

3.3.2 Number of research papers per teachers in the Journals notified on UGC website during the last five years

DVV query 3: Provide screenshots of research articles clearly showing the title of the article, affiliation, name of the journal, year and authors name if the links and DOI number are not available

HEI Answer: Screenshots of research articles are attached below in the table:


Table: Screenshots of research articles

Title of paper	Name of journal	<u>Screenshot of research article</u>	Is it listed in UGC Care list/Scopus/Web of Science/other, mention
A Review on Water Loss Management	Journal of the Maharaja Sayajirao University of Baroda	View	UGC Care list
Purification of drainage water for farming situated near railway track	Advanced science Letters E-ISSN:1936-7317	View	UGC Care
Viability of drainage water for farming	Advanced science Letters E-ISSN:1936-7317	View	UGC Care
Design of Water Distribution System using WATERCAD Software	Advanced science Letters E-ISSN:1936-7317	View	UGC Care
Design A Water Supply System For A Village Using Epanet Software	Advanced science Letters E-ISSN:1936-7317	View	UGC Care
Seismic soil interaction of a multistorey building supported by Pile foundation resting on hill slope: Literature Review	Advanced science Letters E-ISSN:1936-7317	View	UGC
Tribological analysis of swing gear foe excavator	Advanced science Letters E-ISSN:1936-7317	View	UGC

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Engineering Programme	Technical Training	Research	Publication
AgRoMac: Agriculture Robotic Machine	Advanced science Letters E-ISSN:1936-7317	View	UGC
Effective Methods of Machine Scheduling	Asian Journal of Advanced Basic Sciences	View	UGC
Comparative Phytochemical analysis of Ampelocissus latifolia roots using various solvents.	Asian Journal of Advanced Basic Sciences	View	UGC
Medicinal Properties of Natural Colourants /Dyes from Plants.	Asian Journal of Advanced Basic Sciences	View	UGC
Short Review on Chemical Bath Deposition Technique	Asian Journal of Advanced Basic Sciences	View	UGC
Sustainable Manufacturing: Performance Evaluation of a Non Conventional Cutting Fluid	Asian Journal of Advanced Basic Sciences	View	UGC

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A Review on Water Loss Management

Journal of the Maharaja Sayajirao University of Baroda ISSN : 0025-0422

A REVIEW ON WATER LOSS MANAGEMENT

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Kharghar, Navi Mumbai, India**Dr.Saumya Singh**Associate Prof., Department of Civil Engineering, Saraswati College of Engineering, Kharghar, Navi
Mumbai, India**ABSTRACT**

Human beings need water in every aspects of life. Globally, many countries are grappling with the dilemma of increasing water demand and diminishing water resources. This makes it critical to use available water efficiently and to reduce water losses. But the water suppliers around the world are facing the water loss management issue. Keeping in mind, development of sustainable water loss management system is also very much necessary. This paper covers the study of various strategies involved in water loss management such as Geographic Information System, Hydraulic modelling and the use performance indicator like Infrastructure Leakage Index. It also deals the problem of leakages in the distribution networks.

KEY WORDS: GIS, Water supply, Distribution Network, Leakage Detection, Performance Indicators, and Infrastructure Leakage Index.

INTRODUCTION

Water is essential for survival of human species. Nowadays, large scarcity in drinking water experienced by most countries worldwide. Though, the designs of modern water distribution systems are quit advanced, still 20% to 30% losses occur during the distribution of water. The need

The screenshot shows a web browser displaying the UGC-CARE List for a journal. The page title is 'UGC-CARE List'. The journal details are as follows:

Journal Details	
Journal Title (in English Language)	Journal of the Maharaja Sayajirao University of Baroda (print only) (Current Table of Content)
Publication Language	English
Publisher	Maharaja Sayajirao University of Baroda
ISSN	0025-0422
E-ISSN	NA
Discipline	Multidisciplinary
Subject	Multidisciplinary (all)
Focus Subject	Multidisciplinary (all)

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Purification of drainage water for farming situated near railway track

Advanced Science Letters

E-ISSN:1936-7317

PURIFICATION OF DRAINAGE WATER FOR FARMING SITUATED NEAR RAILWAY TRACK*Rahul Walimbe¹, Niranjan Bankar¹, Mahesh Dhamane¹, Abhishek Salunkhe¹, & Prof. Rachel Gitty²**¹ UG Students, Civil Engineering, Saraswati College of Engineering, Kharghar, Navi Mumbai**² Assistant Professor, Civil Engineering, Saraswati College of Engineering, Kharghar, Navi Mumbai***ABSTRACT**

This study deal with the agricultural practices that are carried besides the rail tracks in Mumbai region. A detailed study has been done on the various parameters. It is observed that farmers were using polluted water for cultivation. In this project a careful and detailed study has been done on the effect of polluted water on plants nutrients which grown on drainage water. The Water quality parameters like pH, Hardness, COD, BOD, Turbidity, and Total Solids & DO were tested. After the analysing the wastewater it is concluded that water contains undesirable impurities and it is unsuitable for irrigation. Based on the local condition different filter Medias were used to remove impurities from water which includes strainer, charcoal filter,

sand filter and fibre filter. Strainer is used for remove large size particles. Activated carbon filter (Charcoal) is used for remove chemical poisonous impurities. Two types of charcoal filter are used i.e. Pre activated and Post Activated charcoal filter. Fine suspended particle is removed by sand filter of aggregate size 3-15mm. For removing dust and dirt Fibre Filter is used. In addition to this black silica ball were used to normalise the pH and anti-bacterial ball were used to save water from different viruses. After all this filter media aeration is introduced to improve dissolved oxygen in water. After the comparison of results, we concluded that the filter is able to remove 60-70% of the impurity from the waste water and it is suitable for farming and can improve the yield of the farm.

Keywords: Drainage water, Charcoal filter, Sand filter, Aeration

INTRODUCTION:

In many dry countries water isn't existing in large quantities and planners must consider any sources of water which used economically and effectively to market development And also the population increasing at a high rate the requirement for expanded food production is seems to be real The potential for irrigation to boost both agricultural

productivity and therefore the living standards of the agricultural poor has long been recognized Irrigated agriculture occupies approximately 19% of the globe's total arable land but the assembly from this land comprises about 38 you look after the world total this is often more pronounced in arid areas like the Near East Region where only 32% of the cultivated area is

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**PURIFICATION OF DRAINAGE WATER FOR FARMING SITUATED
NEAR RAILWAY TRACK**

Authored by

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From

Saraswati College of Engineering, Kharghar, Navi Mumbai

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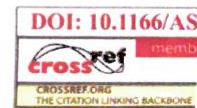
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Viability of drainage water for farming

Advanced Science Letters

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VIABILITY OF DRAINAGE WATER FOR FARMING

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Navi Mumbai

ABSTRACT:

Rapid growth of population and scarcity of land for cultivation led farmers to grow vegetables besides railway tracks in metro city like Mumbai for their livelihood. Few farmers were interviewed for collecting data regarding the type of crop grown, source of water and method for irrigation. It is observed that farmers were using polluted water for cultivation. In this project a careful and detailed study has been done on the effect of polluted water on plants nutrients which grown on drainage water. Water quality parameters like pH, Hardness, Chemical oxygen demand(C.O.D), Biological oxygen demand(B.O.D), Turbidity, Total Solids & Dissolved oxygen(D.O) were tested and properties of soil like pH, Moisture, Organic Carbon, Nitrogen, Calcium, Iron, Chloride, Total Soluble Sulphate & density.

Typical plants are also tested for their nutrients like Carbohydrates, Fats, Protein, Sugar, and Energy. By further comparison parameter of water & soil with standard permissible limits. It is concluded that water contain undesirable impurity content & it is unsuitable for irrigation & the water also has ill effects on soil fertility. The nutrient contents of crop grown on drainage water are compared with the nutrients of crop which is grown under organic farming. Based on results drainage water used for farming is undesirable & this water have some serious effect on human health. It has been observed that the vegetables are cultivated in unhygienic condition and an awareness had been given to the farmers and public about the importance of use clean water for cultivation.

Keywords: Plant nutrient, polluted water, human health, awareness

INTRODUCTION: -

As global population is increasing day by day the gap between the supply and demand for water is widening and is reaching such alarming levels that in some parts of the world it is posing a threat to human existence. Scientists around the globe are working on new ways of conserving water. It is an opportune time, to refocus on one of the ways to recycle water—through the reuse of urban wastewater, for irrigation

and other purposes. This could release clean water for use in other sectors that need fresh water and provide water to sectors that can utilize wastewater e.g., for irrigation and other ecosystem services. In general, wastewater comprises liquid wastes generated by households, industry, commercial sources, as a result of daily usage, production, and consumption activities. Municipal treatment facilities are

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Design of Water Distribution System using WATERCAD Software

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DESIGN OF WATER DISTRIBUTION SYSTEM USING WATER CAD SOFTWARE

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Abstract—The objective of our project is to redesign water distribution system in sector 12, Kharghar Navi Mumbai using Water Cad Software. Increase in population in sector 12, Kharghar has resulted in increased demands of water supply. These increasing demands of water supply are not being satisfied due to aging of pipeline. Aging of pipeline has resulted in corrosion because of which adequacy in pressure supply is hard to maintain. The solution to overcome the problem is redesigning the water distribution system. The output of water distribution system included pressure, head loss and velocity. Change of diameter has resulted in adequate water pressure.

Keywords— Water Cad, Water distribution system, diameter, pressure.

I. INTRODUCTION

Water distribution is the process of supplying water to consumers. Supplies of freshwater are limited and there are some areas where water scarcity is a significant issue. Although water distribution is not just about supplying water to the people who need it, but about allocating water to ensure that it is used efficiently and to provide access to safe water. The process of water distributions starts with identifying a source of water and determining what kind of treatment may be needed to make it usable. The water is moved through treatment facilities and into distribution systems, including networks of pipes, canals, and aqueducts. WATERCAD is such an application that can be used to model water distribution networks. It is published by Bentley Systems Inc. and is one of the leading network modelling applications. WATERCAD allows users to construct models from scratch and import drawings of networks prepared using AutoCAD.

II. OBJECTIVES

- Studying the problems of water distribution system in sector 12, Kharghar Navi Mumbai by collecting the data.
- Calculating demand for existing population by calculating the area using the 'AutoCAD' software.

- To improve the efficiency of water supply by redesigning water distribution system using Watercad Software of Sector 12, Kharghar.

III. METHODOLOGY

A. Determination of area

The location of project is sector 12, Kharghar Navi Mumbai.

B. Population Determination

It is necessary to calculate the population in order to meet the existing water demand. Hence the population can be calculated using the following formula -

$$\text{Population} = \frac{\text{AREA} \times \text{FSI}}{10}$$

Where,

Total area = 572076.6122 m²

FSI = 1.5

In this calculation '10' stands for 1 person per 10 m²

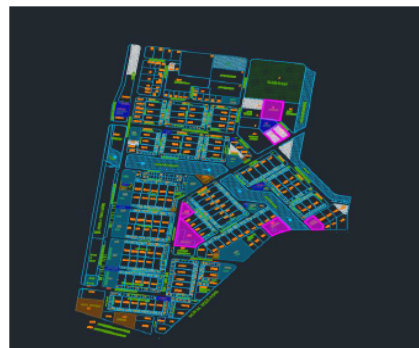


IMAGE. SECTOR 12, KHARGHAR

C. Water Demand

In order to calculate the water demand of the population it is necessary, first to take average

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Design A Water Supply System For A Village Using EPANET Software

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DESIGN A WATER SUPPLY SYSTEM FOR A VILLAGE USING EPANET SOFTWARE

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Abstract—Water distribution system is a basic yet very crucial unit in every urban as well as rural habitat. The primary task for water utilities is to deliver water of the required quality & quantity to individual customers under sufficient pressure. But this system of engineered hydrologic as well as hydraulic components is subject to faults in the form of loss of water, the most important losses being leakages. In this project, hydraulic modelling of the water distribution system of survey area is carried out. Also, leakages in the water supply system are identified and the effect of loss of water on the system pressure is studied. This is done with the help of EPANET software.

In order to ensure the availability of sufficient quantity of good quality of water to the various section of community in accordance with the demand. Many computer tools were developed, out of all the tools available EPANET become most popular and convenient for the effective design of complex pipe networks. During this project we will highlights on the effective design and distribution of network of pipes using EPANET tool. The residual head at each and every node was found out by having the elevation as input and thereby the corresponding flow quantities were derived like residual head, velocity and nodal demand etc.

Keywords— Water Distribution, Network Analysis, EPANET, Population forecast, water demand, nodal demand.

I. INTRODUCTION

The area for which we are designing the water distribution system is Village Saga on. The population of the area is 380. The distribution system designed here is tree system or dead-end system. By the use of EPANET that is by filling the data into it about number of nodes, demand, elevation, tanks and pipes we design the respective distribution system.

As there was no distribution network laid in Sagaon. Which was causing water wastage. Hence a well-planned network system can help people and meet the future demands and to reach consumer at its door step. The laid network plan is laid according to the road pattern. The hydraulic model EPANET version 2.0 is used for designed the optimized water supply system to the case study area. There were several aspects taken into consideration in planning water supply system

II. OBJECTIVES

The objectives of our projects are:

- Topographic survey of Sagaon, Badlapur.
- Calculations of future population forecasting, And their water consumption and Water demand.
- Extraction of road map from Google Earth Pro and marking of roads.
- Input parameter of Water Demand and Elevation of various points of consumer end in the software.
- Design of Distribution Network using EPANET.

III. MATERIALS

The materials used in these projects for increasing the strength of concrete are as follows:

1. HDPE Pipe

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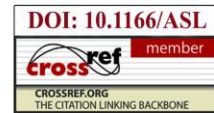
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Seismic soil interaction of a multistorey building supported by Pile foundation resting on hill slope: Literature Review



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Seismic Soil Structure Interaction of a Multi Storey Building Supported by Pile Foundation Resting on Hill Slope: Literature Review

Authored by

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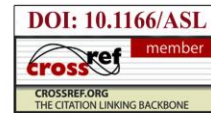
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Tribological analysis of swing gear foe excavator

Advanced Science Letters

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Tribological Analysis of Swing Gear Drive for Excavator

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ABSTRACT

Lack of sufficient and accurate information leads to face the challenges in decision-making processes. This is why some types of failures often recur, reducing the equipment availability and generating additional costs. Used oil analysis is an important part of machine maintenance. It provides information about the condition of the oil as well as its suitability for further use and to certain extent information about the condition of the machinery lubricated by the oil. The precondition of valuable oil analysis and its interpretation is a sample being taken according to a reliable procedure. Modern maintenance principles are based on the application of equipment condition monitoring techniques. One of these techniques is an analysis of used oil which known as monitoring of lubricant condition, focuses on the physical and chemical state of oil and the working condition of machine elements that are encountered with this oil during regular operations. The study of turbine oil is presented. In this study, various lubricating parameters including four basic namely Viscosity, water content, Solid particulate content and acid number for different applications are analyzed. The results of the analysis show the variation of K.V. with both temperature and tonnage. Polynomials are best suitable for mimicking the behavior of oil and degradation of materials of machine elements. Water as particulate content can be a very dangerous source of contamination. However, the realization

has been made that these techniques have limitations and more work is needed for the development of ideas on how to increase reliability and safety of the installation as well as provide insight into used oil analysis as a troubleshooting tool.

Introduction

An excavator is used for earthmoving, is an engineering vehicle that has other potential uses in heavy lifting, demolition, material handling, etc. It is equipped with an undercarriage with tracks or wheels and an upper platform (which is pivoted) which is supported with an articulated arm to perform the tasks of interest. Depending on the purpose, the arm can be affixed with various attachments. The rotating movement which is known as swing or slew is usually driven hydraulically. The power source of the excavator is, in general, a diesel engine that drives one or many hydraulic pumps. Most of the time hydraulic motors are used for swing drive. The pumps supply oil flow to the hydraulic system which further actuates the different work responsibilities. It should be noted that togetherness of the drive transmission is needed along with the aforementioned stuff. The swing drive is as just mentioned, is driven by a hydraulic motor. The motor is responsible for the rotating motion of the upper structure through planetary gears. The excavator can rotate 360 an infinitely number of times but normally operates within a specific working cycle.

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AgRoMac: Agriculture Robotic Machine

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Abstract – AgRoMac is the Robot designed for agricultural purpose. The AgRoMac is developed using an Arduino. It performs the elementary functions involved in farming. This robot can be used to reduce human work considering the efficiency and proper utilization of resources. This can perform essential basic capacities like Drilling, Seeding, Pesticide etc.

I. INTRODUCTION

Agriculture is primary occupation over majority population in the world. It is the most essential and foremost economic activity of all times. The vast majority of human population laboured in agriculture. The growth rate of agricultural output is gradually declining in the recent years due to labour scarcity and more expensive. The farmers struggle with labour shortages and growing world demand for food led us to propose an "Agricultural Robotic Machine (AgRoMac)", that can perform different agricultural activities. It performs the elementary functions involved in farming. This robot can be used to reduce human work considering the efficiency and proper utilization of resources. It performs two effective modes that is automated mode and manual mode.

II. LITERATURE SURVEY

Paper 1 - Agricultural robot (agribot) for harvesting underground plants.

Year of publication - 2017

Authors - Sampoomam k.p*, Dineash T, Poorinamasre j
Methodology - Microcontroller (PIC16F877A), Motors - shaft DC motor, Geared motor, Wiped motor, Sensors- Soil moisture, Rotating blade. In recent times, there is a shortage of labour in the agriculture fields and this led us to do some innovation to reduce this problem. It can utilize the energy resources efficiently. A dedicated mechanical arm is fitted with the robot to harvest the rhizomes. The entire design is automated with the help of GSM.

The main aim of this project is to emphasize the need for automating the farming practice and the growing prevalence of hectic life style. Being compromised with soil sustainability, it can assure higher output and profitability.

Paper 2 - Agribot : A Different approach

Year of publication - 2017

Authors - Mr. Vaishak N.L

Methodology – It contains a hopper, harvester, plougher, medicine sprinkler, fertilizer sprayer and chain drive mechanism. These components are controlled by microcontrollers and this is in turn operated by remote control. A single machine carrying out a variety of operations will greatly reduce costs of operations. Fertilizers are remotely dispersed which reduces the exposure of these chemicals to humans. Huge tracts of land can be cultivated in a short amount of time. The main components of the Agribot are as follows:- Plougher, Harvester, Chain/ Tracks, Main Body Frame, Microcontrollers, Remote Encoder and Body Decoder, Stepper Motor, Power Source. It contains a hopper, harvester, plougher, medicine sprinkler, fertilizer sprayer and chain drive mechanism. These components are controlled by microcontrollers and this is in turn operated by remote control. A single machine carrying out a variety of operations will greatly reduce costs of operations. Fertilizers are remotely dispersed which reduces the exposure of these chemicals to humans. Huge tracts of land can be cultivated in a short amount of time. Since the operations are automated, costs of employing humans are reduced. The cycle of agriculture is ploughing, sowing seeds, fertilizers, medicine which is followed by harvesting. These cycles are performed by a single machine.

Paper 3 - IOT based solar AGRIBOT for irrigation & farm monitoring.

Year of publication - 2018

Authors - Mr. Rahul D S., Sudarshan S K, Meghana K N, R Krishana

Methodology - Two major issues in modern agriculture are water scarcity and high labor costs. The design and development of an IoT based solar powered Agribot that automates irrigation task and enables remote farm monitoring. The Agribot is developed using an Arduino microcontroller. At each sensing point, data acquired from multiple sensors is processed locally to decide the necessity of irrigation and accordingly farm is watered. Agribot acts as an IoT device and transmits the data collected from multiple sensors to a remote server using Wi-Fi link.

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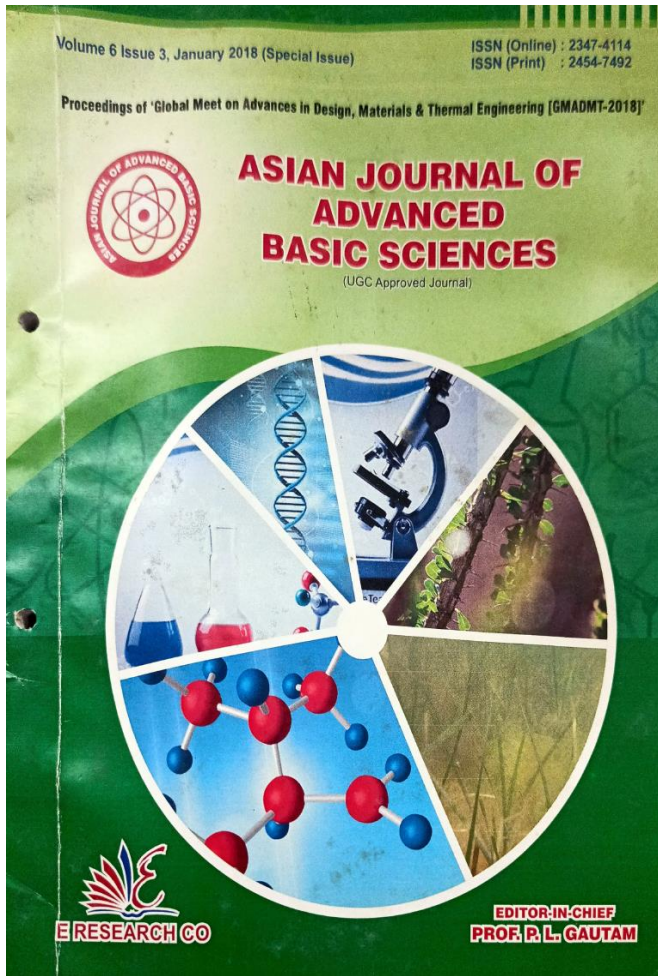
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Effective Methods of Machine Scheduling



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Effective Methods of Scheduling

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ABSTRACT: Scheduling is a term which we used in our day to day life. It is a plan prepared for smooth conduction of any activity. Schedule gives us the answer of the question 'when'. In industries scheduling plays an important role for getting maximum output using available resources and raw material. One of the important tasks is designing model to understand the schedule and finding the solution for the problem. There are several methods of machine scheduling which are often used in production. A model may be of single machine or multiple machine models. Depending on number of machines the optimization techniques are developed and used. In this paper we have tried to compare the different methods of machine scheduling. In scheduling problems there are two common types of constraints. One of the constraints is limitations of number of machines and another is restriction of jobs performed on machines. Depending on this factors the various methods of scheduling like Gantt chart method, Johnson's rule, Proposed method, Palmers heuristic method etc. are discussed in this paper and tried to find the effective method for optimization problem.

Keywords: Branch and bound technique; Gantt chart; Johnson's rule; Machine scheduling; proposed method and Palmer's heuristic.

INTRODUCTION: Proper sequencing determines the scheduling of jobs performance which gives the deterministic schedule of the production in industries. In machine scheduling, machines are arranged in series or parallel combination. There are three types of scheduling problems for m-machines and n-jobs- job shop scheduling, flow shop scheduling and open shop scheduling problems. In job shop scheduling problems the jobs are operated on different machines with some relation among them that is all jobs are not operated on every machine. In flow shop scheduling problems all the jobs are performed on all machines in a fixed sequence. In open shop scheduling problem there is not restriction on the job performance. The jobs are freely operated on the machines with their priority. In most of the industries the tasks implementation needs use of available resources in particular order or every job has to perform on every machine. Hence flow shop scheduling problem is widely used in scheduling problems. Every scheduling problem must satisfy the following conditions:

- 1) The jobs must be ready with particular operation on every machine.
- 2) Only one job should be processed on a machine at a time.
- 3) Processing time of the job and set up time of the jobs may be independent or included.

- 4) Breakdown interval of the machine should be avoided.
- 5) Sequence of jobs must be decided initially.
- 6) Machines should not be kept idle while jobs are processing.
- 7) Once the production starts, jobs should be operated on machines continuously.
- 8) There should not be two machines of same type.
- 9) Initially all jobs must be available for dealing out at time zero.
- 10) All jobs are independent means there is no relation between them.
- 11) Each job is performed in fixed order, preemption of jobs is not allowed.

METHOD:

Gantt chart: In case of single machine all jobs have to be processed through only one machine. Since the total manufacturing time is fixed or it is equal to the processing time of all the jobs, the other constraints like to decrease the mean flow time, cost minimization etc. are to be considered. The jobs are processed by using SPT rule (shortest processing time) means according to their increasing order of completion time. It means jobs taking minimum time for completion should be processed first. It minimizes the average waiting time as well as total make-span of production.

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Comparative Phytochemical analysis of *Ampelocissus latifolia* roots using various solvents.

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Comparative Phytochemical Analysis of *Ampelocissus latifolia* Roots Using Various Solvents

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ABSTRACT: In our country many plants are known for their medicinal properties and are widely used for the treatment of various diseases. *Ampelocissus latifolia* is one of the ethnomedicinal plants belonging to vitaceae family. It is large herbaceous climber with circular, broad leaves and tuberous roots. *Ampelocissus latifolia* is commonly used due to presence of biologically active compounds present in plants which are termed as phytochemicals or ethanol, methanol, ethyl acetate and pet-ether based on their polarity. The study includes comparison of phytochemicals present in extract which are obtained by using above solvents.

Keywords: Phytochemicals; *Ampelocissus latifolia*; soxhlets; ethanol; methanol; ethyl acetate and petroleum ether.

INTRODUCTION: Since ancient time medicinal plants played a very important role and have been used by man to cure many diseases. The Ayurvedic, Homeopathic, Unani & Siddha system of medicines are still prevailing predominantly use of plant based raw materials in most of their preparations and formulations. Phytochemicals are natural chemical constituent in the vegetables, plants, leaves, and roots that have defense mechanism. They may vary depending on the geographical location, cultivating practices and storage conditions and transportation can also affect the quality of finished formulation. *Ampelocissus latifolia* is one of the most widely used medicinal plant among tribal people. The sandals of Bihar used this plant for muscular pains, sores and fractured bones.^{1 & 2} The extracts of this root is useful in chronic dysentery.³ The roots of this plant are known to be used against snake bite.⁴ The present study emphasis on phytochemical present in *Ampelocissus latifolia* leaf obtained by using four different solvents. The selection of solvent is based on polarity like polar, mid polar and non-polar.

MATERIAL AND METHODS: The plant material, root powder of *Ampelocissus latifolia* was extracted separately in petroleum ether, ethyl acetate, methanol and ethanol solvents by using soxhlet extractor. These extracts were subjected to following tests to check presence of secondary metabolites.⁵⁻⁸

Test for saponins: 300 mg of individual extract was boiled with 5 cm³ water for two minutes, the mixture

was allowed to cooled and mixed vigorously. The froth formation indicates the saponins is present.

Test for tannins: To 100 mg of each extract, 2 cm³ of NaCl was added and then mixed with the 5 cm³ of 1 % gelatin solution. Formation of precipitate indicates tannins is present.

Test for Triterpenes: To the 100 mg of each extract, 5 cm³ of chloroform was added, and warmed for 30 min. In above solution few drops of concentrated H₂SO₄ was added. The red colour of solution indicates the presence of triterpenes.

Test for alkaloids: 100 mg of individual extract was digested using 2M HCl, this acidic filtrate was mixed with amyl alcohol at room temperature. The alcoholic layer turns pink in colour which suggests the presence of alkaloids.

Test for flavonoids: To the 100 mg of each extract, 1% aluminium chloride solution (prepared in methanol), 2 drops of concentrated hydrochloric acid, KOH and MgOH solutions were added. Pink-tomato red colour is obtained which concludes presence of flavonoids.

Test for steroids: 2 cm³ of acetic anhydride was added to 100 mg of each individual extract, further it was boiled and then cooled. To this solution, few drops of conc. H₂SO₄ were added from the sides of the test tube. The appearance of blue-green colour ring suggests the steroids are presence.

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Medicinal Properties of Natural Colourants /Dyes from Plants.



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Medicinal Properties of Natural Colourants/Dyes from Plants

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ABSTRACT: Now a days worldwide demand for natural dyes has increased due to the awareness and beneficial properties of natural dyes. The medicinal plants are widely used for curing various types of diseases. The natural dyes from these plants having several applications in textiles, cosmetics, inks, pharmaceutical paper industries etc. The natural dyes existing different shades of colours depends on metabolic functional groups. The present review, describes the information regarding the basic chemistry of plant pigments in relation to medicinal properties which may be useful to further development of pharmaceutical formulations.

Keywords: Alkaloids; Natural dyes; Pigments and Medicinal value.

INTRODUCTION: In nature many plants shows medicinal properties. Some of them gives natural colourants by extraction process. Pomgranate contains large quantity of tannin which shows antimicrobial activity. Some other plants like heena, alkanet and walnut shows antifungal and antibacterial properties. The antimicrobial activity was observed in dye powder of Rubia cordi and Kerria lacca plants. It was proved that some natural dyes show medicinal properties. In watermelon lycopene pigment gives red colour. Lycopene pigment is also observed in tomatoes and carrots. In food industries lycopene pigment is very important in colouring food material. It has great demand in food formulation. In recent years special attention is given on prevention of chronic diseases like cancer.

The epidemiological studies proved that the use of lycopene containing tomatoes in food causes low risk of cancer. Fruit of pomegranate uses as natural colourant and also shows medicinal importance. From the research data it was proved that fruit of pomegranate contains anticarcinogenic anti-microbial and antiviral compounds. Due to the presence of pigments in above mentioned plants, a spectrum of beautiful colours is observed. Spectrum colour starting from yellow to black and observed in 400 to 800 nm visible region because of absorption of light. This absorption is depends on the basis of structure and chromophores present in pigments.

Consumers are avoiding the use of synthetic colorants containing foods. Now a day food industries preferred only natural pigments for colouring the food. Natural colours are made from renewable sources. They are

extracted from plant material, insects, algae, cyanobacteria and fungi. Now a day natural colourants are formulated in various types of drinks and food. Legislation restricts on use of colorants are allowed, as well as sources used for that particular colorant. It also restricts on which solvents may be used for extraction and purification of colourants. Most of the pharmacological studies were preliminary, carried out in animals and are not sufficient for the development of a pharmaceutical product.

Natural dyes have a great scope. In the present scenario, it has been seen that due to the excellent advantages of natural colorants or dyes, they became attractive and alternative option for the synthetic dyes. The natural dyes have some properties due to which they are accepted as alternatives for synthetic dyes. Natural dyes are biodegradable in nature. They are non-toxic and environment beneficial and ecofriendly. They are aesthetically attractive and results in employment generation as well as useful in the wasteland utilization. Natural dyes can be easily extracted for their pigments. It includes the boiling of flowers, fruits and leaves, barks, roots and whole plant in water as solvent.

The utilization of natural resources and use of extracted pigments from the plants is significantly focused in various fields like pharmaceuticals, food stuffs, paper and textiles. It has been observed use of natural dyes is since long decades and the trend continues which aims towards the safety and protection of human health. Various research fields has proved that natural dyes have similar properties when compared with synthetic one hence, natural dyes can be commercialized.

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Short Review on Chemical Bath Deposition Technique



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Review on Chemical Bath Deposition Technique

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ABSTRACT: In recent year demands of semiconductor devices to use solar energy in different work has lead to study on chemical bath deposition method. As it is the simplest method to deposit uniform, stable and reproducible thin films and nanomaterials. This paper is a short review which tells us the scope of this technique in the field of photovoltaics. The growth of thin film depends mainly upon the time, temperature, and concentration of metal ion and the nature of the substrate used for study.

Keywords: Chemical bath deposition; Thin layers; photovoltaics and Temperature.

INTRODUCTION: Thin film is layer of materials which can be made by chemical deposition method ranging from micrometers to nanometer scale. The first thin film of PbS was prepared in 1984. later various combination of chalcogenides and chalcopyrite were used. The pioneer of thin film was bode et al from Barbara research institute initially the films prepared used as a photodetector after decade they employed as energy applications [1-2].

Chemical bath deposition is a simple technique to prepare thin films as compared to other methods such as CVD, spray pyrolysis sol-gel etc. the first film deposited by this method is made up of PbS which was used as a photodetector [3] later this technique was used in solar absorber coatings[4].

In past few years this technique found their active role in solar cells applications for more than 11% energy conversion [5]. P K Nair group has done tremendous work in this technique [6]. The photovoltaic laboratory at university science and technology has done lot of work for the preparation CIS/CdS thin film solar cells having both n-type and p-type materials[7].

PRINCIPLE OF CBD TECHNIQUE: In chemical bath deposition technique precipitation of solid phase occurs due to super saturation in the reaction bath. At given temperature when ionic product of reactant is more than solubility product precipitation occurs but if ionic product is less than solubility product then solid phase produced which dissolves back in solution

Resulting no net precipitate. Therefore it is necessary to control chemical reaction for better deposition. In this method mostly metal chalcogenides are used for thin films preparation.

METHODS OF DEPOSITION: There are mainly three ways to deposit thin films

- i) ION-ION Process-in this process ion condense at the reacting surface to form film.
- ii) Cluster by Cluster: In this process colloidal particles are formed in the solution due to homogeneous reaction which is absorbed at the surface of substrate to form thin layer.
- iii) Combination/Mixed process : Here predominance is governed by heterogeneous and homogeneous nucleation

FACTORS AFFECTING DEPOSITION PROCESS: CBD technique is mainly governed by following process:

- i) Nature of Reactant: if metal sulfate is used to deposit metal selenide film using selenosulfate the rate of deposition decreases and terminal thickness increases[8-9]
- ii) Concentration of reactant: initially rate of deposition increases with concentration but later higher concentration may lead to precipitation which decreases the film thickness.
- iii) Concentration of complexing agent: In general the concentration of metal decreases with increase in concentration of complexing agent can decrease the rate of deposition.
- iv) Reaction Temperature: with increase in temperature dissociation of molecules increases this may increase or decrease terminal thickness depending upon super saturation of solution.
- v) Reaction PH: When PH is higher the metal complex becomes more stable reducing metal ion availability hence decreases the rate of reaction and higher terminal thickness [10].

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Sustainable Manufacturing: Performance Evaluation of a Non Conventional Cutting Fluid



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Sustainable Manufacturing: Performance Evaluation of a Non-conventional Cutting Fluid

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ABSTRACT: Conventional cutting fluids pose serious risk to the environment. The carcinogenic additives in the cutting fluids have a negative health effect on the workers as well. These can infiltrate inside through nasal passage fumes and through contact and thereby causing various types of skin and respiratory diseases. Skin irritation is commonly reported by workers working in such environments where such cutting fluids are used. In order to find an alternate to the conventional cutting fluid, an attempt was done to develop a new cutting fluid which would be safe for human, environment and which would perform at par with the conventional cutting fluid. Tool tip temperature and surface roughness were studied at constant cutting parameters and different cutting fluids.

Keywords: Vegetable based cutting fluid; Surface roughness; Tool life; Tool wear and Temperature.

INTRODUCTION: Manufacturing industries are the backbone and an essential part for the prosperity of a nation. Every manufacturing industry involves metal removing process. Each material removal or finishing process requires the application of either straight oils or soluble cutting fluids. Heat is generated due to the surfaces coming in contact and friction and it has a negative impact on the cutting tool and can also deform the workpiece dimensions and also the form of the workpiece dimensionally [1-3]. So, a cutting fluid has to be used in order to keep the temperature under control.

There are different categories of cutting fluids viz straight oil, soluble, synthetic and semi-synthetic. Different class of cutting fluid finds applications in different areas of machining or material removal process. High speed machining requires the use of soluble oils. Soluble oils are water soluble. These are mixed up with water and then sprayed directly on the cutting zone. This helps in lowering the temperature and keeping it under limit [3].

This increases the cutting tool life and thus increases the production rate and minimizes the losses [9-12]. Application of cutting fluid also helps in subsiding the friction between the rubbing surfaces i.e. the tool and workpiece. [10-15]

Better surface is achieved by the use of cutting fluids as compared to dry machining [12-15, 17-19]. Studies done by many researchers have shown that use of cutting fluids reduces tool wear, increases surface finish and hence increases tool life [5-7, 14-16, 19].

The conventional cutting fluids have additives which are added to increase their life and cutting performance. These additives are carcinogenic and unsafe for humans and environment. A substitute to these is vegetable oil based cutting fluid. Vegetable oil based cutting fluids have high inherent viscosity and hence there is no need of adding additives to improve their performance. These have high lubricity also.

Another problem is the disposal of the conventional cutting fluids. These require thorough neutralization before being disposed into water bodies. This adds up to the cost of the cutting fluid. Whereas, vegetable oil based cutting fluids do not require such neutralization because they are not toxic and do not have any carcinogenic additive like the ones in the conventional cutting fluid.

To make oil soluble in water an emulsifier is required. Most emulsifiers are petroleum based. So we need to find an emulsifier which is not petroleum based and is safe for human use.

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