DR APJ ABDUL KALAM UNIVERSITY, INDORE

Scheme of Examination
B.Sc.
Semester-I
(w.e.f. July 2016 Onwards)

(Non Grading)

Course Name	Subject	Theory Max. Marks				Practical Max Marks		Total
		Internal		External		Max Marks	Min Marks	
		Max	Min	Max	Min			
Foundation Courses	HINDI+ ENGLISH **FCS 101 HE**	10+05=15	05	50+35=85	28	-	-	100
	E-SHIP **FCS 102 EP**	15	05	35	12	-	-	50
B.Sc. Computer Science	COMPUTER SCIENCE **BSS 101 T**	15	05	85	28	50	17	100
	COMPUTER SCIENCE **BSS 101 P**	-	-	-	-	50	17	50
	PHYSICS **BSP103 T**	15	05	85	28	50	17	100
	PHYSICS **BSP103 P**	-	-	-	-	50	17	50
	MATHEMATICS **BSM 101 T**	25	08	125	42			150
Total								600

DR APJ ABDUL KALAM UNIVERSITY, INDORE

B.Sc. Under Graduate Semester wise Syllabus

(w.e.f. session 2016 Onwards)

Class: - B.Sc.

Semester: - I Semester

Subject: - Computer science (BSS 101T)

Paper: - **COMPUTER ORGANIZATION**

Marks 85+15 CCE

UNIT I

Evolution of Computers and Computer Generations, Computer Classification Processing speed of a computer, Technology Trends, Measuring Computer Performance, MIPS.von Neumann Machine Architecture, Functional Units and Components in Computer Organization, Computers – Block diagram, Memory addressing capability of a CPU, Word length of a computer Basic components of a Digital Computer - Control unit, ALU, IO Subsystem of a Computer, Bus Structures, Uses of Program Development Tool, Editor, Compiler, Assembler, Interpreter)

UNIT II

Number systems – Decimal Number system, Binary number system and Hexa-decimal number system,1's & 2's complement, Representation of Positive and Negative Numbers Binary Fixed- Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow. Floating Point Representation, Codes, ASCII Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates. Counters, Registers, Shift Registers

UNIT III

Storing data and Program in Memory, Memory Hierarchy in a Computer Internal Organization of Semiconductor Main Memory Chips, Semiconductor Memory RAM and ROM Auxiliary Memory Peripheral Devices, Secondary Storage Memory, Magnetic Memories and Hard Disk Optical Disks and CD Memories

UNIT IV

Algorithm, Flowchart, Logic Development & Problem solving. Algorithms for simple problems involving conditional manipulation of memory variables The 8085 Programming Model, 8085 Hardware Model, Block Diagram and uses of Registers, Accumulator, Flag, Program counter and stack pointer How to write, assemble and execute a simple program: Illustrate Program –Adding two hexadecimal numbers.

UNIT V

Input Devices, keyboard, Mouse, Output Devices, CRT Monitor, LCD Displays, Touch Screen Displays Print Devices Multiprocessor and Multi core Architecture Flynn Classification SISD, SIMD, MISD, MIMD.

TEXT BOOK

Computer Fundamentals – B. Ram – New Age International Publishers

REFERENCE BOOKS

1. Rashid Sheikh, "**Computer Organization & Architecture**"
2. William Stallings, "**Computer Organization & Architecture**", Pearson.
3. BARTEE, ***"Digital Computer Fundamentals"*** TMH Publication
4. *MORRIS MANO,* ***"Computer System Architecture"*** PHI
5. W. Hayes, Computer Architecture, McGraw-Hill

Problems Solving Skills Book

1. Nicholas P Carter, Schaum Outline on Computer Architecture and Organization, TMH, Special Indian Edition Adaptation,, 2010

Note: Faculty teaching the subject will also given to students the besides 50 hours teaching the appropriate exercises and assignments. .

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B.Sc. Under Graduate Semester wise Syllabus

(w.e.f. session 2016 onwards)

Class: - B.Sc.

Semester: - I Semester

Subject: - Computer science (BSS 101P)

Paper: - **Practical on Comp. Org. and MS-Office**

Practical Session -01 - Practical on MS-OFFICE:

WINDOWS

1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties
3. Adding and removing software and hardware
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items
7. Search file

MS-Word

1. Creating & Editing Document
2. Formatting Document
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool,
4. Page Formatting, Page Border, Background,
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS-Excel

1. Creating & Editing Worksheet, Fill Handle
2. Use Formulas and Functions
3. Preparing Charts

MS-PowerPoint

1. Creating, Manipulating & Enhancing Slides,
2. Inserting Organizational Charts, Excel Charts
3. Using Word Art
4. Putting Animations and Sounds
5. Inserting Animated Pictures
6. Inserting Recorded Sound Effect

Computer Organization

Practical Session 02 - Using Debug/MASM/TASM

To Study of DEBUG visit the following website:
http://kipirvine.com/asm/debug/Debug_Tutorial.pdf
Practical on Flip-flops, Logic Gates and Registers.
Do the following tasks: -

1. Add 3, 4 and 7 and display result in only AX register
2. Add 3, 8 and 9 using three different registers and show result of all registers
3. Take dump of location 110 and display
4. Add your name and date of birth at location 120. Move only the date of birth to location 200. Search through 100 to 300 to find the date
5. Move 3 to AX register and multiply it with 3 to show the result.
6. Use int 21 in all your assembled codes
7. Use comparison command to compare the date of birth at location 120 and 100.

Write complete assembly codes for the following tasks. Submit code and output trace:

1. A program that displays your name and date of birth.
2. A program that adds the following numbers
a. 1000
b. 4000
c. 1700

3. A program that does the following a. Add two numbers X and Y
b. Multiply the result with C c. Increment the result

4. A program that subtracts

a. Two numbers X and Y such that X>Y
b. Two numbers X and Y such that Y>X

5. A program that divides

a. Two numbers X and Y such that X%Y = 0
b. Two numbers X and Y such that X%Y != 0
c. Two numbers X and Y such that Y =

Dr. A.P.J. Abdul Kalam University, Indore (M.P)

B.Sc. Under Graduate Semester wise Syllabus
(W.e.f. session 2016 onwards)

Class: - B.Sc.

Semester: - I Semester

Subject: - Physics (BSP103T)

Marks 85+15 CCE

Unit-I: Mathematical Physics

Addition, subtraction and product of two vectors; Polar and axial vectors and their examples from physics; Triple and quadruple product (without geometrical applications); Scalar and vector fields; Differentiation of a vector; Repeated integral of a function of more than one variable; Unit tangent vector and unit normal vector; Gradient, Divergence and Curl; Laplacian operator; Idea of line, surface and volume integrals; Gauss', Stokes' and Green's Theorems, Jacobian Application.

Unit-II: Mechanics

Kinematics: Displacement, Time and Average Velocity (x-t graph illustrations to be included); Instantaneous Velocity (Finding of velocity on an x-t graph), Average and Instantaneous Acceleration (Illustration with v–t and a–t graph), Motion with Constant Acceleration (Illustration with a–t and v–t graph), Freely Falling Bodies (Up and down motion in fall with y-t and vy-t graph), Velocity and Position by Integration, Position and Velocity Vectors, Acceleration Vector, Components of velocity and acceleration in different coordinate systems.

Newton's Laws of motion and its explanation with problems, various types of forces in nature (explanation), Pseudo Forces (e.g. Centrifugal Force), Coriolis force and its applications. Motion under a central force, Derivation of Kepler's laws. Gravitational law and field, Potential due to a spherical body. Gauss & Poisson's equation of Gravitational self-energy. System of particles, Centre of mass and reduced Mass. Elastic and inelastic collisions.

Unit-III: General Properties of Matter

Elasticity: Hook's law and coefficient of elasticity; Young's modulus, Bulk modulus and Modulus of rigidity; Work done during longitudinal strain, volume strain, and shearing strain; Poisson's ratio; Relation between three elastic moduli (Y, η, K); Determination of Y of rectangular thin bar loaded at the centre; Torsional oscillations, Torsional rigidity of a wire, to determine η by torsional oscillations.

Surface Tension: Surface Tension, Angle of Contact, Capillary Rise Method; Energy required to raise a liquid in capillary tube; Factors affecting surface tension; Jeager's method for Determination of surface tension; Applications of Surface Tension.

Viscosity and Fluid Mechanics: Concept of Viscous Forces and Viscosity; Steady and Turbulent Flow, Reynolds's number; Equation of Continuity; Bernoulli's Principle; Application of Bernoulli's equation - (i) Speed of Efflux (ii) Venturimeter (iii) Aspirator Pump(iv) Change of plane of motion of a spinning ball.

Unit-IV: Oscillations

Concept of Simple, Periodic & Harmonic Oscillation with illustrations; Differential equation of harmonic oscillator; Kinetic and potential energy of Harmonic Oscillator; Oscillations of two masses connected by a spring; Translational and Rotational motion, Moment of Inertia and their Product,Principal moments and axes, Motion of Rigid Body, Euler's equation.

Unit-V:

Relativistic Mechanics: Michelson-Morley experiment and its outcome; Postulates of Special Theory of Relativity; Lorentz Transformations. Simultaneity and order of events; Lorentz contraction; Time dilation; Relativistic transformation of velocity, frequency and wave number; Relativistic addition of velocities; Variation of mass with velocity.

Earlier Developments in Physics up to 18th Century: Contributions of Aryabhatt, Archimedes, Nicolus Copernicus, Galileo Galilei, Huygens, Robert Hooke, Torricelli,Vernier, Pascal, Kepler, Newton, Boyle, Young, Thompson, Coulomb, Amperes, Gauss, Biot-Savarts, Cavendish, Galvani, Franklin and Bernoulli.

Useful links:

1. http://en.wikipedia.org/wiki/History of Physics

2. http://en.wikipedia.org/wiki/Nobel Prizes in Physic

Reference Books:

1. University Physics: Sears and Zeemansky, XIth edition, Pearson Education

2. Concepts of Physics: H.C. Varma, Bharati Bhavan Publishers

3. Problems in Physics: P.K. Srivastava, Wiley Eastern Ltd.

4. Applied Fluid Mechanics: Mott Robert, Pearson Benjamin Cummir, VIth Edition,

Pearson Education/Prentice Hall International, New Delhi

5. Properties of Matter: D.S. Mathur, Shamlal Chritable Trust, New Delhi

6. Mechanics: D.S. Mathur, S Chand and Company, New Delhi-5.

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B.Sc under Graduate Semester wise Syllabus

(w.e.f. session 2016)

Class: - B.Sc.

Semester: - I Semester

Subject: - Mathematics (BSM 101T)

Paper: - Matrix Theory, Calculus and Geometry

Unit-1

Rank of a matrix, Eigen values, eigen vectors, Characteristic equation of a matrix, Cayley Hamilton theorem and its use in finding inverse of matrix, Application of matrix to a system of linear (both homogenous and non - homogenous) equations, Theorems on consistency and inconsistency of a system of linear equations, Solving the linear equations with three unknowns.

Unit-2

Relation between the roots and coefficients of a general polynomial equation in one variable, Transformation of equations, Descarte's rule of signs, De Moivre's theorem and its applications, Direct and inverse circular and hyperbolic functions, Expansion of trignometrical function.

Unit-3

Continuity of function of one variable, Properties of continuous function, Uniform continuity, Chain Rule of differentiability, Mean value theorems and their geometrical interpretations, Darboux's Intermediate Value Theorem for derivatives.

Unit-4

Integration of irrational algebraic functions and transcendental functions, Reduction formulae, Definite Integrals.

Unit-5

Equation of cone with given base, generators of cone, condition for three mutually perpendicular generators, Right circular cone, Equation of Cylinder and its properties, Right circular cylinder, enveloping cylinder and their properties.

Texts Books:

1. S.L. Loney – Plane Trigonometry Part II
2. K.B. Datta – Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd. New Delhi 2000
3. Chandrika Prasad – A Text Book on Algebra and Theory of Equations, Pothishala Pvt. Ltd. Allahabad
4. N. Saran & R.S. Gupta: Analytical Geometry of Three dimensions. Pothishala Pvt. Ltd. Allahabad
5. S.L. Loney, Elements of Coordinate Geometry, Macmillan and Co. London.
6. Gorakh Prasad – Differential Calculus, Pothishala pvt. Ltd. Allahabad
7. Gorakh Prasad – Integral Calculus, Pothishala pvt. Ltd. Allahabad
8. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & sons, 1999.