LITERATURE REVIEW

Joseph Pask and Maurice Warner (1953): A Differential Thermal Analyzer is composed of three major components. A sample holder, a controlled source of heat, and a device for the measurement of the heats of reaction. Fundamentally only a few basic ideas exist although practically no two units are exactly alike in detail because they are generally assembled individually. The actual design employed, in addition to personal preferences, is primarily controlled by economic factors and the ultimate purpose of the data.

Xu. Zhu (1992): The paper on Star chromatic number and products of graphs deals with the concept introduced in order to generalize an aspect of the chromatic number of a graph. The works on the paper also cater to develop a parallel approach towards star chromatic number of a graph and thereby gives scope of understanding or analyzing the convolution among the two chromatic numbers. There are few other aspects of homomorphism among graphs that can be correlated with the help of this star chromatic number of the planar graph.

Xu. Zhu (1992): Another work by the researcher on the chromatic number of the products of hypergraphs where a specific type of n+1 hypergraphs are discussed. The paper discusses two specific results including the result that if two graphs contain a specific number of complete sub hypergraph of a certain order then these two graphs do also contain vertex critical with the same order of sub hypergraphs. The second is that of the product hypergraph among both the sub graphs taken under study. They have introduced the concept of loop less hypergraphs as well with the help of loops of edges $|e| = 1$.

The paper develops with a product conjecture on the two graphs with reference to their minimal distance. $\chi(G \times H) = n + 1$, further to involving coloring among them.

N. Sauer and X. Zhu (1992): In the paper titled “An approach to Hedetniemi’s conjecture” there has been an attempt to compare the chromatic number of a graph G with some fixed integer value or complex which further maintains the existence for n+1 of another graph having that chromatic number and for further cases too. This association further sees to it that the product graph formed by $G \times H$ can
settle with n+1 chromatic graphs of their own. The paper challenges an age long problem of all graphs pertaining the chromatic number to be n. To consider G to be strongly persistent imagined H sum of G to be persistent as well. The paper has prominent results as follows. The construction of G by $K_{n+1}$ considering the possible edges and vertices will form G to be persistent. This further contradicts.

**N. Sauer and X. Zhu (1992):** The paper on Multiplicative posets for morphism of inter elements of posets forms involved in it. This can be considered as a directed or a non-directed formation. Incase of directed morphism under $P \to Q$ direction in other forms $P \not\to Q$. The paper also involves the multiplicative property of internal posets. The property is described in the form of well founded trees of a particular height that is a variable parameter.

**P. Hell and X. Zhu (1993):** The paper with title "Homomorphisms to oriented cycles" involves a great understanding of the homomorphism existence towards oriented cycles. This is done with a special class of cycles reforming the diagraphs forming a homomorphism onto itself. NP $\cap$ coNP is a specific type of diagraph formation of the subgraphs onto the corresponding relation. The paper utilizes the pre defined $\Psi$ onto a countable cycle of B-cycle formation that further relates the diagraph so formed. The paper further advances with the homomorphism of the type $h_{\psi}$ which collapses onto the conclusion of the research.

**P. Hell and X. Zhu (1994):** The paper named as “Multiplicative oriented cycles” basically categorizes the specific cycles of the oriented cycles C falling under the category of diagraphs to not involve the multiplicative forms or the product forms.
Above we see some prominent results from the mapping of inter-forming posets. The existence of the oriented paths are related using the initial and final terminals. This further falls onto the common preimage theorem for multiplicity of those cycles.

**P.Hell and X. Zhu (1995):** The paper on the existence of homomorphisms to oriented cycles depicts a path homologous of diagraphs that are arbitrary on an oriented cycle $C$. The main aspect of the paper deals with the unbalanced forms of the diagraph $G$ with $C$ being associated within. The further extension to the proof includes the orientation of the holomorphic forms from $C$ to $G$ as any diagraphs inside it. The length of cycle formed over $C$ depicts the same cycle forms over $G$ associated in it.

**H.Zhou and X. Zhu (1995):** A paper on a note on homomorphisms to acyclic local tournaments represents a clear idea of vertex mapping. The inset and outset of a diagraph depicts a tournament is when it is seen to call it local in the form of a diagraph. The two types of directed graphs and acyclic tournaments cater to most of the needs to generalize this term. Involving $H$ as a directed path and having a transitive tournament there is a case of transitive tournament in an aspect of having a homomorphic pre image inside it. Then it discusses the transitive tournament involving homomorphism of oriented path.
G.Gao and X. Zhu (1995): Star-extremal graphs and lexicographic product deals with the star chromatic number and the fractional chromatic number over ordinary chromatic number of a graph. In case the equality of the star chromatic and fractional numbers are same the graph is said to be star external. Having said the necessary condition the property also includes lexicographic product of the star chromatic number. Also the paper discusses the other classes of circulant graphs to be star external.

J.Nevsetvril and X. Zhu (1996): Path homomorphisms deals with the mapped homomorphisms with oriented paths that are finite. The further investigation deals with the density theorem for the homomorphism between the oriented paths. It is a mere finite number of path needed to represent a two dimensional countable poset. This is further attached to their trees and their individual homomorphism.

X. Zhu (1999): Game coloring number of planar graphs takes into account the game chromatic number of a graph. This ideology further gives an upper bound to the graph having a specific quality like this. Thus achieved for a planar graph the game coloring is 19 at most. This result is found to be improvised than many other forms of the similar posets of graphs.

A.L. Westerling and et al (2006):-Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity. This research article shows disencumbered picture of Western United States governance regime about laxity towards various documentation, as per analysis shown there has been constantly increased the number of wildfire forest activity in the western region of United States in recent decades. Moreover this articles show the diluted and more clear structure about regime for instance instead of documenting the wildfire forest activity, they are focusing on the effect of 19th and 20th century land-use history. The lacuna created by regime, here authors have work on comprehensive data base of all kind of activity which happen in wildfire forest and complied it in such way that, it gives lucid and wonderful picture of western U.S. forest wildfire activity specifically in the mids- 1980s. Authours have done careful study of most all significant activities such as higher large-wildfire frequency, longer wildfire
duration and longer wildfire seasons. Finally shown, how fire risk activity are strongly linked with spring and summer temperature.

**Gre Gaklančnik and jo ŽeFMedved (2009):** Thermal analysis is used to establish thermodynamic properties which are essential for understanding the behavior of material under different heating and cooling rates, under inert, reduction or oxidation atmosphere or under different gas pressures. Thermal analysis comprises a group of techniques in which a physical property of a substance is measured to a controlled temperature program. In this paper only two methods are presented: differential thermal analysis (DTA) and differential scanning calorimetry (DSC). The results given from the DTA or DSC curves depend on the preparation of the material, and on the instrument sensitivity. The sensitivity is in close relation to the apparatuses design. Several types of DTA and DSC apparatuses are described as well as the use. New types of DSC devices are being developed which will have the capability of high heating / cooling rates and with shorter response time.

**S.K.VaidyaandC.M.Barasara (2012):** Edge Product Cordial Labeling Of Graphs
This research paper deals with labeling of discrete structure and its potential which deals with research method and research methodology. And the concept of edge product cordial graph has been defined emphatically with various theorems and its proof. Moreover this paper has given the area of application in graph theory such as to derive the analogous result of divergent graph as well as the tenor and frame of reference of various graphs labeling problem.

**S K Vaidya and C.M Barasara (2012):** Further results on products cordial graphs. A binary vertex labeling of graph G with individual edge labeling defined by is called cordial labeling if and only if the cordial if it admits cordial labeling. The paper further proves that the shell admits a product cordial labeling. Sundaram also proved that if a graph with p vertices and q edges with p then we further present a family of graphs that satisfies this condition but not product cordial. We begin with simple, finite, connected and undirected graph with order p and size q. for all standard terminologies and notations. We follow the Harrary [t3].

**Kelli Talaska and Lauren Williams (2013):** This paper deals with the evaluation of KazenLusztig polynomials. The author has introduced his decomposition tool with a partial flag variety. There is also an explanation of the Deodhar
decomposition of the Grassmannian, wherein Deodhar introduced certain components as $R_D$ of the Grassmannian they are isomorphic to the given conditions.

The main result focuses on networked Deodhar component in the Grassmannian relating go-diagram $D$ and weight matrix with a weight network. The further result of the parametrization are found with the help of lemma given by Lindstrom-Gessel-Viennot.

Ghodasara and Rokad (2013): $K_{m,n}$ is cordial for all $m$ and $n$. In this paper cordial labeling for three graphs related to complete bipartite graph $K_{n,n}$ is discussed. We prove that (1) star of $K_{n,n}$, path union of $K_{n,n}$, and the graph obtained by joining two copies of $K_{n,n}$ by a path of arbitrary length are cordial graphs.

R. Ponraj and S. Sathish Narayanan (2013): The paper introduces a notion called as the difference cordial labeling. Let $G$ be a graph and $f$ be a function for $p$-tuples from $G$. For every edge $uv$, assign the label, then $f$ is called a differential cordial labeling if it has a 1-1 map. A graph with a difference cordial labeling is called a difference cordial graph.

AbhaTennguria and RinkuVerma (2013): In this paper we investigate a new labeling called 3-total super product cordial labeling. Suppose $G = (V(G), E(G))$ be a graph with vertex set $V(G)$ and edge set $E(G)$. Any graph which satisfies 3-total super product cordial labeling is called 3-total super product cordial graphs. Here we prove some graphs like path; cycle and complete bipartite graph $K_{1,n}$ are 3-total super product cordial graphs.

Shaikh Irfan Ahmed and M.B Joshi (2013): Impact of Climatic Parameter on Cotton Yield of Three Districts in Marathwada (Maharashtra), India. This research article deals with effectuate in weather on the cotton crop which concede in three districts with the help of some significant statistics tools such as t-test, correlation coefficient and multiple regression. As it is evident, the weather plays a huge role in all kind of agricultural production and especially in India where 75%-90% land is based on natural rainfall. After using appropriate analysis of data, it reveals that yielding of crop is fully based on rainfall and moreover it depends on maximum
temperature and minimum humidity. The major outcome of this research article is a great amount of elevated in the area and production but inconsonance of lower acquiesce remains same as years go in Aurgangabad, Beed and Jalna. Since, cotton crop are the most significant crop Marathwada especially so such research based study will be an immense motivation towards the yielding cotton crop all over India.

**Satish (2013)**: Introduction To Graph Theory  This research article deals with the delineation of graph theory in various field of mathematics as well as other area such as computer application for research. Author has introduced the precise definition of graph with addling elements of vertices and edges. A pair $G = (V, E)$ with $E \subseteq E (V)$ is called a graph (on $V$) followed by the detail explanation of vertices, edges and subgraph. In 1735, the invention of graph theory happened due to the problem of Königsberger Bridge and later the advantage of this problem convoy the Eulerian Graph. As time progress, the idea of bipartite graph & complete graph was constructed by A.F. Möbius in 1840, followed by Kuratowski substantiated that both the graph (bipartite & complete) are planar by means of recreational problems and then the progression continuously happen by Gustav Kirchhoff (1845), Thomas Gutherie (1852), Kirman& William (1856) and finally in 1913, H.Dudeney announced the puzzle problem. Graph theory has immense application in real world problems, analyzing “things that are connected to other things”, easiness in solving difficult problem of algebra.

**Mihyun Kang and Zdeněk Petrášek (2014)**: Random Graphs: Theory and Applications from Nature to Society to the Brain. Through this article, Authors wants to unfold the phenomenal applications of random graph which has been use in to mathematics over 50 years and it depicts how the journey of random graph has been used right from first definition to many scientific disciplines. Notwithstanding author has mentioned very precisely although this article leads to application but still it could not give thoroughgoing doctrine about the theory of random graph. However, this article leads to brief requisition about the special topic of random graph such as Erdos-Renyi random graph model, Limit theorem, Random hypergraph, random planar graph etc. and in terms of advent titan component in random graph, authors has given a very special attention on
intriguing prodigy of phase transition. And finally the article showed how abstract mathematics will be useful and have direct application of real world phenomenon.

**Hamid and et al (2014):** - Humidity Sensors Principle, Mechanism, and Fabrication Technologies. In this article, authors have given the importance of humidity measurement and how it plays a crucial role in many areas such as climatology etc. the main purpose of this article is to fabricated humidity sensor and its cultivation towards laboratory application and industrial purpose. There are multitudinous forms of humidity sensor which are based on distinct sensing element e.g. hybrid composite, polymer, ceramic. Moreover, there is an important feature of this article; there is an immense and scrupulous discussion on a protonic condition type and mechanism of sensing and it accepted at 85o room temperature followed by some key factors such as structural characteristics and some advanced progenitor quantities for instance sensitivity, stability and efficiency. Some humidity sensor like laboratory research & automated industries are the best befitting and the most widespread.

**VJ Kaneria and et al (2014):** - Gracefulness Of Cycle Of Cycles And Cycles Of Complete Bipartite Graphs. This research article deals with important property of graph theory i.e. graceful and cordial labeling of graph when the value of \( t \) is zero and also author has proved, \( t \) is even integer then cycle of consummate bipartite graph is graceful. Authors have introduced the title with impeccable definition of graceful labeling, binary vertex labeling, and cycle of graphs. The main gist of this article is the main result about how cycle of complete bipartite graph is graceful and its illustration with prevalent graceful flow as follow,
S. K. Vaidya and C. M. Barasara (2015): -On Embedding and NP-Complete Problems of Equitable Labeling. This research article deals with the complete predicament of equitable labelling in graph theory which has an allocation of integers to the vertices or edges or sometime both and depends on the subject to certain condition and authors have given the precise clarification of Acharya et al about a graph G which can be engrafted as an induced subgraph of a graceful graph and this has shown that for graceful graph on the same line it is practically impossible of obtaining any contraband subgraph characterization. Moreover authors have discussed NP – complete problem with help of 5 different theorem and its proof which leads to the correct conclusion and embedding of equitable graphs are explained by many significant theorem and its proof and most of the theorem of equitable graphs have been explained by 2 or more than 2 cases for almost each of single theorem.

Roslan Hasni and Almothana Azaizeh (2015): For a graph G = (V(G),E(G)) on edge labeling function function f:E(G) where induces a vertex labeling function the product of the labels of the edges incident to v(mod k). This function f is called k total edge product cordial labeling of G if in this paper 3 total edge product cordial labeling for star related graphs is determined.

Hamid and et al (2016):-Comparison of Delphi and Analytic Hierarchy Process (AHP) techniques in locating flood spreading. In this article, Delphi & AHP techniques have compared predominantly and explain the importance substantially well. Since Iran comes in the dessert area of earth space so the major factor which is highly significant and has great impact is water scarcity. Moreover, maximum part of Iran falls in to the desiccated and semi desiccated therefore due to water scarcity controlling the catastrophic floods is the most significant activity and hence the study of Delphi & AHP techniques are the need of present time. For this study,some statistical tool have been used such as Questionnaires were taken and filled by the target group and it has distinguish between three different criteria such as 4 main, 8 sub and 24 indices of flood spreading and it is examined by AHP in expert point of view followed by GIS (Geographic Information System) were used to do mapping then for alluvium volume and unemployment rate, results of AHP and views of expert panel the highest and lowest degree and its importance were
recorded. Similarly in Delphi techniques some important factor for location flood spreading for Ivar watershed such as indices of soil permeability, flood quality, soil texture, slope, aqueduct and sub-criteria of water.

**Suhua Liu and Hongbo Su (2016):** To estimate the surface air temperature by remote sensing, the advection energy balance for the surface air temperature (ADEBAT) model is developed which assumes the surface air temperature is driven by the local driving force and the advective driving force. The local driving force produces a local surface air temperature whereas the advective driving force changes it by adding an exotic air temperature. An advection factor is defined to measure the quantity of the exotic air brought by the advection. Since the \( f \) is determined by the advection, this paper improves it to a regional scale by using the Inverse Distance Weighting (IDW) method whereas the original ADEBAT model uses a constant of for a block of area. Results retrieved by the improved ADEBAT (IADEBAT) model are evaluated and comparison was made with the instrumental measurements, with an 2 (correlation coefficient) of 0.77, an RMSE (Root Mean Square Error) of 0.31K, and a MAE (Mean Absolute Error) of 0.24K. The evaluation shows that the IADEBAT model has higher accuracy than the original ADEBAT model. Evaluations together with a \( t \)-test of the MAD (Mean Absolute Deviation) reveal that the IADEBAT model has a significant improvement.

**Dr. Amit Rokad and Kalpesh Patadiya (2017):** In this paper we prove that Shadow graph of Star \( K_{1,n} \), Splitting graph of star \( K_{1,n} \) and Degree Splitting graph of star \( K_{1,n} \) are cordial graphs. Moreover we show that Jewel graph \( J_n \) and Jellyfish graph \( J_{n,n} \) are cordial graphs.

**Ruchita S and Rohit S (2017):** -Effect of Global warming on Indian Agriculture In this article, authors have given how effect of temperature is directly proportional to yielding of crop in India. India”s economy is fully based on agriculture, if agriculture sector is affected then it will de direct impact on Indian economy. The diversified effect of global warming is not only in irregular rainfall but also affecting the climate change drastically. Hence crop production affected at severe level by sporadic rainfall, elevated temperature, increased the level of carbon
dioxide in the atmosphere. According to research study, it is emphatically proved that the impacts of weathering parameters are much higher than other parameters such as nutrient management and soil quality. The ratio of weathering parameter to soil & nutrient management is 67:33. The ultimate outcome of this article is for every 1°Fo elevation of temperature, yielding of crop fallen by 3% to 5%. At the end, authors have given a very significant solution for above mentioned problem like government must endorse an effective policy which boost the level of agriculture sector and it will help to grow economy.

Ozabor and Nwagbara (2018):- Identifying Climate Change Signals from Downscaled Temperature Data in Umuahia Metropolis, Abia State, Nigeria. This research article shows that there are very significant evidence that temperature have change drastically and it is very much evident from downscaled data of Umuahia in Abia state. Notwithstanding GHGS exhalations propagation and escalation of population, uncontrolled urbanization are the factors advocated by HadGCM3. Neverthless with incertitude in forecast the temporal patterns of temperature suggested that there are changes from normal to normal for current and future temperature pattern. Due to this, there will be some impeccable changes and drastic effect on environmental impact and there will be irreparable damages if necessary steps were not taken in given period of time. Moreover in this research article some important statistics tools have been used such as ANOVA and p-value method.

Mekonnen H Daba (2018):- Assessing Local Community Perceptions on Climate Change and Variability and It’s Effects on Crop Production in Selected Districts of Western Oromia, Ethiopia. This paper deals with the peoples cognizance towards environmental changes occurred in given period of time. The perception of small holder farmers taken into consideration, their viewpoint, their strategies of various variability happen when climate change. Moreover, primary data has been used of almost 204 respondents at the basic level of quantitative and qualitative approach. The most impressive thing about this paper, Author has used some statistics tool such as Stratified sampling frame and Cluster sampling frame. After completion of experiment, farmers has able to perceived all kind of changes which happened in environment such as strong wind that led to inflate farming problem for instance, soil abrasion, loss of soil potency, reduction in crop yields and high rate of disease occurrence was shown in the paper.