2SO_4, H_2O, CO_2, MNO_2

   $N_2+H_2 \rightarrow NH_3$

2. Create a news paper model with multi columns.

3. Type a paragraph and perform the following task.

a) Make five lists of numbering which contains details of the courses offered in your college.

b) Make the five list of bullets having hand symbol which describes about facilities in your college.

c) Keep a footnote to any one of the word of the first paragraph.

d) Center the heading of your document.

4. Create a word document to display the Time Table of your class. Use all the features of Table Formatting.

5. Use Mail Merge feature to send invitation letters to ex-students of your college inviting them to attend the Alumni meet in your college.

6. Create letterhead of any company or institution that you got and insert the Watermark with that company name in the document.

7. Create a MACRO taking your own data and run it.

8. Create a document on Features of computers and apply different themes.

9. Create Super Script at Subscript as Co^2; x_2.

10. Create a word document consisting of 5 pages describing about your college. Insert headers and footers and page numbers in all the pages.

MS-Excel

11. Enter the Student details with the following columns:
    Sno, Sname, Subjects marks in first semester.
    Calculate the Total Marks, Average and Result.
    Result should be displayed as "Pass/Fail". Take your own criteria for result.

12. Enter the Student details with the following columns:
    Sno, Sname, Subjects marks in first semester.
    a) Calculate the Total Marks, Average.
    b) Find the maximum and minimum of marks in Total Marks column.
    c) Count the number of students whose Average score is > 70.

13. Enter the Student details with the following columns:
    Sno, Sname, Subject marks in first semester.
    a) Calculate the Total Marks, Average.
    b) Use conditional formatting to display the students marks whose score in a particularl subject is greater than 90.
    c) Use conditional formatting to display the students whose marks are greater than 90 in all the subjects.

14. Consider the following columns:
    Sno, Sname, Total marks obtained in first semester. Represent this data using a Bar diagram.

15. Consider the following columns:
    Month, Sales(Rs.). Plot the data using a line chart.

16. Consider the following student data with columns:
    Firstname, Lastname, Score(out of 100)
    a) Sort the above data on Firstname column.
    b) Sort the above data on Fistname and then by Lastname (use multilevel sorting)

17. Consider the following student data with columns:
    Firstname, Lastname, Score(out of 100)
    a) Filter the above data by displaying the student details where score > 70.
    b) Filter the above data by displaying the student details where score between 50 and 70.

18. Consider the following Sales data with columns:
    Date, Salesman Name, Region(North/South/East/West), Sales in Rs.
    Generate a pivot table to calculate the Total Sales Region wise. Also calculate the average sales made region wise.

19. Consider Employee details data with the columns:
    Emp. ID, Employee name, Department and Salary.
    Generate Department wise sub-totals.

20. Following are the scores of 10 students in an exam:
    44, 56, 89, 94, 43, 32, 11, 55, 99, 44.
    Use functions to calculate Mean, Median and Mode.

MS-Powerpoint

21. Create a presentation of 5 slides to describe the facilities available to students in your college.
22. Create a presentation of 5 slides to describe the benefits of Yoga in human life. Apply different slide transitions.
23. Create a presentation of 5 slides using different slide layouts to describe about Global Warming.
24. Create a presentation of 5 slides describing the side effects of overuse of Smart Phones and apply design templates.
25. Create a presentation of 5 slides describing about the Side effects of smoking using custom animations.

MS-DOS

26. Create the following directory structure:

    a) Create a directory with your college name.

    b) Create sub directories with course names under your college name folder.

    c) Within each course create sub directories for First, Second and Final years.

27. Create the following directory structure:

a) Create a directory with your college name.

b) Create sub directories with course names under your college name folder.

c) Display the above folder structure in the form of a tree.

28. Create the following directory structure:

a) Create a directory with your college name.

b) Create sub directories with course names under your college name folder.

c) Create text files describing about each course in respective course names.

29. Create the following directory structure:

a) Create a directory with your college name.

b) Create sub directories with course names under your college name folder.

c) Create text files describing about each course in respective course names.

d) Copy the text files into college name directory.

e) Delete the sub directories under college name directory.

30. Demonstrate the use of any 5 internal and external DOS commands with your own data.

=x=

FACULTY OF COMMERCE OSMANIA UNIVERSITY

Practical Question Bank for B.Com Comp Applications (CBCS) II-Semester
w.e.f 2020

Subject: Programming with C & C++

Total Marks: 35

Record: 10
Computer Practical: 10
Viva : 15

Total Marks: 35

1. Write a C Program to Add Two Integers.
2. Write a C Program to Print an Integer (Entered by the User).
3. Write a C Program to Multiply Two Floating-Point Numbers.
4. Write a C Program to Find ASCII Value of a Character.
5. Write a C Program to Compute Quotient and Remainder.
6. Write a C Program to Find the Size of int, float, double and char.
7. Write a C Program to Swap Two Numbers Using Temporary Variable.
8. Write a C Program to Check Whether a Number is Even or Odd
9. Write a C Program to Check Odd or Even Using the Ternary Operator.
10. Write a C Program to Check Whether a Character is a Vowel or Consonant.
11. Write a C Program to Find the Largest Number Among Three Numbers.
12. Write a C Program to Check Leap Year.
13. Write a C Program to Check Whether a Character is an Alphabet or not.
14. Write a C Program to Calculate the Sum of first 'N' Natural Numbers.
15. Write a C Program to Find Factorial of a Number.
16. Write a C Program to Generate Multiplication Table of a given number.
17. Write a C Program to Display Fibonacci Sequence up to 'n' numbers.
18. Write a C Program to Count Number of Digits in an Integer.
19. Write a C Program to Reverse a Number.
20. Write a C Program to Check Whether a Number is Palindrome or Not.
21. Write a C Program to Check Whether a Number is Prime or Not.
22. Write a C Program to Check whether the given number is an Armstrong Number or not.
23. Write a C Program to Make a Simple Calculator Using switch...case.
24. Write a C Programming Code To Create Pyramid and Pattern.
25. Write a C program to reverse a Sentence Using Recursion.
26. Write a C Program to Display Prime Numbers Between Intervals Using Function.
27. Write a C Program to Convert Binary Number to Decimal and vice-versa.
28. Write a C Program to Check Prime or Armstrong Number Using User-defined Function.
29. Write a C program to calculate the power using recursion.
30. Write a C Program to Find G.C.D Using Recursion.
31. Write a C Program to Calculate Average Using Arrays.

32. Write a C Program to Find Largest Element in an Array.
33. Write a C Program to Add Two Matrices Using Multi-dimensional Arrays.
34. Write a C Program to Find the Length of a String.
35. Write a C Program to Concatenate Two Strings.
36. Write a C Program to Copy String Without Using strcpy().
37. Write a C Program to Count the Number of Vowels, Consonants and so on.
38. Write a C Program to Find the Frequency of Characters in a String.
39. Write a C Program to Access Array Elements Using Pointers.
40. Write a C program to create, initialize, assign and access a pointer variable.
41. Write a C program to swap two numbers using pointers
42. Write a C program to count vowels and consonants in a string using pointers.
43. Write a C Program to Store Information of a Student Using Structure.
44. Write a C Program to Add Two Distances (in inch-feet system) using Structures.
45. Write a C Program to Store Information of Students Using Structure.
46. Write a C program to declare, initialize an union.
47. Write a C++ program to implement function overloading.
48. Write a C++ program to calculate an area of rectangle using encapsulation.
49. Write a C++ program to add two numbers using data abstraction.
50. Write a C++ program to overload binary operators.

Computer Lab – Practical Question Bank

FACULTY OF COMMERCE, OSMANIA UNIVERSITY

B.Com Computer Applications - III Semester (New) w.e.f. 2019-20

RELATIONAL DATABASE MANAGEMENT SYSTEM Practical Question Bank

Paper No.DSC 303

Time: 60 Minutes

Record : 10
Viva-Voce : 10
Skill Test : 15

Total Marks : 35

A. Create a **Supplier** table as shown below : (for questions from 1 to 10)

Sup_No (Primary Key)	**Sup_Name**	**Item_Supplied**	**Item_Price**	**City**
S1	Suresh	Keyboard	400	Hyderabad
S2	Kiran	Processor	8000	Delhi
S3	Mohan	Mouse	350	Delhi
S4	Ramesh	Processor	9000	Bangalore
S5	Manish	Printer	6000	Mumbai
S6	Srikanth	Processor	8500	Chennai

1. Write sql query to display Suplier numbers and Supplier names whose name starts with 'R'

2. Write sql query to display the name of suppliers who supply Processors and whose city is Delhi.

3. Write sql query to display the names of suppliers who supply the same items as supplied by Ramesh.

4. Write sql query to increase the price of Keyboard by 200.

5. Write sql query to display supplier numbers, Suplier names and itemprice for suppliers in delhi in the ascending order of itemprice.

6. Write sql query to add a new column called CONTACTNO.

7. Write sql query to delete the record whose itemprice is the lowest of all the items supplied .

8. Create a view on the table which displays only supplier numbers and supplier names.

9. Write sql query to display the records in the descending order of itemprice for each itemsupplied.

10. Write sql query to display the records of suppliers who supply items other than Processor or Keyboard.

B. Below are the details of Employees working for a software Company. (For questions from 11 to 20)

Create the table called **EmpDetails** with the below mentioned details.

Eid (Primary Key)	**Ename**	**DOB**	**Designation**	**Salary**	**DOJ**
E101	Suma	29-Dec-89	Designer	20000	01-Apr-10
E102	Amit	10-Jan-95	Programmer	25000	18-Feb-18
E103	Payal	15-Aug-85	Tester	35000	13-Jun-11
E104	Kiran	20-Apr-90	Programmer	40000	7-Mar-14
E105	Meenal	29-May-83	DBA	50000	9-Dec-11
E106	Sheila	1-May-70	Analyst	60000	25-Sep-18
E107	Swamy	13-Jan-85	Programmer	45000	14-Feb-16
E108	Sushma	22-Dec-76	DBA	45000	31-Jan-12

11. Write sql query to display all the employees whose designation is Programmer.

12. Write sql query to display employees who have joined after 2014.

13. Write sql query to display all the employees whose name ends with 'a'.

14. Write sql query to display the total salary of all the employees whose designation is programmer.

15. Write sql query to display all the employee names in upper case.

16. Write sql query to display the details of the employee with highest experience.

17. Write sql query to display the details of the employees whose name contains 'ee'.

18. Write sql query to increase the salaries of employees by 5000 whose designation is DBA.

19. Write sql query to display the employees whose salary is more than the average salary of all the employees.

20. Write sql query to display the record in the following format:

xxxxxxxxx is working as xxxxxxxxxxxxxx with a Salary of Rs.xxxxxxxx

eg: Suma is working as Designer with a Salary of Rs. 20000

C. Create the two tables as shown below with the given constraints: (for questions 21 to 30)

Table name: **Employee**

Constraints: Eid is Primary key and DeptId is foreign key

Salary should not be less than 10000

Eid (Primary Key)	**Ename**	**DeptId (Foreign Key)**	**Designation**	**Salary (> 10000)**	**DOJ**
101	Sudha	D2	Clerk	20000	01-Apr-10
102	David	D1	Manager	50000	18-Feb-18
103	Preethi	D3	Clerk	35000	13-Jun-11
104	Kiran	D1	Salesman	20000	7-Mar-14
105	Meenal	D2	Clerk	50000	9-Dec-11
106	Sunitha	D3	Manager	60000	25-Sep-18
107	Akhil	D3	Clerk	25000	14-Feb-16
108	Sushma	D2	Manager	45000	31-Jan-12

Tablename: **Department**

Constraints:DeptId Primary key

and Dname is NOT NULL

DeptId (Primary Key)	**Dname**
D1	Sales
D2	Marketing
D3	Finance

21. Write sql query to display all the employees who earn more than average salary of all the employees in the company.

22. Write sql query to display the fields Eid, Ename and Dname.

23. Write sql query to sort the employee table in the descending order of salaries.

24. Write sql query to list all the job designations in the employee table without repetitions.

25. Write sql query to display all the employee details Department wise and in the ascending order of their salaries.

26. Write sql query to display all the clerks in DeptId D2.

27. Write sql query to display all the employees who joined in the year 2011.

28. Write sql query to display all the employees who joined in the month of February.

29. Write sql query to display all the employees whose salary is between 30000 and 45000.

30. Write sql query to display all the employee details along with their work experience in the company till current date.

D. Below are the details of Students enrolled in various course of B.Com (For questions from 31 to 40)

Create the table called **Student** with the below mentioned details.

Sid (Primary Key)	**Sname**	**DOB**	**State**	**Gender**	**Category**	**Course**
1001	Neha	29-Dec-02	Telangana	F	Gen	Comp
1002	Arun	10-Jan-02	Telangana	M	OBC	Honors
1003	Payal	15-Aug-01	Maharashtra	F	Gen	Appl
1004	Amrita	20-Apr-02	Karnataka	F	OBC	Honors
1005	Pavan	29-May-03	AndhraPradesh	M	ExServicemen	Comp
1006	Anchal	1-May-03	Gujarat	F	OBC	Comp
1007	Ramya	13-Jan-02	Telangana	F	Gen	Appl
1008	Rakesh	22-Dec-01	AndhraPradesh	M	Sports	Comp

31. Write sql query to display the students who are not from Telangana or AndhraPradesh.

32. Create a view to display the columns Sid, Sname for students belonging to Telangana.

33. Write sql query to create an index on column Sname.

34. Write sql query to display all the female students enrolled under Comp course and who belong to OBC.

35. Write sql query to display the student ids, names, and their present age.

36. Write sql query to display the students in the ascending order of their names for each course.

37. Write sql query to delete all the students records who have enrolled for Comp course and who are born after 2002.

38. Write a sql query to add two new columns Contactno and Email to the existing fields.

39. Writs an sql query to display all the Student names prefixed with Mr./Ms. Based on Gender column.

40. Write an sql query to display all the Student names where the length of the name is 5 characters.

E. Create a Table for Library Information : (for questions from 41 to 50)

Table name: **Library**

Constraints: BookId is primary key and BookName is NOT NULL

BookId (Primary Key)	**BookName**	**Author**	**DatePurchased**	**Publisher**	**Price**
B101	Cost Accounting	Jain Narang	11-Feb-13	Kalyani	800
B102	Business Statistics	OP Aggarwal	22-Dec-11	Himalaya	750
B103	Rdbms	C J Date	2-Mar-15	TMH	900
B104	Mgmt Accounting	RK Sharma	19-Apr-16	Kalyani	450
B105	Operating Systems	Galvin	25-Nov-13	PHI	750
B106	Advanced Accounting	SC Gupta	16-Apr-18	Himalaya	600

41. Write sql query to display the list of authors from Himalaya publications.

42. Write sql query to display the total cost of books purchased Publisher wise.

43. Write sql query to count the total number of books under Kalyani publications.

44. Write sql query to rename the column Publisher as Publications.

45. Write a sql query to display the books in the ascending order of DatePurchased.

46. Write sql query to create an index on the fields BookName and Author.

47. Write sql query to display the books whose price is between 500 and 700

48. Write sql query to increase the price of all the books by 200 for publishers other than Himalaya or Kalyani.

49. Write sql query to display the book details where author name contains the name Sharma.

50. Create a view to display the fields BookId and BookName where the Publisher is Himalaya.

Department of Commerce

Osmania University Hyderabad

Practical Question Bank

B.Com (CBCS) IV Semester (Computer Applications)

Computer Lab - "**WEB TECHNOLOGY"**

Time: 60 Minutes

Record: 10
Skill Test: 10
Viva-Voce: 15

Total Marks: 35

1. Write a HTML program to implement Formatting tags .

2. Write a HTML program to demonstrate all Logical tags.

3. Write a HTML program to implement all Header tags.

4. Write a HTML program to illustrate Anchor tag along with all its attributes.

5. Write a HTML program to insert Image tag with all its attributes.

6. Create a Web Page to display the text "ALL **THE BEST**" aligned with images.

7. Write a HTML program to implement Font tags along with its attributes.

8. Write a HTML program to illustrate List formatting tags for the streams available in College :

a. Ordered list b. Unordered list c. Menu List. d. Definition List .

9. create a Web Page to display ordered list, unordered list on the subjects available in Fifth semester .

10. create a Table with Four rows and Four columns in HTML .

11. Write a HTML program to create a Time-table of your College using necessary options such as Cellpadding, Cellspacing , colspan , rowspan .

12. Write a HTML program to marquee the image and text.

13. Create a Web Page in which the text " **WEB TECHNOLOGY** " should scroll in different directions
for four times .

14. Create a table using all its attributes and sub tags to execute the following Information .

S.No	Name	Specialization
1.	Ada Lovelace	She is World's first Computer Programmer.
2.	Adam Osborne	Creator of the first commercially available Portable Computer .
3.	Abhay Bhushan	Author of the File Transfer Protocol .
4.	Alan Cooper	Father of Visual Basic .
5.	Alan Emtage	Developer of " Archie " which is considered to be the first search engine.
6.	Alan Schaaf	Founder of " Imgur " which is the world's largest image hosting site .
7.	Alexander Douglas	Created the first graphical Computer game, OXO .
8.	Andreas Bechtolsheim	Co-founder of Sun Microsystems.

Contd.2

15. Create a Program on the concept of Form containing Textboxes, Radio Buttons and Check boxes.

16. Create a Program on Employee Information Form.

17. Write a program to create Pull down menu on the universities available in Telangana State.

18. Write a program to create Pull down menu on various Web Designing Softwares.

19. Create a Web Page of student information form, when the information is submitted message should be displayed .

20. Write a HTML program to create Four Vertical Frames .

21. Write a HTML program to create Four Horizontal Frames.

22. Write a DHTML program for Cascading style Sheets.

23. Write a DHTML program to demonstrate Inline Style Sheets.

24. Write a DHTML program to demonstrate External Style Sheets.

25. Write a DHTML program to demonstrate Embedded Style Sheets.

26. Write a DHTML program to illustrate Id and Class Selectors using CSS.

27. Write a DHTML program to demonstrate Filters .

28. Write a DHTML program to demonstrate Transitions.

29. Write a DHTML program to demonstrate changing text and attributes using CSS.

30. Write a Java Script program to calculate Area and circumference of a Circle .

31. Write a Java Script program to display Greatest Number among Three Numbers .

32 . Write a Java Script program to demonstrate Arithmetic Operations using Switch case.

33. Write a Java Script program to print Odd numbers using while loop.

34. Write a Java Script program to demonstrate multiplication table .

35. Write a Java Script program using any five events .

36. Write a Java Script program to print N-natural numbers using For loop.

37. Write a Java Script program to print Factorial of a given number .

38. Write a Java Script program to demonstrate Arrays.

39. Write a Java Script program to demonstrate String manipulating functions.

40 . Write a Java Script program to demonstrate Math objects.

Contd.3

41. Create a Web page with an image, when the mouse is doubled clicked new image should replace the existing.

42. Create a Web page and apply mouse effects to change text color, size, family etc on the text.

43. Create a Web page which displays a line of text, when you click on the text a new line of text should overwrite the existing text.

44. Create a program on the event onkeypress.

45. Create a program on the event onreset .

46 . Create a XML document for employee database with 10 records and 5 columns in each record.

47. Create a XML document for student database and apply the style sheet effects.

48. Create a XML document with simple links

49. Create a XML document for the Marketing department of an organization and apply style effects.

50. Create a program on XML Document Object Model.

Computer Lab - Practical Question Bank
FACULTY OF COMMERCE, OSMANIA UNIVERSITY

B.Com (Computer Applications) CBCS Semester - V W.E.F.2022-23

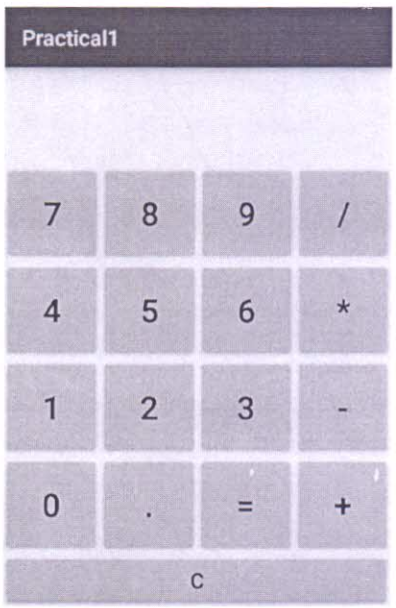
MOBILE APPLICATION - Paper: 503

Time: 60 Minutes

Record	: 10
Viva-voce	: 10
Skill Test	: 15
Total Marks	: 35

Objective: Learning outcomes: To design, implement, document and present a mobile client/server system using Android studio and XM. It is necessary to use a mobile phone emulator to develop and demonstrate the experiments. It may be necessary to use other components or existing resources (servers) as needed.

1. Write down the steps for creating an android virtual device (AVD) on Android Studio.
2. Run an application on AVD in Android Studio.
3. Write procedure to develop an application on Android studio.
4. Write procedure to create first android project.
5. Write a program to design an android user interface using the Graphical Layout Tool.
6. Write a program to create a manifest file. (manifest.xml)
7. Write an xml code to implement linear layout.
8. Write an xml program to create UI elements on a layout.
9. Write an xml code to implement content provider.
10. Write an xml program to design the following calculator format



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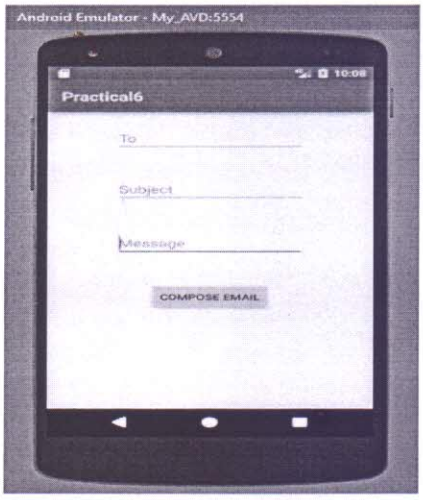
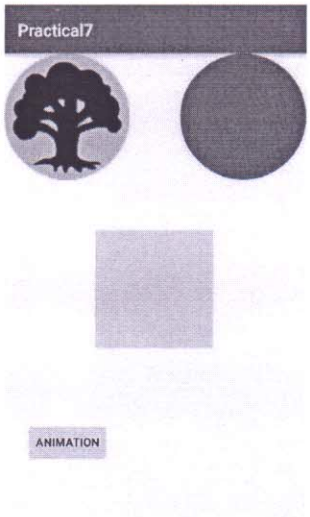
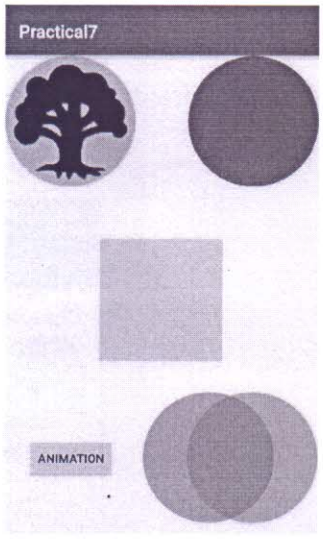
Hyderabad - 500 007. (T.S.)

11. Create an xml code to demonstrate seek bar on your device.
12. Write an xml code to develop an application for connecting to the internet and sending an email.



13. Write an xml code to develop an application working with graphics and animations





14. Create an xml program to implement following
    i) Checkbox
    ii) Radio button
    iii) Buttons

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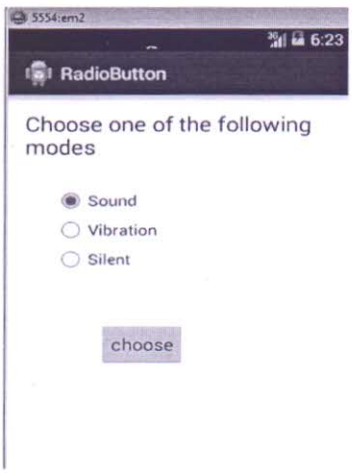
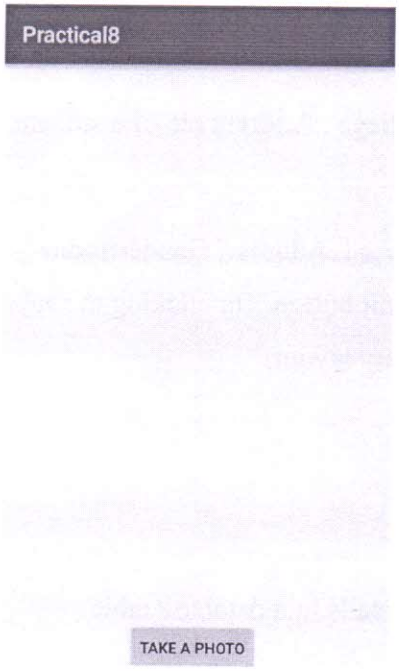
15. Create an application that takes the name from a text box and shows hello message along with the name entered in text box, when the user clicks the OK button.

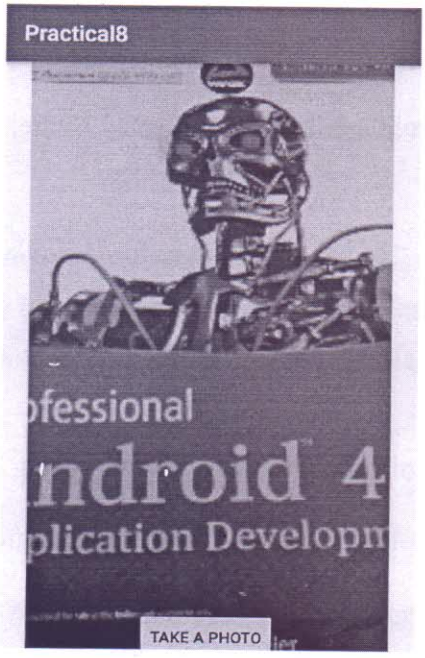
16. Write a program to create a gallery
17. Write an xml program to demonstrate transitions.
18. Write an xml program to create a seekbar.
19. Write an xml code to create an implicit intent
20. Write an xml code to create an explicit intent
21. Design an android application using radio buttons



22. Create an android application for menu

23. write an xml program to set transparency of an image and it should rotate 90 degrees.
24. develop an application for working with device camera

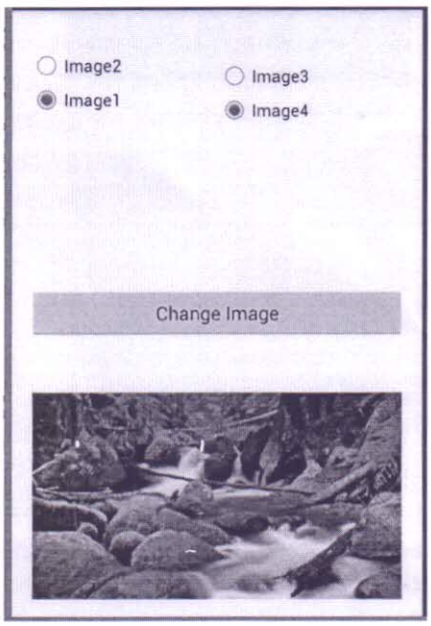




25. write an xml program to develop an application for working with location based services.

26. write an xml code to create an activity

27. write a program to change the image on the screen



28. Write an android program to create sound buttons

29. Write an XML program to demonstrate menu application

30. Design an android application to display Name, Class, College , Address etc of a student.

31. Create a screen that has input boxes for User Name, Password, Address, Gender(radio buttons for male and female), Age (numeric) and a Submit button. On clicking the submit button, print all the data below the Submit Button (use any layout)

32. Design an android application Send SMS using Intent

33. Design an android application Using Radio buttons.

34. Create a user registration application that stores the user details in a database table

35. Design an android application to record an audio

36. Design an android application to record a video

37. Write an XML program to send an E-Mail.

38. Write an XML program to create a thread.

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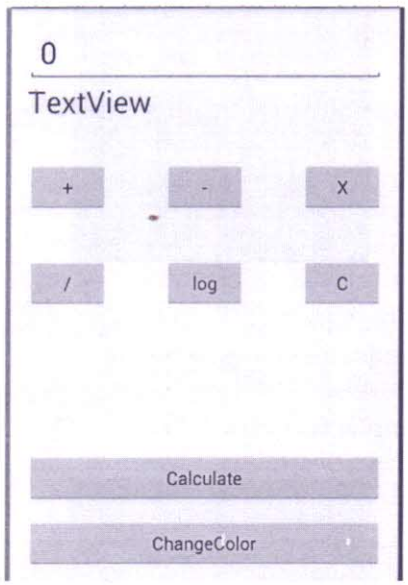
39. Write an xml program to view an animation.

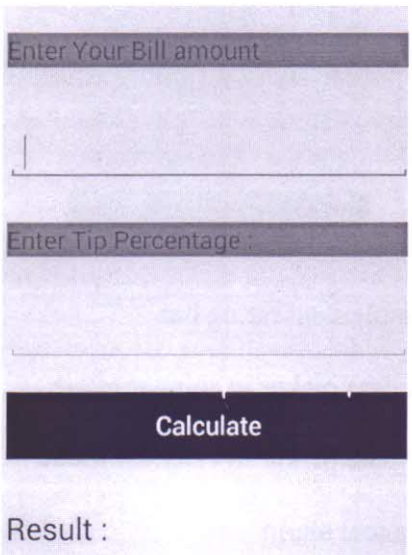
40. Write a program how to define menu hierarchy in xml

41. Write a program how to create custom grid view layout in android

42. Write a program to create the following



43. Write a program to design the following



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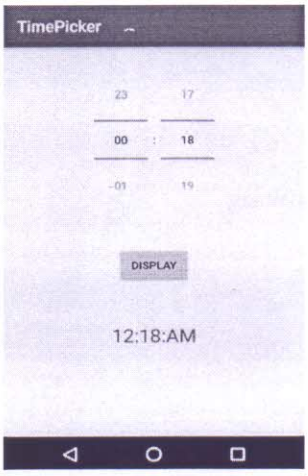
44. Android program to design login screen using relative layout

45. Write an android program to implement toggle button

46. Write an android program to implement time picker



47. write an android program to implement rating bar

48. write a program to implement date picker in spinner mode

49. write a program to implement date picker in calendar mode

50. write an android program to cancel alarm

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Computer Lab – Practical Question Bank

FACULTY OF COMMERCE, OSMANIA UNIVERSITY

B.Com Computers/Computer Applications (CBCS)-VI Semester

E-COMMERCE

Time: 60 Minutes

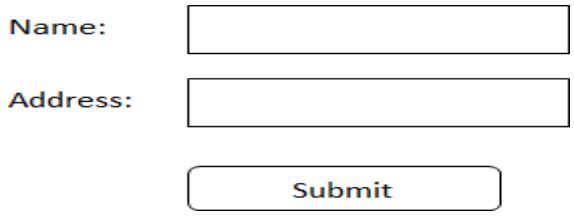
Record	**: 10**
Skill Test	**: 15**

Total Marks	**: 25**

Note: All the questions should be practiced using Microsoft Front page/any related tools.

In the practical examination the students have to write the procedure for performing the given task in front page followed by the html tags used to perform the task.

1. Create a web page to display the following output: (use textboxes, submit button)



2. Create a web page to display the time table of your class using tables.
3. Create a web page which accepts user input as shown below.

4. Create a web page to modify the default properties of h1 tag using internal style sheet.
5. Create a web page to display an ordered list of courses offered in your college.
6. Create a web page to display a table with 2 rows and 2 columns. Also insert images in the cells of the table.
7. Create a web page to display a hyperlink which when clicked directs you to Amazon website.
8. Create a web page to demonstrate various marquee effects over a given text.

9. Create a web page to display the following output:
   (take your own data into consideration)

Title	
Description of the image in a paragraph	Image

10. Create a web page to display the following output: $(a+b)^2=a^2+2ab+b^2$

    H_2SO_4

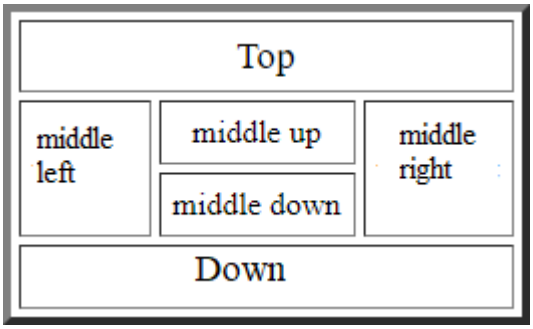
11. Create a web page to demonstrate the usage of nested tables as shown in the diagram below:

Rubber	baby
buggy	bumpers

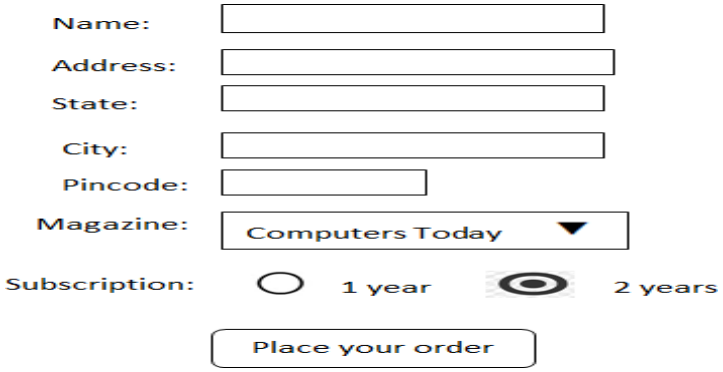
She	sells
sea	shells

12. Create a web page which acts as a home page where your college name is properly aligned with the logo of your college followed by address and contact details at the center of the page.
13. Create a web page to demonstrate definition lists by taking various applications of ecommerce as an example.
14. Create a web page to display a bulleted list of subjects available in the current semester.
15. Create a web page to give scrolling effect of an image (preferably your college logo).
16. Create a web page to display a button which when clicked directs you to your college website.
17. Create a web page to display various courses in your college. The courses should be separated by a horizontal ruler of varying sizes and colors.
18. Create a web page to display four horizontal frames each frame containing a different color.
19. Create a web page to display four vertical frames each frame containing a different color.
20. Create a web page to display a button with label “search” adjacent to a text box. Also change the color of text box and background of the web page.
21. Create a web page to display a table containing 2 rows and 2 columns which contains the names of your friends and each cell filled with different background colors.

22. Create a web page to demonstrate the usage of rowspan and colspan for the figure below:

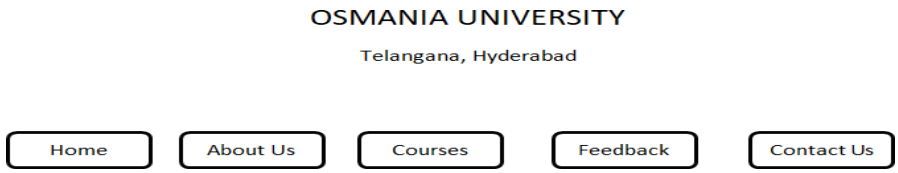


23. Create a web page which asks for mode of payment which includes the options: Credit card/Debit card/Online transfer (use radio buttons)
24. Create a web page which asks the user to enter his credit card details. Use textboxes, drop down buttons.
25. Create a web page to generate a purchase order as shown below:



26. Create a web page to display a hyperlink which when clicked displays excel sheet containing student details.
27. Create a web page to display definition list which defines the terms: B2B, B2C, C2B, C2C.
28. Create a web page with paragraphs left, right and center aligned to explain about various social networking sites. The paragraphs should be on different colors and separated by horizontal lines of varying sizes.
29. Create a web page which displays four buttons containing text B2B, B2C, C2B, C2C. Also when a button is clicked details about the clicked subject should appear on a separate page.
30. Create a web page to modify the default properties of h1 tag using external style sheet.

31. Create a web page to scroll the text “E-Commerce” for exactly 5 times from left to right of the screen.
32. Create a web page to insert an image which when clicked redirects you to your college website.
33. Create a web page to display the name of your college in h6 size with blue as font color and background color yellow separated by a thick line and below which a paragraph about the facilities offered by your college is described.
34. Create a web page with OSMANIA UNIVERSITY as the title and five buttons labelled Home, About Us, Courses, ,feedback, Contact us as shown in the diagram which when clicked displays the details on a separate pages.



35. Create a web page to demonstrate a pull-down menu. The menu should contain the list of your favourite south Indian dishes.
36. Create a web page with name of your college as text. The text should scroll, alternate and slide.
37. Create a web page to display an image surrounded by text on all the four sides.
38. Create a web page with 4 paragraphs of about 5 lines each describing about E-Marketing, E-Shopping, E-banking and E-Learning. The paragraphs should be aligned left, right, center and justified respectively.
39. Create a web page with name of your college as Text in h6 size, font as verdana, blue as font color followed by a copyright symbol and trademark symbol.
40. Create a login page asking the user to enter his username and password followed by a submit button.
41. Create a web page to create links to the sections on the same page.
42. Create a web page using a form which collects data about students rollno, name and marks in various subjects followed by submit and reset buttons.
43. Create a web page using a form titled as Feedback form which takes the feedback of the various facilities offered in your college. The form should have fields student name, rollno followed by 5 check boxes labelled Excellent, Very Good, Good, Average, Bad respectively.

44. Create a web page to display the list of universities available in Telangana state using a pull-down menu.
45. Create a web page to display an image surrounded by text on left and right sides.
46. Create a web page using a default theme in front page to describe about OSMANIA UNIVERSITY.
47. Create a user registration form for an upcoming examination.(use textboxes, pulldown menus, option boxes, submit button)
48. Create an web page to display a multilevel list taking your own example.
49. Create a table to demonstrate colspan, rowspan, cellspacing and cell padding attributes of a table.
50. Create a webpage to insert an image using all the image attributes.

Computer Lab - Practical Question Bank
FACULTY OF COMMERCE, OSMANIA UNIVERSITY

B.Com (Computer Applications) CBCS Semester - VI

Multimedia Systems Practical Question Bank DSE-603 (a)

Time: 60 Minutes

Record	***: 10***
Viva-voce	***: 10***
Skill Test	***: 15***
Total Marks	***: 35***

1. create an Image with line, rectangle, square and other basic shapes
2. create a new image adding background colour and foreground colour
3. create a new image fill with various pattern(Fill type)
4. Draw curve, circle, arc, oval using tools panel and the properties panel.
5. Create an animation using the tools panel and the properties panel to draw the following Pen ,Pencil, brush ,lasso tool
6. Create a heart shape in GIMP using selections.
7. Insert background image and do the following using blender.
   a) Make annotations on the active area.
   b)Scale(Resize selected items)
8. Create your own text and apply different font styles, size , alignments and color
9. Create text using text –editor tool apply various formatting like Bold, Italic, underline and strike through.
10. Create text using text –editor tool apply Justify like left justify, right justify and centre justify
11. Create an animation in which text HELLO gets converted into GOODBYE (using motion /shape tweening).
12. Create An Outline Around Text("Text tool option" window)
13. Create text using text –editor tool apply various orientation effects
14. Create a new layer apply Fill with transparency effect
    a. Flip horizontally b. flip vertically
15. Create your own text and apply Arbitrary rotation
16. Create your college logo that appears to be floating above a background
17. Create your own text and add object mirror effect and Transform- rotate effect.
18. Create your own text and apply viewport shading

19. Insert an Image in GIMP and perform the following
    a. Adjust colour curves
    b. Perform Invert, Linear Invert, and value Invert
20. Insert an image and do the following using blender.
    a) Rotate it in different directions.
    b) Make annotations on the active area.
    c) Scale (Resize selected items)
21. Apply snake hook, rotate, cloth effects by using sculpting and display it in different viewpoints.
22. Merge An Image From A File To The Current Image In Gimp(Use "File->Open As Layers)
23. Draw box and apply different colors.
24. Apply different filter effects to the image
    a. Blur
    b. Distorts
    c. Artistic with cartoon and photocopy
25. Insert an image and perform the following
    a. Smudge the image
    b. Dodge/burn the image
26. Insert an image and perform the following using Transform Tool
    a. Distort the image using Wrap Transform
    b. Flip the image
    c. Create a 3-D Image
    d. Use Perspective Transform
    e. Use Shear Transform
27. create 2D animation to depict moving object from left to right
28. Insert an image and apply Decor filter
29. Insert an image and apply Map-illusion filter
30. Take two files in one folder with different MB and Show ZIP and UNZIP compression of files with steps.
31. Create an animation using blend animation effect
32. create a webpage with sample video using video tag
33. Remove A Window Border In Gimp image (crop tool)
34. Create an animation having an image having fade-in fade-out effect
35. Create an animation –Pseudo-colour Overlays
36. Create your college LOGO and save it with different file extension like BMP,JPEG,GIF,TIFF and PNG
37. Write about covid safety in measures by selecting animation menu showing

animation transition and sound effects.

38. Create a water wave effect animation using (wave).
39. Create an animation adding an image and text where image is blur(blur in effect)

40. Create an animation adding a text using Fire Effects in Gimp (using Filters Make 2D still and animated fire! Blur and Noise filters)
41. Create an animation adding a text using Beveled text on Stone
42. Create an animation adding a text using Neon Text
43. Create an animation adding a text using Text on Faces (Blend your text with a person's face.)
44. Create an animation adding a text using Artistic 3D Text (Combine Illustrator 3D effects and Gimp)
45. Create an animation using X-ray Scanner (use the same face and skull images. Rescale tool, Iwarp, Blur, and Layer Masking.)
46. Create a Text Portrait Poster (half text –half image) in GIMP
47. Write steps to show audio effects.
48. Write steps to show video effects.
49. Write steps to show sound effects.
50. Create a scene to show the sunrise (using multiple layers and motion tweening)

Note: Implement the programs using GIMP/Blender/Audacity/animation tools/image editor/video editor

Computer Lab - Practical Question Bank

FACULTY OF COMMERCE, OSMANIA UNIVERSITY

B.Com (Computer Applications) CBCS Semester - VI

Cyber Security Practical Question Bank DSE-603 (b)

Objective : Analyze cyber-attacks, types of cybercrimes, cyber laws and also how to protect the entire Internet community from such attacks. Interpret and forensically investigate security and network incidents. Apply policies and procedures to manage Privacy issues.

Note : a) Write the below Program using C language or Python.

Time: 60 Minutes

Record	: 10
Skill Test	: 15
Viva	: 10
Total Marks	**: 35**

1. What are the Roles and Responsibilities of System Administrator? Write the steps for creating the User account, setting permissions and protecting your files with password.
2. Write the steps for disk partitioning and perform operations like shrinking, Extending, deleting and formatting.
3. Prepare a Case study on Ransomware attacks. (Ex: MediaMarkt)
4. Write the steps for installation of software from Open source Mode and Paid subscription mode
5. Write the steps to make Microsoft Chrome as a default browser, Add Active X Controls and Add–on to the Browser.
6. Write the steps to establish peer to peer network connection using two systems in a LAN
7. What is WiFi? How do you configure the Wifi on Windows operating system
8. Write the steps to Install and configure Network Components like switches, Hub and Modem and how do you connect to Dial-Up networking
9. What are the features of firewall? Write the steps in providing network security and to set Firewall Security in windows.

10. Write the steps for installation of System Software, Application software and Antivirus.
11. What do you mean by Spooling printers? Write the steps for spooling printer.
12. Write a Program to identify the category of IP address for a given IP address
13. Write a Program to check the strength of the password.
14. Write the steps to transfer files between Wireless communication using Blue Tooth and FTP
15. Prepare a case study on Cosmos Bank Cyber attack in Pune
16. Write a Program to search the given pattern using optimized algorithm
17. Prepare a case study on Social Media Crime that occurred in Pune 2021.
18. Prepare a case study on Japanese Bank for Keylogger Scam
19. Write the steps to prevent the denial of Service attacks.
20. Write the steps to demonstrate intrusion detection system (ids) using the tool SNORT
21. What is Malware? Write the steps to remove the malware from your PC.
22. What are the various types of Vulnerabilities for hacking the web applications.
23. Write steps for sharing files and printer remotely between two system
24. List out the various Mobile security apps . Write the steps to install and use ,one of the mobile security app
25. Write the algorithm for encoding and decoding the Hash-Based Message Authentication Code(HMAC)
26. Prepare a case study on Mahesh Bank cyber attack.
27. Prepare a case study of cyber attack through Facebook Account
28. Create a Presentation on " Ethical Hacking" at least 10 slides
29. Write a Program to download a file from HTTP server
30. Create a Presentation on "Security Protocols" (atleast 5 protocols)
31. Write the steps to detect the number of devices connected to wifi and block unauthorized devices
32. Prepare a case study on Crypto currency Cyber attack. (Ex: Grim Finance)
33. Write an algorithm and Program for encrypting a plain text and decrypting a cipher text using Caesar Cipher.

34. Write an algorithm and Program to implement Data Encryption Standard (DES) for encryption and decryption
35. Write RSA algorithm and Program to implement RSA Standard for encryption and decryption
36. Write the steps to analyze the E-Mail Application's security vulnerabilities.
37. What is SQL Injection? Write steps for SQL Injection attack on Insert, Update and Delete.
38. Write an algorithm and a Program to implement Diffie Hellman Key
39. Write an RSA algorithm and Program to implement digital Signature Scheme
40. Write an algorithm and Program to generate Pseudo Random numbers in a range
41. Create a Presentation on "Cyber Security Regulations" with at least 10 slides
42. Create a Presentation on "Role of International Law" with at least 10 slides
43. Create a Presentation on "Cyber Forensics" with at least 10 slides
44. Create a Presentation on "Cyber Security Standards" with at least 10 slides
45. Create a Presentation on "Cyber Security Attacks" with at least 10 slides
46. Write a Program to validate your Email address
47. Write the steps to check the devices connected to your internet and about data usage
48. Create a Presentation on "Cyber Security Policies 2013" with at least 10 slides
49. Create a Presentation on "State and Private sectors in Cyber Space" with at least 10 slides
50. Write the steps to read Email Headers and identify them as SPAM.

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – I

Programming in C Lab

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.Write the Pseudo Code and draw Flow Chart for the programs.
- Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
- External Vice-Voce is compulsory.

1. Write a program to find the largest two numbers using if and conditional operator.
2. Write a program to calculate arithmetic operations of two numbers using switch.
3. Write a program to print the reverse of a given number.
4. Write a program to print whether the given number is a prime or not.
5. Write a program to find largest and smallest elements in a given list of numbers
6. Write a program to find the sum of two matrices
7. Write a program to find the product of two matrices.
8. Write a program to print reverse of the string
9. Write a program to find the factorial of a Positive integer Using iteration and recursion
10. Write a program to find the GCD of two positive integers using iteration and recursion.
11. Write a program to demonstrate the call by value and the call by reference concepts.
12. Write a program to illustrate the use of Enumeration data type.
13. Write a program to illustrate the use of structure concept.
14. Write a program to illustrate the use of union concept.
15. Write a program to write content into a file and display contents of a file
16. Write a program to copy content of one file into another file and display the content of new file.

FACULTY OF SCIENCE
BA. (Computer Applications)
SEMESTER – II

Programming in C++ Lab

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
- Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
- External Vice-Voce is compulsory.

1. Write a program to print the sum of digits of a given number
2. Write a program to check whether the given number is Armstrong or not
3. Write a program to check whether the given string is Palindrome or not
4. Write a program to read student name, roll no, marks and display the same using class and object
5. Write a program to find area of a rectangle, circle, and square using class and object
6. Write a program to implement inline function inside and outside of a class for
    a. Finding the area of a square
    b. Finding the area of a cube
7. Write a program to implement friend function and friend class
8. Write a program to implement constructor and destructor with in a class
9. Write a program to demonstrate hierarchical inheritance.
10. Write a program to demonstrate multiple inheritances.
11. Write a program to demonstrate the constructor overloading.
12. Write a program to demonstrate static polymorphism
13. Write a program to demonstrate dynamic polymorphism.
14. Write a program to implement polymorphism using pure virtual functions
15. Write a program to demonstrate the function templates and class templates
16. Write a program to demonstrate exception handling using try, catch and finally.

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – III

Relational Data base Management Systems Lab

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.
   LibraryBooks (Accession number, Title, Author, Department, PurchaseDate, Price),
   IssuedBooks (Accession number, Borrower)

   a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
   b) Delete the record of book titled “Database System Concepts”.
   c) Change the Department of the book titled “Discrete Maths” to “CS”.
   d) List all books that belong to “CS” department.
   e) List all books that belong to “CS” department and are written by author “Navathe”.
   f) List all computer (Department=”CS”) that have been issued.
   g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.
   Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)
   Paper Details (Paper code, Name of the Paper)
   Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

   a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
   b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
   c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
   d) Find the total attendance and total marks obtained by each student.
   e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:
   Customer (CustID, email, Name, Phone, ReferrerID)
   Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)
   BicycleModel(ModelNo, Manufacturer, Style) Service (StartDate, BicycleID, EndDate)

   a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
   b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
   c) List the bicycles purchased by the customers who have been referred by Customer "C1".
   d) List the manufacturer of red colored bicycles.
   e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.
   Employee (Person_Name, Street, City)
   Works (Person_Name, Company_Name, Salary)
   Company (Company_Name, City)
   Manages (Person_Name, Manager_Name)

   a) Identify primary and foreign keys.
   b) Alter table employee, add a column "email" of type varchar(20).
   c) Find the name of all managers who work for both Samba Bank and NCB Bank.
   d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than $10,000.
   e) Find the names of all employees who live in the same city as the company for which they work.
   f) Find the highest salary, lowest salary and average salary paid by each company.
   g) Find the sum of salary and number of employees in each company.
   h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.
   Suppliers (SNo, Sname, Status, SCity)
   Parts (PNo, Pname, Colour, Weight, City)
   Project (JNo, Jname,Jcity)
   Shipment (Sno, Pno, Jno, Qunatity)

   a) Identify primary and foreign keys.
   b) Get supplier numbers for suppliers in Paris with status>20.
   c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
   d) Get suppliers names for suppliers who do not supply part P2.
   e) For each shipment get full shipment details, including total shipment weights.
   f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
   g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
   h) Get the names of cities that store more than five red parts.
   i) Get full details of parts supplied by a supplier in Hyderabad.
   j) Get part numbers for part supplied by a supplier in Warangal to a project in

Chennai.

k) Get the total number of project supplied by a supplier (say, S1).
l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – IV
Multi Media Systems Lab
Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, Pen, oval, circle, rectangle, square, pencil, brush, lasso tool
2. Create an animation using text tool to set the font, size, color etc.
3. Create an animation using Free transform tool that should use followings-
   Move Objects
   Skew Objects
   Stretch Objects
   Rotate Objects
   Stretch Objects while maintaining proportion
   Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
   Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background color etc.)Using the following tools
   Eraser tool
   Hand tool
   Ink bottle tool
   Zoom tool
   Paint Bucket tool
   Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – V
Programming in Java

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Write a program to find the largest of n natural numbers.
2. Write a program to find whether a given number is prime or not.
3. Write a menu driven program for following:
   a. Display a Fibonacci series
   b. Compute Factorial of a number
4. Write a program to check whether a given number is odd or even.
5. Write a program to check whether a given string is palindrome or not.
6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
7. Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
8. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
9. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
10. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
11. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
12. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
13. Write a java program to draw a line between two coordinates in a window.
14. Write a java program to display the following graphics in an applet window.
    a. Rectangles b. Circles
    c. Ellipses d. Arcs e. Polygons
15. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage () prints the information about the error occurring causes.
16. Write a program for the following string operations:
    a. Compare two strings b. concatenate two strings c. Compute length of a string

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – VI
Web Technologies Lab

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Write a HTML program using basic text formatting tags, <p>, <br>, <pre>.
2. Write a HTML program by using text formatting tags.
3. Write a HTML program using presentational element tags <b>, <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
4. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
5. Write a HTML program using different list types.
6. Create a HTML page that displays ingredients and instructions to prepare a recipe.
7. Write a HTML program using grouping elements and .
8. Write a HTML Menu page for Example cafe site.
9. Write a HTML program using images, audios, videos.
10. Write a HTML program to create your time table.
11. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
12. Write a HTML program to create frames and links between frames.
13. Write a HTML program to create different types of style sheets.
14. Write a HTML program to create CSS on links, lists, tables and generated content.
15. Write a HTML program to create your college web site using multi column layouts.
16. Write a HTML program to create your college web site using for mobile device.
17. Write a HTML program to create login form and verify username and password.
18. Write a JavaScript program to calculate area of rectangle using function.
19. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
20. Write a JavaScript program using switch case?
21. Write a JavaScript program to print multiplication table of given number using loop.
22. Write a JavaScript programs using any 5 events.
23. Write a JavaScript program using JavaScript built in objects.
24. Write a JavaScript program to create registration Form with Validations.
25. Write a XML Program to represent Student Data using DTD.
26. Write a XML Program to represent Data using XML Schema Definition.

Practical Syllabus

(45 hours)

1. Study of viruses and bacteria using electron micrographs (photographs).
2. Gram staining of Bacteria.
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
   Viruses: Tobacco mosaic
   Bacteria: Angular leaf spot of cotton and Rice tungro.
   Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya
   Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut.
4. Vegetative and reproductive structures of the following taxa:
   Algae: Oscillatoria, Nostoc, Volvox, Oedogonium,Chara ,Ectocarpus and Polysiphonia.
   Fungi: Albugo, Mucor,Saccharomyces, Penicillium, Puccinia and Cercospora
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut.
6. Lichens: Different types of thalli and their external morphology
7. Examination of important microbial, fungal and algal products:
   Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc.
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies).
9. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
   Bryophytes: Marchantia, Anthoceros and Polytrichum.
10. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
    Pteridophytes: Lycopodium, Equisetum and Marsilea.
11. Study of Anatomical features of Lycopodium stem, Equisetum stem and Marsilea petiole & rhizome by preparing double stained permanent mounts.

Practical Model Paper

Max. Marks: 50

Time : 3 hrs

1. Identify the given components '**A**'&'**B**' in the algal mixture .
   Describe with neat labeled diagrams & give reasons for the classifications. — 2 X 4 = 8M
2. Classify the given bacterial culture '**D**' using Gram – staining technique. — 6M
3. Take a thin transverse section of given diseased material '**E**'.
   Identify & describe the symptoms caused by the pathogen. — 8M
4. Identify the given specimens '**F**', '**G**' & '**H**' by giving reasons .
   (Fungal-1, Bacteria-1 & Viral-1) — 3 X 2 = 6M
5. Comment on the given slides '**I**' & '**J**' (Algae-1, Fungi-1) — 2 X 4 = 8M
6. Identify the given specimen '**K**' & slide '**L**' (Bryophytes & Pteridophytes) — 2 X 4 = 8M
7. Record & Viva — 6M

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Practical Syllabus (45 hours)

1. Study of Morphology (vegetative and reproductive structures) of the following taxa:
   Gymnosperms - Pinus and Gnetum.
2. Study of Anatomical features of Pinus needle and Gnetum stem by preparing double stained permanent mounts.
3. Fossil forms using permanent slides / photographs: Cycadeoidea.
   Systematic study of locally available plants belonging to the families prescribed in theory Syllabus (Minimum of one plant representative for each family)
4. Study of morphological and anatomical characteristics of locally available plant species (Eichhornia, Hydrilla, Pistia, Nymphaea, Asparagus, Opuntia, Euphorbia melii)
5. Demonstration of herbarium techniques.
6. Candidate has to submit at least 30 herbarium sheets.

Practical Model Paper

Time : 3 hrs **Max. Marks: 50**

1. Prepare a mount of the given material ' **A** ' (Hydrophytes /Xerophytes)
   Draw diagram & give reasons for identification. 8M
2. Prepare a double stained permanent mount of the given material ' **B** ' (Gymnosperms)
   Draw diagram & give reasons for identification. 10M
3. Identify the given specimens **C & D** (Gymnosperms /Xerophytes) 2 X 4 =8M
4. Identify the given slides **E&F** (Gymnosperms /Xerophytes) 2 X 4 =8M
5. Technical description of the given plant twig ' A ' 10M
6. Herbarium 3M
7. Record 3M

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B.Sc. BOTANY
II Year: Semester-III

Paper – III: Plant Anatomy and Embryology

DSC - 1C | Credits- 1

Practical syllabus (45 hours)

1. Demonstration of double staining technique.
2. Tissue organization in root and shoot apices using permanent slides
3. Preparation of double stained Permanent slides

   Primary structure: Root - *Cicer, Canna, Stem – Tridax, Sorghum*

   Secondary structure: Root – *Tridax* sp.; Stem – *Pongamia*

   Anomalous secondary structure: Examples as given in theory syllabus.
4. Anatomy of Xerophyte (*Nerium* leaf), Hydrophyte (*Hydrilla* stem).
5. Stomatal types using epidermal peels.
6. Structure of anther and microsporogenesis using permanent slides.
7. Structure of pollen grains using whole mounts – *Hibiscus, Acacia* and Grass).
8. Pollen viability test using Evans Blue – *Hibiscus*
9. Study of ovule types and developmental stages of embryo sac.
10. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot embryos using permanent slides.

Practical Model Paper

Time: 3 hrs | Max. marks: 50

1. Identify the given material "A", Prepare a double stained permanent mount of transverse section of given the given material. 15M
2. Prepare a temporary mount of epidermal peel of the given leaf material " **B** " and identify the stomatal type . 7M
3. Conduct the pollen viability test "C" (OR) Isolate the embryo from the given material . 6M
4. Identify and describe the specimens / slides with well labeled diagrams

   (a) Embryology – **D** (b) Palynology – E (c) Anatomy – F 3 X 4 = 12M
5. Record 5M
6. Viva 5M

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B.Sc. BOTANY
II YEAR: Semester-IV

Paper IV: Cell Biology, Genetics and Plant Physiology

DSC-1D — **Credits-1**

Practical Syllabus — (60 hours)

1. Demonstration of cytochemical methods: Fixation of plant material and nuclear staining for mitotic and meiotic studies
2. Study of various stages of mitosis using cytological preparation of Onion root tips
3. Study of ultra structure of cell organelles using photographs. Chloroplast, Mitochondria, Nucleus,
4. Study of Special types of Chromosomes (Polytene chromosome and Lampbrush chromosomes-Permanent slide)
5. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square analysis.
6. Chromosome mapping using test cross data
7. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4)
8. Determination of osmotic potential of vascular sap by Plasmolytic method using leaves of *Rheodiscolor / Tradescantia.*
9. Determination of rate of transpiration using Cobalt chloride method
10. Determination of stomatal frequency using leaf epidermal peelings / impressions
11. Determination of amylase activity using potato tubers by titration method
12. Separation of chloroplast pigments using paper chromatography technique
13. Estimation of protein by Biurette method
14. Mineral deficiency symptoms of Micro and Macro nutrients

Practical Model Question Paper

Time: 3 hrs — **Max. marks: 50**

1. Prepare a cytological slide of given material "A" and identify & describe any two stages with well labeled diagrams. (12M)
2. Genetics problem (10M)
3. Physiology Experiment (12M)
4. Identify and Comment on A & B (2x3 =6M)
   - A. Micronutrient / Macronutrients Deficiency symptoms
   - B. Cell organelles / Special type of Chromosomes
5. Record (5M)
6. Viva (5M)

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B.Sc. BOTANY

III Year: Semester-V

Paper-1B: Tissue Culture and Biotechnology

DSE-1B **Credits-1**

Practical Syllabus

30 Hours

Major Experiments

1. Isolation of plant DNA. (Tomato)
2. Production of synthetic seeds /Encapsulation of embryo
3. Preparation of plant tissue culture medium - MS medium
4. Isolation of protoplasts.

Minor Experiments

1. Callus induction
2. Demonstration of Micropropagation/multiple shoots
3. Anther culture
4. PCR –Demonstration
5. Study of biotechnology products: Samples of antibiotics and vaccines
6. Photographs of Gene transfer methods.
7. Instruments used in Biotechnology lab- Autoclave, Laminar air flow, Hot air oven and Incubator.
8. Demonstration of In-vitro sterilization and inoculation methods using leaf and nodal explants of tobacco, Datura, Brassica etc.

Spotting

1. Study of anther, embryo and endosperm culture, micropropagation, somatic embryogenesis & artificial seeds through photographs.
2. Study of methods of gene transfer through photographs: Agrobacterium-mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment.
4. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs.
5. Restriction digestion and gel electrophoresis of plasmid DNA.

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B.Sc. Botany
III Year: Semester-VI
Paper-2B: Economic Botany

DSE-2B | Credits-1

Practical Syllabus

30 hours

1. Study of economically important plants: Wheat, Gram, Soybean, Black pepper, Clove Tea and Cotton through specimens, sections and microchemical tests.
2. Identification and study on nutrient values of locally available vegetables, millets and cereals.
3. Study on nutrient values and commercial status of Cashew nut, Almond and Walnut.
4. Uses and health implications of groundnut, sunflower, coconut, linseed and Brassica.
5. Identification of starch granules.
6. Quantitative estimation and comparative study of proteins in millets and cereals.
7. Collection of economically important plants / vegetable plants and preparation of Herbarium.

Practical Exam - Model Paper

Time: 3 Hours | Max. Marks: 50

I. Experiments	
A) Protein test (Major Experiment)	12M
B) Starch granules (Minor Experiment)	6M
II. Spotters	4X3=12M
C) Leafy / Fruity Vegetables.	
D) Fruits / Spices.	
E) Medicinal Plants / Beverages.	
F) Wood / Timber / Fiber	
III. Herbarium	10M
IV. Viva	5M
V. Record	5M

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B.Sc. ZOOLOGY I YEAR
ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
CORE PAPER – I
ANIMAL DIVERSITY – INVERTEBRATES

Instructions: 3hr per week
No. of credits: 1

1. **Study of museum slides / specimens / models (Classification of animals up to orders)**
   - *i.* **Protozoa:** Amoeba, *Paramoecium, Paramoecium Binary fission and Conjugation, Vorticella, Entamoeba histolytica, Plasmodium vivax*
   - *ii.* **Porifera**: *Sycon, Spongilla, Euspongia, Sycon* - T.S & L.S, Spicules, Gemmule
   - *iii.* **Coelenterata:** *Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula*
   - iv. **Platyhelminthes:** *Planaria, Fasciola hepatica, Fasciola* larval forms – Miracidium, Redia, Cercaria, *Echinococcus granulosus, Taenia solium, Schistosoma haematobium*
   - v. **Nemathelminthes:** *Ascaris(Male & Female), Drancunculus, Ancylostoma, Wuchereria*
   - vi. **Annelida:** *Nereis, Aphrodite, Chaetopteurs, Hirudinaria,* Trochophore larva
   - *vii.* **Arthropoda:** Cancer, Palaemon, Scorpion, *Scolopendra, Sacculina, Limulus, Peripatus,* Larvae - Nauplius, Mysis, Zoea, Mouth parts of male & female *Anopheles* and *Culex,* Mouthparts of Housefly and Butterfly.
   - *viii.* **Mollusca:** *Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus,* Glochidium larva
   - *ix.* **Echinodermata:** *Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, Antedon,* Bipinnaria larva

2. **Dissections:**

   Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst
   Insect Mouth Parts

3. **Laboratory Record work shall be submitted at the time of practical examination**

4. An **"Animal album"** containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose

5. **Computer aided techniques should be adopted – show virtual dissections**

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B.Sc. ZOOLOGY I YEAR
ZOOLOGY PRACTICAL SYLLABUS FOR II SEMESTER
ZOOLOGY - CORE PAPER - II
ANIMAL DIVERSITY- VERTEBRATES

Instructions: 3hr per week
No. of credits: 1

Study of museum slides / specimens / models (Classification of animals up to orders)

1. **Hemichordata:** *Balanoglossus,* Tornaria larva
2. **Protochordata:** *Amphioxus, Amphioxus* T.S. through pharynx
3. **Cyclostomata:** *Petromyzon, Myxine, Ammocoetus larva*
4. **Pisces:** Sphyrna *Pristis, Torpedo, Channa, Pleuronectes, Hippocampus, Exocoetus, Echieneis, Labeo, Catla, Clarius, Auguilla, Protopterus,* Scales: Placoid, Cycloid, Ctenoid
5. **Amphibia:** *Ichthyophis, Amblystoma, Siren, Hyla, Rachophous,Bufo,Rana,* Axolotal larva
6. **Reptilia :** *Draco, Chemaeleon, Gecko, Uromastix, Vipera russelli, Naja, Bungarus, Enhydrina, Typhlops, Testudo, Trionyx, Crocodilus, Ptyas.*
7. **Aves:** Archaeopteryx, *Passer, Psittacula, Bubo, Alcedo, Columba, Corvus, Pavo;* Collection and study of different types of feathers: Quill, Contour, Filoplume, Down
8. **Mammalia:** *Ornithorhynchus, Tachyglossus, Pteropus, Funambulus, Manis, Loris,* Hedgehog

Histology: T.S. of Liver, Pancreas, Kidney, Stomach, Intestine, Lungs Artery, Vein, Bone T.S., Spinal cord.

Osteology :

1. Rabbit – Axial skeleton system (bones of Skull and Vertebral Column)
2. Varanus, Pigeon and Rabbit – Appendicular skeleton system (bones of limbs and girdles)

Dissections of *Labeo/Tilapia*:

1. Digestive system.
2. Brain, Weberian ossicles
3. V, VII, IX, X cranial nerves

Laboratory Record work shall be submitted at the time of practical examination
An **"Animal album"** containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

Computer aided virtual dissections.

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B.Sc. ZOOLOGY PRACTICAL SYLLABUS
SEMESTER-III
CORE PAPER – III: ANIMAL PHYSIOLOGY AND ANIMAL BEHAVIOUR

Instructions: 3hr per week
No. of credits: 1

1. Qualitative test of identification of carbohydrates, proteins and lipids.
2. Qualitative test of identification of ammonia, urea, uric acid (nitrogenous excretory products).
3. Zonation of gut in cockroaches.
4. Effect of pH and temperature on salivary amylase activity.
5. Study of permanent histological sections of mammalian endocrine glands: pituitary, thyroid, pancreas, adrenal glands.
6. Estimation of haemoglobin by Sahil's method.
7. Estimation of blood clotting time.
8. Estimation of total protein by Biuret's method.
9. Estimation of unit metabolism of fish.

- Laboratory record work shall be submitted at the time of practical examinations.
- Computer – aided techniques shall be adopted as per UGC guidelines.

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B.Sc. ZOOLOGY II YEAR PRACTICAL SYLLABUS
SEMESTER - IV
CORE PAPER – IV
CELL BIOLOGY, GENETICS & DEVELOPMENTAL BIOLOGY

Instructions: 3hr per week
No. of credits: 1

I. Cytology

1. Preparation and Identification of slides of Mitotic divisions with onion root tips
2. Preparation and Identification of different stages of Meiosis in Grasshopper Testes
3. Identification and study of the following slides
   i). Different stages of Mitosis and Meiosis
   ii) Lamp brush and Polytene chromosomes

II. Genetics

1. Problems on Genetics - Mendelian inheritance, Linkage and crossing over, Sex linked inheritance

III. Embryology

1. Study of T.S. of Testis and Ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8, 16 cell stages); Morula, Blastula
3. Study of chick embryos of 18 hours, 24 hours, 33 hours and 48 hours of incubation

Laboratory Record work shall be submitted at the time of practical examination

An **"Album"** containing photographs, cut outs, with appropriate write-up about Genetics and Evolution.

Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals

1. Manual of laboratory experiments in cell biology Edward, G.
2. **Freeman & Bracegirdle,** An atlas of embryology

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B.Sc. ZOOLOGY III YEAR PRACTICAL SYLLABUS
SEMESTER-V
PAPER – V(DSE – I): IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Instructions: 3hr per week
No. of credits: 1

I. Immunology

1. Demonstration of agglutination(ABO-blood grouping/Widal test) using kit
2. Demonstration of precipitation(VDRL/RPR test)using kit
3. Radial immunodiffusion using kit.
4. Histology of lymphoid organs-Spleen, Thymus, Lymphnode, Bone marrow.

II. Animal Biotechnology

1. Study the following techniques through photographs / virtual lab
   a. Identification of Vectors
   b. Identification of Transgenic animals
   c. DNA sequencing (Sanger's method)
   d. DNA finger printing
   e. Southern blotting
   f. Western blotting

2. PCR demonstration /virtual lab

- **Laboratory Record work shall be submitted at the time of practical examination**
- **Computer aided techniques should be adopted as per UGC guide lines.**

Reference Books:

1. A hand book of practical immunology-Ivan Riott
2. Animal Biotechnology – PK Gupta

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B.Sc. ZOOLOGY III YEAR PRACTICAL SYLLABUS
SEMESTER- VI
PAPER – VI (DSE-II): ECOLOGY, ZOOGEOGRAPHY AND EVOLUTION

Instructions: 1hr per week
No. of credits: 2

1. Determination of pH of Soil and Water
2. Estimation of salinity (chlorides) of water in given samples.
3. Estimation of Carbonates and bicarbonates in the given water samples.
4. Estimation of dissolved oxygen of pond water, sewage water and effluents.
5. Identification of Zooplankton from a nearby water body.
6. Study of Pond Ecosystem / local polluted site - Report submission
7. Study of at least 3 endangered or threatened wild animals of India through photograp specimens / models
8. Field visit to Zoo Park to study the management, behavior and enumeration of wild ar
9. Identification of Zoogeographical realms from the Map and identify specific fauna of respective regions.
10. Museum Study of Fossil animals: *Peripatus, Coelacanth Fish, Dipnoi fishes, Sphenodon Archeopteryx*.
11. Study of homology and analogy from suitable specimens and pictures
12. Problems on Hardy-Weinberg Law
13. Macroevolution using Darwin finches (pictures)

Laboratory Record work shall be submitted at the time of practical examination

Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals

1. **Robert Desharnais,Jeffrey Bell, 'Ecology Student Lab Manual, Biology Labs'**
2. **Darrell S Vodopich, 'Ecology Lab Manual'**

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BSC APPLIED NUTRITION & PUBLIC HEALTH I YEAR

I -SEMESTER

BS104 DISCIPLINE SPECIFIC COURSE IA- (DSC IA)

BASICS OF BIOCHEMISTRY (Practical)

PERIODS: 15 **NO. OF CREDIT-1**

I. Introduction to Qualitative and Quantitative Analysis of Nutrients

IL. Carbohydrates:

1. Qualitative analysis of Glucose
2. Qualitative analysis of Fructose
3. Qualitative analysis of Maltose
4. Qualitative analysis of Sucrose
5. Qualitative analysis of Lactose
6. Qualitative analysis of Starch

III. Proteins

l. Qualitative analysis of Proteins

IV. Minerals

1. Qualitative analysis of Minerals

BSC APPLIED NUTRITION & PUBLIC HEALTH I YEAR

II -SEMESTER

BS204 DISCIPLINE SPECIFIC COURSE IB- (DSC IB)

NUTRITIONAL BIOCHEMISTRY (PRACTICAL)

NO. OF HOURS 15 **CREDITS-1**

I. Quantitative analysis of carbohydrates

Estimation of Reducing Sugar by Benedict's method

Estimation of Fructose by Roe's Resorcinol method

II. Estimation of protein by Biuret method

III. Fats

Determination of saponification number of oil.

IV. Vitamins

Estimation of ascorbic acid by 2,6, dichlorophenol, indophenols method in lemon/cabbage / green chillies.

V. Minerals.

Estimation of Calcium in the Ash solution of Green leafy vegetable by titrimetric method

B.SC. II YEAR
III-SEMESTER
BS305, DSC-1C

PAPER III- FOOD SCIENCE & TECHNOLOGY (PRACTICALS)

Total No. Of Practicals: 7

1. Demonstration of Standard Weights & Measures, Types of cut: Julienne, Chiffonade, Diagonal, Roll cut, Cubes and flower cut.
2. Cookery Practical's in:
   i. Cereals & Pulses.
   ii. Milk & Its Products, Fleshy Foods- Meat, Fish & Eggs.
   iii. Vegetables & Fruits.
4. Estimation of Gluten
5. Evaluation of Egg quality – candle test& floating test
6. Stages of sugar cookery:
   i. Thread – Gulabjamun
   ii. Softball- Barfi
   iii. Hard crack- Chikki

B.SC. II YEAR
IV-SEMESTER
BS405, DSC-1D
PAPER-IV FAMILY & COMMUNITY NUTRITION (PRACTICAL)

CREDIT 2 **TOTAL NO. OF PRACTICAL:10**

1. Planning of diets
    a. Adult- according to sex & activity.
    b. Pregnant & lactating women.
    c. School going child.
    d. Adolescents.
    e. Old age group.

2. Preparation of diets - 4 practical sessions.
3. Formulation & preparation of weaning mix.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR
V - SEMESTER
BS504 (A) - DISCIPLINE SPECIFIC ELECTIVE 1E (DSE 1E)
CLINICAL DIETETICS (PRACTICALS)

NO. OF HOURS: 30 **CREDITS: 2**

I. Planning of diets & calculation of the nutritive value of the following diets

1.1 Routine hospital diets- clear, full fluid & soft diet.
1.2 Diet for peptic Ulcer-Soft & bland diet.
1.3 Degenerative disease- DM, atherosclerosis, HTN.
1.4 Renal disorder- Low sodium, moderate/low protein diet
1.5 Liver disorder- jaundice & cirrhosis.

II. Preparation of diets- 4 practical sessions

III. Anthropometric assessment – Height, Weight, BMI, Waist – Hip ratio, Body fat.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

V – SEMESTER,

BS504 (B) - DISCIPLINE SPECIFIC ELECTIVE- 1E (DSE 1E)

FOOD SAFETY AND QUALITY CONTROL (PRACTICALS)

NO. OF HOURS: 30 **CREDITS 2**

1. Examine and judge the appropriateness of packaging of food to ensure compliance with Indian laws for canned, bottled & tetra packs.
2. A market survey of 3 processed product food (any 3) with respect to standards (nutritionallabelling, certification etc.) to be able to judge the status of claims and misleading descriptions.
3. Prepare a record file adding the various type of packaging material, write a report on the type of packaging material, characteristics and stability, nutritional labelling of 15 packaging materials.
4. Examining food contamination by microorganism using direct examination and cultural technique.
5. Detection of artificial colour by TLC method.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH
III YEAR
VI SEMESTER
BS603 (A) - DISCIPLINE SPECIFIC ELECTIVE- DSE 1F
PUBLIC HEALTH, FOOD HYGIENE AND SANITATION (PRACTICAL)

NO. OF HOURS: 30
CREDITS: 2

I. Identification of adulterants in various classes of food samples
a) Cereals and pulses
b) Milk and milk products – milk, curd, khoa
c) Ghee, oil, butter.
d) Spices and condiments- chilli powder, turmeric, pepper, asafetida, dhania, Salt, whole and powdered spices
e) Sugar, honey and jaggery, tea coffee and miscellaneous foods

II. Preparation of 3 audiovisual aids like Flashcard/PowerPoint, poster and models related tohealth and nutrition.

III. Formulation and preparation of a low-cost nutritious recipe
IV. Field visit. Report writing on a field visit.

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

VI – SEMESTER
DSE – I (F), PAPER – VIII PRACTICALS
NUTRITION THERAPY IN CRITICAL CONDITIONS

NO. OF HOURS: 30 **CREDITS: 2**

- Planning and preparation of diets for Hyperlipidemia.
- Planning and preparation of diets for Congestive Heart Failure.
- Planning and preparation of diets for Acute Renal failure and Chronic Renal failure.
- Planning and preparation of diets for patients with chronic renal failure undergoing Dialysis.
- Planning and preparation of diets for Renal calculi.
- Planning and preparation of diets for Surgery

John Wiley & Sons.

PART-B : EXPERIMENTAL PSYCHOLOGY

Objectives:

- To teach students about understanding behaviour through experimentation in laboratory
- To train the students to analyse and report the data from experiments and see its relevance to the phenomenon

List of Experiments

Note: Conduct Eight Experiments selecting at least one from each area.

1. **Psycho-Physics**
    a. Reaction time
    b. Two-Point Threshold
    c. Method of Average Error – Muller- Lyer Illusion
    d. Method of Minimal Changes – Brightness discrimination
    e. Constant Stimuli Method – Size Constancy
2. **Attention**
    a. Span of Attention for visual stimuli
    b. Division of Attention with similar and dissimilar tasks
    c. Effect of auditory and visual distraction on Attention
3. **Learning**
    a. Trial and error Learning
    b. Insight Learning
    c. Bilateral Transfer of Learning
    d. Massed Vs Spaced Learning
    e. Part Vs Whole Learning Method
    f. Serial Learning - Positioning Effect
    g. Habit Interference
    h. Effect of Knowledge on Results

4. **Remembering & Forgetting**
    a. Measuring Retention using Recognition method
    b. Measuring Retention using Recall method
    c. Short term Memory for Digits
    d. Effect of meaning on Retention

Note: The practical exam will be conducted for 25 marks.

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PART-B: EXPERIMENTATION ON BEHAVIOURAL PHENOMENA

Objective: To enable the students to learn concepts pf Psychology through demonstration.

List of Experiments/ Tests

Note: Conduct Eight Experiments/ Tests selecting at least one from each area.

1. **Motivation**
   a. Level of aspiration
   b. Goal Setting
   c. Approval Motivation Scale by Tripathi & Tripathi (NPC Agra).

2. **Emotion**
   a. Judgement of Emotions
   b. Achenbach's Scale for Emotional and Behavioural Adjustment (YSR).

3. **Thinking**
   a. Mental Set (Luchin's Jar Problem)
   b. Problem Solving (Pyramid Puzzle)
   c. Concept formation

4. **Intelligence**
   a. Measuring Intelligence using Non - verbal Intelligence tests (SPM)
   b. Measuring Intelligence using Performance Intelligence tests (Alexander Pass along & Koh's Block Design Test)

5. **Social Behaviour**
   a. Conformity
   b. Sociometry
   c. Bogardus Scale
   d. Styles of Leadership Behaviour

Note: The practical exam will be conducted for 25 marks.

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SEMESTER – V

B.A (U.G) COMMON CORE SYLLABUS

DISCIPLINE SPECIFIC ELECTIVE PRACTICUM/DSE-V(P) (1 Credit):

PSYCHOLOGICAL TESTING (DSE-501-P)

Objective: To enable the students to learn concepts of child and educational psychology through psychological Testing.

Conduct Eight Tests from the following list:

1. Self-Concept Scale
2. Self- esteem
3. Self- Confidence
4. Bell's Adjustment Inventory
5. Kundu's Introversion and Extroversion Inventory (KIEI)
6. Cooperation
7. Competition
8. Parent- Child relationship
9. Achievement Test
10. Creativity test

Note: The practical exam will be conducted for 25 marks.

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SEMESTER – VI
B.A (U.G) COMMON CORE SYLLABUS
DISCIPLINE SPECIFIC ELECTIVE PRACTICUM/DSE-VI (P) (1 Credit):
PSYCHOLOGICAL ASSESSMENT (DSE-601-P)

Objective: To enable the students to learn the tests related to areas of adolescent and health psychology.

Conduct Eight Tests from the following:

1. Life events Scale/Student Stress Scale
2. State & Trait Anxiety
3. Loneliness Scale
4. Adolescent Depression
5. Aggression Questionnaire
6. KNPI
7. Student Problem Inventory
8. Well- being
9. Health Locus of Control
10. Type A and Type B personality test

Note: The practical exam will be conducted for 25 marks.

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B.A (U.G) COMMON CORE SYLLABUS
2019-2020
PSYCHOLOGY LABORATORY
Basic Equipment and Infrastructure requirements for Psychology Lab

- Area of the Room (Appx 1000 sq.ft)
- 10 tables (2.5 ft/3ft)
- 20 stools* (in proportion to the height of the table)
- Electrical plug points (close to every table)
- Extension cords (as per requirement)
- White Boards
- Computers with UPS and speakers (minimum 5 no's)
- Photos of Psychologists (with names)
- Notice Boards
- Glass Almirahs to store apparatus and equipment
- Lab Assistant (graduated in Psychology and trained in laboratory)
- Lab Attender (trained)
- LCD Projector

Basic Apparatus and materials in the Psychology Laboratory

- Stop watches (preferably electronic)
- Blind Folds
- Playing cards
- Wooden scales
- Wooden screens
- Tachistoscope
- Mirror drawing apparatus
- Muller Lyer Illusion boards
- Aesthesiometers
- Memory drums
- Standard Progressive matrices
- Pass Along Test
- Hanfmann-Kasanin Concept formation Test
- Division of Attention

✓ *Stools: Can be screw based ones that can be self adjusted as per the required height and necessity of the experiment.
✓ Equipment and apparatus may be procured as per the requirement in sufficient numbers.
✓ Software packages to conduct reaction time and psycho-physics experiments

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Sem-1

OPTIONAL I: PRACTICALS
CELL BIOLOGY AND GENETICS

1. Microscopic observation of cells: bacteria, fungi, plant andanimal
2. Preparation of different stages of Mitosis (onion roottips)
3. Preparation of different stages of Meiosis (grasshoppertestis)
4. Preparation of Polytene chromosome from Drosophila salivarygland
5. Monohybrid and dihybrid ratio inDrosophila
6. Monohybrid and dihybrid ratio inMaize
7. Problems on co-dominance, epistasis, two point and three point test cross,gene mapping.
8. Statistical applications of Hardy-WeinbergEquilibrium

Spotters:

1. ProkaryoticCell (Bacteria)
2. Mitochondria
3. Chlorolplast
4. PolyteneChromosomes
5. Test Cross
6. BloodGrouping
7. HemophiliaPedigree
8. CrossingOver
9. SynaptonemalComplex
10. NucleosomeModel

Sem-2

OPTIONAL I: BIOLOGICAL CHEMISTRY AND MICROBIOLOGYPRACTICALS

1. Preparation of normal, molar& molalsolutions.
2. Preparation of buffers (acidic, basic&neutral)
3. Qualitative tests of sugars, amino acids&lipids
4. Estimation of total sugars by anthronemethod
5. Separation of amino acids by paperchromatography
6. Estimation of proteins by biuret method
7. Sterilizationmethods
8. Preparation of microbiological media (bacterial, algal &fungal)
9. Isolation of bacteria by streak, spread and pour platemethods
10. Isolation of bacteria fromsoil
11. Simple staining and differential staining (gram'sstaining)
12. Bacterial growth curve
13. Technique of micrometry(ocular andstage)

Spotters:

1.Osazone
2.Globularprotein
3.Lock and key model
4.Completive inhibition
5.RUBISCO
6.ATPsynthase
7.Autoclave
8.Laminar air flow
9.Tyndalization
10. Bacterial growth curve
11. Hot airoven
12. Serial dilutiontechnique

Sem 3

OPTIONAL-I: PRACTICALS
MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY

1. Isolation of DNA from bacterial cells
2. Isolation of plasmid DNA
3. Agarose gel electrophoresis of DNA
4. Quantification of DNA by Spectrophotometer
5. Separation of proteins by SDS-PAGE
6. Polymerase Chain Reaction
7. Restriction digestion of DNA
8. Bacterial transformation

Spotters:

1. PCR
2. RNA polymerase
3. Okazaki fragments
4. Plasmid vector map
5. Prokaryotic gene
6. Eukaryotic gene
7. Splicing
8. Post transcriptional modifications
9. Point mutations
10. Lac operon
11. Tryptophan operon
12. Post translational modifications (PTMS)

Sem 4

OPTIONAL I: PRACTICALS
BIOINFORMATICS AND BIOSTATISTICS

1. Exploring web portals - NCBI, EBI &ExPASy
2. Literature search through Pubmed and Pubmed Central
3. Sequence retrieval from Genbank, ENA, Swissprot
4. Pairwise homology search by BLAST and FASTA
5. Calculation of mean, median, mode, standard deviation, variance, standard error and coefficient of variation
6. Construction of bar diagram, pie diagram, line diagram, histogram
7. Problems on hypothesis testing using Z- test, t-test andChi-square test
8. Problems on probability and probability distributions

Spotters

1. Line diagram, bar diagram & pie diagrams
2. Histogram, frequency polygon & frequency curve
3. Normal Probable curve
4. GenBank
5. DDBJ
6. SWISS-PROT
7. PROSITE
8. PIR
9. BLAST
10. Pairwise alignment
11. Multiple sequence alignment
12. PAM and BLOSUM
13. Phylogenetic tree

Sem 5

OPTIONAL-I (A): PRACTICALS
PLANT BIOTECHNOLOGY

1. Preparation of media for plant tissue culture
2. Sterilization methods of explants (seed, leaf, inter node & root) and inoculation
3. Establishment of callus cultures – from carrot/rice
4. Preparation of synthetic seeds
5. Meristem culture
6. Cell suspension cultures
7. Protoplast isolation and culture
8. *Agrobacterium* mediated transformation

Spotters

1. Callus cultures
2. Sterilization techniques: autoclave and hot air Oven
3. Somatic embryos
4. Synthetic seeds
5. Meristem culture
6. Plant regeneration
7. Cell suspension cultures
8. Isolation of protoplasts
9. Particle bombardment (Gene gun)
10. Binary or co-integrate vectors
11. Gus gene expression in transgenic plant tissue
12. Golden Rice

Sem 6

OPTIONAL-I (B): PRACTICALS
ENVIRONMENTAL BIOTECHNOLOGY

1. Estimation of BOD in polluted water samples
2. Estimation of COD in polluted water samples
3. Estimation of total dissolved solid in waste water samples
4. Determination of quality of water sample (Coliform test)
5. Isolation of microorganisms from polluted soil/industrial effluents
6. Production of hydrogen or biogas
7. Identification and characterization of bioremediation microorganisms
8. Production of microbial biofertilizer

Spotters

1. Air/water/soil pollution
2. Municipal waste
3. Industrial effluents
4. Algal blooms
5. Green house effect
6. Plant biomass
7. Waste water treatment plant
8. Organic composting
9. Biogas plant
10. Xenobiotic degrading bacteria
11. Phytoremediation
12. Microbial biofertilizers