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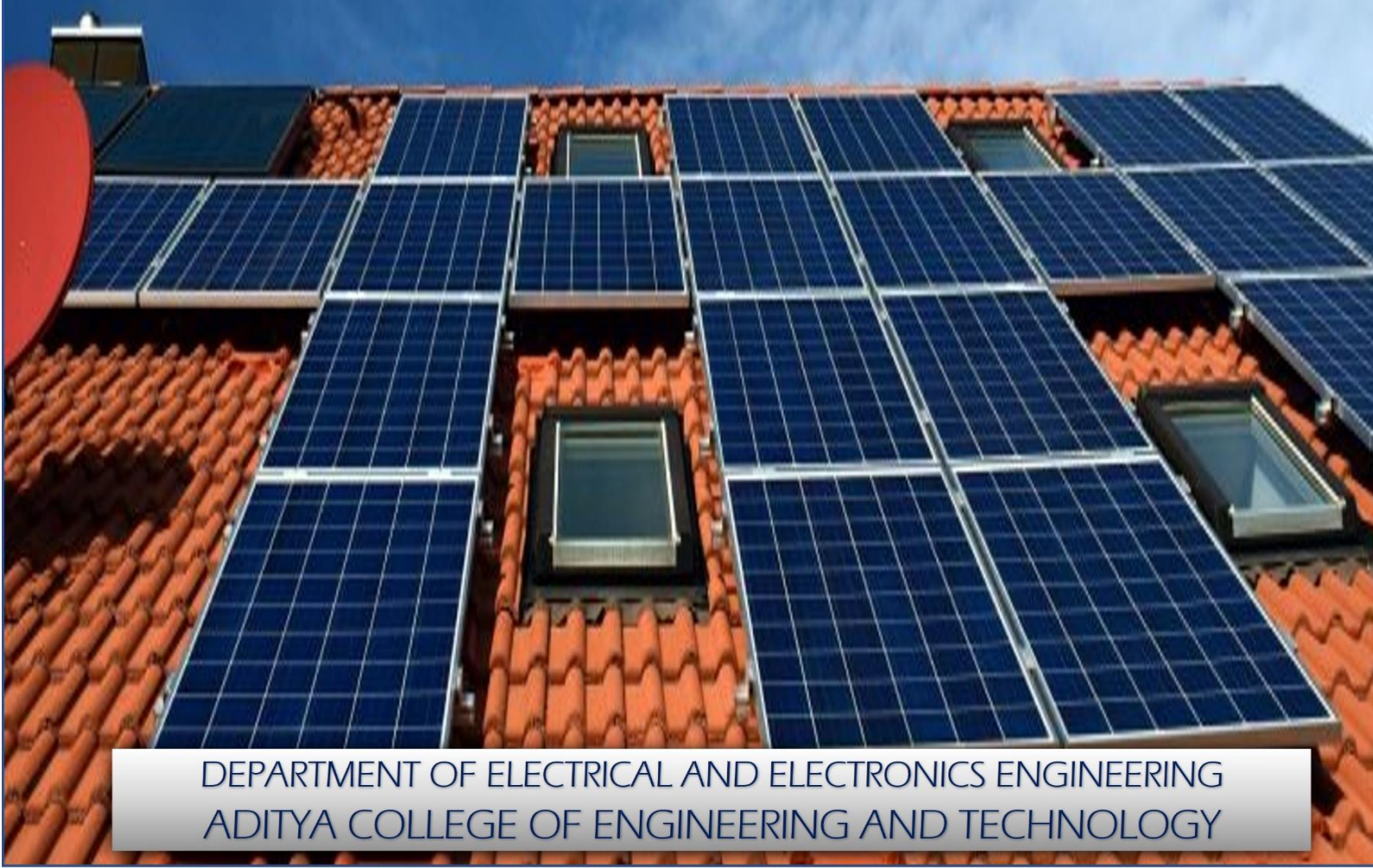
Smart Grid



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
ADITYA COLLEGE OF ENGINEERING AND TECHNOLOGY

VISSION OF THE DEPARTMENT

TO BE RECOGNIZED AS A LEADER IN EDUCATION, TRAINING, AND RESEARCH

MISSION OF THE DEPARTMENT

- Provide state-of-art infrastructure to impart technical skills in the frontier areas of electrical and electronics engineering.
- Enable innovative teaching and learning process with collaboration
- To raise professionals, academicians, researchers and entrepreneurs with a passion for Solving societal problems

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CONTENTS

CAREER GUIDANCE

Why Career Guidance is Important?

Have you ever thought about the career guidance? Well! I think majority of students do not consider career guidance a significant issue. Hence, they have no or very little realization about the importance of career guidance. As a matter of fact, career guidance is a very important aspect of your life. In fact, it can make or break your career. In this article, we will discuss about the importance of career guidance. Not just students but working professionals also should give importance to it. Usually, students and employed professionals have no idea of right career guidance. Hence in this article, I will shed some light on this issue.

Nothing Succeeds Like Success

- As we say nothing succeeds like success. And career guidance is very essential for success. If you want to see your career moving in a right direction then career guidance is of utmost importance.
- Everyone wants to be successful but they do not get the right guidance to make right decision at right time. If you have a pre-planned guidance for your career then it can make a lot of difference.
- Today, awareness about career guidance is still very low among younger generation. The culture of going to a counsellor is almost non-existent in our country.
- Therefore, for success it is important that you get right guidance from right person

Planning your Future

- If you are a high school student then your entire future is lying in front of you. I is you with your parents who need to make right decision about your career from now on.
- It is essential that for a bright future you must start planning from now on. And for right planning you need right guidance.
- Right career guidance can tell you, about the career options that could suit you the most. Hence, you can start preparing for that option from the beginning.
- It will give you ample amount of time for right kind of preparation. This could only possible if you take guidance for your career.

Bring Clear Sight of Your Goal

- Everyone has some goal in his or her life. So, what is ambition or target as far as your career is concerned.
- You have to decide in advance and right career guidance could really help you in that.
- The best part of career guidance is that it is very objective as well as strategic. You could get a clear picture what your goal should be or must be.
- Otherwise it is quite normal that students fail to figure out, what they want to do in near future. Career guidance from right person could really help you to figure out perfect career for you

Choosing Right One from Myriads of Career Options

- Today, in the time of globalization, when there are myriads of career options, it is normal that novice students get lost in those options.
- In short, I want to say, they are not able to decide a career which is best for them. The reason for this confusion is hundreds of carers available in just one line.
- This confusion could easily be clarified with the help of career counselling or guidance. Moreover, there are people who have malice intentions. Unfortunately, there are quite a few people.
- They may not want you to succeed. Hence, they are ready to misguide you anytime. You should not fall in the trap of those people and the best way to avoid is through career guidance from right person.

Beat the Competition More Easily

- You do have friends and all are aspiring for same career that you want to be. Could you imagine the competition when so many others are competing? How is it possible that you can easily beat the competition?
- Is there a way out? Yes the best way to beat this competition is to consult a career counselor for right guidance.
- A counselor knows everything about the present state of affairs regarding a particular career option.
- If you are not consulting the right person for your career then you might go haywire.Hence to avoid confusion and deception go for career guidance

Beat the Competition More Easily

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- Hence to avoid confusion and deception go for career guidance.

Best Career in India or Abroad

- There are more other complex issues related to choosing a career. We will touch some of those pressing issues. One of them is whether you want to pursue your career in India or abroad.
- If the option is in India then it is OK. But if you want to go outside the country then you have to know the future prospect of the career option you have chosen. Whether inthat particular country, future is good or it may not work well.
- So, the best way to find a solution is through career guidance. The Person could tell whether for a particular career you should stay in India or go abroad. Do not consult from friends or anyone else, always go for a professional advice.
- Organize Finances for Further Education Expenditure

- Today affording education has become so difficult and for many it is out of their means. However, if you get right career guidance then you can choose best colleges and courses at very affordable price.
- If you do not have any idea about the right courses or colleges then you might have to pay more. Hence, the best way to avoid this is taking right guidance because they could give you the most appropriate information.
- You could also plan for your child‘s future that how much you have to spend in next 5 to 10 years. You could take loan and start funding for the education of your child.

Conclusion

Finally, I will conclude by saying never underestimate the importance of career guidance. In our, country where everyone only wants a Sarkari Naukri, they hardly give any importance to other career options. You should open your mind regarding your career. Career guidance could make things a lot easier for you. Although in India the culture of career guidance is limited to big cities but you need to defy this culture and make best use of career guidance

Hence career guidance could save you from all the financial woe

EEE Subject learning Websites

- www.nesoacadamy.org www.nptel.ac.in
- www.tutorialspoit.com www.daenotes.com
- www.engineersgarage.com
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By

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Enakshi Bhattacharya, PhD Professor Department of Electrical Engineering and

Centre for NEMS and Nano photonics Indian Institute of Technology Madras Chennai. Enakshi Bhattacharya completed her MSc (Physics) from the Indian Institute of Technology Bombay in 1980, PhD from the Tata Institute of Fundamental Research, Mumbai in 1985 and did post-doctoral work on the light induced effect in amorphous silicon solar cells at the National Renewable Energy Laboratory, USA from 1986-88.

She was a faculty member in the Department of Physics, IIT Kanpur during 1988-91. Since 1991, she has been on the faculty of the Department of Electrical Engineering at IIT Madras and was heading the department during 2010-2013. She spent a sabbatical year in 2000 at the Micro machined Products Division, Analog Devices, USA and spent a semester at IIT Mandi in 2017. She has played a key role in establishing the Centre for NEMS and Nano photonics at IIT Madras in 2011.. Administrative and organisational experience: Independent Director (non-executive): SPEL Semiconductor Ltd, Chennai from 2014; Chip test Engineering Ltd, Chennai from 2012 Member, Board of Governors, National Instt. of Technology, Puducheri, 2012-2015 Head, Department of Electrical Engineering, IIT Madras, 2010 – 2013 Organiser/Co-organiser.

By

Mr K.r.k.v.prasad,

Associate professor, EEE Dep, ACET.

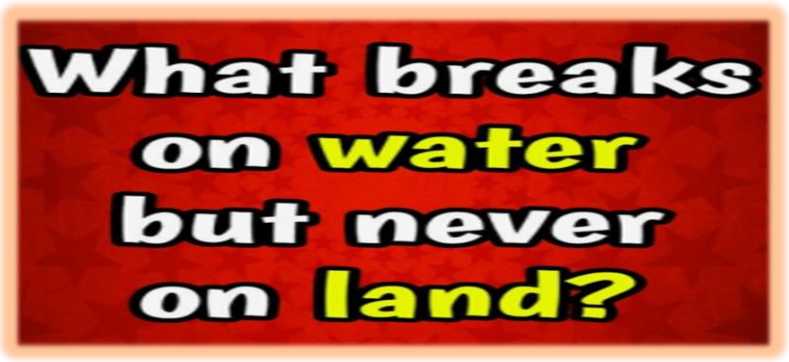
FACULTY ARTICLE

Power quality maintenance is of major problem to be solved with the increase of load demand. Many loads connected to distribution grid consume active power

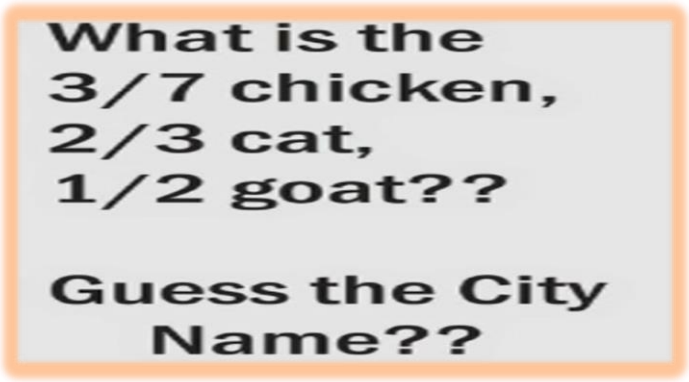
and also high reactive power with reduction of power factor of the main source. To maintain the power factor of source, reactive power drain from source has to be decreased with a supplement device connected to the distribution line. So, that the reactive power demand of the load can be compensated with the device and source supplies only active power, with negligible reactive power drain. This makes the active power equal to apparent power increasing the power factor of the source to unity. Voltage sags caused due to sudden change of loads can also be eliminated with increase of the total apparent power of the system, supporting the loads even in high demand conditions. The device used to inject reactive power into the grid can be a STATCOM. This FACTS device is capable for Voltage Regulation, Shunt Compensation and Power factor improvement. STATCOM controls line flow without disturbing thermal limits, stability margin etc. keeping losses minimum. Many research papers have been published on multilevel converter based STATCOM with Convetional controllers like PI, carrier based techniques and Space vector PWM.

By
K.Varalakshmi,
Sr.Asst professor, EEE Dep.

RIDDLES



ANS: oil



ANS: ***Chicago***

By
20P31A0247,
VALLEPU VIJAYA KUMAR.

I Cover the Planet

I have a floor but I'm not a room
I wave but have no hand
I'm wet but I'm not a towel
I have currents but no electricity
I contain fish but I'm not a tank
I cover a lot of the planet but I'm not land

ANS: **The ocean**

By
20P31A0248,
V.R.VENKATESWARA SWAMY.

.

FITNESS

By
15P31A0231,
PREM KUMAR.

Smart Grid

A Smart Grid is an electricity network that can intelligently integrate the actions of all users connected to it - generators, consumers and those that do both—in order to efficiently deliver sustainable, economic and secure electricity supplies. A Smart Grid employs innovative products and services together with intelligent monitoring, control, communication, and self-healing technologies to:

- better facilitate the connection and operation of generators of all sizes and technologies
- Allow consumers to play a part in optimizing the operation of the system
- Provide consumers with greater information and choice of supply
- Significantly reduce the environmental impact of the whole electricity supply system
- Deliver enhanced levels of reliability and security of supply

Aims of the Smart Grids—the Vision

- Provide a user-centric approach and allow new services to enter into the market;
- establish innovation as an economical driver for the electricity networks renewal
- Maintain security of supply, ensure integration and interoperability
- Provide accessibility to a liberalized market and foster competition
- Enable distributed generation and utilization of renewable energy sources
- Ensure best use of central generation
- Consider appropriately the impact of environmental limitations
- Enable demand side participation (DSR, DSM)
- Inform the political and regulatory aspects

BY

16P31A0230,

R.SAI KUMAR.

CURRENT ISSUE

Sustainable energy systems

Role of optimization modeling techniques in power generation and supply

Electricity is conceivably the most multipurpose energy carrier in modern global economy, and therefore primarily linked to human and economic development. Energy sector reform is critical to sustainable energy development and includes reviewing and reforming subsidies, establishing credible regulatory frameworks, developing policy environments through regulatory interventions, and creating market based approaches.

Energy security has recently become an important policy driver and privatization of the electricity sector has secured energy supply and provided cheaper energy services in some countries in the short term, but has led to contrary effects elsewhere due to increasing competition, resulting in deferred investments in plant and infrastructure due to longer-term uncertainties. On the other hand global dependence on fossil fuels has led to the release of over 1100 GtCO2 into the atmosphere since the mid-19th century. Currently, energy-related GHG emissions, mainly from fossil fuel combustion for heat supply, electricity generation and transport, account for around 70% of total emissions including carbon dioxide, methane and some traces of nitrous oxide.

This multitude of aspects play a role in societal debate in comparing electricity generating and supply options, such as cost, GHG emissions, radiological and toxicological exposure, occupational health and safety, employment, domestic energy security, and social impressions. Energy systems

engineering provides a methodological scientific framework to arrive at realistic integrated solutions to complex energy problems, by adopting a holistic, systems-based approach, especially at decision-making and planning stage.Modeling and optimization found widespread applications in the study of physical and chemical systems, production planning and scheduling systems, location and transportation problems, resource allocation in financial systems, and engineering design. This article reviews the literature on power and supply sector developments and analyzes the role of modeling and optimization in this sector as well as the future prospective of optimization modeling as a tool for sustainable energy systems.

There has been an enormous increase in the demand for energy since the middle of the last century as a result of industrial development and population growth. Consequently, the development of new and renewable sources of energy has become a matter of priority in many countries all over the world. Electricity is conceivably the most multipurpose energy carrier in our modern global economy, and it is therefore primarily linked to human and economic development. Electricity growth has overtaken that of any other fuel, leading to ever-increasing shares in the overall mix. This trend is expected to continue throughout the following decades, with large parts of the world population in developing countries appealing connected to power grids. Electricity deserves precise attention with regard to its contribution to global greenhouse gas emissions, which is reflected in the continuing development of low-carbon technologies for power generation.

A multitude of features play a role in societal debate in comparing electricity generating options, such as cost, gas emissions, radiological and toxicological exposure, greenhouse, occupational health and safety, employment, domestic energy security, and social impressions. Decision-makers will in

general weight these aspects differently, and similarly the literature deals with these issues in inconsistent ways. Attempts to quantify the varied concerns of electricity generation in one end-point indicator in order to aid decision-making are anxious with problems, among which uncertainty and the discounting are perhaps the two most extremely challenging. The formation of public perception is further complicated by the fact that media and political campaigns often comment more rapidly and decisively on contentious issues, thus reaching the public more effectively than sources of less biased factual information. For example nuclear energy is often portrayed and hence perceived as an invisible danger under the control of a few, and associated with military use, suppression of information, and high accident risk. On the other hand of the spectrum, large hydroelectric dams are associated with the forceful resettlement of large numbers of people, and the destruction of archaeological heritage and biodiversity. The concept of sustainable development is evolved for a liveable future where human needs are met while keeping the balance with nature. Driving the global energy system into a sustainable path has arisen as a major concern and policy objective. It is becoming gradually accepted that current energy systems, networks encompassing everything from primary energy sources to final energy services, are becoming unsustainable. Driven primarily by concerns over urban air quality, global warming caused by greenhouse gas (GHG) emissions and dependence on depleting fossil fuel reserves, a transition to alternative energy systems is receiving serious attention. Such a tradition will certainly involve meeting the growing energy demand of the future with greater efficiency as well as using more renewable energy sources (such as wind, solar, biomass, etc.).

While many technical options exist for developing a future sustainable and less environmentally damaging energy supply, they are often treated separately driven by their own technical communities and political groups. Energy systems

engineering provides a methodological scientific framework to arrive at realistic integrated solutions to complex energy problems, by adopting a holistic, systems-based approach. Superstructure based modeling strategy, along with MILP and MINLP solution algorithms are efficient and effective in solving energy systems engineering problems, especially at decision making and planning stage. Based on this, multi-objective optimization and optimization under uncertainty produces further in-depth analyses and allows a decision maker to make the final decision from many aspects of view. The aim of this study is to update existing status of optimization modeling role in world energy assessments with information published during the past decade, focusing on electricity-generating technologies and the distribution or supply systems and to envisage the importance of optimization techniques for future developments in power sector.

Current state of power generation technologies a mix of options to lower the energy per unit of GDP and carbon intensity of energy systems will be needed to achieve a truly sustainable energy future in a decarbonized world. Energy related GHG emissions are a by-product of the conversion and delivery sector which includes extraction/refining, electricity generation and direct transport of energy carriers in pipelines, wires, ships, etc.,

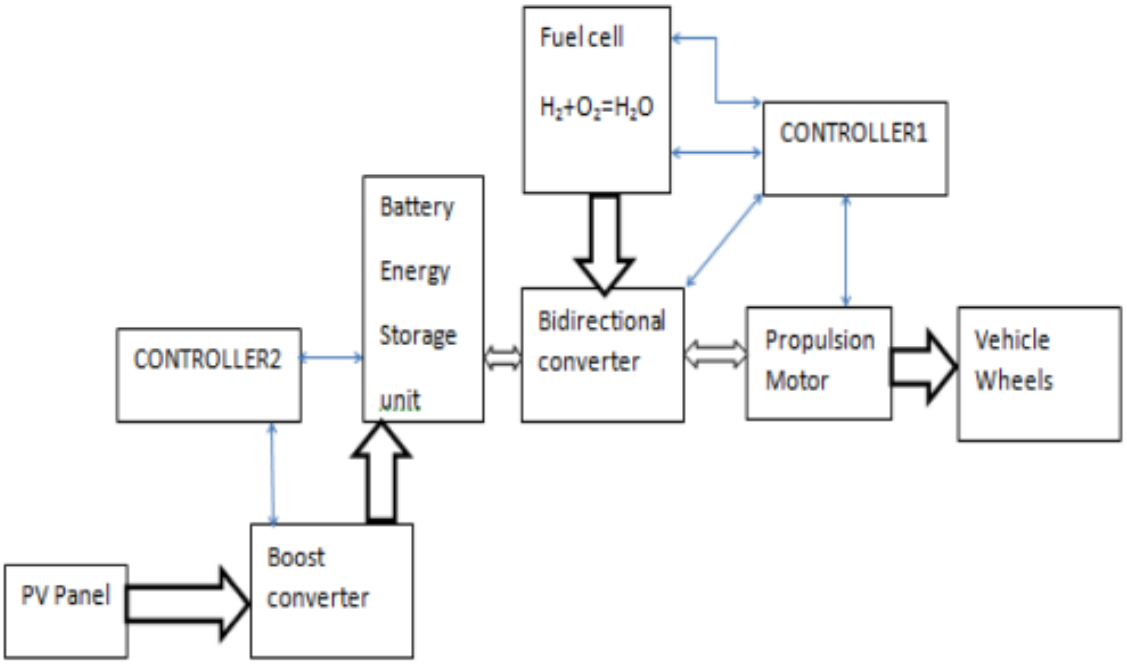
BY
17P31A0201,
ADAPA REVATHI.

PROJECT IDEA

BIDIRECTIONAL DC/DC CONVERTER SYSTEM FOR SOLAR AND FUEL CELL POWERED HYBRID ELECTRIC VEHICLE

The future trend in vehicular design for which environmental concerns is must, for that electric drive is a choice. The hybrid electric vehicle (HEV) with new topology Powered by the bidirectional DC/DC converter with the eco-friendly sources like solar energy and fuel cell. Eco-friendly sources with the integration of bidirectional DC/DC converter have improved efficiency and are making tough competition for fossil fuel driven vehicles. Electric energy generated by these eco-friendly sources is stored in energy storage system (ESS) and used for propulsion.

The discharge of energy during acceleration of vehicle is recharged by braking in vehicle i.e. Propulsion machine and charge is stored in battery by bidirectional converter There is a premising shift over to Eco-friendly energy sources such as solar, wind, fuel cell due to global warming and fossil fuel potential shortage. By next generation there will have advanced power electronics and industrial drives as major components in hybrid vehicular designs. Investigations about PV array methodology and maximum power point tracking (MPPT) with variation in the irradiance, and DC/DC converter is used to improve accuracy of MPPT.



The hybrid electric vehicle presented here comprises the two eco-friendly sources solar and fuel cell driving a vehicle interconnected by a bidirectional DC/DC converter. The management of power flows among all the sources to vehicle is achieved through bidirectional DC/DC converter which uses PI controller technique. The coordinated operation of solar source and fuel cell source and interconnected converter are investigated for proportional locomotion. The simulation results show that the efficient power sharing of hybrid sources with drive by a bidirectional DC/DC converter.

LIMERICKS

There was an Old Man with a beard
who said, "It is just as I feared!
Two Owls and a Hen,
Four Larks and a Wren,
Have all built their nests in my beard!"

Young ladies weren't safe from his humour:

There was a Young Lady of Dorking,
Who bought a large bonnet for walking;
But its colour and size,
So bedazzled her eyes,
That she very soon went back to Dorking.

An interesting character:

There was a Young Person of Crete,
Whose toilette was far from complete;
She dressed in a sack,
Spickle-speckled with black,
That ombliferous person of Crete.

JOKES

1. Q: What do you call a fake noodle?
   A: An im-pasta.
2. Q: How do you make an artichoke?
   A: You strangle it.
3. Q: Why did the tomato blush?
   A: Because it saw the salad dressing.
4. Q: Why do mushrooms get invited to all the parties?
   A: Because they're such fungis! (Fun guys, get it?)
5. Q: What did one plate whisper to the other plate?
   A: Dinner is on me.
6. Q: Did you hear about the famous pickle?
   A: He was a big dill!
7. Q: Should you have your whole family for Thanksgiving dinner?
   A: No, you should just stick with turkey.
8. Q: Why did the banana go to the hospital?
   A: He was peeling really bad.
9. Q: What do you call a nosy pepper?
   A: Jalapeno business!
10. Q: Why did the kid throw a stick of butter out the window?
    A: To see butter-fly.

BY

16P31A0202,

BODDU RAMYA.

Vedic Indian Math Tricks

Multiplication of a 2-digit number from 11 to 20

Step 1: Add the larger number to the unit digit of the smaller number

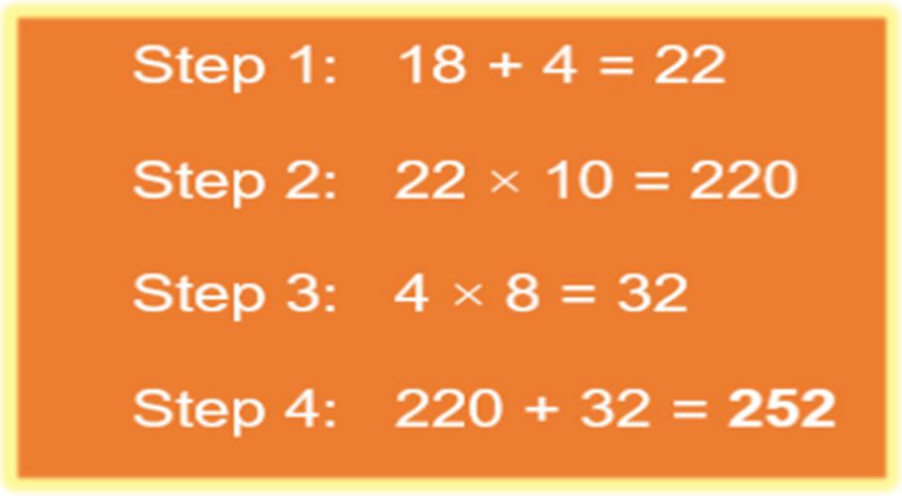
Step 2: Multiply the answer obtained from step 1 by 10

Step 3: Multiply the unit digits of both the numbers

Step 4: Add the answers from Step 2 and Step 3

Let us see an example.

Multiply 14 × 18



Numbers lesser/greater and closer to the power of 10 (on the same side)

Step 1: Find the difference between the numbers from the closest power of 10 and multiply them.

Step 2: Add one of the two given numbers to the difference of the other number from the closest power of 10 (Subtract the closest power of 10 from the number)

Step 3: Final answer is obtained by joining the answer from step 2 and step 1

Example

Multiply 93 × 96

Step 1: 93 - 100 = -7; 96 – 100 = -4; -7 × -4 = 28

Step 2: 93 + (96-100) = 93 – 4 = 89

Step 3: '89' and '24' = **8928**

By
V.U.P LAVANYA,
Assistant professor, EEE dep.