

Memorandum of Understanding
for
Academic, Scientific, Technical, and Infrastructural Cooperation

between

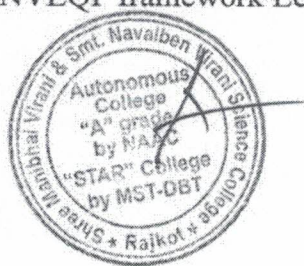
ARC Analytic & Research Laboratory,
Gondal Road Highway GIDC,
Near Skoda Showroom, Rajkot – 360022

and

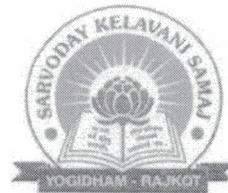
Deen Dayal KAUSHAL Kendra,
Department of Chemistry,
Shree Manibhai Virani & Smt. Navalben
Virani Science College (Autonomous), Rajkot

Preamble:

MHRD of Government of India through its apex academic regulatory bodies UGC, under National Vocational Education Qualification Frame work (NVEQF), National Skill Qualification Frame work (NSQF) had proposed to establish Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (KAUSHAL) in Universities and Colleges (Deen Dayal Upadhyay KAUSHAL Kendra); in attempt to bridge the conventional education along with vocational / skill based education with lateral entry and exit points, leading to the award of Diploma, Advance Diploma, B.Voc., PG Diploma and M.Voc. Degree under NSQF & NVEQF framework Level 5, 6, 7, 8 and 9.



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Signature
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Shree Manibhai Virani & Smt. Navalben Virani Science College (Autonomous - Affiliated to Saurashtra University, Rajkot), is a Grant-in-Aid coeducational premiere science Institution, reaccredited at the 'A' level by NAAC, 'Star College' funded by MST-DBT & A College with 'Potential for Excellence' by UGC, and 2(f) & 12(B) recognition of UGC; is permanently affiliated to Saurashtra University, Rajkot, Gujarat. The institute has established a **Deen Dayal KAUSHAL Kendra** approved by University Grants Commission (UGC), New Delhi.

Further, **ARC Analytic & Research Laboratory** is a Rajkot based organization offering analytical services in following areas of specialization:

• **Metallurgical, Minerals & Ores:**

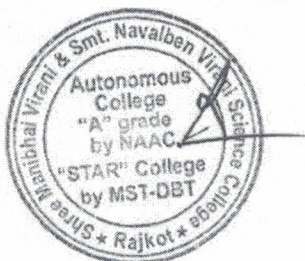
- Precious group of elements in ppb levels
- Analysis of Ferrous and Non-Ferrous elements
- Trace and rare earth elements like W, Mo, Tl, Se, Te, V, Th, Ce etc
- Major oxides for minerals of Iron Ore, Limestone, Bauxite, Hydrogenate Ore, Cuprite Ore, Malashite Ore, Cassiterrite Ore, Manganese Ore, Chromite, Columbite

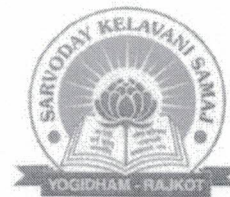
• **Precious Metal Recovery:**

- Precious metals salts and complexes $RuCl_3 \cdot H_2O$, $RhCl_3 \cdot H_2O$, $IrCl_3 \cdot H_2O$, Rhodium Sulphate Solution, Palladium Chloride, Chloro Auric Acid, Chloro Platinic Acid etc.
- Recovery of precious metals from Catalyst, Salt, Anode Slime & Secondary Waste etc.
- Silver (Ag) electro plating Brightners like Black Powder, Liquid etc.

• **Oil And Herbal Extraction:**

- Extraction of Oil from Seeds like Ground Nut, Castor, Cotton, Sesame, Rape, Musterd, Sun Flower, Soyabeen, Coconut, Neem, Maize, Jetropha, Babchi, Moringa, Chanothi, Cashew, Almond etc.
- Extraction of Oil from Cakes & De-cakes as per above seeds.





- Extraction of Oil from Leaf like Eucalyptus(Nilgiri), Nyctanthes Arbor-Tristis(Parijat), Azadirachtra Indica(Neem), Moringa Oleifera, Alovera, Tulsi, Pappya, etc.
- Extration of Root from Turmeric, Garlic, Ginger, Onion, Beet, Pumpkin, Yam etc.
- Extraction of Essential Oil from flowers from Rose, Lily, Jasmin, Perennial(Barmasi), Habiscus, Lavender, Marigold, Lotus, Sunflower, Tulip etc.
- Extraction of Oil from Spices from Cinnamon, Cardamom, Chilly, Coriander, Fennel, Black Pepper, Clove etc.

● **Food And Beverages:**

Our trace analysis laboratory can detect upto ppb levels the following residues using standard and in-house validated methods.

- Microbial pathogens
- Pesticide residues & Insecticides
- Antibiotic residues
- Heavy Metals, Food additives & Mycotoxins
- Ethylene Oxide residues in spices
- Dyes & colors like Sudan and Rhodamine & Dioxins & furans in meat products
- Melamine presence in dairy products
- Packaged drinking water tests

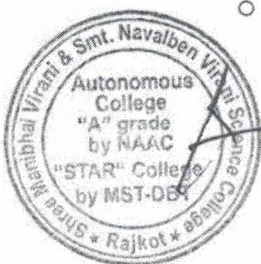
Product quality is usefully described as a bundle of attributes that determine the product's performance. The major categories under quality attributes, tested at our lab are:

- Shelf life studies
- Physico-chemical properties
- Allergens

● **Fertilizers & Pesticides:**

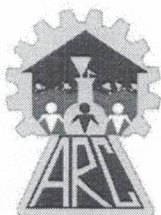
State-of-the-art laboratory of the organization can test parameters like

- Nitrogen
- Phosphorous
- Potash



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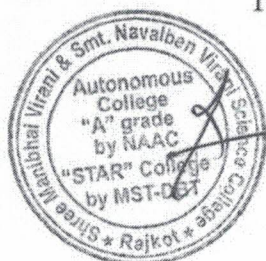
- Sulphur
- Micro nutrition like Fe, Cu, Zn, Mn, Mo, B, Se, Ca, Mg, Na etc.
- Heavy Metals like Pb, As, Hg etc.
- Determination of Organic and Inorganic Pesticides
- Shelf life study for fertilizers and pesticides

The **ARC Analytic & Research Laboratory** and **Deen Dayal KAUSHAL Kendra**, Department of Chemistry, Shree M. & N. Virani Science College is mutually interested in establishing skill development, knowledge exchange, and facility sharing collaboration in chemical and pharmaceutical research, especially, in the area of sophisticated and in-depth analysis of industrial formulations.

Deen Dayal KAUSHAL Kendra of Department of Chemistry, Shree M. & N. Virani Science College has skilled manpower and infrastructure for development of industrial chemicals & formulations based on metal electroplating, surfactants, and polymer based products; along with analysis of pharmaceutical intermediates and utilities. **ARC Analytic & Research Laboratory** has skill, facility and infrastructure for in-depth and detailed analyses of wide array of samples. The said two organizations have discussed their mutual interests and in furtherance of these interests following mutual understanding is recorded:

I. Areas of Cooperation & Collaboration:

1. Curricular Aspects: Cooperation in development & updating of curricula, Transaction, Evaluation, Guest lectures, Research work, Workshops, Seminars



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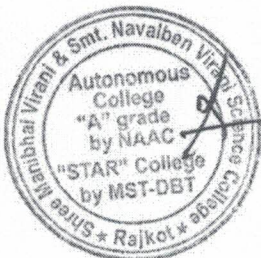
- & Symposium, Faculty exchange & Student exchange, Faculty Development Programmes (FDP), and Short Term Training Programmes (STTPs).
2. Sharing of Infrastructural Resources: Available learning resources and facilities will be made available to train the students in the specified vocation also to undertake project or research work.
 3. Permission for students to undertake industrial visits, demonstrative trainings, project work, assignments, in-plant training & apprenticeship.
 4. Undertaking of joint publication & sharing of credits in publications.
 5. Cooperation in career guidance and placement.
 6. Cooperation and collaboration in any other emerging areas.

Teaching, Learning, and Evaluation:

7. Regular Skill Training: Industry partner shall offer regular skill training for theory as well as for practicals in consultation with academic partner for their respective trade & expertise.
8. Industry partner shall facilitate the conduction of evaluation of skill components at industry/institution.
9. Industry Defined (Research) Projects: Industry partner shall facilitate the academic partner for undertaking Industry Defined Projects (IDP) / Industry Defined Research Projects (IDRP).

Commitment of the stake holder of MoU:

10. The students and host institution shall bear the expenses towards consumables like chemicals, glass wares etc. used for project work and implant training. The host institution & students also bears the travel and daily expenditures incurred. It will also bear any insurance premium, if applicable.



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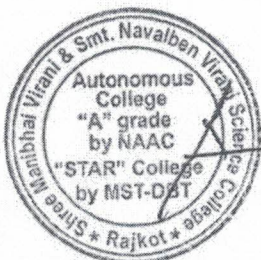
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11. The institution will allow the utilization of their physical infrastructure, equipments under their expert supervision and team the students the expert knowhow.
12. The student or host institution will not have any right to claim any remuneration for the service rendered by the students while undergoing training. However it is solely left to the institution to give any financial incentive or not.
13. The host institution shall provide local hospitality, TA, DA, local conveyance allowance to the experts of industry / institution during their visit to deliver guest lecturers or attending meetings.

II. Duration, Arbitration and Residence of MoU:

1. The agreement shall come into effect from the date of signature by both the parties. Changes to this agreement shall be made by mutual consent between both institutions. In cases of disagreement, the Institution wishing to depart from the agreement shall, wherever possible, give one months' notice of its intention to do so.
2. In order to promote further scholarly exchange, both institutions shall actively consider the exchange of teaching faculty, students and scholars. Such exchange shall be the subject of consultation in the future in accordance with needs and feasibility.
3. Correspondence above this agreement shall be conducted through & between the authorized persons by name and designation of both the institutions.
4. The MoU shall get terminated by a notice of month by any of the Institution to another, explaining the reasons for termination. However, MoU shall not be terminated when exchange programmes are on.
5. Any dispute, if arises, shall be mutually settled between both the parties.



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6. Any arbitration is subjected to mutual consultations, agreement and terms and conditions of bilateral relations and affairs between the two institutions and through embassies in case of foreign institutions.

III. Force Majeure:

Neither institution shall be liable for non-performance either in whole in part of this agreement due to reasons unforeseen and beyond its control. These reasons shall include and be strikes, lockouts, nationalization, acts of God, war and fire. In that event, the other party will be immediately in writing detailing full facts of the case and both parties will undertake to arrive at mutually satisfactory solutions to overcome the difficulties arising out of these circumstances.

Signed on behalf of **Deen Dayal KAUSHAL Kendra**, Shree Manibhai Virani & Smt. Navalben Virani Science College (Autonomous), Rajkot

Signature:

Name:

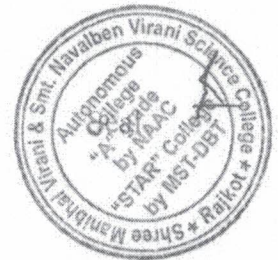
Dr. K. D. Ladva

Designation:

I/C Principal

Shree Manibhai Virani and

**Smt. Navalben Virani Science College
(Autonomous) Rajkot.**



Signed on behalf of **ARC Analytic & Research Laboratory**, Rajkot

Signature:

Name:

**ARC ANALYTICAL &
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Seal

Designation: Director

Partner

Place: **Rajkot**

Date:

