D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY
Department of Electronics and Communication Engineering
Academic Year: 2020- 2021 (Odd Semester)
Innovative Teaching Method

B-Tech, Semester& Branch: II/ I Semester ECE
Title: Electronic Devices and Circuits
Name of the Faculty member: K.Venkanna Naidu
Name of the Topic: Crystal oscillators
Name of the Innovative Practice: Jigsaw
Date& Duration:20.08.2020 &50 Minutes

Justification:

Jigsaw is a cooperative group activity in which students are interdependent to achieve a common goal. In part one, each group is provided a different problems in Input /Output Quantization Errors. The group members become experts on that particular topic and create a group response.

Details of the Implementation:

Students said that they felt this activity had improved their understanding of the frequency of oscillation of crystal oscillator. During assessment tests, it is simple to recall the frequency of crystal oscillator.

Reflective Critique:

- ***Feedback of practice from students and other stakeholders:***

Students stated that they felt that this activity helped them to understand the procedure and steps to calculate the frequency of oscillation of crystal oscillator. It is very useful to recollect the important steps for solving

❖ ***Benefit of the practice:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

The Students eagerly participated in that activity and then they acquired the knowledge about oscillator, function of crystal oscillator and the frequency oscillation. Due to this activity, the students were able to recall the topic and remember the important terms easily.

❖ ***Challenges faced in implementation:***

Students took some time to forming the group. After formed the group, they discussed the topic and present the important terms in paper. I encouraged the students for completing the activity with useful points.

References:

1.Electronic Devices and Circuits-K. Satya Prasad, VGS Book Links.

2. Electronic Devices and Circuits-Salivahanan, Kumar, Vallavaraj, Tata Mc-Graw Hill, Second Edition

3. Electronic Devices and Circuits – Bell, Oxford

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Innovative Teaching Method

B-Tech, Semester& Branch: II/ II Semester ECE
Title: Em Waves &Transmission Lines
Name of the Faculty member: K.Venkanna Naidu
Name of the Topic: TM wave in Rectangular wave guides
Name of the Innovative Practice: Video Lecture
ICT Tool Used:- Smart Class Room Justification

Description of Video Lecture:
Over the past few years, videos are being widely used in classrooms for supporting a teacher's curriculum and helping students learn the material faster than ever. Research shows that 94% of the teachers have effectively used videos during the academic year and they have found video learning quite effective, it is even better than teaching students through traditional text-books.

Majority of part of the human brain is devoted towards processing the visual information. Brain responds to visuals fast, better than text or any other kind of learning material. Remembering stuff from the picture is retained in the mind for a longer time. Through videos, students get to process information fast.
Rectangular waveguides are the one of the earliest type of the transmission lines. They are used in many applications. A lot of components such as isolators, detectors, attenuators, couplers and slotted lines are available for various standard waveguide bands between 1 GHz to above 220 GHz.
A rectangular waveguide supports TM and TE modes but not TEM waves because we cannot define a unique voltage since there is only one conductor in a rectangular waveguide. The shape of a rectangular waveguide is as shown below. A material with permittivity e and permeability m fills the inside of the conductor.
I have shown NPTEL Video Lecture series on "Transmission Lines and E.M Waves" by Prof. R.K.Shevgaonkar, Department of Electrical Engineering, IIT Bombay. In that Lecture No.38 about Rectangular waveguides. After shown this video, students can be identified the difference between Transverse Electric (TE) and Transverse Magnetic (TM) waves propagated through rectangular waveguides.

Reference

1.Electromagnetic Fields and Wave Theory –GSN Raju, Pearson Education 2006
2. Engineering Electromagnetics:Nathan Ida, Springer(India)Pvt.Ltd., New Delhi, 2nd ed., 2005.
3. Engineering Electromagnetics – William H. Hayt Jr. and John A. Buck, TMH, 7th ed., 2006.
4. Electromagnetic Field Theory and Transmission Lines: G SasiBhushana Rao,Wiley India 2013