



UKAI-GLHV-23-169178



2311, I - Cross Mahantesh Nagar, BELGAUM - 16
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SOLUTIONS

ENVIRONMENT AUDIT REPORT

This to certify that *Our Audit Team* has visited JSS's Shri Tammannappa Chikodi Arts, Commerce, BBA, BCA, B.Sc. College, P.G.& Research Centre, **Banahatti** Ta: Rabakvi-Banahatti Dist: Bagalkot 587 311 on 24th March 2023 and undertook the "ENVIRONMENT AUDIT" work of college campus.

The college is located in **Banahatti**, of City Municipal Council Limits of Rabkavi-Banahatti. The population of City Municipal Council is 71,896 (2011 census). The twin cities Rabkavi-Banahatti are absolutely agriculture cum business centers. The twin cities are known for textile industries. The number of saree weaving power looms are around 22,000. (highest in Karnatak) . It is also known very good quality of production of saree. (a brand name Rabakvi Banahatti Sadi) . This is mainly because of availability of skilled workers in and around Council limits of cities .

It seems to be that, whole city is free from industrial harmful- gas effluents.

AIRVEDA Camera Techniques Beta Attenuation Method (BAM) has been employed to check the air quality parameters in terms of Air Quality Index (**AQI**) and audible intensity measured in decibel Bell (**dB**) by standard sensors of sound.

The details of Geographical, Environmental and Weather parameters of twin cities Ta: Rabkavi-Banahatti Dist: Bagalkot are follows.

GEOGRAPHICAL PARAMETERS

1. Altitude from sea level : 542 m. (1778.302 ft)
2. Latitude: 16.477015 N.
3. Longitude: 75.125055 E.
4. Geographical location: Krishna main basin.
5. Weather Chart of Rabkvi (Ref: *Koppen Gieger Weather Chart.*) : BSh
6. Topo sheet : enclosed
7. Perennial water flow direction : Due North
8. Location : City Municipal Council Rabkavi-Banahatti.

PHYSICAL PARAMETERS

9. Average Temperature : 19 to 39 Celsius.
10. UV Index : 5 to 9 normal
11. Average rainfall : 100 - 320 mm.
12. Rainy peak month : August-September
13. Average Humidity : 30 % to 65%
14. Least humid period : March to May
15. Clear Visibility : up to 7 to 10 km
16. Gust and wind velocity 10 to 30 km / h
17. Average pressure : 1006 to 1013 mb
18. Snow fall : Nil



SUSTANABLE POLLUTION LEVELS

19. AQI level :	92	28.45	Moderate	(safe as MoEF per standards)
20. CO level:	02	251.81 $\mu\text{g m}^{-3}$	Good	(250 $\mu\text{g m}^{-3}$ as per MoEF standards.)
21. NO _x level :	03	6.59 $\mu\text{g m}^{-3}$	Good	(80 $\mu\text{g m}^{-3}$ as per MoEF standards.)
22. O ₃ level :	06	71.79 $\mu\text{g m}^{-3}$	Good	(100 $\mu\text{g m}^{-3}$ as per MoEF standards.)
23. RPM :	43	41.48 $\mu\text{g m}^{-3}$	Good	(605 $\mu\text{g m}^{-3}$ as per MoEF standards.)
24. SO _x level :	06	11.28 $\mu\text{g m}^{-3}$	Good	(50 $\mu\text{g m}^{-3}$ as per MoEF standards.)
25. SPM:	92	28.45 $\mu\text{g m}^{-3}$	Good	(100 $\mu\text{g m}^{-3}$ as per MoEF standards)
26. Pollution levels :		Well within safe range		(as per MoEF standard)
27. dB level: 40 to 50		Better range		(as per the BIS audible standards).
28. The illumination level :		Better range		(as per BIS mark 3646 part I.)

TYPE OF SOIL, PH, QUALITY OF WATER AND GREENARY

29. Type of soil : Gravel murum pink-red type soil with PH of soil : 7.2 to 8.6
30. Water quality : Water RO and UV filter (Report is enclosed in separate sheet)
31. Greenery in the campus : Appreciable

MISCELLANEOUS

32. Max Hottest day 05th May every year, 12:26 PM +5.30 GMT
33. Max Humid day 07th Aug every year , 12:36 PM + 5.30 GMT
34. Distance from Equator : 1827.8 km
35. Distance from Tropic Cancer 773.63 km
36. Electromagnetic Radiation < 40 μT (safe as per the BIS standards).

All Environmental related charts and their importance are submitted to the college.



Technical staff



Convener

Environment Audit Team

Date :24th March 2023

Place :Banahatti

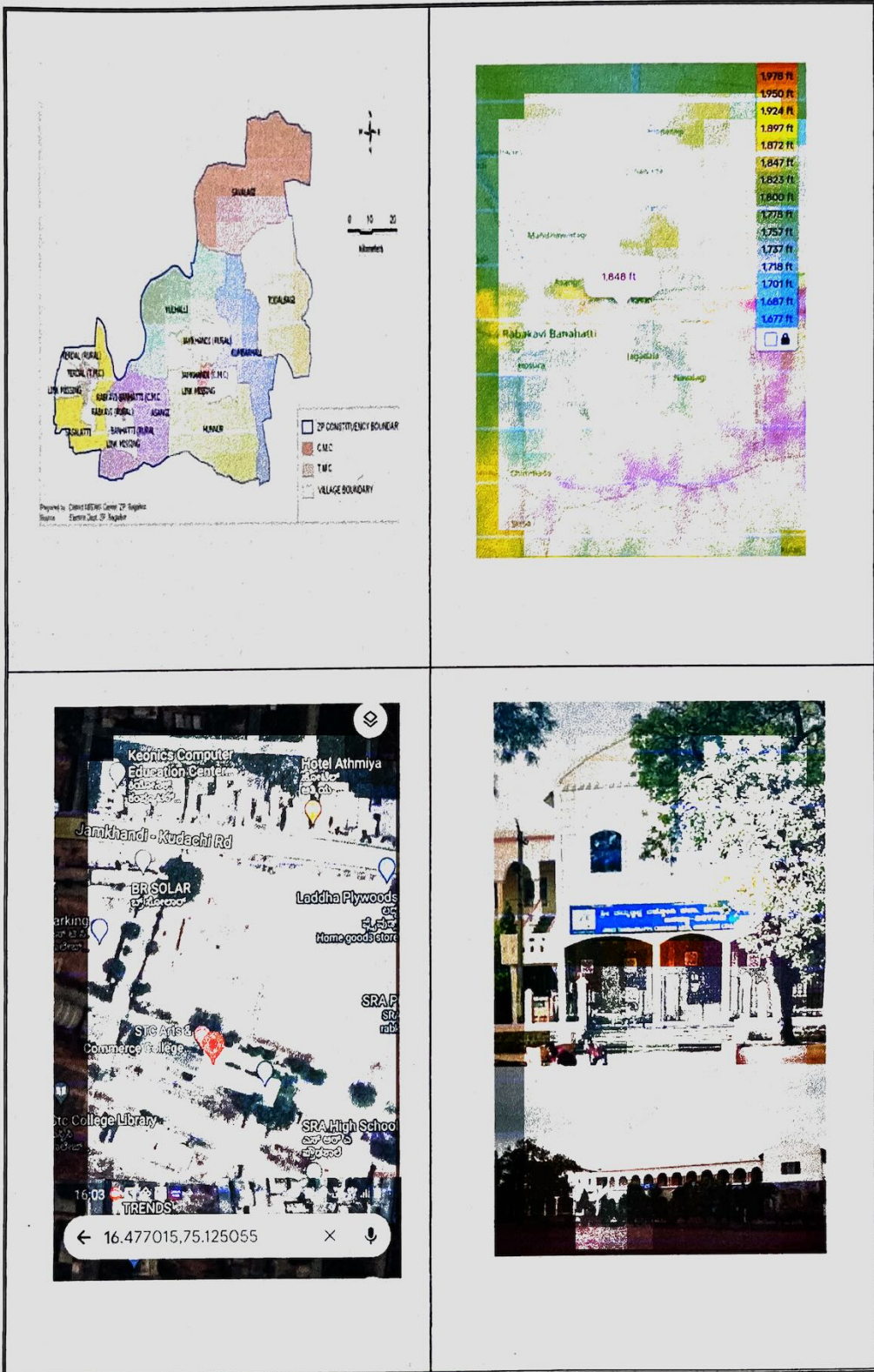


JS Sangha's

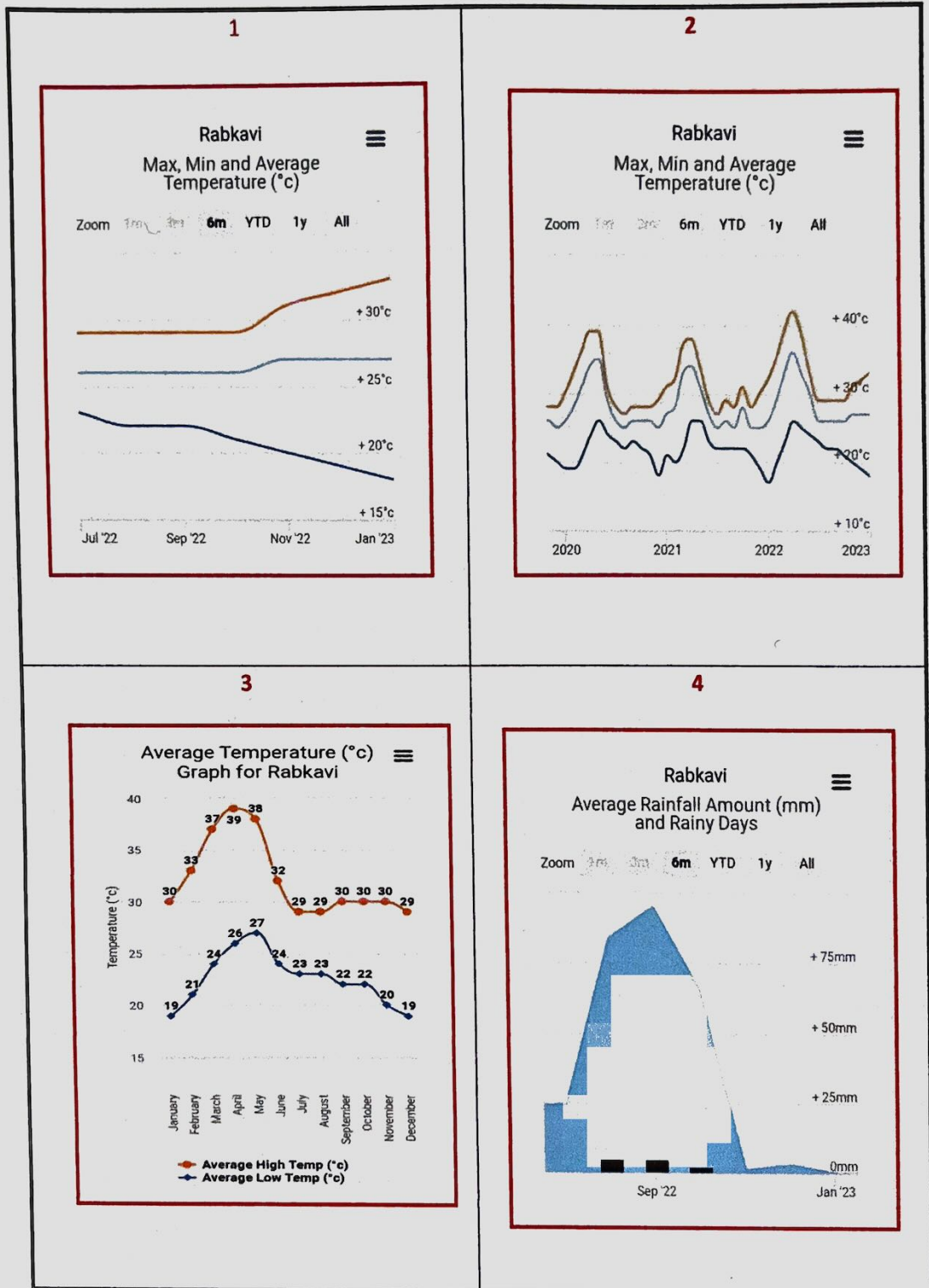
Shri Tammamappa Chikodi College of Arts and Commerce, BANAHATTI

587 311

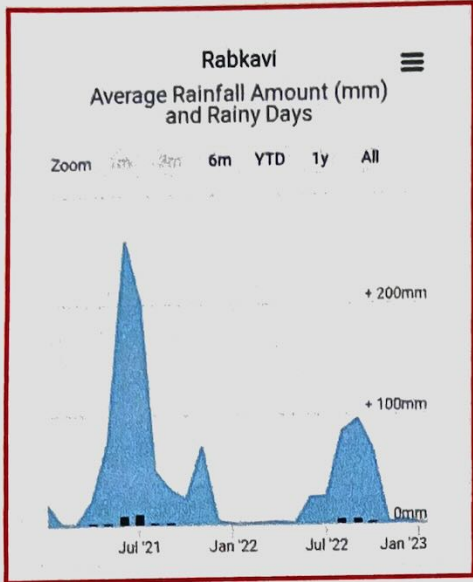
Ta: Rabkavi-Banahatti , Dist: Bagalkot



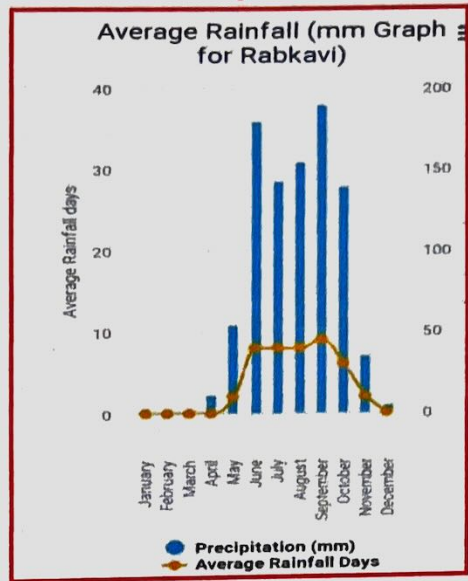
Environmental Parameters



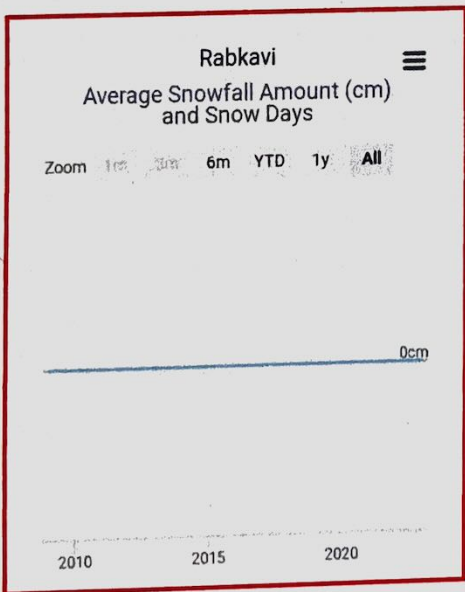
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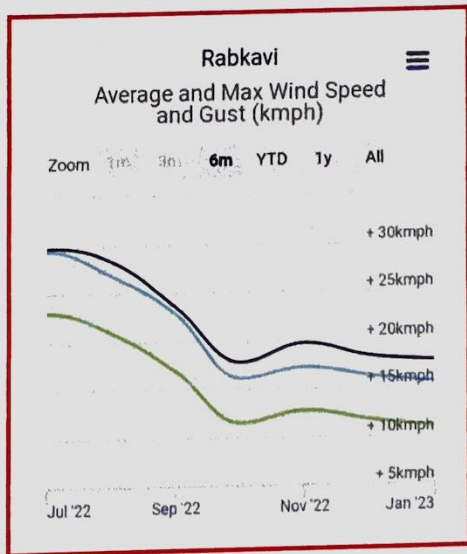
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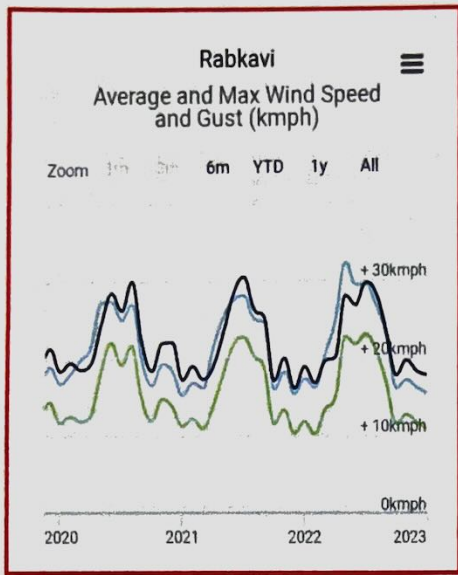
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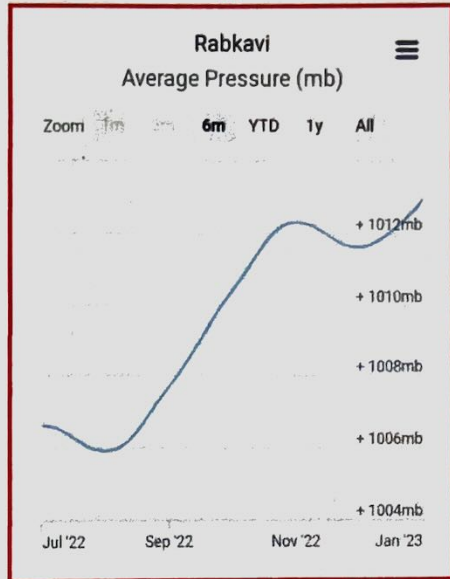
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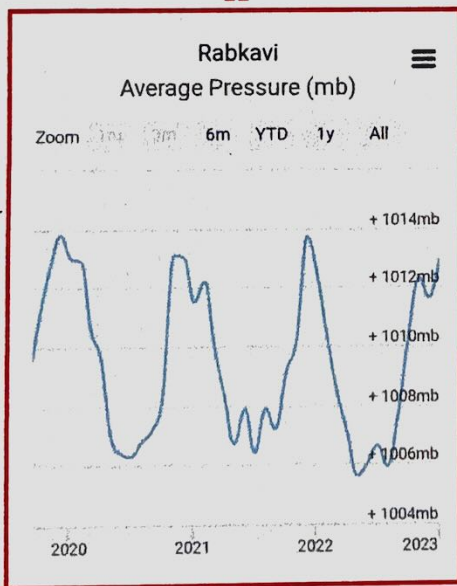
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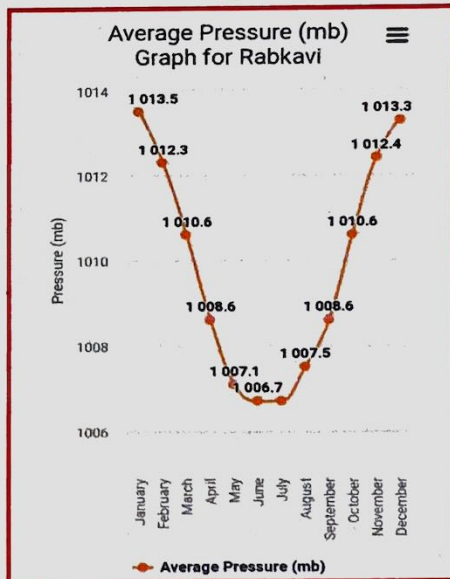
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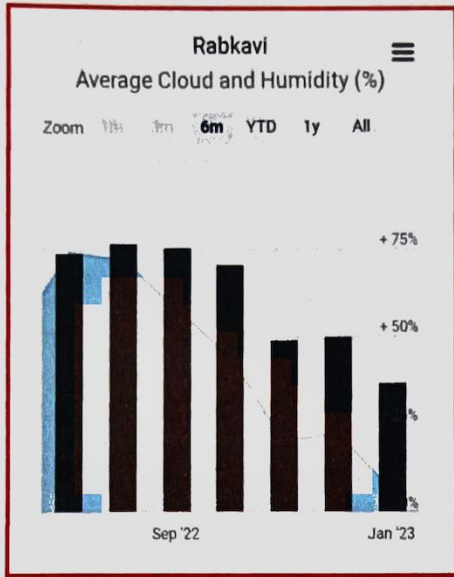
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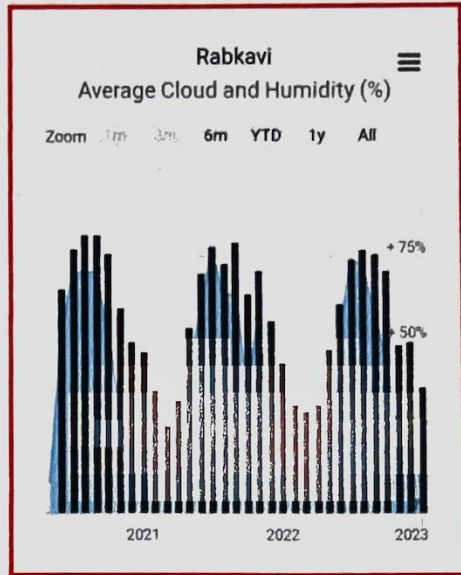
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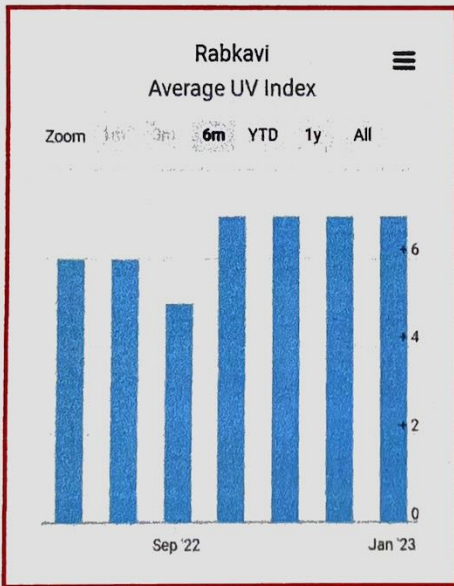
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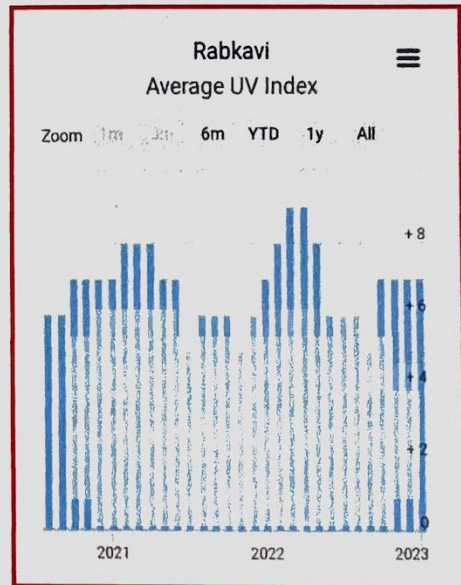
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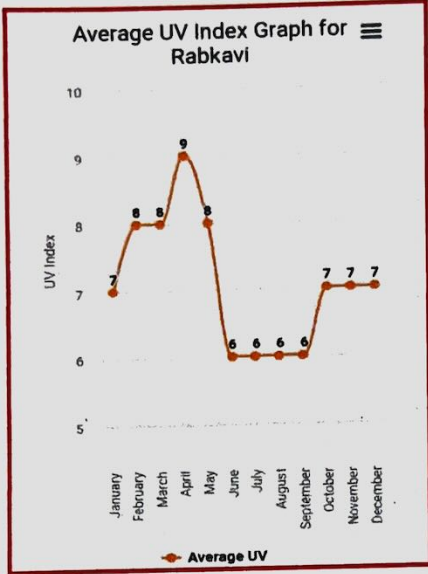
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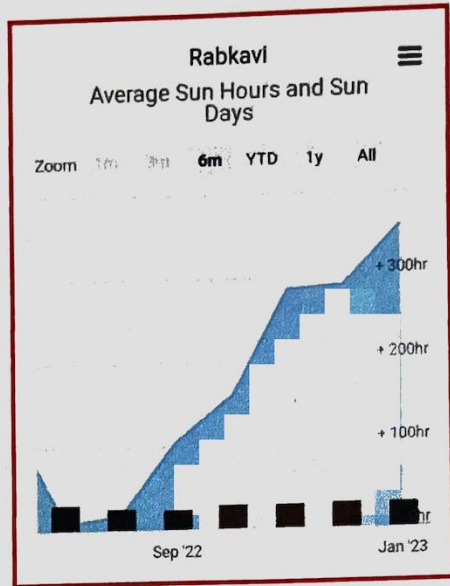
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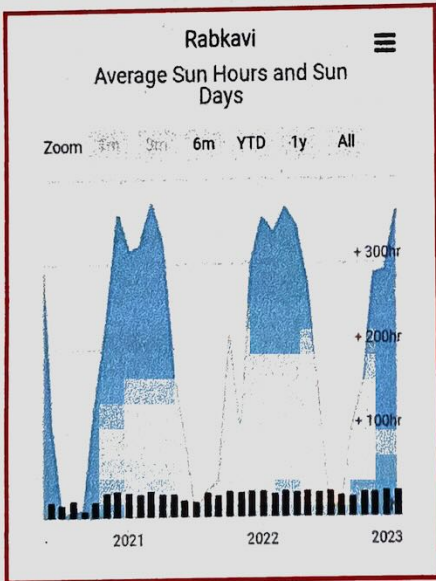
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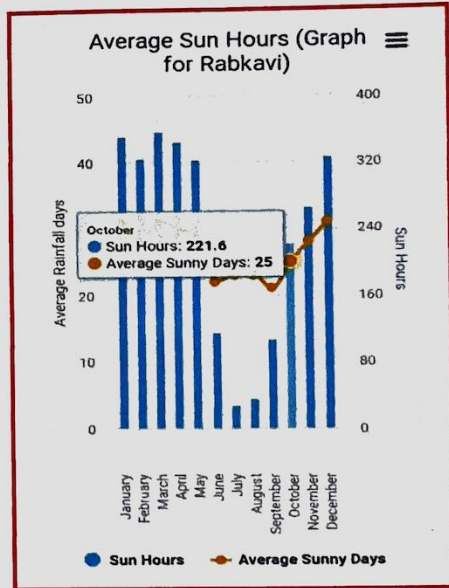
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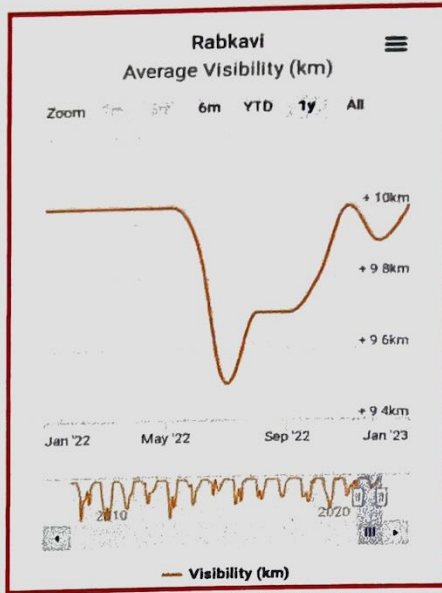
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22



23

All Pollutants

- 92** PM2.5 (Particulate matter less than 2.5 microns)
Moderate
28.45 µg/m3
- 2** CO (Carbon Monoxide)
Good
258.81 µg/m3
- 3** NO2 (Nitrogen Dioxide)
Good
6.69 µg/m3
- 46** O3 (Ozone)
Good
71.92 µg/m3
- 43** PM10 (Particulate matter less than 10 microns)
Good
41.48 µg/m3
- 6** SO2 (Sulfur Dioxide)
Good
11.28 µg/m3

Pollution Level

24



*Unhealthy for Sensitive Groups

AQI Level



AIR QUALITY INDEX @ RABKAVI -BANHATTI

Today's Air Quality - Rabkavi, Karnataka, India

92

Moderate

Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.



Signature



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ENERGY AUDIT CERTIFICATE

This to certify that *Our Audit Team* has visited JSS's Shri Tammannappa Chikodi Arts, Commerce, BBA, BCA, B.Sc. College, P.G.& Research Centre, **Banahatti** Ta: Rabakvi-Banahatti Dist: Bagalkot 587 311 on 24th March 2023 and undertook the "ENERGY AUDIT" work of college campus.

The college is located in **Banahatti**, of City Municipal Council Limits of Rabkavi-Banahatti. The population of City Municipal Council is 77,004 (2011 census and 1,06,000 population in the year 2023 as extrapolated). The twin cities Rabkavi-Banahatti are absolutely agriculture cum business centers, The whole cities are known for textile industries. The number of saree weaving power looms are around 22,000. (highest in Karnatak) . It is also known very good quality of production of saree. (a brand name Rabakvi Banahatti Sadi) . This is mainly because of availability of skilled workers in and around Council limits of the city . It seems to be that, whole city is free from industrial harmful- gas effluents.

The Energy Audit is a retrospective survey and analysis of energy requirements. The energy conservation principles have been adopted with minimal use of energy judiciously .i.e

"Whenever necessary

and

Where ever necessary use electric energy".

All the energy requirements are collected from each and every class room, laboratory, office, staff common room, library, computer lab etc.,

A separate log sheet of energy consuming appliances is made ready for ease of energy management. An energy **sensitization awareness program** is developed among the staff and students.

Need of Energy Audit

- To minimize the cost of energy consumption
- To minimize the operational costs
- To minimize the cost of maintenance



ENERGY AUDIT METHODOLOGY

The Audit involves visiting physical position of load and to carry out the inventory of load. Due measurements of electrical load of requirement and adequate circuit is carried out . Energy bill received from HESCOM is audited and analyzed in various location of energy utilisations. The optimum utilization / requirements are judged and finalized. Energy conservation and saving opportunities are identified, proper circuitry plans are implemented.

ANALYSIS OF ELECTRICAL ENERGY UTILISATION

HESCOM CONSUMER BILL for the last five years have been analyzed

There is a single power consumer ID with eight power connection nodes for the whole college. Analysis follows on separate sheet. The energy sensitization programs are notified among the staff and it is found that there is decline trend in use of electrical power(very judiciously) without affecting the routine work of college activities.

Graphical analysis of use of power meter wise, and total bill wise (consolidated) has been worked out .

The analysis of data is as follows

S.No	Year	Average Power units consumed	Remarks
1	2018	2205	A graphical analysis shows that there is initial incremental trend in the beginning. It is found that there is " <u>decline trend</u> " in the two last year.
2	2019	2383	
3	2020	1557	
4	2021	1558	In the year 2019 because infrastructure developments electrical energy is utilized within appreciable limits only
5	2022	2019	
**Appreciation			15.27 % 9.8 units yearly decrease, respect to previous highest.1945 unit/month is five years integrated average.


***Note :**

Maximum consumption of electric power in the year 2019..

Optimum utilization principle of conservation of electric energy, is always followed (Adopting modern electric appliances)

It is observed that stand alone solar energy harvesting units are installed in campus. Because of this facility the college is getting electric bills as per HESCOM norms.

** Decline trend indicate practicing "use of electric power is done very judiciously". This is reflected from the EXCEL graphical analysis sheets.


Technical staff


Convener

Energy Audit Team

Place :Banahatti

Date : 24th March 2023

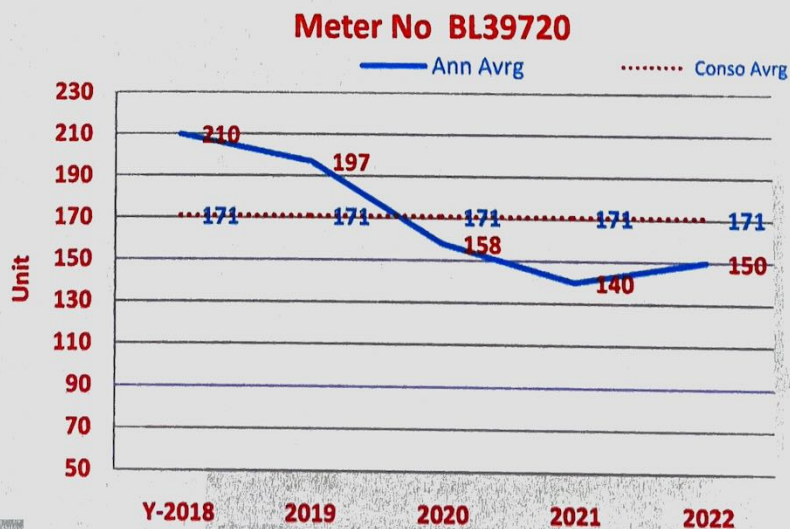
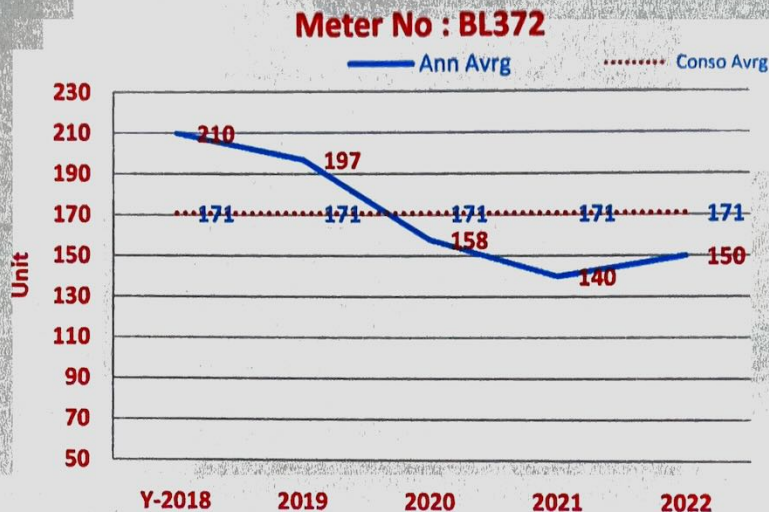


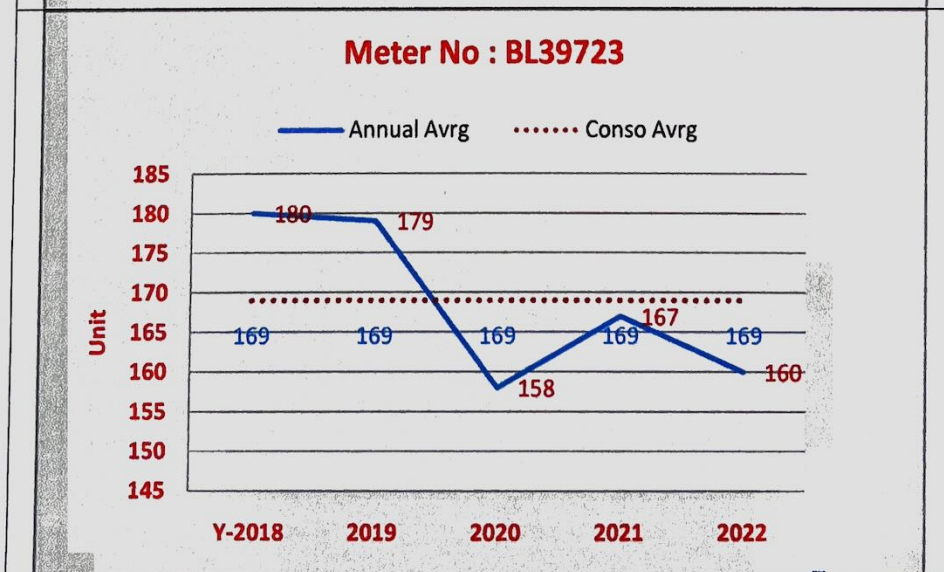
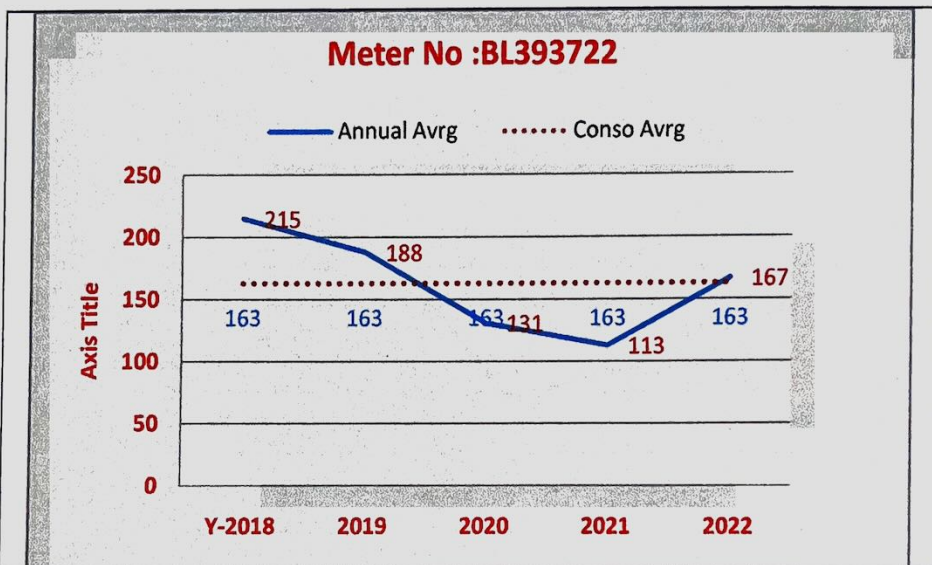
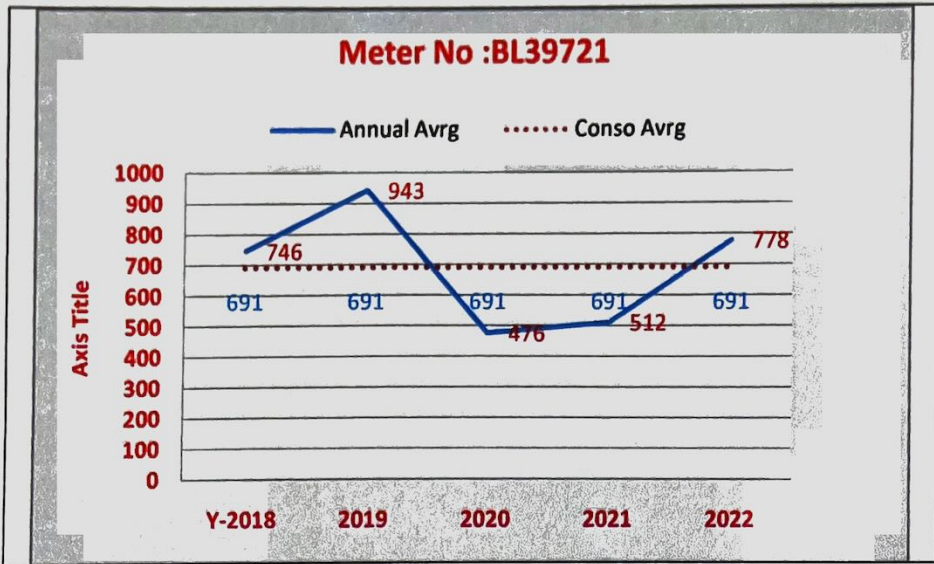
JSS's
Shri Tammannappa Chikodi Arts, Commerce, BBA, BCA, B.Sc. College,
P.G.& Research Centre, Banahatti
Ta: Rabakvi-Banahatti Dist: Bagalkot 587 311

ELECTRIC ENERGY

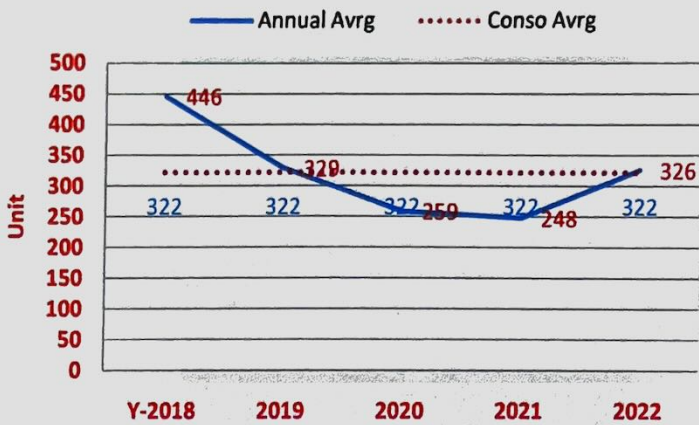
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- 2 BL39720
- 3 BL39721
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- 6 BL515574
- 7 BL64514
- 8 BLAEH1237

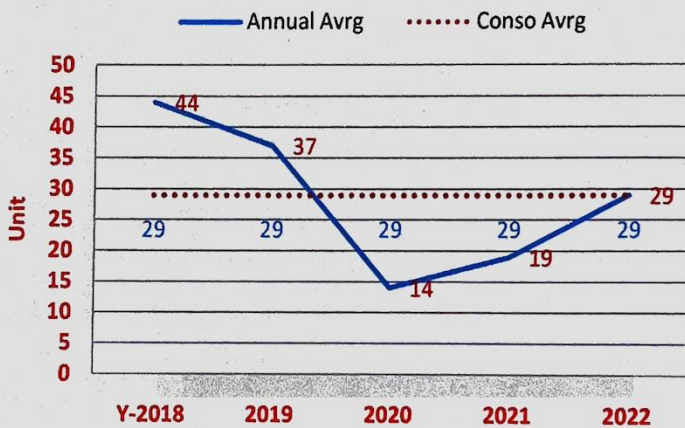




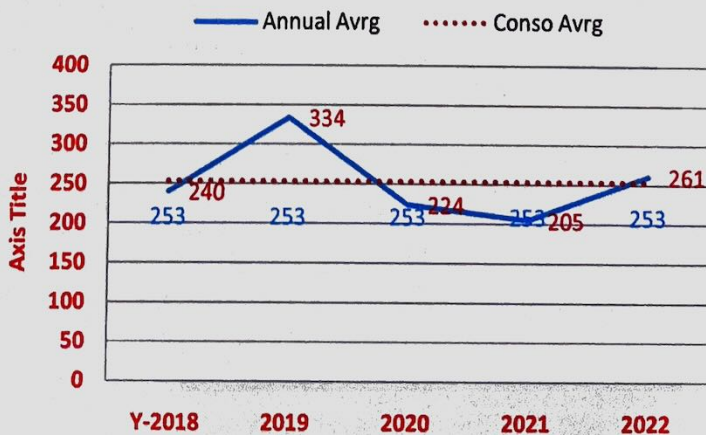
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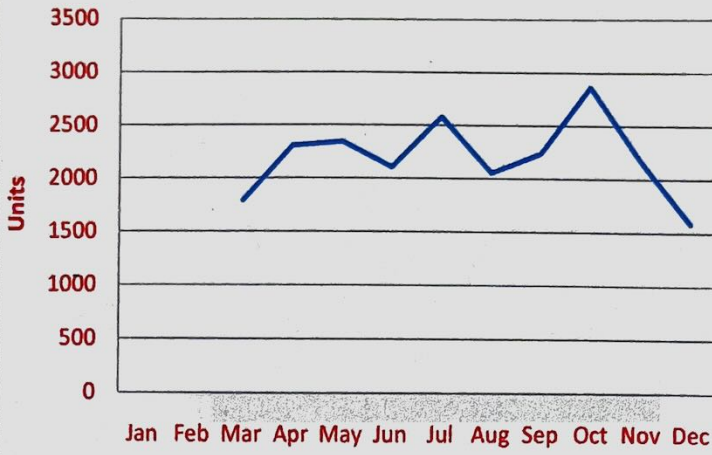
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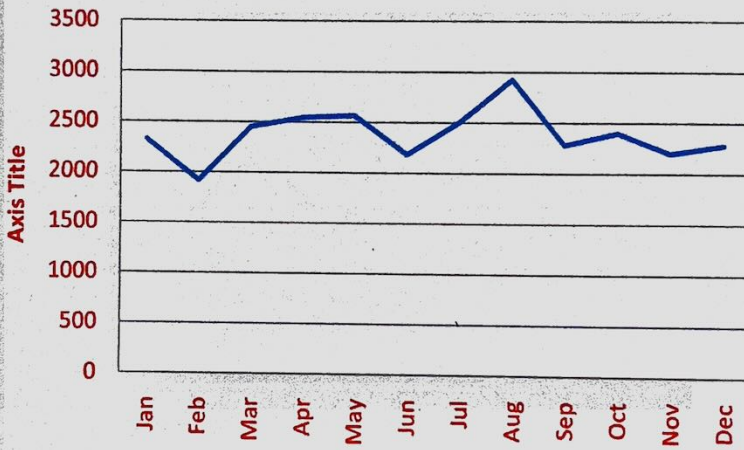
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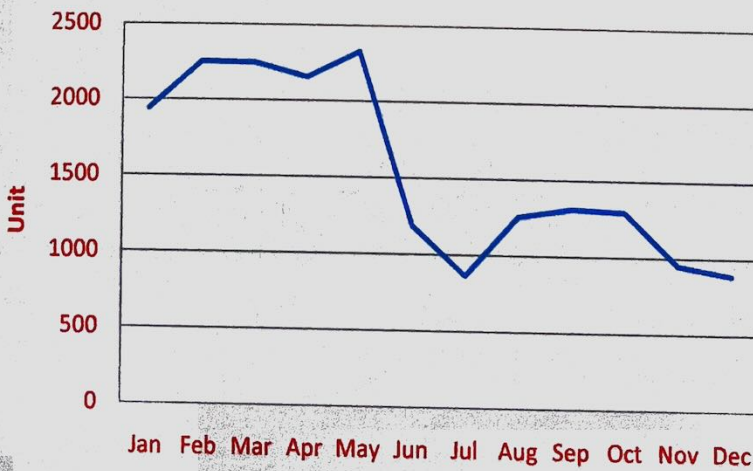
Y-2018



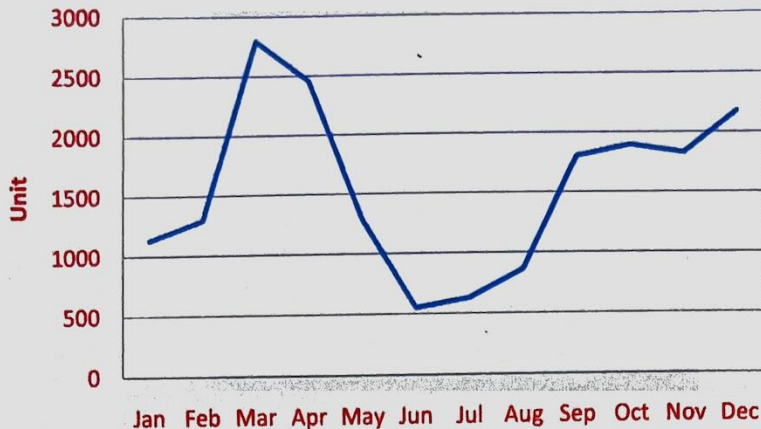
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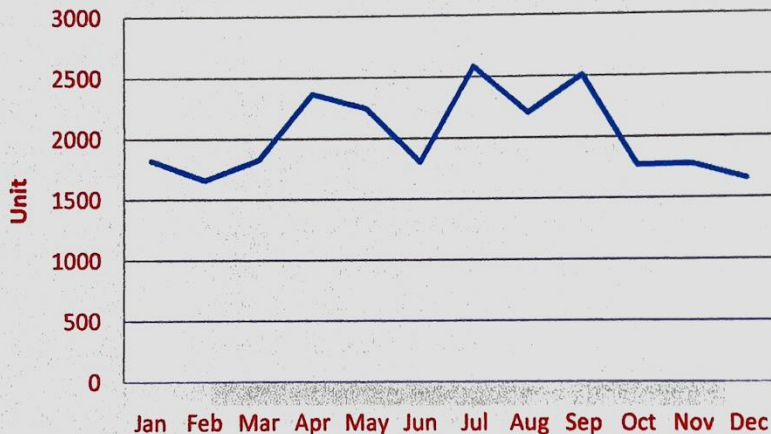
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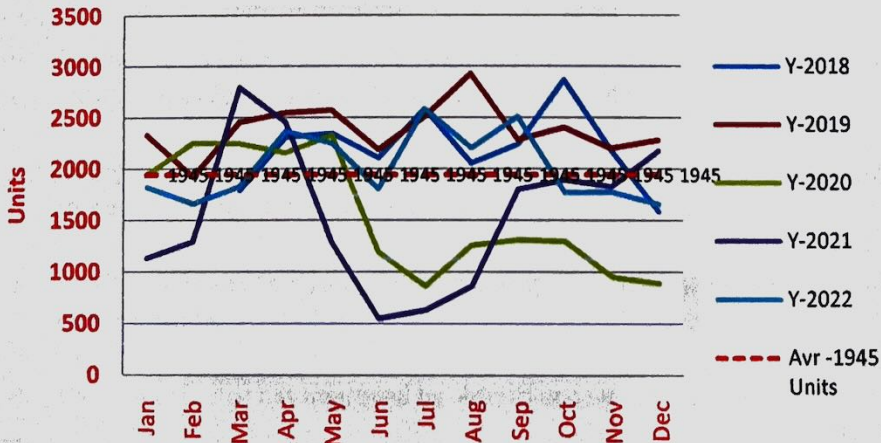
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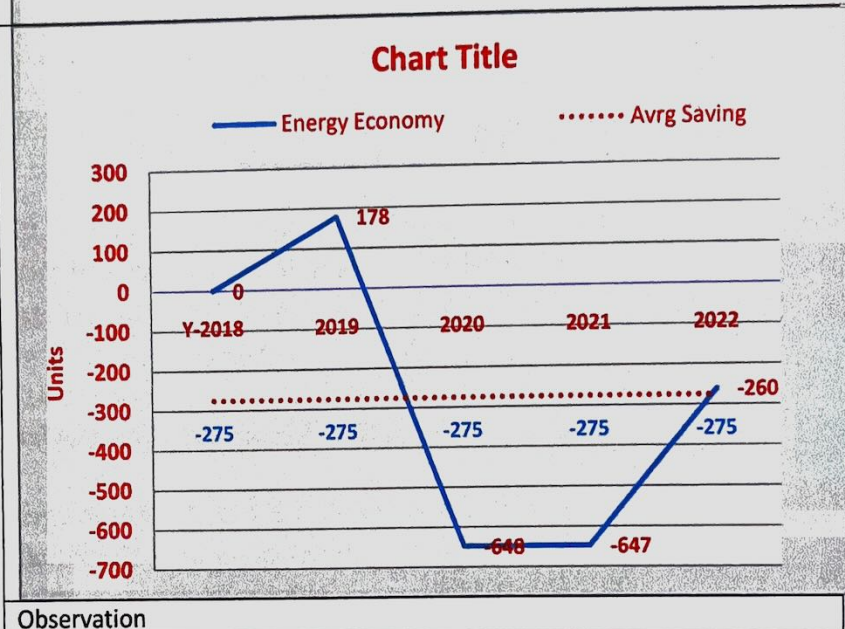
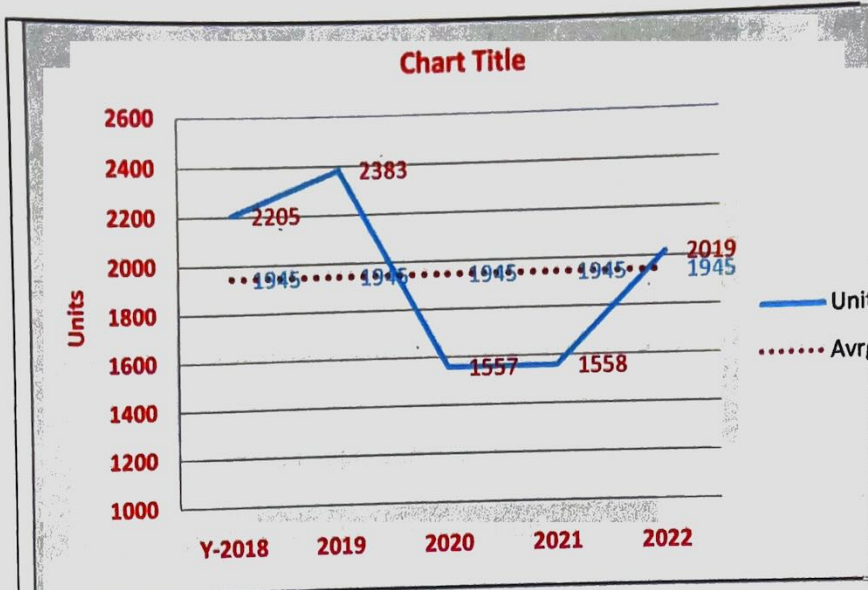


Y-2022



Five years Integrated Average :1945 Units





Observation

Observations

***Note**

1. All the energy curves show a minimum use in the month of December every year This certainly reflects the judicious use of electricity
2. Analysis show a bit increase trend equal to 13 units on an average year, with respect to the maximum use in 2018.
3. There is additional consumption in the year 2022 because of Infra structure developments.
4. The Power Factor has improved by Adopting new technology
5. Use of new electrical appliance has better future .

[Handwritten Signature]





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EXTERNAL GREEN AUDIT TEAM

Energy Conservation in Girls Hostel (Usage of Solar water heaters)

No of Hostels : 3 No

Capacity of Solar water heater

S.No	Name of the Hostel	Capacity in liter
1	Ladies' hostel - A	400
2	Ladies' Hostel - B	200
3	Boy's Hostel	-
	Total	600

- i. 1KW/h energy is generated from burning wood equivalent to 0.932 kg of CO₂
- ii. Total hot water required per day = 600 Lit /day
- iii. Required rise in temperature = (50-25) = 25 °C (ideal case)
- iv. Specific gravity of water = 1kg/lit
- v. Sp heat of water = 4.18 kJ/ kg °C
- vi. Total amount of heat energy required = $M \times C_p \times (T_2 - T_1)$
= $600 \times 4.186 \times 25 = 62,700$ kJ
- vii. Energy obtained from solar collectors = 62,700 kJ
- viii. Efficiency of Solar water heaters = 80%
- ix. Electric energy saved per day = $62700 \times 100 / 80$
= 78375 kJ/sec
= 21 kJ /h
= 21.77 unit
- x. No of working days of college = 210
- xi. Quantity of prevention of CO₂ emission in the atmosphere = $21.77 \times 210 \times 0.932$
= 4260 kg/year
= 4.260 ton/year
- xii. 4.62 ton of CO₂ emission / year prevent using solar water by the use of solar water heater





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ANNUAL SAVING OF ELECTRIC BILL

1. Electric energy units saved /day = 21.77/day
2. Rate electric energy per unit = Rs 7.15
3. Total saving per month = $21.77 \times 30 = \text{Rs } 653.00$
4. Annual saving = $21.77 \times 7.15 \times 12 = \text{Rs } 1876.66$
5. Cost of one solar water heater approx = Rs 30,000.00
6. B .C ratio = 1.089 appreciable

Analysis of out come

Note : Installing solar water heater is a most welcome and worth investment.

It is a wise step towards achievement of Clean and Green Energy.

Technical staff

Date: 24th March 2023

Place : Banahatti

Convener

GREEN Audit Team



Janata Shikshan Sangha's
SHREE TAMMANNAPPA CHIKKODI
ARTS, COMMERCE, BBA, BCA & B. Sc College ,
PG COLLEGE & Research Centre, BANHATTI.
(Affiliated to Rani Channamma University Belagavi)

Tal:Rabkavi-Banahatti)

Karnataka

(Dist: Bagalkot

Re-Accredited by NAAC at "B++" Level

Date:-

7.1.3 Policy Document on environment and energy usage

Institute is committed to manage energy in such a systematic way so as to minimize its impact on the environment. Institute suggests exploring the renewable energy resources to reduce the burden of the government and to find out substitute natural resources as solutions to the energy crisis. This environment and energy policy is binding for all the components of the institution and applies to all its stakeholders and to the various activities undertaken by the institution. It will help us to embed efficiency and environmental awareness into our everyday activities, thus helping us to realize our responsibilities and commitment to conservation of natural resources and to limit its usage. Nature Club Committee is devoted to the cause of environmental awareness, to undertake green initiatives, and to conduct green literacy programs to save energy and to protect the environment.

Policies:

- To assess our energy usage and measure its impact on the environment.
- To install solar panels for the generation of alternative energy.
- Turn off your monitor when you leave your table. Whenever possible, shut down rather than logging off.
- Turn off unnecessary lights and use daylight instead.

- Use LED or compact fluorescent bulbs as much as possible.
- Switch off lights, fans in conference rooms, classrooms, lecture halls when they are not in use. Avoid the use of decorative lighting.
- Use the fans only when they are needed.
- In hostels install the water heaters with non-conventional energy resources.
- To reduce local air pollution emission using bicycles, public transportation and use of pedestrian – friendly roads.
- To undertaken tree plantation drive.
- To encourage use of advanced technology to minimize energy consumption, atmospheric emission and noise
- To monitor and respond to emerging environmental and energy issues.
- To strengthen our employees' and students' environmental knowledge and skills in order to improve our own environmental performance.
- To provide information and training opportunities on energy saving measures.
- To offer opportunities for employees and students to engage in initiatives which contribute to environmental protection.



**Co-ordinator
IQAC**

**JSS STC Art's and Commerce College.
BANHATTI -587311. Dist..Bagalkote.**



**PRINCIPAL
STC Arts & Commerce College
BANHATTI-587 311**