Two day Faculty Development Programme

on

"Recent Trends in Material Science and Engineering (RTMSE-2020)"

August 20-21, 2020

Organized by

Rajasthan Technical University, Kota

&

Swami Keshvanand Institute of Technology, Management &Gramothan, Jaipur

Report of the Event

1. Title of the activity: Recent Trends in Material Science and Engineering (RTMSE-2020)

2. Activity Detail:

a.) Objective: The aim of this FDP is to provide an opportunity to the researchers, engineers, and academics to sharpen their research skills to find new trends, explore new ideas, and gain knowledge related to recent developments in material science. This FDP will provide in-depth knowledge of advancement in materials, their fundamental characteristics, synthesis, characterization and applications in different domains.

b.) Program detail: The Department of Physics, Swami Keshvanand Institute of Technology, Management &Gramothan (SKITM&G), Jaipur organized a two day Faculty Development Programme on "Recent Trends in Material Science and Engineering" during August 20-21, 2020 in association with Rajasthan Technical University, Kota. This FDP was sponsored by RTU (ATU) under Technical Education Quality Improvement Program phase III (TEQIP-III) action plan and conducted on webex online platform.

This two day FDP *comprised six thoughtful informative sessions* each of one hour delivered by the experts from the various reputed institutes. 185 faculty members and research scholar from various universities and institutes of all over the country have participated in this FDP.
The FDP was inaugurated on the 20 August 2020 by the chief guests, Prof. Arun Pratap, Dean, Faculty of Technology & Engineering, MSU Baroda and Prof. Dhirendra Mathur, TEQIP-III Coordinator, RTU.Prof. Ramesh Kumar Pachar (Principal SKIT), Prof. S L Surana (Director Academics, SKIT), Prof. R.K. Jain (Department of Physics, SKIT) and Dr. Brajraj Sharma, HOD, Physics also graced the inaugural function of the programme.
Prof. Ramesh Kumar Pachar welcomed the guests and participants of FDP and appreciated the new mode of the conduction of FDP. HE also talked about the need and importance of such type of development programs for faculties. Prof. S.L. Surana addressed the audience by highlighting the need of research in material science and its benefits to the society. He also stressed the need of updating our knowledge in areas like advanced engineering materials, Nano technology etc. Prof Arun Pratap addressed the participants about the recent developments in the area of Material science. He also highlighted the importance of materials science from both scientific as well as engineering pointof view. Prof. Dhirendra Mathur explained about the importance of organising such programs under RTU (TEQUIP III), and appreciated the active participation of SKIT in organising such events

In the first session of the first day Prof. Arun Pratap ,MSU Baroda has delivered a keynote address on "Evolution of Condensed Matter Physics: from crystals to quasi crystals". He started with explaining the effect of nanoparticle formation on different properties of material. He also discussed his research work on metallic glasses and important results were shared. Further, he discussed about quasi crystals and explained how quasi crystals differ from normal crystal. He concluded his talk with explaining effect of nanotechnology in viruses structure, relating to present scenario of Corona virus. He told that nanotechnology enabled N95 masks can be a tool to combat Corona virus.

In second Session Dr. Mahesh Kumar, IIT Jodhpur delivered an expert talk on 'Real time detection of heavy metal ions using high electron mobility transistor for water quality monitoring". He started the talk with discussion of 2D materials. He shared some important results and concluded that AlGaN/GaN HEMT devices can be utilized for sensing of heavy metal ions. These devices show excellent sensitivity with rapid response time and have capability of real time onsite monitoring of ion sensing.

The day one is ended with the final session of Dr. Praveen Kumar, IACS, Kolkatta. He shared his knowledge about the Modified Heterostructures for Photoelectrochemical Hydrogen Generation from Water. He discussed the importance of renewable energy sources and the need of hydrogen energy as a fuel for better environment. He also discussed about other energy efficient sources such as emitters and solar cells. He also showed some important methods for generation of solid-state lighting, PECwater splitting and Co2 reduction, Tandem and IB solar cells and broadband photodetectors.

Day 2 started again with the knowledge enriching session of Dr. Anurag Gaur, NIT, Kurukshetra. He shared his knowledge on the Emergent Materials for Energy storage devices. He discussed the importance of supercapacitor as a high energy storage device from the application point of view.

The session is followed by an expert talk by Dr. Pawan Kulriya, IUAC, New Delhi who shed light on Development of advanced radiation-resistant materials. He discussed the results of high energy ion irradiation effects on ceramic materials and high entropy alloys.
Dr. Pooja Sharma, CSIR shared her knowledge on Materials engineering for environmental application, Challenges and Status, in the last session of the FDP. She discussed her research work on sensor system for monitoring & removal of water pollutants. The talk was very informative for the listeners.
After these technical sessions, assignment was given to participants on Google Classroom on both days.
In the valedictory session, Dr. Praveen Kumar, IACS, Kolkatta, Mrs. Sanju Tanwar, RTU Coordinator of this event, Prof. R.K. Jain, Dr. Brajraj Sharma and organizers of the event were present. Dr. Praveen Kumar had appreciated the efforts of organizing team to conduct such type of FDP. He had congratulated the organising team for successful conduction of this FDP. Dr. Manasvi Dixit, Coordinator of this event, SKIT has given a brief summary of the events conducted in FDP. At the end, Dr. Brajraj Sharma has expressed his vote of thanks to everyone involved in this event and appreciated the group effort of the whole organizing team.

c.) Outcome: All the 6 sessions were very much informative. The discussed areas are of great benefit for the participants as they were enlightened with recent advancement in material science.

d.) Type: National

3. Details of the Activity

a.) Resource person

S. No.	Name of Expert	Institution/ Organization
1.	Prof. Arun Pratap	MSU Baroda, Vadodara
2.	Dr. Mahesh Kumar	IIT, Jodhpur
3.	Dr. Praveen Kumar	IACS, Kolkata
4.	Dr. Anurag Gaur,	NIT, Kurukshetra
5.	Dr. Pawan Kumar Kulriya	IUAC, New Delhi
6.	Dr. Pooja D. Sharma	CSIO-CSIR, Chandigarh

b.) No. of Participants – 185

c.) Brief Proceeding of each day of the activity

Day 1: 20.08.2020 (Thursday)	**10:00 -10:30 AM**	**Inaugural session**
	Session –I 10:30 -11:30 AM	Prof. Arun Pratap, Dean, Faculty of Technology & Engineering, MSU Baroda, Vadodara
	Session – II 11:45 AM – 12:45 PM	Dr. Mahesh Kumar, Associate Professor, Electrical Engineering, IIT, Jodhpur
	Session – III 1:30 – 2:30 PM	Dr. Praveen Kumar, Assistant Professor, School of Materials Sciences, IACS, Kolkata
	3:00 – 4:00 PM	Assignment 1
Day 2: 21.08.2020 (Friday)	Session –I 10:30 -11:30 AM	Prof. Anurag Gaur, Associate Professor, Department of Physics, National Institute of Technology, Kurukshetra
	Session – II 11:45 AM – 12:45 PM	Dr. Pawan Kumar Kulriya, Scientist, Inter University Accelerator Centre (IUAC), New Delhi
	Session – III 1:30 – 2:30 PM	Dr. Pooja D. Sharma, Senior Scientist, Central Scientific Instruments Organization (CSIR), Chandigarh
	2:30 – 4:00 PM	Assignment 2 and Valedictory session

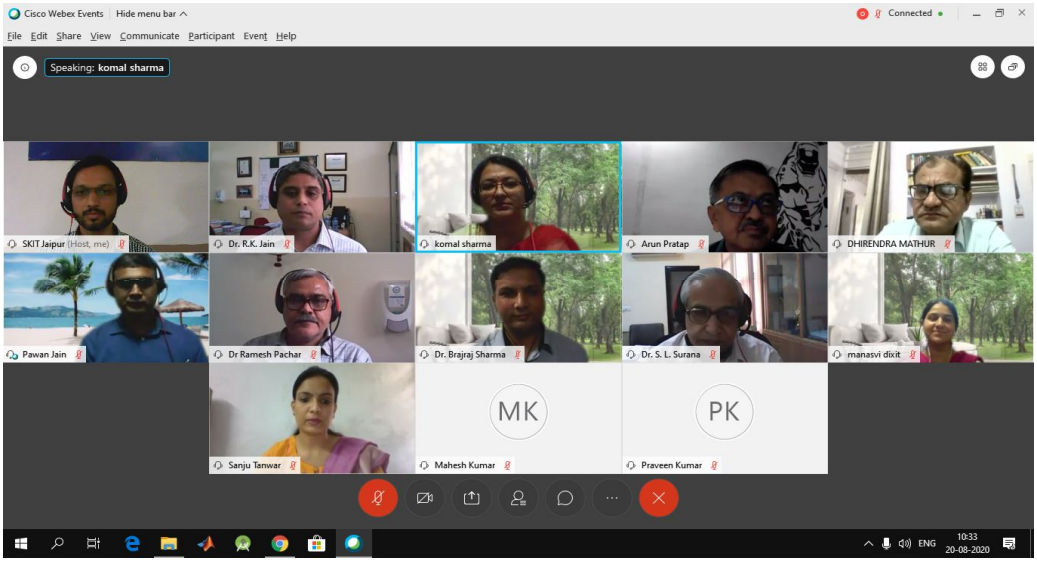
d.) Attainment of the activity: The two day FDP provided a better insight into the recent trends in the field of Nanomaterials, energy storage devices and applications of these materials in different

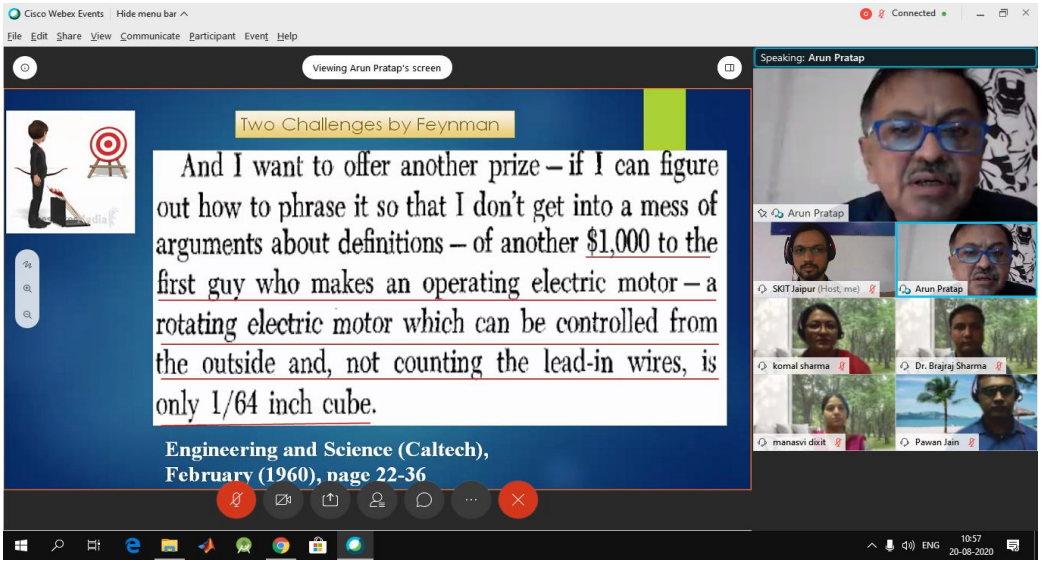
domains. The FDP attained most of the objectives to cover in the field of Material Science and Engineering that can be beneficial to researchers and faculty.

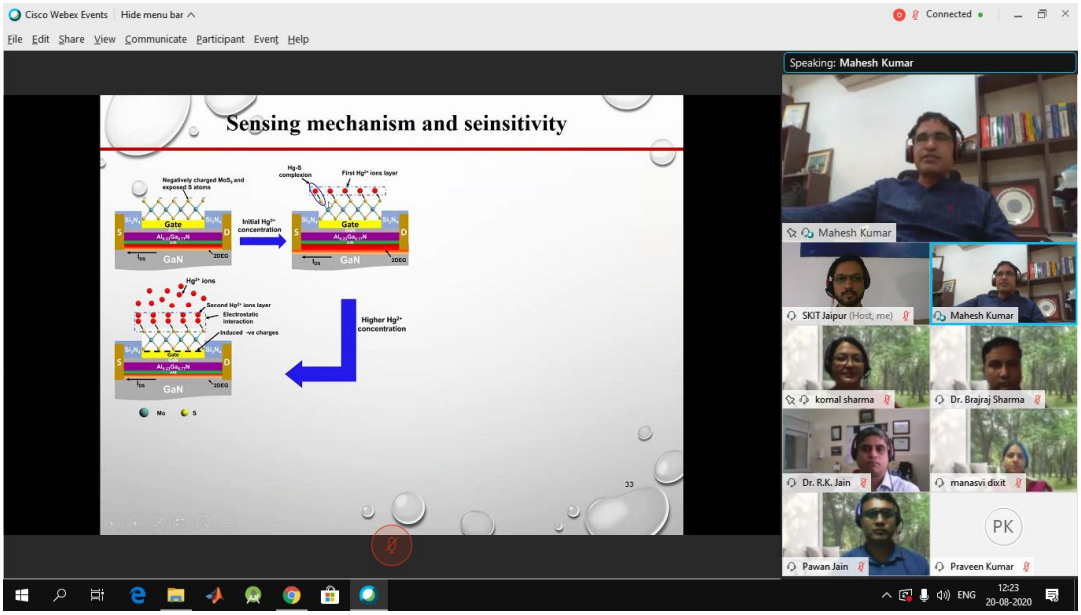
e.) Recommendations:

We recommend such types of FDP in future.

Photographs of Program



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Speaking: Mahesh Kumar
Mahesh Kumar
SKIT Jaipur (Host, me)
komal sharma
Dr. Brajraj Sharma
Dr. R.K. Jain
manasvi dixit
Pawan Jain
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Praveen Kumar
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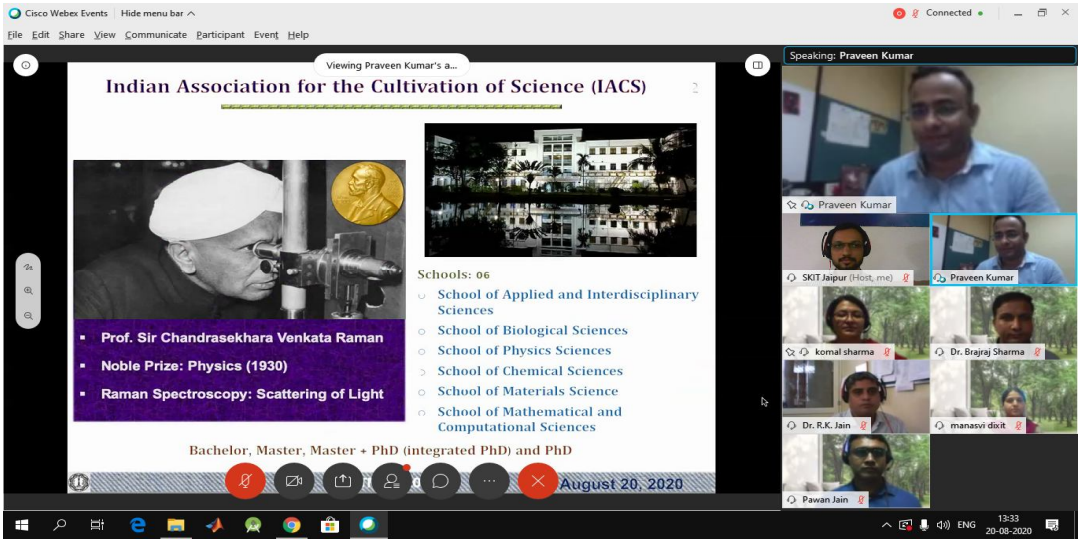
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Viewing Praveen Kumar's a...
Indian Association for the Cultivation of Science (IACS)
Prof. Sir Chandrasekhara Venkata Raman
Noble Prize: Physics (1930)
Raman Spectroscopy: Scattering of Light
Schools: 06
School of Applied and Interdisciplinary Sciences
School of Biological Sciences
School of Physics Sciences
School of Chemical Sciences
School of Materials Science
School of Mathematical and Computational Sciences
Bachelor, Master, Master + PhD (integrated PhD) and PhD
August 20, 2020
Speaking: Praveen Kumar
Praveen Kumar
SKIT Jaipur (Host, me)
komal sharma
Dr. Brajraj Sharma
Dr. R.K. Jain
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Pawan Jain
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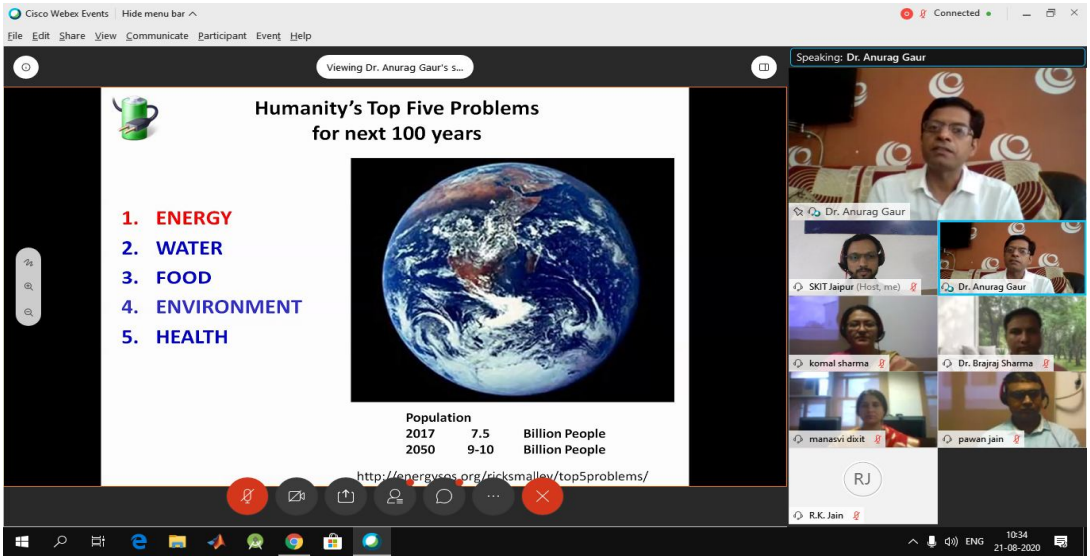
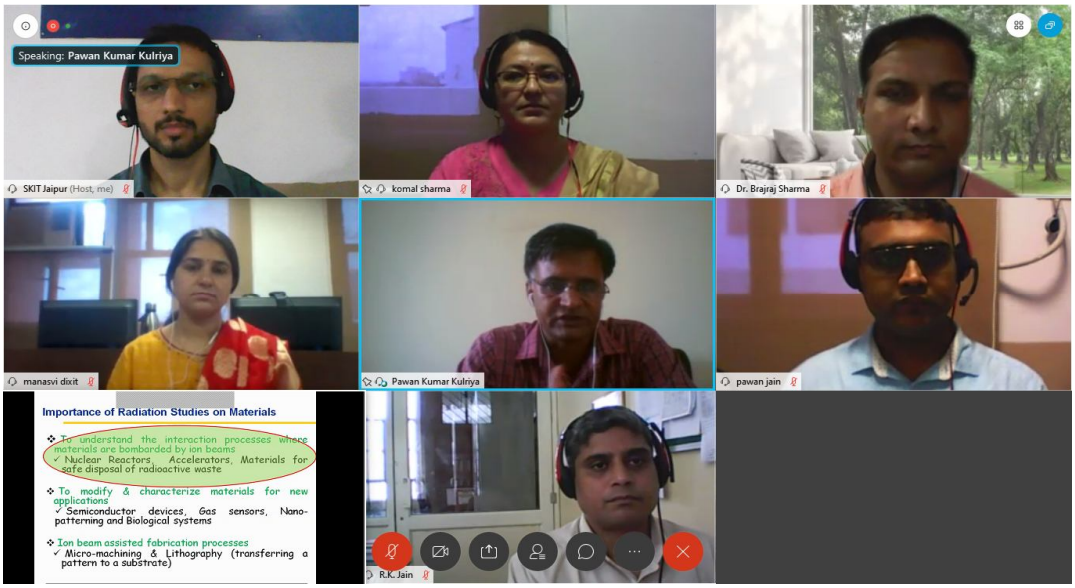
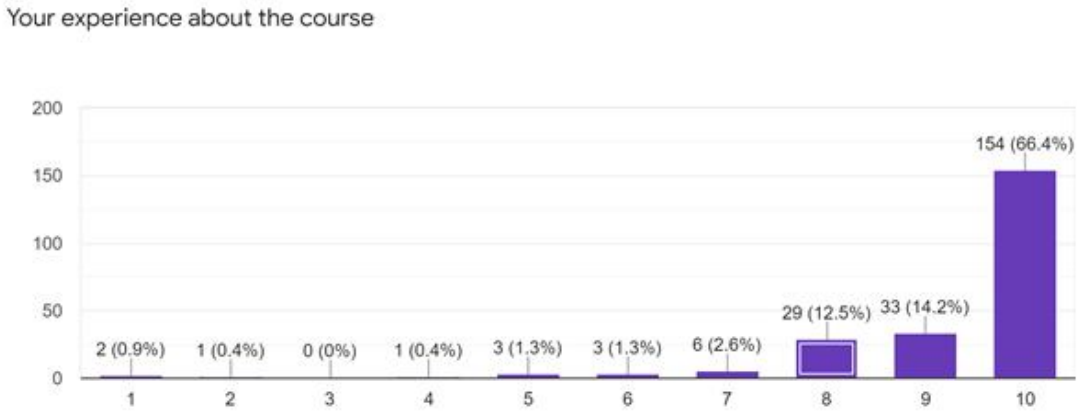
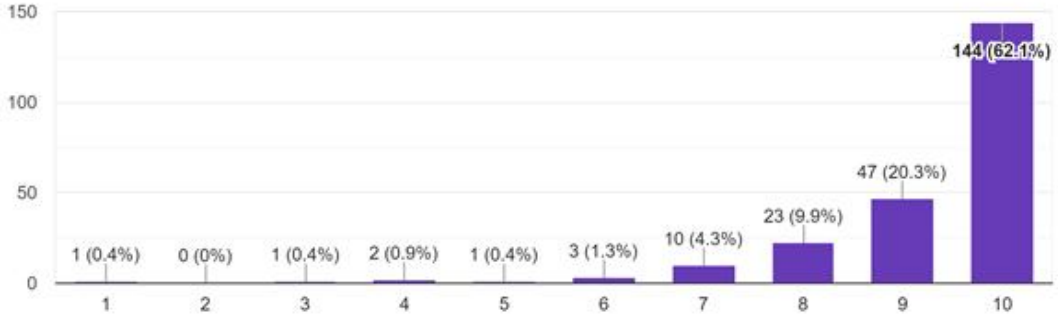




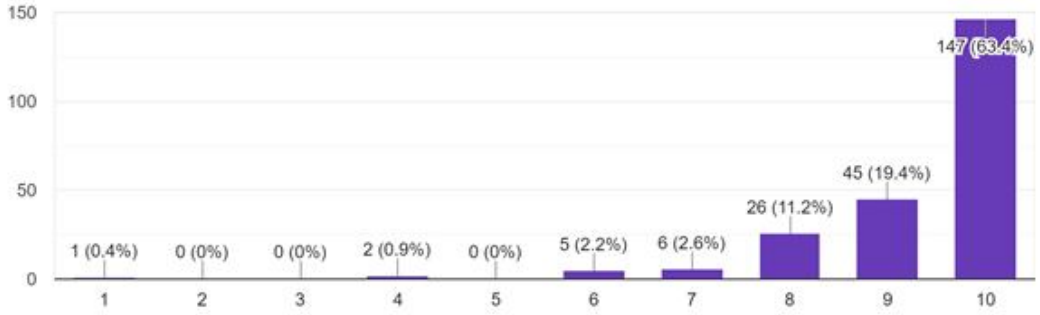
Feedback Analysis: -



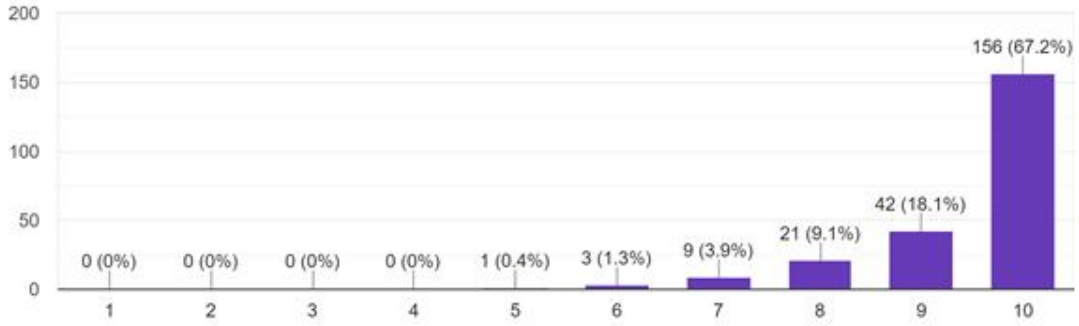
Knowledge enhancement



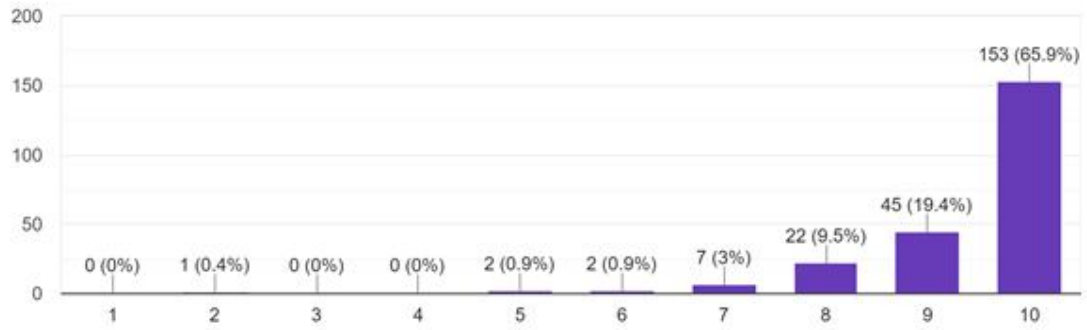
Relevancy of topics



About speakers



General Arrangement



- All participants shown great interest to attend more FDP in Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur.

- Some topics suggested by participants are:Advanced Characterization Techniques Nanotechnology, Renewable Energy, Non-conventional energy, Dielectric and magnetic materials, Matlab etc.

- Overall experience of the course is excellent.