

7.3 Institutional Distinctiveness

Provide the details of the performance of the institution in one area distinctive to its vision, priority and thrust

Provide the weblink of the institution in not more than 500 words

The college in its vision has stated that it will provide excellent infrastructure with advanced technological facilities at college for teaching-learning. Over the years in addition to physical facilities, the college had taken conscious efforts to introduce technology in teaching-learning. The main focus of the College is to provide not only quality education facilities to the socially and economically weaker sections of society. Following are the distinctiveness areas of the college.

TECHNOLOGY IN TEACHING & LEARNING:

According to its vision, the college has introduced high class technological methods of teaching and learning by providing the Students with latest information technology facilities.

Following is the list of some quality equipment and software provided to students:

1. Water Analyser Kit.

Electronics India stands as the most leading Water and Soil Testing Instruments Suppliers in India. These Water and Soil Analysis instruments are widely used for field testing of important parameters such as pH, ORP, Conductivity, TDS, Salinity, Dissolve Oxygen, Turbidity, Colorimeter and Temperature.

Electronics India's instruments are used for efficient use of nutrients in the soil, to test the purity of drinking water and for waste water testing etc.

These water and soil analysis kits are available in portable briefcase making them very convenient for field measurements.

2. Photoelectric Colorimeter.

This is a Photoelectric Colorimeter using specific light filters of the visible range (380nm-740nm). The scale readings are directly proportional to the concentration in accordance with Beers law. Two matched photocells of the "blocking layer" type, in a fully compensated and carefully balanced electrical circuit, form the basis for current measurement. The galvanometer is of the suspension wire type.

3. Digital Potentiometer.

A digital potentiometer (also called a resistive digital-to-analogy converter, or informally a digipot) is a digitally-controlled electronic component that mimics the analogy functions of a potentiometer. It is often used for trimming and scaling analog signals by microcontrollers..

4. Ice Flaker.

In most cases of biosynthesis and chemosynthesis, flake ice is used to control the reaction rate and maintain the liveness. Flake ice is sanitary, clean with rapid temperature reduction effect. Flake ice is used as the direct source of water in concrete cooling process, more than 80% in weight.

5.Single Beam UV- Visible Spectrophotometer.

A UV-Vis spectrophotometer is used to determine the absorption of light from a sample and can be used as a detector for HPLC. A sample is placed in the UV/VIS beam and absorbance versus wavelength is measured.

6.Vacuum Pump.

A vacuum pump is a device that removes gas molecules from a sealed volume in order to leave behind a partial vacuum. The first vacuum pump was invented in 1650 by Otto von Guericke, and was preceded by the suction pump, which dates to antiquity..

7.Microwave Synthesizer.

Microwave synthesizers work by exposing chemical reactions to electric fields under high pressure; this rapidly heats the molecules through motion generated either through dipolar polarization or ionic conduction. Because of the high pressure, solvents can be heated beyond their standard boiling points.

8.Melting Point Apparatus.

A melting-point apparatus is a scientific instrument used to determine the melting point of a substance. Some types of melting-point apparatuses include the Thiele tube, Fisher-Johns apparatus, Gallenkamp (Electronic) melting-point apparatus and automatic melting-point apparatus.

9.Digital Conductivity.

An electrical conductivity meter (EC meter) measures the electrical conductivity in a solution. It has multiple applications in research and engineering, with common usage in hydroponics, aquaculture, aquaponics, and freshwater systems to monitor the amount of nutrients, salts or impurities in the water.

10.Deep freezer 170 Capacity.

Freezers help you shop less, save money, and prepare food in advance – but only if you have enough storage space. They often differ in terms of their external dimensions and how much they can hold. We've put together some information to help you make the right choice

11.Domestic Microwave Oven.

Microwave heating is being used widely in domestic, commercial and industrial applications. Domestic and commercial microwave ovens are used to heat mostly food products at homes restaurants and bakeries for their faster heating. While industrial microwave ovens are used in food, rubber, ceramic, pharmaceutical, polymer, plastic, textile processing etc. Industrial microwave heating has an advantage of faster, green, uniform and economic way of processing compared to conventional heating methods

12. Electronic Balance.

Electronic balances have become standard equipment for many high school and college chemistry departments. They allow the user to quickly and accurately measure the mass of a substance to a level of accuracy impossible for traditional balances to achieve.

13. Heating Oven with Timer.

Some ovens have a bake timer and a regular timer. They work the same, but the difference is the bake timer only works when the baking mode is engaged and the regular timer can be used to time anything, even non-cooking tasks.

14. Thermostat.

Boilers and heating systems use thermostats to prevent overheating and to control the temperature of the circulating water. Thermostats are fitted to hot-water cylinders, boilers, and radiators in rooms. Thermostat location should be coordinated with light switches, dimmers, and other visible control devices.

15. PH Meter.

The pH meter is an electrical device that determines the acidity or basicity of aqueous solutions, one of the most commonly monitored parameters. To use a pH meter, the pH electrode is first calibrated with standard buffer solutions with known pH values that span the range being measured.

16. Ultra Sonicator.

Sonication is the act of applying sound energy to agitate particles in a sample, for various purposes such as the extraction of multiple compounds from plants, microalgae and seaweeds. Ultrasonic frequencies (>20 kHz) are usually used, leading to the process also being known as ultrasonication or ultrasonication..

17. Digital Turbidity Meter.

Turbidity meters are used to quickly measure the turbidity (or cloudiness) of water, caused by suspended solid particles. Understanding how turbidity meters work can help in achieving more accurate results and ensuring the samples and meter are handled correctly.

18. G. M. Counter.

Geiger counter (Geiger-Muller tube) is a device used for the detection and measurement of all types of radiation: alpha, beta and gamma radiation. Basically it consists of a pair of electrodes surrounded by a gas. The electrodes have a high voltage across them. The gas used is usually Helium or Argon.

19. Digital Balance.

The digital mass balances in the General Chemistry labs are very sensitive instruments used for weighing substances to the milligram (0.001 g) level. Please treat them with care. Use containers when weighing chemicals and always weigh objects at room temperature.

20. Magnetic Stirrer with Hot Plate.

The main function of a stirrer is to agitate the liquid for speeding up the reactions or improving mixtures. A magnetic stirrer is often used with hot plates. The stir bar is the magnetic bar which is immersed in the liquid to provide the stirring action.

21. Heating Mantles.

Generally speaking, a heating mantle is referred to as a device which is used in laboratories to heat or temper certain media in glass vessels. Due to the various sizes of the glass vessels, the exact amounts of liquids which are necessary can be heated

22. Rotary Evaporator.

Invented by Lyman C. Craig in 1950 the rotary evaporator, or rotovap, gently removes solvents from compounds using heat combined with reduced pressure to evaporate, dry, and purify samples for further downstream use..

23. Rotary Shaker.

shaker is a piece of laboratory equipment used to mix, blend, or agitate substances in a tube or flask by shaking them. It is mainly used in the fields of chemistry and biology. A shaker contains an oscillating board that is used to place the flasks, beakers, or test tubes.

24. UV- Cabinet.

Use of UV-C radiation to disinfect non-critical patient care items: a laboratory assessment of the Nanoclave Cabinet

25. Colorimeter.

Colorimetry is a scientific technique that is used to determine the concentration of colored compounds in solutions by the application of the Beer–Lambert law, which states that the concentration of a solute is proportional to the absorbance.

26. Refrigerator.

Refrigeration is an essential food storage technique in developed countries. The lower temperature lowers the reproduction rate of bacteria, so the refrigerator reduces the rate of spoilage. A refrigerator maintains a temperature a few degrees above the freezing point of water.

27. Conductivity Meter.

An electrical conductivity meter (EC meter) measures the electrical conductivity in a solution. It has multiple applications in research and engineering, with common usage in hydroponics, aquaculture, aquaponics, and freshwater systems to monitor the amount of nutrients, salts or impurities in the water

28.Polari meter.

A polarimeter is a device for determining the polarisation direction of the light or the rotation of an optically active substance.

29.Digital Potentiometer.

A digital potentiometer (also called a resistive digital-to-analogy converter, or informally a digipot) is a digitally-controlled electronic component that mimics the analogy functions of a potentiometer. It is often used for trimming and scaling analogy signals by microcontrollers.

30.Distilled Water Plant.

Steam irons. Aquariums (mineral supplements should be added to the fish food) watering plants. car cooling systems.

31.Refractometer.

A refractometer is used to determine a concentration of a particular substance within a given solution. It operates based on the principle of refraction. When rays of light pass from one medium into another, they are bent either toward or away from a normal line between the two media.

32.Magnetic Stirrer.

A magnetic stirrer or magnetic stir plate is commonly used in laboratories to ensure liquid samples are homogeneous in consistency and temperature. A magnetic stirrer can use magnetic stirrer bars or inductive agitators to complete the mixing process.

33.Rotamentals.

A heating mantle, isomantle, is a piece of laboratory equipment used to apply heat to containers, as alternative to other forms of heated bath.

34.Laminar air flow.

A laminar flow cabinet is an enclosed workbench which is used to create a contamination free work environment through installed HEPA filters that capture all the particles entering the cabinet. A laminar flow hood is used for work with substances which are not hazardous for the personnel health..

35.Auto clove.

It can sterilize solids, liquids, hollows, and instruments of various shapes and sizes. Autoclaves vary in size, shape and functionality. A very basic autoclave is similar to a pressure cooker; both use the power of steam to kill bacteria, spores and germs resistant to boiling water and powerful detergents

36.BOD Incubator.

Biological Oxygen Demand (BOD) incubators are popular low temperature incubators suitable for growing yeast and mold. They are designed to maintain a minimum temperature of 200C, which is essential for BOD determination.

37. Digital moisture meter.

Moisture meters are used to measure the percentage of water in a given substance. This information can be used to determine if the material is ready for use, unexpectedly wet or dry, or otherwise in need of further inspection. Wood and paper products are very sensitive to their moisture content.

38. Remi centrifuge.

With a wide choice of rotor heads and adaptors, these units are truly versatile. Micro Centrifuges models RM-12C BL & R-12M are ideal for growing routine application in biochemical and clinical labs, for Haematocrit, Corpuscle Percentage contents in blood, Serum analysis and precipitate separation etc.

39. Digital PH METER.

A pH meter is an instrument used to measure acidity or alkalinity of a solution - also known as pH. Why is pH measurement and control a problem? PH electrodes have been around long enough to be well understood and readily applied.

40. Dissecting tray.

Extensively used for necropsies or educational studies, dissecting trays are essential when analysing internal structures and component related functions. Compatible with lining waxes used to provide unadulterated dissecting pin surfaces or including odour absorbent pads, pans allow animals to be securely held in place.

41. Feeder (poultry).

Poultry feed is food for farm poultry, including chickens, ducks, geese and other domestic birds.

Before the twentieth century, poultry were mostly kept on general farms, and foraged for much of their feed, eating

Insects, grain spilled by cattle and horses, and plants around the farm. This was often supplemented by grain, household scraps, calcium supplements such as oyster shell, and garden waste

42. Drinker (poultry).

Only few left! Automatic Drinker for Poultry Chicken with Strong line of Valves and provides Quick Water Filling with fine tuning. Made from highly durable plastic, scientifically designed valves for proper water control and distribution. Height can be adjusted according to birds age

43. Insect cage.

Facilitated by technically advanced production facility, we are able to offer superior quality Green Leaf Hopper Insect Rearing Cage. The offered cage is extensively used for handling and storing various kind of insects. Provided cage is manufactured by making use of high-grade teak wood and advanced

44. Cooling centrifuge.

This equipment is extensively used in chemistry, biology, and biochemistry for isolating and separating suspensions. It additionally provides the cooling mechanism to maintain the uniform temperature throughout the operation of the sample.

45. Pocket PH meter.

pH meters are used for soil measurements in agriculture, water quality for municipal water supplies, swimming pools, environmental remediation; brewing of wine or beer; manufacturing, healthcare and clinical applications such as blood chemistry; and many other applications.

46. Neubauer chamber.

In case of blood cell counting, the squares placed at the corners are used for white cell counting. Since their concentration is lower than red blood cells a larger area is required to perform the cell count. The central square is used for platelets and red cells.

47. Hemoglobinometer.

A hemoglobinometer is a medical measuring device of haemoglobin blood concentration. It can operate by spectrophotometric measurement of haemoglobin concentration. Portable hemoglobinometers provide easy and convenient measurement of haematological variables, especially in areas where no clinic laboratories are available.

48. Stethoscope.

A stethoscope can be used to listen to the sounds made by the heart, lungs or intestines, as well as blood flow in arteries and veins. In combination with a manual sphygmomanometer, it is commonly used when measuring blood pressure..

49. W.B.C. pipette.

WBC pipette is a graduated pipette that gives the dilution of 1:20. It has two markings at the bottom as 0.5 and 1 and the top of the pipette is marked 11. It has a round shape bulb which contains the White bead to mix the blood specimen and the diluting fluid.

50. RBC pipette.

RBC pipette which is composed of a stem & a mixing chamber with a red bead, its function is to mix blood with the substance and for differentiation from the WBC pipette. Haemocytometer "Neubauer" chamber is counting chamber with a cover slip.

51. Dissection box.

Pins are used to hold structures in place or mark certain parts of the body. They are like needles but smaller, and they can be left in the dissection while you move on to the next steps. Pins are usually made entirely out of metal with flat heads and pointy bottoms that stick into the dissection pad.

52. Dissecting microscope.

A dissecting microscope is used to view three-dimensional objects and larger specimens, with a maximum magnification of 100x. This type of microscope might be used to study external features on an object or to examine structures not easily mounted onto flat slides. Both microscopes have similar features.

53. Compound Microscope.

Typically, a compound microscope is used for viewing samples at high magnification (40 - 1000x), which is achieved by the combined effect of two sets of lenses: the ocular lens (in the eyepiece) and the objective lenses (close to the sample).

54. Digital Microscope.

A vast range of industries, such as education, research, medicine, forensics, and industrial manufacturing, all use digital microscopes.

55. Double Demonstration eye piece.

Double demonstration eye piece. This instrument is equipped with high quality optical components. It ensures perfect vision to both the observer and sub-observer. It's conveniently located fine pointer covers the entire field, being visible to both the viewers for easier demonstration.

56. Salinity meter.

Using a water salinity meter is a quick and easy way to measure salinity. Aquaread's water salinity testing equipment is specifically designed to be used in the field, and is suitable for measuring salinity in surface water, groundwater and wastewater.

57. Conductivity meter.

An electrical conductivity meter (EC meter) measures the electrical conductivity in a solution. It has multiple applications in research and engineering, with common usage in hydroponics, aquaculture, aquaponics, and freshwater systems to monitor the amount of nutrients, salts or impurities in the water.

58. Forceps.

A forceps delivery is a type of assisted vaginal delivery. It's sometimes needed in the course of vaginal childbirth. In a forceps delivery, a health care provider applies forceps — an instrument shaped like a pair of large spoons or salad tongs — to the baby's head to help guide the baby out of the birth canal.

59. Plankton net.

A Plankton net is equipment used for collecting samples of plankton in standing bodies of water. It consists of a towing line and bridles, nylon mesh net, and a cod end. Plankton nets are considered one of the oldest, simplest and inexpensive methods of sampling plankton.

60.Mortar and pestle.

Mortar and pestle are implements used since ancient times to prepare ingredients or substances by crushing and grinding them into a fine paste or powder in the kitchen, laboratory, and pharmacy.

61.Aquarium.

An aquarium (plural: aquariums or aquaria) is a vivarium of any size having at least one transparent side in which aquatic plants or animals are kept and displayed. Fish keepers use aquaria to keep fish, invertebrates, amphibians, aquatic reptiles, such as turtles, and aquatic plants.

62.Slide Cabinet.

Glass slides Cabinet construction prevents drawers from falling out accidentally, but they can be disengaged for use at a work area Cabinets are compatible with other cabinets on market and can be stacked interchangeably. base unit, sold separately, provides solid support for the cabinet

63.Cavity block.

Uses. Hollow blocks are often used to build large structures like boundary fences. The reduced volume of concrete used to make each block adds up to a significant savings in cost for the materials for the whole wall.

64.Coupling jar.

Coplin jars are wide-mouthed glass jars, usually having vertically grooved interior walls. They are used for the storage or staining of slides that contain blood smears or tissue sections.

65.Stefan's Constant Apparatus.

The Stefan–Boltzmann constant can be used to measure the amount of heat that is emitted by a blackbody, which absorbs all of the radiant energy that hits it, and will emit all the radiant energy.

66.Ultrasonic Interferometer.

Ultrasonic interferometer is a simple device which yields accurate and consistent data, from which one can determine the velocity of ultrasonic sound in a liquid medium.

67.Research optical bench.

The main use of the optical benches is to observe the image formation. It is used to study the thermal radiation. They are also used to study the rate of emission from different surfaces that are held at the same temperature..

68.Hall Effect apparatus.

The Hall Effect is the generation of a side-to-side voltage in a conductor or semiconductor carrying a current when it is placed in a magnetic field. The effect is widely used in magnetic field sensors.

69.Resistivity of Semiconductor.

In case of semiconductors as the temperature increases the electrons in the valence band get excited and jump into the Conduction band and hence the conductance increases resulting in the dwindling of resistance. As resistance is directly proportional to resistivity, resistivity decreases, too

70.Susceptibility Apparatus.

Holmarc's Magnetic Susceptibility - Gouy's Method Apparatus (Model No: HO-ED-EM-08) is designed for the determination of magnetic susceptibility of solid samples. The apparatus consists of a pair of electromagnets with constant current power supply and a tube in which the sample powder is taken

71.Platinum Resistance Thermometer.

A platinum resistance thermometer (PRT) is a piece of platinum wire which determines the temperature by measuring its electrical resistance. It is referred to as a temperature sensor. When manufactured carefully, these devices offer an excellent combination of sensitivity, range and reproducibility.

72.He-Ne Laser.

In the He-Ne laser the light is produced by atomic transitions within the Neon atom. The Helium does not directly produce laser light but it acts as a buffer gas, the purpose of which is to assist/help the atoms of the other gas to produce lasing in as manner.

73.Michelson Interferometer.

Interferometers are used to precisely measure the wavelength of optical beams through the creation of interference patterns. The Michelson interferometer is a historically important device which provides simple interferometric configuration, useful for introducing basic principles.

74.Maxwell Bridge.

A Maxwell bridge is a modification to a Wheatstone bridge used to measure an unknown inductance (usually of low Q value) in terms of calibrated resistance and inductance or resistance and capacitance. When the calibrated components are a parallel resistor and capacitor, the bridge is known as a Maxwell-Wien bridge. .

75.Anderson Bridge.

A large number of AC bridges are available and Anderson's Bridge is an AC bridge used to measure self-inductance of the coil. It is a modification of Wheatstone's Bridge. It enables us to measure the inductance of a coil using capacitor and resistors and does not require repeated balancing of the bridge.

78. Incubator.

An incubator is a device used to grow and maintain microbiological cultures or cell cultures. The incubator maintains optimal temperature, humidity and other conditions such as the CO₂ and oxygen content of the atmosphere inside. ... The most commonly used temperature both for bacteria such as the frequently used E

79. Muffle Furnace.

Today, a muffle furnace is usually a front-loading box or tube design used for high-temperature applications such as melting glass, creating enamel coatings, technical ceramics or soldering and brazing.

80. Diode Laser. He LC ELITE is the universal hair growth laser that provides the optimal amount of laser energy for nearly every hair type in a convenient, wireless home care device. The LC ELITE has been FDA cleared to promote hair growth and uses 80 direct beam laser diodes to provide clinical results for both men and women. Diode laser wavelengths are absorbed by pigmented structures, making them ideal for cutting melanotic or highly vascularized soft tissues and providing haemostasis. The usefulness of the diode laser can be greatly expanded by proper carbonization of the fiber tip.

81. Planks Constant.

In the quantum of electromagnetism, Planck's constant is the physical constant that relates the energy carried by a single photon to its corresponding frequency. Represented by h and measure using J.s in SI system and eV. S in the MKS system. The value of Planck's constant has got prime importance in quantum mechanics. .

82. DLL software (Biyani) for Language Lab.

DLL is a language teaching software that allows for pronunciation practice, video presentation, audio broadcasting and quizzes to be integrated into your language classes. In addition to these, there are other equipment's also present. The funds received under special assistance programme from UGC, DST-FIST scheme is used to augment teaching learning facility. The college has made available computers, LCD projectors and Internet/Wi-Fi facility for students. Introduction of number of Computer interfaced experiments is the distinct identity of the college in teaching-learning as compared to other colleges in affiliating University area. These equipment's are used for teaching-learning and practical purposes. Scientific Experiments using Computer interface is an effort to explain to the students how computer is useful in measuring and controlling physical parameters and processes. In this modern age, use of technology in the classroom and laboratories make learning student centric. Through these students get acquainted with computing facility and improve their technological skills. Number of students have completed their project work using these interface experiments. Some students have developed equipment as their project work. Teachers use these experiments for research purposes also. The college have number of students as rank holders in University exams.

In addition to these, the college faculty through their innovations have developed low cost equipment's for teaching & learning. Faculties have published research articles in reputed international journals.

The college has received funds from DST, UGC for augmentation of learning facilities in campus. College has successfully implemented the activities under DSTFIST scheme.

These efforts in introducing specialized modern infrastructure and technology have strengthened the research with quality learning experience. Teachers have presented research papers in national and international conferences.

The faculty have published more than 12 research papers in standard journals with impact factors and UGC approved journals.

Number of reference books essential for teaching & learning are purchased from funds available from above mentioned schemes

Due to wide range of research programmes, the SPPU sanctioned funds to organize Seminars.

- Regular Coaching for MPSC Preliminary examination: 01 month and 24 students benefitted.
- A separate study room for the students who prepare of various competitive examinations is made available. On an average 15-20 students took benefit of the study room regularly.
- Mr. Ashish Mahavir Chordia of TYBA and Ms. Waghe Shital (TYBSc) have applied for State Services Preliminary 2020.
- Dr. Vikram Bhalekar conducted lectures of students of Physics department for the preparation of Banking. Mr. V. N. Rohom and Ms. R. D. Kasar also contributed in that.
- The college has successfully organized the state level seminar on the subject of "**Mathematical Software and its Application for Students**" held in 17th & 18th January, 2020, organised by Department of Mathematic, Arts Science & Commerce College, Rahata and Sponsored by SPPU, Pune.