

Syllabus for SYJC (Science)

SUBJECT : ENGLISH

Section-1(Prose)

- 1.1 An Astrologer's Day R.K.Narayan
- 1.2 On saying Alfred George Gardiner
- 1.3 The Cop and Anthem O'Henry
- 1.4 Big Data – Big Insight
- 1.5 The New Dress Virginia Woolf
- 1.6 Into the Wild Kiran Purandare
- 1.7 Why we Travel Siddharth Pico Raghavan Iyer
- 1.8 Voyaging Towards Excellence Achyut Godbole

Section-2 (Poem)

- 2.1 Song of the Open Road..... Walt Whitman
- 2.2 Indian Weavers Sarojini Naidu
- 2.3 The Inchape Rock.....Robert Southey
- 2.4 Have you Earned your Tomorrow Edgar Guest
- 2.5 Father Returning Home..... Dilip Chitre
- 2.6 Money William H. Davies
- 2.7 She Walks in Beauty.....George Byron
- 2.8 Small Towns and Rivers Mamang Dai

Section-3 (Writing Skills)

- 3.1 Summary Writing
- 3.2 Do Schools Really Kill Creativity? (Mind –Mapping)
- 3.3 Note- Making
- 3.4 Statement of Purpose
- 3.5 Drafting a Virtual Message
- 3.6 Group Discussion

Section-4(Genre-Drama)

- 4.1 History of Novel
- 4.2 To Sir, with Love.....E.R. Braithwaite
- 4.3 Around the World in Eighty Days Jules Gabriel Verne
- 4.4 The Sign of Four..... Sir Arthur Ignatius Conan Doyle

विषय :मराठी

विभाग १

पाठ, कविता

- बहु असोत सुंदर... (काव्यानंद)..... श्री. कृ. कोल्हटकर
१. वेगवशता प्राचार्य शिवाजीराव भोसले
२. रोज मातीत (कविता) कल्पना दुधाळ
३. आयुष्य... आनंदाचा उत्सव..... शिवराज गोर्ले
४. रे थांब जरा आषाढघना (कविता) बा. भ. बोरकर
५. वीरांना सलामी अनुराधा प्रभुदेसाई
६. रंग माझा वेगळा (कविता)..... सुरेश भट
- * आत्मविश्वासासारखी शक्ती नाही (नमुना गद्य आकलन) भारतरत्न डॉ. बाबासाहेब आंबेडकर

विभाग २

पाठ, कविता

७. विंचू चावला... (भारूड).....संत एकनाथ
८. रेशीमबंध..... डॉ. यू. म. पठाण
९. समुद्र कोंडून पडलाय (कविता) वसंत आबाजी डहाके
१०. दंतकथा वसंत सबनीस
११. आरशातली स्त्री (कविता) हिरा बनसोडे
१२. रंगरेषा व्यंगरेषा मंगेश तेंडुलकर
- * जयपूर फूटचे जनक (नमुना गद्य आकलन) डॉ. बाळ फोंडके

विभाग ३

साहित्यप्रकार

कथा- साहित्यप्रकार-परिचय

१. शोध - व. पु. काळे
२. गढी - डॉ. प्रतिमा इंगोले

विभाग ४

उपयोजित मराठी

१. मुलाखत
२. माहितीपत्रक
३. अहवाल
४. वृत्तलेख (फिचर रायटिंग)

विभाग ५

व्याकरण व लेखन

वाक्यप्रकार व वाक्यरूपांतर,

समास,

प्रयोग,

अलंकार

- लेखन : निबंधलेखन

विषय : हिंदी

- १) नव निर्माण
- २) निराला भाई
- ३) सच हम नहीं सच तुम नहीं
- ४) आदर्श बदला
- ५) अ)गुरबाणी
आ)वृंद के दोहे
- ६) पाप के चार हथियार
- ७) पेड़ होने का अर्थ
- ८) सुनो किशोरी
- ९) चुनिंदा शेर
- १०) ओजन विघटन का संकट
- ११) कोख जाया
- १२) सुन रे सखिया कजरी
- १३) कनुप्रिया
- १४) पल्लवन
- १५) पिकचर लेखन
- १६) मैं उद्घोषक
- १७) ब्लॉग लेखन
- १८) प्रकाश उत्पन्न करने वाले जीव

मुहावरे

भावार्थ

परिभाषिक शब्द

रसास्वादन के मुद्दे

SUBJECT : MATHEMATICS

PART-I

NAME OF CHAPTERS

1. Mathematical Logic
2. Matrices
3. Trigonometric Functions
4. Pair of Straight Lines
5. Vectors
6. Line and Plane
7. Linear Programming

PART-II

NAME OF CHAPTERS

1. Differentiation
2. Applications of Derivatives
3. Indefinite Integration
4. Definite Integration
5. Application of Definite Integration
6. Differential Equation
7. Probability Distributions
8. Binomial Distributions

NAME OF PRACTICALS

1. Logic
2. Matrices
3. Trigonometric Functions – I
4. Trigonometric Functions – II
5. Pair of straight lines
6. Vectors and three-Dimensional Geometry
7. Line and plane
8. Linear Programming

9. Applications of Derivatives – I
10. Applications of Derivatives – II
11. Definite Integration – I
12. Definite Integration – II
13. Applications of definite integration
14. Differential Equations
15. Probability Distributions
16. Binomial Distributions

SUBJECT: PHYSICS

NAME OF CHAPTERS

1. ROTATIONAL DYNAMICS
2. MECHANICAL PROPERTIES OF FLUIDS
3. KINETIC THEORY OF GASES AND RADIATION
4. THERMODYNAMICS
5. OSCILLATIONS
6. SUPERPOSITION OF WAVES
7. WAVE OPTICS
8. ELECTROSTATICS
9. CURRENT ELECTRICITY
10. MAGNETIC FIELDS DUE TO ELECTRIC CURRENT
11. MAGNETIC MATERIALS
12. ELECTROMAGNETIC INDUCTION
13. AC CIRCUITS
14. DUAL NATURE OF RADIATION AND MATTER
15. STRUCTURE OF ATOMS AND NUCLEI
16. SEMICONDUCTOR DEVICES

PRACTICALS

NAME OF EXPERIMENTS

1. SPRING MASS OSCILLATOR
2. SURFACE TENSION
3. NEWTON'S LAW OF COOLING
4. SONOMETER I LAW OF LENGTH
5. SONOMETER II LAW OF TENSION
6. RESONANCE TUBE
7. LAWS OF RESISTANCES USING METER BRIDGE
8. RESISTANCE OF GALVANOMETER BY KELVIN'S METHOD
9. E_1/E_2 USING POTENTIOMETER
10. CHARACTERISTICS OF ZENER DIODE
11. STUDY OF LOGIC GATES
12. CHARACTERISTICS OF TRANSISTOR

LIST OF ACTIVITIES

1. EFFECT OF DETERGENT ON SURFACE TENSION
2. SECONDS PENDULUM
3. MELDE'S EXPERIMENT
4. FACTORS AFFECTING THE RATE OF LOSE OF HEAT OF LIQUID
5. HOUSEHOLD CIRCUIT
6. VARIATION OF POTENTIAL DROP
7. USE OF MULTIMETER
8. LIGHT DEPENDENT RESISTOR

SUBJECT: CHEMISTRY

NAME OF CHAPTERS

- 1) Solid State
- 2) Solutions
- 3) Ionic Equilibria
- 4) Chemical Thermodynamics
- 5) Electrochemistry
- 6) Chemical Kinetics
- 7) Elements of Groups 16, 17 and 18
- 8) Transition and Inner transition Elements
- 9) Coordination Compounds
- 10) Halogen Derivatives
- 11) Alcohols, Phenols and Ethers
- 12) Aldehydes, Ketones and Carboxylic acids
- 13) Amines
- 14) Biomolecules
- 15) Introduction to Polymer Chemistry
- 16) Green Chemistry and Nanochemistry

PRACTICALS

NAME OF EXPERIMENTS

Quantitative estimation [Long experiment]

- 1] To determine the concentration in terms of molarity of KMnO_4 by titrating it against (0.1 M) standard solution of oxalic acid.
- 2] To determine the concentration in terms of molarity of KMnO_4 by titrating it against (0.1 M) standard solution of ferrous ammonium sulphate.

Chemical Kinetics [Long experiment](Any 2)

- 3] To study the effect of concentration on rate of reaction between $\text{Na}_2\text{S}_2\text{O}_3$ and HCl .
- 4] To study the effect of temperature on rate of reaction between $\text{Na}_2\text{S}_2\text{O}_3$ and HCl .
- 5] To study the rate of reaction between KIO_3 and $\text{Na}_2\text{S}_2\text{O}_3$ using starch as an indicator.

Electrochemistry

- 6] Study of variation of cell potential of cell $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$ with change in concentration of electrolyte CuSO_4 and ZnSO_4 at room temperature.

Thermochemistry [Short experiment] (Any 3)

- 7] To determine the enthalpy change of dissolution of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ in water at room temperature.
- 8] To determine the enthalpy of neutralization of HCl and NaOH .
- 9] To determine the enthalpy change of displacement of Cu from CuSO_4 by Zn .
- 10] To determine the enthalpy change during the interaction between acetone and chloroform.

Inorganic preparations [Short experiment] (Any 2)

- 11] To prepare a pure sample of ferrous ammonium sulphate.
- 12] To prepare a pure sample of potash alum.
- 13] To prepare a pure sample of potassium trioxalatoferrate (III) complex.

Organic preparations [Short experiment] (Any 2)

- 14] To prepare dibenzalacetone.
- 15] To prepare 2- naphthol aniline dye.
- 16] To prepare acetanilide from acetyl chloride.
- 17] To prepare p- nitro acetanilide from acetanilide.

Identification of functional group (Any 4 compounds)

- 18] Test for functional group present in given organic compound.

Characteristic test of carbohydrates , proteins, fats and oil in pure sample and their detection in given food stuffs.(Any one of each)

19] Characteristic test of carbohydrates , proteins, fats and oil.

Qualitative analysis for 2 acidic radicals.

20] Detection of 2 acidic radicals from given inorganic salt mixture.(Any 3 water soluble salt mixture)

Qualitative analysis for 2 basic radicals.

21] Detection of 2 basic radicals from given inorganic salt mixture. (Any 3 water soluble salt mixture)

LIST OF ACTIVITIES [Any 4]

- 1] Preparation of phthalic anhydride from phthalic acid.
- 2] Preparation of succinic anhydride from succinic acid.
- 3] Preparation of methyl salicylate.
- 4] Measurement of e.m.f. of commercial cells by using voltmeter (any 4 cells).
- 5] Identification of Resin identification code on given different plastic materials.(any 2 plastic material)
- 6] Preparation of 100 ml 0.1 M standard solution of ferrous ammonium sulphate.(Mohrs salt)

SUBJECT: BIOLOGY

NAME OF CHAPTERS

1. Reproduction in Lower and Higher Plants.
2. Reproduction in Lower and Higher Animals.
3. Inheritance and Variation.
4. Molecular Basis of Inheritance.
5. Origin and Evolution of Life.
6. Plant Water Relation.
7. Plant Growth and Mineral Nutrition.
8. Respiration and Circulation.
9. Control and Co-ordination.
10. Human Health and Disease.
11. Enhancement of Food Production.
12. Biotechnology.
13. Organisms and Populations.
14. Ecosystem and Energy Flow.
15. Biodiversity, Conservation and Environmental Issues.

PRACTICALS

NAME OF EXPERIMENTS

Part A-Experiments to be performed by students

1. Study of osmosis by potato ismoscope.
2. Study of plasmolysis in epidermal peel.
3. Study of structure and distribution of stomata on upper and lower leaf surface.
4. Study of pollen germination on slide.
5. Study of soil samples from two locations with reference to texture and pH.
6. Study of suspended particulate matter in air at two different locations.
7. Study of water samples from different locations with reference to clarity,pH & microbes.
8. Study of population density & frequency of plants by quadrant method.
9. Isolation of DNA form given sample.
10. Dissect & display floral whorl , T.S./V.S anther for pollens and ovary for ovules.
11. To study wing shape eye colour in Drosophila.
12. To examine the presence or absence of Barr body in given sample.
13. Detection of commonly used adulterants in milk.
14. To detect presence of strach used as adulterant in milk.
15. To study various syndromes & karyotypes in human beings.

Part B-Demonstration Experiments (Spotting's)

1. Comparative study of rate of transpiration using four leaf experiment.
2. Seperation of plant pigments by paper chromatography.
3. Study of imbibition by using dry seeds or raisins.
4. Study of flower adaptations for pollination by insects and wind.
5. Study of V.S. of anatropous or orthotropus ovule via chart or slide.
6. Study of stages of meiosis in onion flower buds via permanent slides.
7. Study of T.S. testis, T.S. of ovary and V.S. of blastula via permanent slides.
8. Study of plants found in xerophytic & aquatic habitat with their adaptations.
9. Demonstration of hybridization technique (bagging, tagging & emasculation).
10. Pedigree charts for rolling tongue, widow's peak, colourblindness, blood group.
11. Morphological adaptations of animals living in xeric & aquatic conditions.
12. Identify common pathogens (plasmodium, enatmoeba, ascaris & ringworm).
13. Study of parts of human eye, ear and brain with the help of model or chart
14. Observe the perpered blood smear slide to identify different blood cells.

SUBJECT: COMPUTER SCIENCE

NAME OF CHAPTERS

CS-I

1. Operating system
2. Data structures
3. C++
4. HTML

CS-II

1. Introduction to microprocessors & organization of 8085
2. Instruction set & programming of 8085
3. Introduction to INTEL X-86 family
4. Introduction to Microcontroller
5. Networking Technology

NAME OF PRACTICALS

CS-I

(C++ Programs):

(HTML Programs):

1	Sorting Array using Bubble Sort Method	1	Creating Webpage with Background Colour & Hyperlink
2	Exchanging Data of two Integers	2	Working with Tables & Images in HTML
3	Binary Search Program	<i>(VB Programs):</i>	
4	Printing Start & End Address of Elements		
5	Reversing String	1	Calculating Area of Circle & Rectangle
6	Implementing Class Ratio	2	To Add, Delete & Sort the List
7	Implementing Class Circle	3	Accepting Marks & Displaying
8	Constructor & Destructor	4	Creating Text Editor
9	Overloading Operator	5	Accept Information & Check Validity
10	Conversion Routine	6	Sum of Hundred Numbers using Do Loop
11	Implementing Inheritance	7	Design Calculator
12	Virtual Function	8	Creating Graphic Editor
13	File Handling		

CS-II

1	Introduction to Microprocessor	13	Find first Occurrence
2	Instruction Set of 8085	14	Find how many times data appears
3	Addition of Two 8-bit numbers	15	Count Zero
4	Addition of Two 8-bit BCD numbers	16	Multiply two nibbles
5	Addition using DAD	17	Display Zero Flag
6	Multiply in two number	18	Convert Hexadecimal to ASCII
7	Add BCD contents of block of memory	19	Exchange the Content of two blocks
8	Divide two numbers	20	Transfer data in reverse order
9	Find Smallest & Greatest numbers	21	Monitor Subroutine
10	Find Odd & Even numbers	22	Microprocessor Kit use as Calculator
11	Subtract two numbers	23	Flasing message program using monitor sub routine
12	Sort Data		

SUBJECT: INFORMATION TECHNOLOGY (97)

NAME OF CHAPTERS

1. Advanced Web Designing
2. Introduction to SEO (Search Engine Optimization)
3. Advanced Javascript
4. Emerging Technologies (IOT, Cloud Computing ,AI,5G)
5. Server-Side Scripting (PHP)
6. E-Commerce And E-Governance

SKILL ORIENTED PRACTICALS (SOP)

1. Advanced Web Designing

SOP 1 : Creation of website using HTML5

Create a website using HTML5 and CSS using any 4 CSS properties. Write a code for 2 separate pages having different file names such as first page as Index. html and second page as page2.html. Use any theme such as college profile or company profile etc. Every page must contain proper Meta information and design web page as follows-

- 1) The index page must contain a heading which is highest among other text on pages and must be at centre of the page. There must be a paragraph which introduces general information about the theme chosen must have at least 3 physical style tags and one image with alternate text. This page must be connected to other two pages with proper navigational links.
- 2) The 2nd page must contain the feedback or enrolment form related with theme chosen with features of HTML5. The form must contain text element and email address of the company or person. Include the submit button.

SOP 2 : Create a webpage using HTML and CSS code to design a web page as the layout displayed below.

The top section will display the heading , 'Tourist places' in header. The section on the left has list of cities. The right hand side displays tourist places of any one of the city .

Use Inline style sheet in the top section to display background color for the text 'Tourist places'. Use internal stylesheet for the left and right section with background color and font styles.

Tourist places	
City 1. Pune 2. Banglore 3. Hyderabad 4. Delhi	Tourist places in Pune • Shanivarwada • Kelkar Museum • Sinhgad fort

SOP 3 : Create a website using HTML and CSS code to design webpages as follows -

The first webpage will accept the name of the traveller, date of travel , telephone number . It also has submit button as an image .

The second webpage has information about the name of transporter, time , seat no and destination displayed one below the other in the form of unordered list as

Name of transporter – Air Asia

Time - 09:30 am

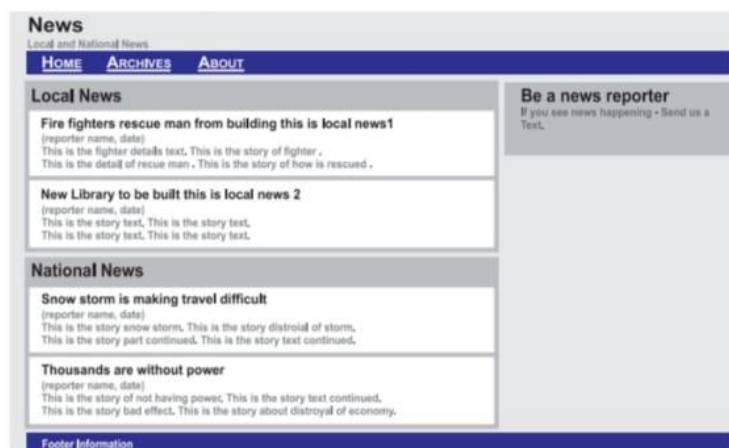
Seat no – B39

Destination - Delhi

Both pages should be interlinked. Create external stylesheet with relevant tags.

SOP 4 : Creation of website using HTML5 and CSS.

Create a webpage as given layout use <nav>,<header>,<footer>,<aside>,<article> with CSS.



SOP 5 : Use of Audio on web pages using HTML5.

Create a webpage named audio.html to set an audio file in web page with controls such that it uses HTML5 elements. The audio file must play as soon as the webpage loads in browser and it will start over again, every time when it is completed.

Create another webpage named audio1.html which provides multiple source file formats for the same audio file that plays a sound automatically with controls. The browser should display the message with appropriate attribute, when audio file is not supported by browser. The code must incorporate the list of sound files formats (like wav, MP3 or ogg etc).

SOP 6 : Use of video on web pages using html5.

Create a webpage named video.HTML to display a video file on web page and plays automatically with controls. The dimension of video area should be 150 * 150 pixels.

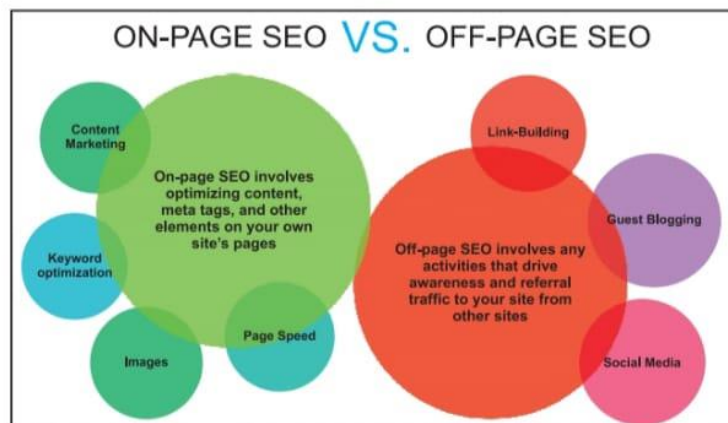
Create another webpage which provide multiple source file formats for the same audio file that plays a sound automatically with controls. The dimension of video area should be 100*100 pixels. The browser should display the message with appropriate attribute when audio file is not supported by browser. The code must incorporate the list of video files formats (like webM, MP4 or ogg etc).

SOP 7 : Navigation on an image using Client side image Mapping in web page using html 5.

- Create a webpage named imagemap. html with an inserted image having jpeg, png or gif extension. Create 3 different shapes (like rectangle, circle and polygon) which do not overlap. Note the co-ordinates making use of Ms-Paint/GIMP/IrfanView/Pinta. Each shape should be mapped or navigate with a different URL that should navigate to a local webpage.

SOP 8 : Use of SEO methodology to improvise the website.

- Select a website.
- Use an appropriate SEO software and list out the page optimization requirements.
- Write down at least 4 suggestions to optimise the web pages.
- Write importance of SEO.



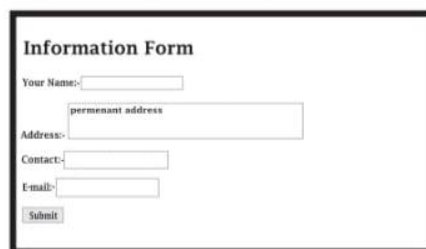
2. Javascript

SOP 1 : Create a web page in HTML having a white background and two Button Objects. Write code using JavaScript such that when the mouse is placed over the first button object without clicking, the color of the background of the page should change after every __ seconds. There should at least be 7 different and visibly distinct background colors excluding the default color. When the second button object is clicked, appropriate message should be displayed in Browsers status bar.

Create another web page using JavaScript where the background color changes automatically after every ____ seconds. This event must be triggered automatically after the page gets loaded in the browser. There should at least be 7 different and visibly distinct background colors. When the page is unloaded, the appropriate alert message should be displayed.

SOP 2 : Create JavaScript program for the following form validations. Make use of HTML5 properties to do the following validations :

- 1) Name, address, contact number and email are required fields of the form.
- 2) Address field should show the hint value which will disappear when field gets focus or key press event.
- 3) Telephone number should be maximum 10 digit number only.
- 4) Email field should contain valid email address, @ should appear only once and not at the beginning or at end. It must contain at least one dot(.).
- 5) Make use of pattern attribute for email to accept lowercase, uppercase alphabets, digits and specified symbols.



The image shows a web form titled "Information Form". It contains the following fields and elements:

- "Your Name:" followed by a text input field.
- "Address:" followed by a text input field with the placeholder text "permenant address".
- "Contact:" followed by a text input field.
- "Email:" followed by a text input field.
- A "Submit" button at the bottom.

SOP 3 : Create event driven JavaScript program for the following. Make use of appropriate variables, JavaScript inbuilt string functions and control structures.

- To accept string from user and count number of vowels in the given string.

SOP 4 : Create event driven JavaScript program for the following. Make use of appropriate variables, JavaScript inbuilt string functions and control structures.

- To accept string from user and reverse the given string and check whether it is palindrome or not.

SOP 5 : Create event driven JavaScript program to convert temperature to and from Celsius, Fahrenheit.

Formula: $c/5 = (f-32)/9$

[where c=Temperature in Celsius and f=Temperature in Fahrenheit.]

Output format : 40 Celsius=104 Fahrenheit

45 Fahrenheit = 7.22222222 Celsius

SOP 6 : Create JavaScript program which compute the average marks of students. Accept six subject marks of student from user. Calculate average marks of student which is used to determine the corresponding grades.

Range	Grade
35 to 60	F
61 to 70	D
71 to 80	C
81 to 90	B
91 to 100	A

SOP 7 : Write a JavaScript function to get difference between two dates in days. Create a page in HTML that contains input box to accept date from user. The input boxes should be used by users to enter their date of birth in the format dd-mm-yyyy. Do not make use of any dropdown boxes.

Example :

```
date_diff_indays('04/02/2019', '11/04/2019');
```

```
date_diff_indays('01/01/2020', '31/01/2019');
```

Output :

66

-30



3. Server-Side Scripting (PHP)

- SOP 1 :** Write a PHP program to check if a person is eligible to vote or not. The program should include the following-
- Minimum age required for vote is 18.
 - Use PHP functions.
 - Use Decision making statement.
- SOP 2 :** Write a PHP function to count the total number of vowels (a,e,i,o,u) from the string. Accept a string by using HTML form.
- SOP 3 :** Write a PHP program to perform the following operations on an associative array.
- Display elements of an array along with their keys.
 - Display the size of an array.
 - Delete an element from an array from the given index.
- SOP 4 :** Write a PHP program to save marks of English, Hindi, Marathi, Maths and Information Technology in an array. Display marks of individual subject along with total marks and percentage.
- SOP 5 :** Write a PHP program to save marks of English, Hindi, Marathi, Maths and information technology in an array for 5 students and display totals marks and percentage of each students using 'foreach'.
- SOP 6 :** Write a program using PHP to calculate Electricity bill by accepting the limits.
- For first 100 units - Rs. 4
 - For next 100 units - Rs. 5
 - For next all units - Rs. 6
- SOP 7 :** Write a PHP Program to insert a roll number and student name in a database (use postgresql data to create database). Accept roll number and name from the user.