

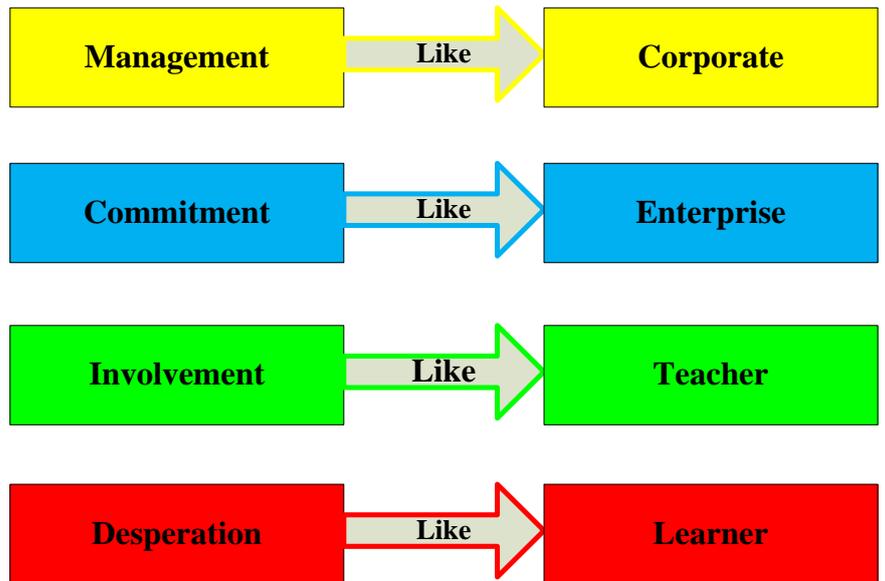
# GYAN VIGYAN SARITA: शिक्षा

A Non-organizational, Non-remunerative, Non-commercial and Non-political Initiative  
 To Mentor Unprivileged Children  
 Monthly e-Bulletin GgyanVigyanSarita: शिक्षा dt 1st December'19 (51<sup>st</sup> Issue)



## Interactive Online Mentoring Sessions (IOMS)

It is a Non-proprietary Model



## Personal Social Responsibility (PSR)

Open to Know, Modify, and Use it as Needed

To Add Value to Education

Without commercializing it



Not This Way!  
 Leave Would Snap



Not The Least !!  
 Plant Would Uproot



Not This Way Too !!!,  
 The Pot Would Break at  
 Collar

Thanks For The Care !!!!  
 Ah!!  
 Plant is Safe & Elevated

Effort is to Groom Competence to Compete  
 Among Deprived and Unprivileged Children

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### *Aim at the Best, but...*



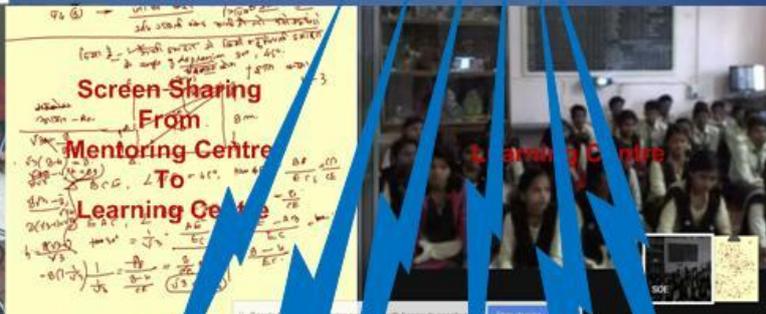
**Conceptual Representation of Online Mentoring**  
 An Initiative To Bridge Gap between Passionate Teachers and Desperate Students  
 A Selfless Endeavour to Democratize Education with a sense of Personal Social Responsibility (PSR)



- Equipments at Mentoring Center**
1. Desk-Lap-top
  2. WebCam
  3. Headset with Microphone
  4. Digital Pen AND Broadband-Internet Connection

**Cloud Internet**  
 (Linking platform : cloud based with as low bandwidth as possible for seamless connectivity of audio-video-whiteboard across nodes where internet connectivity is poor- Presently A-VIEW is in use)

- Equipments at Learning Center**
1. Desk-/Lap-top
  2. WebCam
  3. A Mixer-cum-amplifier with Speakers and Wireless Microphone
  5. Overhead Projector.
  6. UPS (For Continuous Power Supply to computer, internet modem and L&F) AND Broadband-Internet Connection:



- Important Links**
1. Good Internet Connectivity (Wired Broadband Connection)
  2. Subject-wise Coordinator for Each Session to Bridge Learning Gaps between Mentor & Students



- Special Features**
1. Free and Open to all to adopt. Modify, change, correct
  2. Welcomes participation, promotion and facilitation on Zero-Fund-Zero-Asset (ZFZA) basis
  3. More details on Technological and Operational – please write on <http://www.gyanvigyansarita.in/contact/>



*... start, without losing time, with whatever is available.*

**Infrastructural requirement for Centres in Interactive Online Mentoring Sessions (IOMS)**

Learning Centre (if asked for by Mentor)		Mentoring Centre (if asked for by Mentor)	
Estimated Capital Cost (One Time)			
Particulars	Cost (in Rs)	Particulars	Cost (in Rs)
Desktop (without monitor)	20,000	Laptop	25,000
Projector	9,000	Projector	-
Web camera	2,000	Web camera	-
Mixer cum amplifier with Speaker and Wireless microphones	14,000	Headset with Microphone	3,000
Total	45,000	Total	28,000
Wireless Surface Writing Device (WSWD). It shall be required when Learning Centre is ready for collaborative use of Whiteboard.	15,000	Wireless Surface Writing device	15,000
Total with WSWD	60,000	Total with WSWD	43,000
Estimated Recurring Cost			
a. Internet charges, based on estimated monthly data transfer which depends upon choice of cloud platform, and tariffs of ISP		Internet charges, based on estimated monthly data transfer which depends upon choice of cloud platform, and tariffs of ISP	
b. Cloud Platform Charges, to be shared across Learning Centres			
<b>Cloud platform :</b> A-VIEW indigenously developed by Amrita University. It is found to be best among available options for use in IOMS. It has been developed for use in imparting Interactive Online Education, with bilateral audio-visual access, in an interactive manner. Cloud platform. a. The IOMS envisages session upto Five Learning Centres. Charges for the platform whenever payable may be shared across in mutual agreement between Learning Centres. b. Benefit of sharing of charges of cloud platform can be optimized with offset of schedule among multiple sessions of IOMS, to the extent Mentor can deliver.		IOMS is since an initiative driven with Personal Social Responsibility (PSR) operating n Zero-Fund-&Zero-Asset (ZFZA) basis, the Cloud Platform has to provided by Learning Centers for deriving benefit of IOMS. Gyan Vigyan Sarita will be pleased to connect Learning Centres for collectively complementing the cost of Cloud Platform, whenever payable, for arriving at a mutual agreement for cost sharing.  So also IT Infrastructure with the Mentors has been in use and is working. But, at any stage if upgradation becomes essential, support of learning centres, beneficiaries of the initiative, is gratefully welcomed on ZFZA basis.  Operating cost of Mentor, if required, shall be supported by Learning Centres.	

**Specification:** These are based on ground level operating experience and need of optimizing the cost on the initiative. This is essential to utilize financial resources, considered scarce, for benefitting more number of students at more number of centres and mentoring centres. These specifications have been updated based on experience of operation of IOMS with available options. MS WhiteBorad a free App of MS office has been tried out in IOMS and is found satisfactory, until a better option is available.

**Web Camera:** iBall 20.0 HD with a wall mounting

**Projector:** Portronics POR 624 LED Projector Beam 100 Lumen, Screen Size 130 Inch , 800x480px resolution

**Sound System:** Ahuja Make PA Mixer Amplifier Model DPA-370, 30 W Max/37W Max, with PA wall speakers PS-300T 10W, and a wireless unit AWM-490V2 Dual Cordless Microphones. This sound input/out when decoupled with USB sound adopter to connect to the computer required echoless environment is achieved in the Classroom and networked mentor and Learning Centres.

**Cloud Platform:** A-VIEW (Amrita Virtual E-Learning World) developed by Amrita University in association with IIT Bombay, an MHRD, GOI sponsored project.. Problems with Whiteboard functionality of A-VIEW are being circumvented with OneNote app of MS Office for IOMS. This has many features of minimizing bandwidth requirements.

**Surface Writing Device:** HUION make Model WH1409, or Wacom model Intuos with wireless device makes it suitable for communication with base computer in class in an interactive online environment.

**UPS:** An additional accessory, for uninterrupted continuity of session, based on power availability to be decided by Learning Centre, **not included in above cost estimates.**

**Furniture and Lighting:** At Learning Centre, as deemed fit by local administration of Learning Centre, **not included in above cost estimates.**



## संपादकीय

### काश, ईश्वर को हम पहचान पाते!

पृथ्वी पर मानव को ईश्वर की एक कृति माना गया है। हर पल एक नया मानव बच्चे के रूप में पृथ्वी पर आता है, यह बताने के लिये कि ईश्वर अच्छाई को आगे बढ़ाने के लिये प्रयास कर रहा है और वह हतोत्साहित नहीं हुआ है।

दिसंबर का महीना विश्व को शांति और भाईचारा सिखाने वाले महापुरुष ईसामसीह के अवतरण का महीना है। ईसामसीह का आगमन लगभग 4 ईसवी पूर्व 25 दिसंबर को हुआ था। ईसामसीह, ईसाई धर्म के प्रवर्तक हैं।

25 दिसंबर भारत के पूर्व प्रधानमंत्री अटलबिहारी बाजपेयी का भी जन्मदिन है। श्री बाजपेयी एक प्रख्यात वक्ता, हाजिर जबाब, मधुरभाषी, हिन्दी के विद्वान और अच्छे कवि रहे हैं।

उनका मानना था कि छोटे मन से कोई बड़ा नहीं होता है और टूटे मन से कोई खड़ा नहीं होता है। मनुष्य-मनुष्य के बीच के आपसी संबंध अच्छे रहने चाहिये, उनमें सांप्रदायिक सद्भाव बना रहना चाहिये, उनका मजहब के नाम पर शोषण नहीं किया जाना चाहिये, जाति के आधार पर लोगों में हीन भावना को उत्तेजित नहीं किया जाना चाहिये और शिक्षा के द्वारा उनका विकास किया जाना चाहिये।

ईसामसीह ने विश्व में शांति और प्रेम को फैलाया। उनका कहना था कि अपने मन को परेशान मत करो, भगवान में विश्वास रखो, कल के लिये चिंता मत करो, और अपने को नम्र रखो क्योंकि जो नम्र होता है, वही महान होता है।

हमारा अहंकार हमें डुबोता जाता है, और जो ईश्वर पर विश्वास रखते हैं, उनको ईश्वर अहंकार से निकालता जाता है। हमें अहंकार से बच कर रहना चाहिये।

एक प्रसंग है कि एक गाय जंगल में घास चरने गयी। वहां उसने देखा कि दबे पांव एक बाघ उसकी तरफ बढ़ रहा है। वह डरकर भागने लगी। सामने एक तालाब था। वह उसमें घुस गयी। उसने महसूस किया कि तालाब में पानी कम है और कीचड़ अधिक है। बाघ भी उसके पीछे पीछे तालाब के पानी में उतर गया।

थोड़ी देर बाद गाय को लगा कि वह कीचड़ में फंसने लगी है। बाघ भी कीचड़ में फंस रहा था। गाय के नजदीक होने के बाद भी बाघ उस तक पहुंच नहीं पा रहा था। दोनों कीचड़ में फंसकर असहाय हो गये थे।

गाय ने बाघ से पूछा, क्या तुम्हारा कोई मालिक है? बाघ ने कहा, मैं जंगल का राजा हूँ। मुझे मालिक की क्या जरूरत है? मैं बहुत शक्तिशाली हूँ।

गाय ने कहा, लेकिन तुम्हारी शक्ति तो किसी काम की नहीं है, यहां।

बाघ ने कहा, तुम भी तो असहाय हो। गाय ने मुस्कराते हुये कहा, मेरा मालिक शाम को जब घर लौटेगा, हमें घर पर नहीं पायेगा, तब वह हमें ढूंढता हुआ यहां जरूर आयेगा, और हमें इस कीचड़ से निकालकर अपने घर ले जायेगा।

थोड़ी ही देर बाद सचमुच एक आदमी आया, उसने गाय को कीचड़ से निकाला और अपनी राह चल पड़ा। गाय और किसान दोनों एक दूसरे को कृतज्ञ भाव से निहार रहे थे। वे चाहकर भी बाघ को नहीं निकाल सके क्योंकि निकलते ही वह उन्हें मारकर खा जाता।

वास्तव में गाय हमारे समर्पित हृदय का प्रतीक है और बाघ हमारा अहंकारी मन है। मालिक ईश्वर का प्रतीक है। कीचड़ यह संसार है। कीचड़ से बाहर निकलने का संघर्ष हमारे अस्तित्व की लड़ाई है।

किसी पर निर्भर नहीं होना, अच्छी बात है पर सबकुछ मैं ही हूँ, मुझे किसी के सहयोग की जरूरत नहीं है, ऐसा सोचना ही अहंकार है जो हमारे विनाश का कारण बनता है।

ईश्वर हमारे आसपास रहता है, भले ही हम उसे देख न पाते हों। यह भी संभव है कि हम ईश्वर को रोज देखते हों, उससे मिलते हों, उससे बातें करते हों, परंतु उसको पहचानते न हों क्योंकि अगर ईश्वर नहीं होता तो अबतक इसकी खोज की जा चुकी होती।

कभी कभी कुछ चीजें होती हैं पर वे दिखायी नहीं देती हैं। विज्ञान का नियम है कि जो चीजें होती हैं, वे या तो दीखती हैं अथवा महसूस की जाती हैं।

उदाहरण के तौर पर, हवा को हम देख नहीं सकते हैं परंतु महसूस कर सकते हैं। हवा के महत्व को जान सकते हैं। अगर थोड़ी देर के लिये हमें हवा न मिले तो हमारी जान जा सकती है। यह बात और है कि हम जान को देख नहीं सकते हैं पर उसे महसूस तो कर ही सकते हैं कि हमारी सांसें चल रही हैं।

हम ईश्वर को इसलिये नहीं देख पाते कि हम उसको साधारण रूप में देखने की कोशिश नहीं करते हैं और उसे असीम, अनंत और अपनी पहुंच से दूर मान कर उसकी व्याख्या करना शुरू कर देते हैं।

ईश्वर को अगर हम प्रकाश कह दें और विश्वास कर लें तो यह ठीक ही होगा क्योंकि ईश्वर अगर है तो वह सबके लिये है। सूरज का प्रकाश हर एक को बराबर मिलता है चाहे वह अच्छे कार्य करता है अथवा बुरे कार्य करता है।

ईश्वर को हम वर्षा मान सकते हैं क्योंकि जब बरसात होती है तब वह हर एक पर बराबर होती है। ऐसा नहीं होता है कि अच्छे के घर ज्यादा बरसात हो और बुरे के घर पानी न पहुंचे।

ईश्वर को हम हवा मान सकते हैं क्योंकि जब हवा चलती है तब वह सबके पास से गुजरती है। ऐसा नहीं होता कि कोई चाहेगा तभी उसके पास से हवा गुजरेगी और कोई नहीं चाहेगा तो हवा उसके पास नहीं आयेगी। यह बात और है कि उसे हवा दीखे अथवा न दीखे, पर वह आयेगी जरूर उसके पास।

ईश्वर कभी किसी से उसकी कोई चीज नहीं मांगता है। वह केवल देता ही है। इसलिये हम कह सकते हैं कि जो कोई हमारी चीजों को न मांगे वही ईश्वर है क्योंकि उसके पास तो वह चीज है ही।

आज विश्व में बेहतर जिंदगी देने वालों की संख्या कम हो रही है, और ईश्वर की दी हुयी अनमोल जिंदगी को बर्बाद करने वालों की तादाद ज्यादा हो रही है। हम कह सकते हैं कि लोगों को बेहतर जिंदगी देने वाला ही ईश्वर है।

समय की जरूरत है कि हमारी सोच बदले जिससे हम अपने चारों ओर खुशियां बिखरने की बात करें, सबको खुशहाल बनाने

की बात करें, सभी की भलाई की बात करें, सबको फलने फूलने का मौका देने की बात करें, और दूसरों को भी अपने से आगे निकलने का मौका देने की बात करें।

महापुरुषों का जीवन हमें संदेश देता है कि हम अपने चारों ओर के वातावरण को स्वच्छ बनायें, प्रकाशित करें, और हमेशा उज्वल रखें।

प्रकाश को बिखरते रहना ही महापुरुषों के जीवन का लक्ष्य होता है। प्रकाश को दूसरों तक पहुंचाना ही उनको याद करने का कारण होता है।

जब प्रकाश आता है, तब अंधकार जाता है। अंधकार अज्ञान है, प्रकाश ज्ञान है।

आइये, ज्ञान विज्ञान सरिता परिवार की उस पहल को हम आगे बढ़ायें जो हमें सिखाता है कि हमारा हर काम ऐसा होना चाहिये जिससे हमसे जुड़े लोगों का जीवन प्रकाशमय हो। हम उन लोगों के जीवन में प्रकाश फैलाने की कोशिश करें जो अशिक्षा अथवा पिछड़ेपन के अंधकार से ग्रस्त हैं। अगर हमारे चारों ओर प्रकाश फैलता है, तब हमारा जीवन खुद-ब-खुद प्रकाशित हो जायेगा। जयहिंद !

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## **EVOLUTION OF IOMS**

- **Philosophy of IOMS** had its inception in Sarthak Prayash an NGO, in May'2012 in Chalk-N-Talk Mode with stray students.
- Its manifestation in the form of e-Bulletin started in 2016, on 2<sup>nd</sup> October with its First Issue **Subodh पत्रिका**
- In May' 2017 the initiative was upgraded to IOMS, in its primitive form, with the efforts of its Shri Shailendra Parolkar
- This initiative was reorganized as Gyan Vigyan Sarita in 2017 with its e-Bulletin in the name of **Gyan Vigyan Sarita – शिक्षा**
- With this e-Bulletin as Fourth Annual issue, we are stepping in Fifth year of broadening communication to invoke participation of those who can make a difference, for the larger good.
  - Presently it is a satisfactory working model on 'Minimum Need' basis.
- Currently about 200 students in Two rural schools, one in A.P. and other in M.P., are being mentored.
  - We continue to look forward.....

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## Anger?

Most talks in spiritual discourses are on emotions - Kama, Krodha, Moha and Lobha the four primary evils. All these four evils coexist interdependently. Kama, Moha and Lobha are the emotions which create a desire of possession and thus create an urge for their fulfillment. These desires, despite, efforts when remain unfulfilled Krodha is an automatic consequence and manifestation of an outburst of despair. Despite Kama included in primary evils, it is essential for continuity of life. Therefore, with evolution of civilization in different parts of the world regulation of Kama have got evolved based on the prevailing socio-biological conditions. These regulations have taken form of family and social norms. While unregulated Kama leads to social disorder; any obstruction in its perpetuation leads to a state of extreme Krodha which ends up in heinous crimes. This realization occurs only when the act is done. Therefore, different states have evolved different set of laws to deter breach of social norms. After Kama, Krodha is the next emotional evil, the subject matter of this article.

Shrimad Bhagwat Geeta the oldest and one of the most revered scripture in India, about 5000 years ago, in its verse 2:63 reads as -

क्रोधाद्भवति सम्मोहः सम्मोहात्स्मृतिविभ्रमः।  
स्मृतिभ्रंशाद् बुद्धिनाशो बुद्धिनाशात्प्रणश्यति ॥

(krodhād bhavati sammohah sammohāt smṛiti-vibhramah  
smṛiti-bhranśhād buddhi-nāsho buddhi-nāshāt praṇashyati)

Meaning : Anger leads to clouding of judgment, which results in bewilderment of the memory. When the memory is bewildered, the intellect gets destroyed; and when the intellect is destroyed, one is ruined.

It is interesting to note that **Buddha** around 5 to 6 BC cautioned on anger by preaching that “You will not be punished for your anger, you will be punished by your anger”. While **Confucius**, an ethical philosopher, around the same era five centuries BC advised : “ When anger rises, think of the consequences”. On the contrary **Socrates**, a critical thinker, a century later emerged as a school of scholars which recognized emotions including anger as cognitive state of a person. It promoted growth of knowledge by contradictions. He maintained it until his last breath as brought out by Plato, considered to be his first disciple, in “The Defense Speech (Apology)”. Separately, **Plato** opined that “There are two things a person should never be angry at, what they can help, and what they cannot”. Whereas, **Aristotle** regarded as first disciple of Plato “Anybody can become angry - that is easy, but to be angry with the right person and to the right degree and at the right time and for the right purpose, and in the right way - that is not within everybody's power and is not easy.”

Reverberations of these wise words have triggered a desire to analyze behavioural causes and effects of anger leading to aggression and retaliation, a complex phenomenon. They are the saints who have renounced the world and could preach to refrain from anger by exercising forgive and forget policy. But, a million dollar question remains to be answered that a persons with full knowledge of all spiritual preaching, can he live with forgive and forget in pursuit of his role and responsibility? In this context, this analysis is based on first-hand experiences of growing to nearly seven decades as a person in family, profession and lastly social service with an

inspiration of **Personal Social Responsibility (PSR)** to mentor deprived students so as to groom in them competence to compete in a non-organizational, non-remunerative, non-commercial and non-political manner.

Some of the basic questions that are self-imposed for taking ahead the analysis are – (a) Why do I get angry? (b) Is there anything absolute, universal right or wrong? (c) How does flow of authority trigger anger? (d) Is anger objective? (e) Can anger be regulated? Efforts are being made to find plausible answer to each of these questions.

**Why Anger? (First Question):** Aggression of any form is expression of anger. A child gets angry when his wish is not granted or he is in pain. Wishes of a child are plain and their pacification is simple. But, as one grows in age, desires are influenced by the other three evils and their pacifications becomes complex and may not be always either feasible or justifiable. Behaviourally, a person is a part of family, organization, state and society; each of them is being analyzed.

**Family:** In family with growing age one ascends in the family hierarchy. Family traditions lead to the following of the head of the family by all other members; it in turn grants a virtual authority to his wisdom and/or wish. Any breach of actions in the family irks the head and it leads to differences within the family which may take shape of disputes. Such disputes, coupled with socio-economic problems lead to disintegration of family. Despite, involvements of a family in charity, religious performances or social welfare activities is driven with the collective lineage that members of the family carry from their family traditions as well as their engagement in profession or for survival. Yet in a family creativity of every individual is recognized and plays a predominant role in intra- and inter-family interactions.

**Organization:** It can be an enterprise, corporate, institution, NGO. Their ambitions of growth depend upon its nature and scale of operation. These in turn, drive all strategies, policies and actions. They grow with a policy - survival of the fittest. In the process its core group works with an imperialistic mindset. Any effort in CSR, charity, or events of religious pursuit are all focused towards business objectives tainted with family believes of incumbents at the top. But, primarily in an organization emphasis is on productivity and

profitability which is directly linked to performance of a person. It is decisive in survival and growth of person(s) in place. *Thus in the rat race of productivity and profitability, creativity is severely jeopardized.* Accordingly, each organization develops its own work culture oriented to fit in the yardstick of its management. Despite defined role of every person in the organization, his responsibilities are drawn from prevalent convention. Authority of a person, on his descendants in the organization, is discretionary and assumed to be unquestioned. It depends upon confidence enjoyed by a person in the organization; it is purely subjective. This notion depends upon the wisdom of the person. *Challenge to the authority by descendants gives rise to anger* and it could lead to unrest. Nature and extent of unrest depends upon resilience of the organization. As long as situations in an organization are normal or suiting to expectations of the superior, it is fine. But, in the event of an unrest or loss of expectations, the authority is questioned. This creates instability to the person exercising authority to an extent of attrition; it is *manifestation of anger and loss of self-confidence*. Burst out of this kind of authority causes sadness and depression, a sense of helplessness, and gets carried from place of work to home which in turn influences the family matrix. *Ultimately family is the victim of anger generated at place if work.*

**State:** In twenty-first century where the world has largely moved into democracy, it makes sense to limit discussions on democratically elected government. In democracy masses elect their leaders who step in to form government. Here, an important questions that needs consideration are – *are the leaders true representative of masses? are leaders born and brought up in deprivation?* Since, this is not always affirmative, leadership is of elitists and masses are mere a means to climb the ladder. This is the reason that masses see their leader reaching a height until they become inaccessible. Cases of corruption in some of the exemplary communist countries and democracies are real eye openers. *Rare are the true leaders of masses, and Abraham Lincoln was one of them.*

Expectations of polity from leader inflate as soon as he comes to power. Leading a set of people with certain demands is mobocracy. Whereas, leading polity, a combine of assenting and dissenting people, for a better cause is democracy. This is the toughest job. This is the reason even great democracies have seen assassination of their most revered and successful leaders.

Betrayal by a leader, elected democratically, to fulfill expectations of the polity becomes a cause of anger among the people who elected him. Such situations lead to multiple unrests. This leads to *deterioration of socio-political situations in the state and it triggers anger of the leaders; yet they find justification in being irrational, a necessity to remain in power.* It is a vicious trap where result is breakdown of socio-political systems and the state. Many countries including ours has faced it.

Here, it is important to consider that the role of government officials starting from Principal Secretaries to lowest level in different government establishments. These are the people selected, through open public competitions, to serve the welfare state and not the chair. Though these persons are not elected, yet they are integral part of the government machinery. These officials are bestowed with a trust of custody of state's conscience and welfare with a long term vision. Their role and responsibility is to extend candid advice to the incumbent government, without ignoring the reason of their own being in the position. Government may have short-term object to stay in power, but it is the state that has to bear the blunt of any wrong actions, in times ahead. It is most unfortunate if this machinery starts towing the line of the incumbent government with fear or favour in its own vested interests. *Why can't they resist any inordinate policy, decision or execution? Be it at the risk of their position of powers, sphere of influence and belongings. Such a resistance is well regulated and articulated anger against unreasonable, unjust motives against the larger good; it is in line with the Aristotle, quoted in the beginning.* It is vouched from personal experience that life of such an astute person is never a subject of either pleasure or displeasure of others.

Unless anger is exercised, ethics and morality will roll-down and corruption would surge undeterred to affect every segment of state i.e. society, organizations, families and individuals. *Such a decline is a results of mindset to maximize gain in shortest possible time, with least effort and eventually at least cost.*

*There are multiple cases where people have tried to uphold the larger good sometimes successfully, at times unsuccessfully; nevertheless, they upheld the larger good above the chair. Such are the persons who are true leaders, custodians and real statesman.*

Another important consideration about state is that it is just not a geographical boundary, but a set of elected legislators, government elected or nominated by them, government officials, organizations those execute government policies and decisions, and the polity which elects the legislators. It is a complex matrix where each has a role, responsibility and authority. Failure of communist, fascist, and anarchist states in themselves are big case studies to understand as to how they rose to power, and the how power led to digression and absolute power accelerates the digression, *a critical manifestation of complex anger.* *Such socio-political changes are deeply influenced by the process through which leaders, the state and the society has evolved. Having great leaders by a state is a phenomenon, which does not occur every time.*

**Society:** It has a long history of evolutions. Everything assured by the state or its constitution does not wipe out influences of traditions, conventions and cultural traits. Still, even after more than seven decades of independence, cases of social evils like child marriages, sati, dowry and gender disparity, etc. keep surfacing. *It is the society that together,*

without discrimination but with firm yardstick of ethics and morality, constitutes state and organizations. This society was called *रैयत* (Rayat) and treated as supreme in *स्वराज्य* (Swarajya) of Chatrapati Shivaji. In Swarajya dissenting persons were granted freedom to disagree in the interest of Rayat, but anyone who breached or harmed Rayat was called *फितूर* (Fitur) and punished firmly and judiciously, given an opportunity of defense. In his regime even Shambhaji, even son of Shivaji, had to defend himself against various allegations labeled against him. Swarajya of Shivaji is considered to be a benchmark of governance.

In a state, Governments come and go, but it is the society which remains in place. It is the society which inhibits factions, and also produces different kinds of leaders, and people to serve the state. A fragmented society is the greatest pasture for politicians with vested motives. Yet, monolithic society is like a living vegetable. Agree to disagree is and must be foundation of a society. Manners in which disagreements are taken forward for a reform, like musical melody, are indicators of wisdom prevailing in the society. But, disagreement turning society into a hostile and violent, like rattling noise, indicates immaturity of the society.

Human civilization is dynamic and in its present form has undergone many upheavals. Reforms are for the larger good and sustainable in times ahead; they are slow, and result of **Passion, Patience, Persistence and Perseverance** (4Ps).

Any abrupt change in social systems is a result irresistible anger against tyranny and atrocities; it is a type of revolution; it is volcanic. Sustenance of sudden change depends upon the kind of leadership that has emerged and the extent to which it has been able to mobilize masses in pursuit of rigorous process of reform which has no shortcuts.

*Mobilizing masses for a revolt or disobedience can be easily done by fuelling anger within them. It is extrinsic. But, taking along masses for a reform is real leadership. It is wise articulation of anger; hence it is intrinsic. Be it reform or revolutions they impact all sections of society. Effect of reform is long lasting while that of revolution is short lived and has been experienced globally.*

#### **Discrimination of Right and Wrong? (Second Question):**

It is perceived to be highly subjective. Yet in spiritual discourses actions are broadly classified as *कर्म* (Karma- acts performed for self-satisfaction) *सत्कर्म* (Satkarma –performed for larger good) and *दुष्कर्म* (Dushkarma – committed to harm others for self accomplishment). Likewise, thoughts are classified into *विचार* (Vichaar - thoughts that occur for survival or pacification of self), *सद्विचार* (Sadvichhar – that are aimed at larger good) and *कुविचार* (Kuvichaar – intended to harm others for self accomplishment). But, the classification of behavior is *व्यवहार* (Vyavhaar – it is the behavior for survival and is *कर्म* triggered by *विचार*); *सद्व्यवहार* (Sadvyavhaar – it is the *सत्कर्म* inspired by *सद्विचार*); *व्यवहार* (Vyavhaar – it is *दुष्कर्म* induced by *कुविचार*). A behavioural scientist may further lead it into micro-classification.

Every person has justification for his acts in past, present or that may be intended. These justifications have a very wide spectrum ranging from intense physiological to biological urge of an innocent or a naïve person to well manipulated justifications of elites. The latter are seen as intellectual, professional and moral dishonesties. But, certainly a reformists is an inspired persons who are engaged in *सद्व्यवहार*. In the materialistically driven society success of a reform is seen in achievements which is incorrect. *The success of reform is how long the reformists have been able to manage their anger with 4Ps.*

#### **Flow of Authority Triggers Anger? (Third Question):**

Largely, answer to this question has been dealt with in elaborations to first question. Yet it has been seen that rarely *सद्व्यवहार* is volunteered in society. Generally, practice is ABCD policy to any new proposition. Here, A- stands for Avoid, B- Bypass, C-Confuse, and lastly D- Do it if inevitable. Any new proposition raises eyebrows of decision makers and its pursuance is cause of anger to them to an extent of their deaf and blind response. The basic reason is that everyone in the hierarchy wants status-quo; none wants to risk either personal interest or position for a change. These are the persons who keep advocating for creativity and innovation. *Where will it come from? Will it be from stale, failed, orthodox practices? Are not the persons in incumbency responsible to grant audience to new propositions, examine them with due consideration to the needs of change? Are not the incumbents responsible for promoting proactive dynamics of change for the larger good? Are not such responses of professionals, administrators, managers, intellectuals prone to moral dishonesty?* Without getting into personal details broad experiences are brought in case studies to follow.

**Objectivity in Anger? (Fourth Question):** Objective of anger is to change the status quo. If change is considered and accepted on merit, then every reformist or an honest revolutionary would prefer to use the available synergy to execute the change rather than propelling the anger.

**Regulation of Anger? Fifth (Last) Question:** Reformists are persons who were blessed to develop EQ (Emotional Quotient) together with IQ (Intelligence Quotient). It is the IQ which imbibes abilities to evolve solutions. Thus it may help a person to find a place above others. But, EQ adds human sensitivity in a person to select most appropriate solution and implement it in a manner that it is feasible, economical, and sustainable for coexistence. Real need is of a proper blend of IQ and EQ.

**Case Studies:** This initiative of Gyan Vigyan Sarita (GVS) is on the path of reform with intentions not to jeopardize individuals who have not conducted either dutifully or sensibly. We believe that those incumbents are victims of their own lust and greed to increase their belonging and enlarge areas of their influence in an unwise and irresponsible manner. It is an unworthiness to the trust bestowed upon them. Yet we have brought our experiences in this initiative in a steadfast manner. We hope that it will

catalyze introspection among the elites, in whatever position they are, to become sensitive to any new proposition and grant due audience and consideration with openness at least in times ahead. It is a necessity of change and needs to be complemented to the extent possible. Here, organizations are broadly classified into (a) Academic Institutions of National and International statures, (b) Prominent Organization having statewide presence, (c) Administration in Education Department of two large states, (d) Local Administration, (e) NGOs, (f) Corporate houses, (h) Social Worker groups and individuals.

Experiences where corrective are needed are as under –

- a) Academic institutions at that stature have environment and infrastructure conducive to support IOMS. But, faculties at that level are burdened with academic and research priorities. Despite, they are best placed to appreciate potential and possibilities of complementing efforts. Yet, this was not reciprocated at the institutes. **Is it not an indication of their spirit of remaining imperceivable?**
- b) The statewide organization at its headquarter patronizes a school upto 12<sup>th</sup> standard. The school has requisite IT infrastructure for IOMS; yet, the proposal to implement it remained unresponded. Lately it is informed that the management has hired a coaching institute for similar purpose. **Is it not sabotage of selfless cause?**
- c) Administration in education department of the states has thousands of government schools. They keep struggling for improving education in tribal, rural, sub-urban and at some urban schools due to non-availability of teachers. Capital investment has been made in many of the schools which remain unutilized. The IOMS proposition is for five schools at max. **Can such administrations be called dutiful in their non-response to evaluate IOMS proposition for pilot implementation in three-four schools?**
- d) Incumbents in local administration are from select cadres. It is expected from them to pro-act in their jurisdiction for the larger good and with long-term vision. They are vested with necessary authority for it. In one of the tribal district a brilliant start was made about Four years ago. But, resolutions of some operational problems needed across the table discussions. A tedious journey was undertaken to the district headquarter with a prior appointment. To our astonishment the administrator was found neither available nor accessible, and did not even care to respond. **Is it not abuse of authority?**
- e) Some of the reputed NGOs boasting their contributions in education with international laurels when approached for collectively complementing of efforts, they maintained a distance. Social welfare is not a matter of competition, rather it is a matter of complementing each other for the cause they espouse in full honesty. **Why do they distance**

**themselves from others who are willing to complement their efforts without expecting anything in return?**

- f) CSR is a great statutory provision. Such a selfless proposition of IOMS requesting facilitation on Zero-Fund-&Zero-Asset (ZFZA) basis, a financial model, can optimize their investment on CSR. **Yet, why is IOMS kept at bay?**
- g) Social work creates a kind of hope among deprived ones. It needs consistency, continuity and commitment. Yet such elite groups and persons choose to act philanthropically at their convenience. **Is it not betrayal of PSR claims by them? Can urgency of the deprived persons wait for their convenience?**

Despite all these odds GVS is striving for at its best with 4Ps since last seven years. It has reached a stage where through three schools to about 200 students are connected in IOMS. This is inspirational and we owe our gratitude to (a) Ramakrishna Mission High School, Sitanagram, Distt. Guntur, A.P. (b) Govt. Higher Secondary School, Kanwan, Distt. Dhar, M.P., and (c) Army Public School, Dinjan, Distt. Tinsukia, Assam, for bestowing their trust on 4Ps of GVS.

**Conclusion:** Experiences brought out above are based on the experiences in life and especially in last seven years in pursuit of efforts to groom competence to compete among deprived and unprivileged children through IOMS, with a sense of PSR. A red carpet welcome was never expected, yet it is wished that elites and incumbents, in responsible position, could consider and explore opportunities for a pilot implementation, where required strength of teachers is not available but internet facility is available or can be made available. Broadband connectivity is backbone of IOMS. We are a small group of four co-passionate persons pursuing this selfless mission of mentoring deprived and under-privileged children through IOMS, Mentor's Manual (a free web-resource), and monthly e-Bulletin to create awareness among elites. We are optimistic that this humble selfless pursuit with 4Ps is a sapling which would receive care and concern of more elites in incumbency and senior citizens to know, and collectively complement for the larger good. Honestly, this initiative is fuelled by extreme anger against prevalent situations. Yet it aims at reform in education, a dire necessity to eradicate the prevalent evils. With this we lay our hopes under your feet to tread softly as felt in the words of a great poet and Nobel laureate William Butler Yates - **"The Cloths of Heaven" as under:**

*Had I the heaven's embroidered cloths,  
Enwrought with golden and silver light,  
The blue and the dim and the dark cloths  
Of night and light and the half-light;  
I would spread the cloths under your feet:  
But I, being poor, have only my dreams;  
I have spread my dreams under your feet;  
Tread softly because you tread on my dreams.*

## **An Appeal: for Interactive Online Mentoring Session (IOMS) at your establishment**

### **By Gyan Vigyan Sarita – A non-organizational educational initiative**

**Philosophy:** Socio-economic reform through education with **Personal Social Responsibility (PSR)** in a non-organizational, non-remunerative, non-commercial and non-political manner.

**Objective:** Groom competence to Compete among un-/under-privileged children from 9<sup>th</sup>-12<sup>th</sup> in Maths, Physics and Chemistry, leading to IIT-JEE.

**Financial Model: Zero-&-Fund-Zero-Asset (ZFZA).** It calls for promoters and facilitators to provide infrastructure for use to the extent they feel it is neither abused nor there is a breach of trust. And, reimbursement of operational expenses, as and when they arise, to the initiative

#### **Operation:**

- a. **Mode:** [Interactive Online Mentoring Sessions \(IOMS\)](#) since July'16, which has been recently switched over to A-VIEW, web-conferencing S/w, with connectivity upto 5 Learning Centers, with One Mentoring Center.
- b. **Participation:** Voluntary and Non-remunerative, Non-Commercial and Non-Political

#### **Involvement:**

- a. **Promoter** –
  - i. Initiate a Learning Center,
  - ii. Sponsor a Mentor who is willing to join on certain terms,
  - iii. Sponsor cost of operation and up-gradation of infrastructure to voluntary mentors,
- b. **Facilitator** –
  - i. Provide space and infrastructure for **Interactive Online Mentoring Sessions (IOMS)**. Most of it is generally available, and may need marginal add-on,

- ii. Garner support of elite persons to act as coordinators at the Learning Centre.
- c. **Participator** –
  - i. As a Mentor,
  - ii. As a Coordinator,
  - iii. Operational support
  - iv. E-Bulletin and Website promotion for increasing its depth and width across target students

**Background:** *The initiative had its offing in May'12, when its coordinator, a non-teacher by profession, soon after submission of Ph.D. Thesis in 2012, at one of the IITs, under taken after retirement got inspired to mentor unprivileged students.*

*The endeavour started with Chalk-N-Talk mode of mentoring unprivileged students starting from class 9<sup>th</sup> upto 12<sup>th</sup>. Since then it has gone through many ground level experiences and in July'16 it was upgraded to IOMS, a philosophy in action to reachout to more number of deprived students. Currently regular sessions of IOMS are held regularly for students of class 9<sup>th</sup> and above at few Learning Centeres. Efforts are being made to interegate more learning centers and mentors to diversify its scope and utilize our full capacity.*

*It is a small group of Four persons including **Prof. SB Dhar**, Alumnus-IIT Kanpur, **Shri Shailendra Parolkar**, Alumnus-IIT Kharagpur, settled at Texas, US and **Smt. Kumud Bala**, Retd. Principal, Govt. School Haryana. More details of the initiative are available on our [website](#) and operational aspects of can be online accessed at [IOMS](#).*

**Actions Requested:** *May please like to ponder upon this initiative. **Queries** ,if any, are heartily welcome. We would welcome your collective complementing in any of the areas listed above at **Involvement**, to make the mission more purposeful and reachable to target children.*

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**विश्व विज्ञान दिवस (शांति और विकास के लिए):** *Life is too precious.....*  
**नवम्बर 10: - के अवसर पर**

साइंस बनाने वाले, क्या तेरे मन में समाई |  
 काहे को साइंस बनाई , तूने काहे को साइंस बनाई ||

काहे बनाये तूने, न्यूटन-एडिसन,  
 दिए उन्होंने हमको, ढेरों समीकरण,  
 रुक ना सकेगा अब मैक्सवेल इक्वेशन,  
 उनकी सब मेहनत लायी, आरामी जीवन |  
 - गुप-शुप तमाशा देखे, वाह रे तेरी खुदाई ,  
 काहे को साइंस बनाई तूने, काहे को साइंस बनाई |1|

साइंस बनाने वाले, क्या तेरे मन में समाई ....

ना होते भास्कर, ना पुरखे फिलॉसफर,  
 होता ना सोक्रेट्स ना, ओपेनहैमर,  
 जंगल में रहते और घिसते पत्थर ,  
 तुझसे हम बदले ना, हम रहते मट्टर |  
 - काहे को करता मेहनत, और हमारी रगड़ाई,  
 काहे को साइंस बनाई तूने, काहे को साइंस बनाई |2|

साइंस बनाने वाले, क्या तेरे मन में समाई ...

साइंस बनाके तूने, जीना सिखाया,  
 जियो-और-जीने दो, हमको रसाया,  
 जीना है हक से हमको, नेचर को रखके,  
 वार्ना कहेंगे बच्चे, हमसे अकड़के |  
 - पैदा किया क्यों हमको ? दया जरासी ना आई,  
 हमको, काहे को साइंस पढाई, वाह रे,  
 काहे को, साइंस बनाई |3|

दुनियाँ बनाने वाले, क्या तेरे मन में समायी,  
 काहे को साइंस बनाई तूने, काहे को साइंस बनाई||

... -Gyan Vigyan Sarita

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*Humanity is acquiring all the right technology for all the wrong reasons.*

- *R. Buckminster Fuller*

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## अंदाज ए बयां

### कड़वा वाला हनी!!!

समीर लाल 'समीर'

चेहरा पढ़ने की आदत ऐसी कि चाहूँ भी तो छूटती नहीं. दफ्तर से निकलता हूँ. ट्रेन में बैठते ही सामने बैठे लोगों पर नजर जाती है और बस शुरू आदतन चेहरा पढ़ना. पढ़ना तो क्या, एक अंदाज ही रहता है अपनी तरफ से अपने लिए. किसी को बताना तो होता नहीं कि एकदम सही सही ही पढ़ा हो. हालांकि जिनको बताना होता है वो भी हाथ देख कर कितना सही सही बताते हैं, यह तो जग जाहिर है. ढेरों अनुभव रोज होते हैं, धीरे धीरे सुनाता चलूँगा.

सामने की सीट पर एक गोरी महिला आ बैठी है. मेरी नजर मेरे लैपटॉप पर है मगर बस दिखाने के लिए. दरअसल, लैपटॉप तो एक आड़ ही समझो, देख तो उसका ही चेहरा रहा हूँ. हूँ पैदाईशी भारतीय, संस्कृति आड़े आती है कि सीधे कैसे देख लूँ एक अनजान अपरिचिता को. मगर फिर वही, हूँ तो पैदाईशी भारतीय, तरीका निकाल ही लिया, लैपटॉप की आड़ से. तिनके की आड़ शास्त्रों में और चिन्दी की आड़ हिन्दी फिल्मों की अभिनेत्रियों में काफी मानी गई है तो लैपटॉप की स्क्रीन तो बहुत ही बड़ी आड़ कहलाई. संस्कृति हो या कानून या सेंसर बोर्ड, जो कुछ रोकने का जितना बड़ा प्रबंध करते हैं, उसमें हम उतना ही बड़ा छेद बनाने का हुनर रखते हैं. यूँ तो अक्सर ऐसा परदा बुनते समय ही ऐसे छेद छोड़ देने की प्रथा रही है. कानून बनाने वाले हम, कानून तोड़ने वाले हम, कानून का अपनी सुविधा के लिए पालन करने वाले हम- हम याने हम भारतीय!!!

उसने हाथ में अखबार खोला हुआ है और नजर ऐसे गड़ाये है जैसे अगर वो खबर उसने न पढ़ी तो अखबार वालों का तो क्या कहना, खबर पैदा करने वालों के यत्न बेकार चले जायेंगे. ओबामा का अमेरीका को ग्रेटेस्ट कहना या अन्ना की कांग्रेस को उखाड़ फेंकने की घुड़की, सब इनके पढ़े बिना नकारा ही साबित होने वाला है. खैर, इस महिला की किस्मत ही कहो कि ये दोनों खबर तो यूँ भी नकारा साबित होना ही है. मगर इतनी गहन तन्मयता प्रदर्शित होने के बावजूद, मेरा चेहरा पढ़ने का अनुभव और वो भी जब चेहरा महिला का हो- कोई मजाक तो है नहीं. फट से ताड़ लिया कि महिला की नजर जरूर अखबार पर है मगर वो सोच कुछ और रही है. अंदाजा एकदम सही निकला- दो ही मिनट में उसने अपने पर्स से फोन निकाला और जाने किससे बात करने लग गई- हाय हनी, मैं अभी सोच रही थी कि आज तुम मुझको लेने स्टेशन आ जाओ तो ग्रासरी करते हुए घर चलें. दूध भी खत्म हुआ है और कल के लिए ब्रेड भी नहीं है. और हाँ, बेटू ने होमवर्क कर लिया कि नहीं?

वैसे भी हनी शब्द सुनते ही मेरे कान खड़े हो जाते हैं कि एक शब्द किसी आदमी को कितना बेवकूफ बना सकता है कि वो

फिर हर बात पर सिर्फ हाँ ही करता है. मानो हनी, हनी न हुआ-रुपया हो गया हो जिसके आगे हमारा हर नेता हाँ ही बोलता है.

एकाएक अखबार की खबर ध्यान से पढ़ते तो यह नहीं हो जाता. निश्चित ही विचार मन में आया होगा कि ग्रासरी करना है, बेटू का होमवर्क होना है. ट्रेन से उतर कर बस लेकर घर जाये- फिर उस सो काल्ड हनी के साथ बाजार जाये- बेवजह समय खराब होगा, उससे अच्छा उसे स्टेशन बुला ले तो सहूलियत रहेगी. तब जाकर फोन किया होगा.

फिर फोन रखने के बाद पुनः वैसे ही नजर गड़ गई अखबार में. मैं अब भी जान रहा था कि वो अखबार में खबर नहीं पढ़ रही है...अनुभव से बड़ा भला कौन सा ज्ञान हो सकता है.

मुश्किल से दो मिनट बीते होंगे कि उसने फोन पर फिर रीडायल दबाया...हाँ हनी, एक बात तो कहना मैं भूल ही गई- स्टेशन आते समय मेरा वो ब्लैक जैकेट लेते आना, जिसमें जेब पर व्हाईट क्यूट सा फ्लावर बना है. ड्राईक्लिनर को रास्ते में दे देंगे.

गरीब हनी शायद हम सा ही, हम सा क्या- ९०% पतियों सा- कोई निरिह प्राणी रहा होगा जिसे पत्नी का जैकेट कौन सा और कहाँ टंगा होता है, न मालूम होगा और पूछ बैठा होगा कि कौन सा वाला?

फिर तो दस मिनट इस तरफ से जो फायरिंग चली कि तुमको तो ये तक नहीं मालूम कि मैं क्या पहनती हूँ..फलाना फलाना...टॉय टॉय...यू डोंट लव मी एट ऑल..मुझे पता है...जाने क्या क्या!...मेरे तो कान ही सुन्न हो गये. उसकी आवाज में मुझे अपनी पत्नी की आवाज सुनाई देती रही. एकाएक उसका चेहरा भी मेरी पत्नी के समान हो गया....ओह!!

स्टेशन आ गया, और मैं हकबकाया सा ट्रेन से उतर कर बाहर आ गया. पत्नी कार लिए इन्तजार कर रही थी.

पूछ रही है कि इतने सहमे से क्यों हो- क्या ऑफिस में कुछ हुआ?

लगता है वो भी चेहरा पढ़ना सीख रही है. सही ही हो ये कोई जरूरी तो नहीं!!! वरना तो हमारे ज्योतिषियों की दुकान ही बंद हो जाये एक दिन में...

सात समुन्द्र कोशिश करके हार गये

मैं अपने आँसू से ही पूरा भीगा हूँ...

गुरु मंत्र स्कूलों वाले सीमित थे

जो भी सीखा ठोकर खाकर सीखा हूँ



लोकप्रिय चिट्ठाकार समीर लाल व्यवसाय से चार्टर्ड एकाउंटेंट हैं। आजकल वे कैनेडा में रहते हैं। उन्होंने कहानी लिखना पाँचवीं कक्षा में ही शुरू कर दिया था। आप कविता, गज़ल, व्यंग्य, कहानी, लघु कथा आदि अनेकों विधाओं में दखल रखते हैं। भारत के अलावा कनाडा और अमेरिका में मंच से कई बार अपनी प्रस्तुति कर चुके हैं। आपका ब्लॉग "उड़नतश्तरी" हिन्दी ब्लॉगजगत में एक लोकप्रिय नाम है।

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## INVITATION FOR CONTRIBUTION OF ARTICLES

*Your contribution in the form of an article, story poem or a narration of real life experience is of immense value to our students, the target audience, and elite readers of this Quarterly monthly e-Bulletin **Gyan-Vigyan Sarita: शिक्षा**—and thus create a visibility of the concerns of this initiative. It gives target students a feel that you care for them, and they are anxiously awaiting to get benefitted by your contributions. We request you to please feel free to send your creation, by **20<sup>th</sup> of each month** to enable us to incorporate your contribution in next bulletin, [subhashjoshi2107@gmail.com](mailto:subhashjoshi2107@gmail.com).*

*We will be pleased to have your association in taking forward path our plans as under-*

- *With the the release of 1st Monthly e-Bulletin in its consecutive Fourth Year, we are gearing up for next Monthly e-Bulletin **Gyan-Vigyan Sarita: शिक्षा** due on 1<sup>st</sup> of ensuing month.*
- *This cycle of monthly supplement e-Bulletin **Gyan-Vigyan Sarita: शिक्षा** is aimed to continue endlessly, till we get your **तन** and **मन** support in this sefless educational initiaticce to groom competence to compete among deprived children.*

*Formatting Guidelines: (a) Paper Size A4, (b) Fonts: Times Roman (English), Nirmala UI (Hindi), (c) Font Size Title/Author Name/Text: 14pt/12pt/10 pt (d) Margins: top/bottom/left/right – 1”/1”/0.4”/0.4”, (e) Photoprofile of author – In 4-5 lines with mail ID and Photo. We will be pleased to provide softcopy of template of an article, in MS Word to the author on advise.*

*We believe that this e-Bulletins shall make it possible for our esteemed contributors to make its contents rich in value, diversity and based on their ground level work and/or experiences.*

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## Ayurveda- Health Care

### Prevention of Cardiovascular Disorders in Ayurveda

Dr Sangeeta Pahuja

In Ayurveda Cardiovascular Disorders (CVD) is mainly a result of unhealthy diet and lifestyle. Hence it can be reversed by natural means. The main aspect of the cardiovascular disorders is a Physical deterioration of the structure of cardiovascular vessel walls. This structural deterioration can be due to clogging of blood vessels with cholesterol and plaques.

Damages are due to increased pressure and free radical activity and lead to loss of vessel wall thickness. Deterioration of cardiovascular vessels causes many symptoms like chest pain, weakness, shortness of breath, palpitation and life threatening disorders caused by reduced oxygen supply.

**Causes of CVD:** They are –

- (a) Excessive stress,
- (b) Overweight,
- (c) Sedentary lifestyle,
- (d) Consumption of food which contain too much of trans fats,
- (e) Overeating,
- (f) Sugar intolerance and Diabetes,
- (g) High Cholesterol,
- (h) High BP,
- (i) Smoking,
- (j) Unhealthy diet and
- (k) Lack of exercise

**Preventive Measures:** Measures that can be taken to control CVD are -

- (a) Regular Exercise - Atleast 30 minutes exercise each day is recommended to stay healthy.
- (b) Maintain Healthy weight - Excess weight leads to many problems like heart disease, high BP, and high cholesterol.
- (c) Avoid Smoking, Tobacco, Nicotine and other drugs - Chemical found in these drugs can damage the heart and blood vessels. Nicotine in cigarette smoke narrows the blood vessels making it harder for the heart to function normally. Moreover, heart does not receive enough oxygen and thus the risk of heart disease increases.

**Healthy Diet:** It is recommended to consume all kind of healthy food to stay healthy. Consume food items that are low in fat ,salt and cholesterol, like low fat dairy products, fruits, vegetables and whole grains are rich food that can protect your heart.

Saturated fat and trans fat are known for increasing blood cholesterol and coronary artery disease. So should be avoided.

Excessive consumption of dairy products should be avoided. Red meat, palm oil are the major sources of saturated fats, and should be avoided.

Polyunsaturated fats like omega 3 fatty acids can help to decrease abnormalities in heart. Fish like mackron and salmon are natural sources of omega3s. walnut oil, flaxseed oil, canola oil, soybean oil contain smaller amount of omega3s.

Food items like Garlic, Onion, shatavari, turmeric, amla, tulsi have cardio-protective and antioxidant properties.

Bottle gourd juice is very beneficial for heart patients.

Consume 2-3 buds of garlic empty stomach daily. This is beneficial for all kind of heart ailments.

Cow's milk is also very beneficial for heart.

**Helpful Herbal Remedies:** Herbs like Ginger, Garlic, Bilberry, grapefruits, green tea, fenugreek seeds, aloe vera, cayenne, arjuna, shankhpushpi, ashwagandha, guggul nutmeg, jatamansi, anantmool, tulsi, guduchi, haritaki, pushkarmool, dashmool contain cardio-protective properties and play major role in the management of CVD.

**Healthy Life Style:** Do Yoga and Pranayam. Yoga builds cardiovascular health, increases lung capacity, and improves respiratory function and heart rate. It also boosts blood circulation, builds muscle, and decreases inflammation.

Among Aasana are padangushtasan, sukhasan, pawanmuktasan, ardhbhujangasanand. And in Pranayam variances are bhastrika pranayam, sheetali pranayam, kapalbhati pranayam, anulom vilom, pranav pranayam, udgeeth pranayam, bhramri pranayam are cardioprotective.

By following the healthy diet and lifestyle ,we can prevent cardiovascular disorders and can stay healthy.

## Know Ayurveda, Follow Ayurveda and Stay Healthy



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## GROWING WITH CONCEPTS

*Concepts of an expert are not like a static foundation of a huge structure; rather it is like blood flowing in a vibrant mind.*

*Growing into an expert, is a process during which each one must have used best of the books available on subject and received guidance of best of the teachers. Authors might have had limitations to take every concept thread bare from first principle and so also must be the constraint of teacher while mentoring a class with a diversity of inquisitiveness and focus. As a result, there are instances when on a certain concept a discomfort remains. The only remedy is to live with the conceptual problem and continue to visualize it thread bare till it goes to bottom of heart and that is an **ingenious illustration**.*

*In this column an effort is being made to take one topic on Mathematics, Physics and Chemistry in each e-Bulletin and provide its illustration from First Principle. We invite all experts in these subjects to please mail us their ingenious illustrations and it would be our pleasure to include it in the column.*

*We hope this repository of ingenious illustrations, built over a period of time, would be helpful to ignite minds of children, particularly to aspiring unprivileged students, that we target in this initiative, and in general to all, as a free educational web resource.*

*This e-Bulletin covers – a) [Mathematics](#), b) [Physics](#), and c) [Chemistry](#). This is just a beginning in this direction. These articles are not replacement of text books and reference books. These books provide a large number of solved examples, problems and objective questions, necessary to make the concepts intuitive, a journey of educational enlightenment.*

*Looking forward, these articles are being integrated into Mentors' Manual. After completion of series of such articles on Physics it is contemplated to come up representative problems from contemporary text books and Question papers from various competitive examinations and a guide to their solutions in a structured manner, as a dynamic exercise to catalyse the conceptual thought process.*

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## Is World In Danger? (Part-2)

**Prakash Kale**

*(This article is in continuation to the thought brought out on the subject in Feb'19 issue of Gyan Vigyan Sarita - शिक्षा, monthly e-Bulletin)*

**Introduction:** Latest Headlines on effects of climate change has warned that much of Mumbai would be under water due to sea-level rise by 2050. (But Indian Scientists have refuted such claims.). Further, more than 11,000 scientists, (in the journal Bio-Science,) have warned of "untold suffering" due to global warming and that "Earth is facing a climate emergency". It said if the Paris treaty's goal is to be achieved emission of (warm causing) gases must be reduced by 50 % by 2030 and to net zero by 2050. However, another team said Paris carbon-cutting pledges itself are "too little, too late". Yet another report says, sea water warming and level rising is long term phenomenon and even if, emission is stopped, sea level will continue to rise for another hundred years. Contradicting all, one study declared, Earth's cycles consist of both, cold glacial periods (ice ages) and warmer interglacial periods (present period) when the ice thaws and sea levels rise and the same (sea level rise) will continue in spite what human beings do. Meanwhile US President has walked out of Paris treaty saying, it is unjust towards USA and puts heavy burden on it. Hearing/ Reading all these contradictory things, one gets confused and is unable to decide what / who is right. Whether, phenomenon is cyclic or structural, manmade or natural, reversible or irreversible, what about development v/s nature, developed country v/s developing country and so on. So let us understand different point of view one by one.

**Inadequacy of Science:** The Physics explains that gases CO<sub>2</sub> (and fossil-fuel burning is increasing CO<sub>2</sub>) in the atmosphere trap heat received from the sun and so the climate system has changed. Is it so simple? No. Reason, we are having atmosphere, oceans, icecaps, seasons, and flora and fauna to get in the way of simple radiative (absorption, reflection and re-radiation of sun ray) physics based on which above calculations are based. Modeling the Earth's climate is one of the most complicated tasks and creates the largest uncertainties. Even supposing models have been very effective in predicting climate change, they have not been as effective in predicting its impact on ecosystem[s] and human society, which is not a pure science. *Thus, major effort should be made to monitor climate change as well as its impact on ecosystem(s).*

**Changed and Failed Theories:** Further, for a common man question is if a tiny (It is measured in parts per million and is in range of 200 to 400 ppm in earth atmosphere) concentrations of carbon dioxide can cause

enough heat to create a global warming impact on Earth, why is Mars with 95% carbon dioxide cold? Can this theory be wrong? Earlier also science has discarded many old theories. Galileo changed Earth centric universe. Einstein changed Newton's Classical Physics. And now CERN researchers have found neutrinos travelling faster than light that have proved Einstein theory wrong. Darwin's life theory is also under clout when scientist found life could have originated in deep-sea hydrothermal vents and not in warm shallow pools of water (as Darwin stated). In socio political theories too Malthus predicted (mathematically) population explosion to be followed by calamities, but proved wrong due to new scientific invention like Birth Control devices etc. Further, what could be side effects (ageing population, slowing of economy etc.) of controlling population was not understood and within 50 years China had to reverse one child policy adopted in 1970s

In view of above, argument is that even if, predictor is sincere and correct about impending danger like, Antarctic ice melting etc, that doesn't mean rising CO<sub>2</sub> is the CAUSE of it (nor is "human activity" the "cause" of rising CO<sub>2</sub> levels, since nobody is taking actual MEASUREMENTS of all of the CO<sub>2</sub> sources and sinks). *Correlation does not equal causation* – one of the most basic foundations of ACTUAL "science." Computer modeling of the climate is at best a speculative hypothesis of what might happen. It is not science in itself. Science is about observation and experiment. If observation bears out the hypothesis then and only then it is science. Further, now quantum physics ( i.e. science) tells that absolute objectivity is not possible in describing observed phenomenon( i.e. for a single event two, observer can have two different conclusion) So, *What will happen if tomorrow it is proved that carbon emission is/was not cause of global warming or for that matter warming has improved certain things on our planet (about Ozone hole written down below).*

**Effect of Human Intervention:** Thus, Science itself has not uttered last word about nature and efforts to understand nature's cycle fully are continuing. Further, side effects of human intervention have not been properly evaluated. Thus, though science has improved our life, but many of today's problems are due to shortsightedness in achieving so called progress. Thus industrial revolution is cause of today's CO<sub>2</sub> emission. Chemical fertilizer has destroyed the natural soil. Invention of plastic is cause of

much solid waste and sea pollution. *Similarly, it is highly probable that, today's heavy dependence on Electromagnetic Waves (for communication etc) may give rise to some future physical or mental disease in mankind.* Near home, consecutive actions in Punjab starting from 1970s - encouragement for paddy crop, mechanization (leading to stubble in field after harvesting) and stubble burning, and a ban on early sowing (before monsoon, to conserve water) led to late harvesting when wind direction is towards Delhi- is cause of smoke problem in Delhi. But even in this season with (temporary) change of wind direction and daily rainfall, the share of stubble burning in air pollution in Delhi is only 2%, (in PM 2.5 Air quality Index) on some day. *This shows how one by one well intended human intervention leads to new unintended problems. This also indicates, nature is still more powerful (ultimately wind direction is deciding level of pollution) and human efforts to control it are falling short. Further it points that media and public outcry over any problem can be biased (calling it problem of Delhi though problem is of North India) and tends to highlight external cause then internal one.*

**Failed Predictions:** Now we analyze earlier predictions about climate change and find that none of prediction on climate and environmental disaster since the 1970s has come true. *Illustrative brief list is: (a) 1970- Ice age by 2000 (Boston Globe, April 16, 1970). (b) 1970- 'America subject to water rationing by 1974 and food rationing by 1980.'* (Redlands Daily Facts, October 6, 1970) (c) 1974- Ozone Depletion a 'Great Peril to Life'. *But no such 'great peril to life' has been observed as the so-called 'ozone hole' remains: (d) 1988- Maldives completely under water in 30 years.* (Agence France Press, September 26, 1988). (e) 2002- *Famine in 10 years.* (The Guardian, December 23, 2002). (f) 2004- *Britain to have Siberian climate by 2020.* (The Guardian, February 21, 2004). (g) 2008- *Arctic will be ice-free by 2018.* (Associated Press, June 24, 2008). (h) 2009- *Prince Charles says only 8 years to save the planet.* (The Independent, July 9, 2009). (i) 2009- *UK prime minister says 50 days to 'save the planet from catastrophe'.* (The Independent: October 20, 2009.) *Further, after Oil crisis, in 1973, the 'experts' predicted there was less than 20 years oil left in the world and that in the year 2000 all computers would stop working and so on.*

*In 1970 scientist warned of global cooling but now they warn of warming. We must remember there's environmental science, and then there's environmentalism. Environmentalism has more in common with scientology than science. General preface to any prediction is "if present trends continue".* The issue, however, is that present trends do not continue. They change dramatically for a number of reasons *within 10 -15 years.* Innovation

happens, leading to change in Consumer behavior (due to price signals) toward quantum and type of energy consumed as well as on side effects generation (pollution etc).

**Changes Brought by Science:** Every year brings new inventions. If we were to try to name the greatest invention in human history, it would be hard to beat the stone chopping tool and the hand axe. They marked the crucial turning point when human being realized the ability to produce things and began to see the world as malleable to their needs. *I am sure from that age onward nature v/s development debate must be eternally going on.* Beginning of Agriculture practices led to destruction of large area under forest. In last two centuries invention of electricity and the internal combustion engine greatly changed our lives and now Computers (more efficient quantum computer is on the horizon), Digital Camera, TV, Smartphone, TCP/IP, WWW all are changing our lives, energy needs and material consumption which was unimagined 50 years ago. Particularly Photovoltaic Solar Energy and LED lights are redefining pattern and need of our energy. Further, there has been invention of a battery operated van which can run for 320 kilometers on a single charge for about 10 minutes only; it gave a boost to e-vehicles. In medicine, Birth-control devices, vaccinations, Non-invasive laser surgery, Coronary Bypass Surgery, Magnetic Resonance Imaging (MRI), etc has changed birth and death rates beyond imagination.

It is well known that CO<sub>2</sub> is pollutant but less known fact is CO<sub>2</sub> is also useful feedstock, an input into variety of industrial processes from plastics to concrete. So a team of researchers has devised a method where in, Carbon of CO<sub>2</sub> (due to fossil fuel burning) is captured and oxygen returned back to the atmosphere. Other researchers have come up with a system to remove carbon-dioxide (even at low 400 ppm concentration) efficiently from the air. Now idea is- *use more, emit less* - and it is giving rise to whole new field in science and technology- carbon capture and utilization (CCU) processes- CO<sub>2</sub>u (utilization), CO<sub>2</sub>p (reduction in CO<sub>2</sub> emission/production), CO<sub>2</sub>r (removal of CO<sub>2</sub> from atmosphere), CO<sub>2</sub>s (storage of CO<sub>2</sub>)

This is how science and technology progresses and change- human organization, energy needs, opens up new sources of energy and so on. *Under these circumstances it is hard to predict what will happen 30-50 year hence, and more foolish to believe such predictions.*

**Adaption by System and Self-healing by Nature:** As said earlier, adaptation by the system does also happen simultaneously. The diversity that we find today in flora and fauna all over the world is because of adaption done by system over millions of year and this will continue in future also. Take example of adaption of life in most poisonous gas for life, Hydrogen sulfide (H<sub>2</sub>S). It is a

potent toxicant interfering with oxidative phosphorylation ( a process) in mitochondria (part of a cell) and creating extreme adverse conditions in aquatic ecosystems. The mechanistic basis of adaptation to perpetual exposure to H<sub>2</sub>S remains poorly understood, but it is seen to be working. Scientist investigated evolutionarily independent lineages of live bearing fishes that have colonized and adapted to springs rich in H<sub>2</sub>S and compared their genome-wide gene expression patterns with closely related lineages from adjacent, non-sulfide streams. Overall, results suggest that modification of processes associated with H<sub>2</sub>S detoxification and toxicity complement each other to mediate *elevated H<sub>2</sub>S tolerance in sulfide spring fishes*. Further, according to new research, Sea levels rose 10 meters, (melting ice was main reason) above present levels during Earth's last warm period 125,000 years ago in the last interglacial period *and we survived that period*. Another example of how nature works/ interacts, (at some point in the next few days), the hole in the ozone layer above the Antarctic will close (good sign and without human effort) completely *as a result of warmer temperatures* in the stratosphere (effect of CO<sub>2</sub> emission).

While global energy, poverty and food insecurity remain a pressing challenge, due to innovation, legislation and adaption, the problems are getting much better, not worse all over the world. For example in 1999 more than 15,000 people were killed in Orissa due to *Super* cyclone, but when similar intensity cyclone *Fani* hit this year death toll were less than 10. In fact we should be thankful for economic liberties that provide people means to protect themselves from the environment. As a country grows economically, it increases the financial ability of its citizens and businesses to care for the environment and reduce pollutants emitted from industrial growth. Countries with greater economic freedoms have cleaner environments and greater environmental sustainability. *Thus development should be seen as complement to fight against climate change and not otherwise.*

**Resist Changes:** Unfortunately, above facts has been used by many to belittle environmentalist and overlook dangers of climate change. They label, environmentalist leftists and opponent of their own political thinking (implying there is some conspiracy in it, to halt progress), or lobbyist to boost business of industries engaged in clean environment (*To some extent it is true, by invoking and playing with fear emotion about pollution, industry of clean water has been created and same is going to happen with air also*). Selectively picking statements (and out of context) on scientific uncertainty to contend that "no one bothers to check that predictions are wrong all the time". They say, over the last 5 million years the world has cooled, warmed up, cooled and warmed when humans were not burning coal. Further, they claim humans have polluted the world but not to the degree the 'experts' want

us to believe. Lastly, they tell people, even if problem is real; *the solutions are so drastic that they could send us back to the Stone Age.*

**Effect on Society:** But reality is, rising temperatures, spread of crop disease and extreme weather events is leading to degradation of local ecosystem and has made harvests at many places unviable and people are migrating from there. In this scenario millions of people are forced to choose between insecure livelihoods and the unauthorized migration. In the absence of coordinated action by global community there is fear of "*climate apartheid*." Further, warming has *enhanced economic growth in cooler, wealthier countries while dampening economic growth in hotter, poorer countries, resulting in increase in economic inequality*. . Climate change has also adversely impacted food security and emissions are "a clear and present danger to health security". (The health benefits of addressing climate change "far outweigh the costs of meeting climate change goals). Warming oceans, melting ice, and rising sea levels are affecting everything from coral reefs to the nearly 10 percent of the global population living in low-lying coastal areas. Within those groups (living in warm and coastal area etc), damage to subgroup of *vulnerable populations* is disproportionately high Animal and plant species on Earth are threatened with extinction. This threat is more (due to the intensive use of fertilizers and chemicals in food production) for Bees, Butterfly etc. (like small creature for whom conservation program are not in place but) which help in pollination, making possible flowers, trees, and agriculture on earth. Further, a new global assessment shows that human impacts have greatly reduced plant-fungus symbioses (known as mycorrhiza), which play a key role in sequestering (storing) carbon in soils. To close the paragraph remembering that uncertainty, about change, can work both ways and we could be underestimating future changes.

**Main Polluters and Who Should Coordinate?** We have discussed models, changes by science etc, and (uneven) effects on society and so on. It makes it essential to ponder upon who contributes to the problem and how to improve the situation. Just over half of greenhouse gas emissions come from four nations. At 29 percent of the global total, China has said it will lower carbon intensity and peak emissions by about 2030. *The US, accounting for 13.1 percent of the total pollution, has turned its back on the Paris deal*. India, which is ramping up both renewable energy and carbon-intensive coal-fired power, accounts for seven percent, and Russia -- which has made no pledge at all - added 4.6 percent. The emissions of the world's poorest nations have been and continue to be negligible, but steps must be taken today to shape their energy consumption pattern so that they should not become dependent on cheap fossil fuel energy (*Halting*

*development is no choice*). The most complicated political questions is who should step up to deal with the harms of climate change, considering that wealthier countries pollute more but are often shielded from the worst effects. How can responsibility be assigned, and more importantly, what is to be done? Under the Paris treaty, developing nations are to receive \$100 billion annually from next year to help curb climate change and cope with its impacts. But whether they will receive it? Ultimately, it is debate between development and nature. We all are supposed to *commit national resources* on a problem which do not recognize national boundary for which *there are no clear answers. It is not a philosophical question about earth and humanity (they will adapt and survive) it is political and economic question of each once place there in.*

**India:** Coming to specific question about India, the policy has to shift decisively from whether to do, to how to do so, but as part of development challenge. We need to do five things. **First**, to recognize the interplay between climate and development (sector wise), **Second**,\_identify clear areas where there are synergies, and where trade-offs exist, between two. **Third**,\_look beyond short term to longer term strategic visions of India's development pathway. **Fourth**, build strong institution, Climate Change Advisory Board etc.(like Security Advisory Board) to direct and coordinate efforts. Lastly, but most important (*as climate change is not bound by national boundary*) is climate diplomacy, *as a deeply vulnerable country, India has to*

*push vigorously for more and more effective, global coordinated action on reducing emissions.*

**Conclusion:** While the exact contours of the future are hard to predict, there is little doubt that climate change carries huge, negative implications for India and World. So far we have focused on our immediate development concerns — poverty, jobs and livelihoods, access to energy services etc —but, it is increasingly clear that climate is crucial to development. There is no longer a pathway to development neglecting climate challenge.

In the past, climate science reports had an implicit future tense, as in, *"It's a problem for your grandchildren"*. Now, we are left with a sense of urgency, about immediate and forthcoming climate dangers. The first step in this is to accept the warnings and create conditions for innovative solutions to be found. By pushing the myth that we can continue to act as usual and innovations will magically happen in the future to bail us out, a great disservice is being done, especially to today's children. They are being burdened with the responsibility of not only dealing with the changing climate, but also innovating and fixing it. We are taking a loan and expecting our children to pay it off. That is an inter-generational Ponzi scheme. Children themselves are aware of it and so Greta Thunberg, a teenager from Sweden, became one of the youngest crusaders against practices adversely affecting climate change.

**This is hope for us and same on us.**



Author is M.Sc.( Physics) and a retired Banker, settled at Dewas, M.P.During his career he was also a faculty, at CBD Staff College o-f Indian Bank, Mumbai. Currently he associated with IFBI, a joint venture of ICICI Bank and NIIT) for skill development of newly recruited bank officers, and NIBM, Pune RBI's Apex College for Executive Training. He is passionate about sharing his thought through blogs and newsletters and guiding college students for competitive exams in a non-commercial manner.E-mail: [kaleprakash23@gmail.com](mailto:kaleprakash23@gmail.com)

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***The value of a college education is not the learning of many facts but the training of mind to think.***

- **Albert Einstein**

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***"I have been impressed with the urgency of doing.***

***Knowing is not enough; we must apply.***

***Being willing is not enough; we must do."***

- **Leonardo da Vinci**



## लाल गुलाब

एक लाल गुलाब  
जो सदा महकता रहेगा  
अपनी भीनी सुगंध से  
जग को सुवासित करता रहेगा  
आज तक उसकी मुस्कान  
प्रतिबिंबित है  
हर नन्हे मुन्ने की आंखों में  
जो दीप जलाती है  
हर मासूम की राहों में  
जो हम सब का प्यार है  
वे चाचा नेहरू  
नमन के हकदार हैं।

## मृणालिनी घुळे



कवियत्री एक सामाजिक चिंतक एवं विचारक हैं। आपकी कविताएँ वर्तमान पर्यवेक्ष्य में बुद्धि-जीवियों को उनके सामाजिक उत्तरदायित्व के प्रति उन्हें चिंतन के लिए प्रेरित करती हैं। आपकी लेखनी प्रादेशिक एवं राष्ट्रीय स्तर पर प्रकाशित है।  
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## अंतर्मुखी ही है सशक्त

जो जितना अंतर्मुखी, वो उतना ही है सशक्त  
अंतर्मन में वास प्रभु का, करता हर पल पथ प्रदर्शन।

संग रहकर सबके, जो रहे सदा असंग,  
नहीं हो सकती उसकी निष्ठा कभी भंग।  
ना पाने का सुख, ना खोने का डर  
हर स्थिति में सम भाव रहकर  
बनता वही निडर।

नयनों में निश्छलता, मुख पर सत्य का तेज,  
शीश पर आत्मविश्वास का छत्र,  
ईश्वर सानिध्य का आवरण ओढ़कर,  
निर्मित होता एक सशक्त वह।

झांका जिसने सदैव अंतर्मन में,  
पाया सुख अपार।  
बाहरी दुनिया में तलाशा जिसने  
जीवन का सुख, न हुआ कभी तृप्त,  
न हो पाया भवसागर से पार,  
जो जितना अंतर्मुखी, वो उतना ही है सशक्त।

## डॉ. संगीता पाहुजा



कवियत्री आयुर्वेदिक चिकित्सक हैं। आपने B.A.M.S. की उपाधि M.D. University, रोहतक से प्राप्त की। आपके दिल्ली एवं नॉएडा में परामर्श केंद्र है। धार्मिक, नारी एवं समाज उत्थान कार्यों में आपकी विशेष रूचि है।  
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*If you can find a path with no obstacles, it probably doesn't lead anywhere*

- *Frank A. Clark*

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## लाज़वाब है तेरा नूर

मुकेश आनंद

ऐ चाँद लाज़वाब है तेरा नूर,  
दिल तो करता है, रुक जाऊँ,  
करता रहूँ दीदार तेरा ही रात भर,  
पीता रहूँ रस युवा पूनम की अधरामृत का।

लेकिन सोचता हूँ अपने आवारापन के बारे में,  
टिकना कहाँ नियति है मेरी।  
मंजिल मेरी बहुत दूर वीरान खेत,  
जहाँ बाट जोहते हैं कलाकार।  
जिनकी हाथों में है जादू  
भूरी मिट्टी से सोना बनाने का,  
तकते हैं राह स्याह मेघों का।

कैसे रूक जाऊँ,  
जिसके नूर से तू रौशन है,  
उसने ही निकाला है समंदर से,  
बड़ी लगन से बनाया,  
की खारे पानी से कुछ मीठा बन सकूँ।  
आऊँ किसी के काम,  
बिछा दूँ हरी चादर,  
और दूँ कुछ विश्राम,  
तपिश से, पेट की हो या मौसम की।

हो जाऊँ न्योछावर  
या कसूँ दीदार ये है कश्मकश?  
फिर तू अपने नियति देख,  
कल से तेरा नूर होने लगेगा कम,  
और फिर हो जाएगा गुम,  
ये मुझसे सहन नहीं होगा।  
प्रेम हो तो हमेशा के लिए!  
लेकिन ये खूबसूरती टिकती कहाँ हमेशा के लिए।

बेहतर है तेरा ये रूप छिपाये हृदय में,  
निकल जाऊँ और छा जाऊँ मेघ बन कर कहीं,  
जो कुछ जीवन है एक मौसम का,  
कर दूँ तर बतर धरती गगन,  
बनूँ प्रेम के लायक स्वयं ही  
और देखूँ अधरों पे मुस्कान अपनी प्रेमिका के।

और हाँ, तेरी तस्वीर मन में बसा ली है,  
जब कभी दिल करेगा देख लूंगा  
दिल से निकाल कर।  
फिर मिलेंगे प्रिये,  
अगर कोई हवा का झोंका इधर खींच लाया जीते जी।



कवि एक अधिवक्ता एवं सामाजिक कार्यकर्ता हैं। सामाजिक विषयों पर पाठन, चिंतन –मनन, लेखन एवं उन पर कार्यान्वयन उनकी अभिरुचि है।

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*We have learnt that LIFE is neither fast nor sudden leaps;*

*It grows gradually and sreadily through pits and rises.*

*We have learnt on every fall, more was needed from us;*

*Irrespective of how others were.*

*We have learnt that when tide is against, swim hardest to keep moving ahead;*

*When in favour swim fastest to create a reserve in case of contingencies.*

*We have also learnt that reasons are in abundance to justify losses,*

*But there is only ONE reason to do good beyond self.*

*LIFE is MUST for sustainable coexistence.*

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## निर्णय

भावना मिश्रा

आज रमा अपने बेटे और बहू के व्यवहार से तंग आकर अपनी आधी संपत्ति वृद्धाआश्रम दान दे दिया और आधी संपत्ति दोनों बेटे के नाम कर, वृद्धाआश्रम आकर बड़ा सुकून महसूस कर रही थीं।

बीते दिनों में खो गयी रमा कैसे रमेश से मिली और पहली ही नज़र में रमेश रमा को दिल दे बैठा और शादी, फिर बच्चे नहीं होने के कारण इसी अनाथालय से चंदू और नंदू को अपने सगे बेटे से भी ज्यादा प्यार दुलार देकर पाला, अभी तक उन्हें नहीं पता कि रमा उनकी सगी माँ नहीं। चंदू विदेश में ही पढाई के बाद नौकरी फिर वही शिफ्ट हो अपनी जिदगी में मगन हो रमा और रमेश को भूल गया। नंदू मुंबई में नौकरी करने लगा, वही अपने पत्नी और बच्चों के साथ व्यवस्थित हो गया।

रमेश जब नौकरी से रिटायर हुआ, तो दोनों अपने बेटे, बहू पोते-पोतियो से मिलने के लिए तरस जाते थे। छुट्टियों में भी कोई ना कोई बहाना बना कर नहीं आते, जब रमा और रमेश उनके पास जाते तो वहा भी उनको, इन दोनों का रहना पसंद नहीं आता।

अचानक एक दिन रमेश को दिल का दौरा आया, रमा पड़ोसी की मदद से उसे अस्पताल में भर्ती कराया गया। एक सप्ताह तक

रमेश आई०सी०यू० में दोनों बेटे का नाम लेता रहा, पर दोनों में से कोई नहीं मिलने आया। रमेश दोनों बेटे का याद करते मर गया।

रमा टूट चुकी थी। दोनों बेटे ने रमा को छः महीने चंदू के पास और छः महीने नंदू के पास रहने का निर्णय लिया।

पहले नंदू के यहाँ रमा गयी, वहा बहू और बेटे को रमा बोझ लगने लगी थी। छः महीने किसी तरह बीता। सब घूमने जाने वाले थे, सारे टिकट, होटल बुक थे, पर अभी तक चंदू रमा को लेने नहीं आया, साथ ही फोन भी नहीं उठा रहा, सब बहुत परेशान थे। बेटे और बहू ने रमा को जब तक चंदूभाई आयगा, तब तक वृद्धाआश्रम में भेज देते हैं।

रमा बोली हँ - आज से मैं वृद्धाआश्रम में ही रहूँगी। आज सारी बातें बता ही देती हूँ, तुम दोनों मेरे बेटे नहीं हो, मेरे किस्मत में संतान नहीं थी, फिर भी मैं तुम दोनों को अनाथालय से लाकर बेटे से भी ज्यादा प्यार दुलार दिया, और तुम्हारी किस्मत बदल दी। और फूट फूट कर रोने लगी, अब सबने रमा को अपने पास रोकने की कोशिश की, पर रमा वहां नहीं रूकी।



लेखिका कला संकाय से स्नातक तथा एक गृहणी हैं। वे अपने पुत्र मनन और पुत्री नव्या के साथ अपने परिवार तथा बुजुर्गों की सेवा का आनंद लेती हैं। संगीत (गायन), नृत्य एवं भ्रमण इनके शौक हैं।

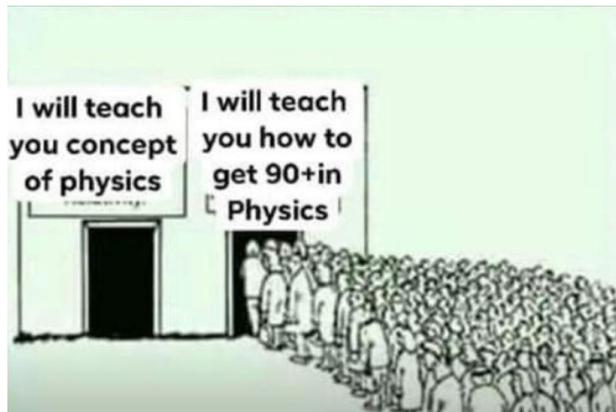
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*Education is not filling of a pail, but lighting of a fire.*

- William Buttlar Yates

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## SOLUTION TO STUBBLE BURNING

**Kumud Bala**

Stubble burning is intentionally setting fire to straw stubble that remains after grains, like paddy, wheat etc. have been harvested. The stubble burning around Delhi and neighboring states have become so worse in the past



few days that farmers in these states are being blamed for their act. Every acre of land where paddy straw is burnt, about three tons of carbon dioxide, 120 Kg of carbon monoxide, six kilogram of particulate matter, four kilograms of sulphur dioxide and 400 kilograms of ash are released. This means in early winter, Punjab and Haryana come under the grip of the green house effect. It is also a fact that the burning of paddy straw also results in burning of precious organic material in the paddy field. For every acre of land, there is a loss of 5.5Kg of nitrogen, 2.3Kg of phosphates, 25Kg of potassium, about two tons of manure. In addition, useful microbes are also burnt. North-west India is currently in the grip of poisonous smog produced by farmers through paddy straw and stubble burning. The smog is affecting the germination and growth of crops as well as having a harmful effect on human health. Farmers continue to violate the ban orders of government even if they are aware that the burning increases local pollution and results in the loss of important soil nutrients such as nitrogen, potassium and phosphorous. In Punjab, only about 20% of straw is managed through biomass power plants, paper and cardboard mills. The remaining quantity is burnt in open fields. The stubble releases enormous quantities of particulate matter especially the dangerous 2.5PM, along with other



noxious gases. The higher moisture content in the winter air accentuates the problem as it traps the pollutants and prevents their dispersal.

**There are many ways in which the problem of stubble burning can be solved:**

- (i) To making manure: make compost pit and fill it with crop waste( paddy waste), mix it with cow dung, green grass and field soil by spreading every content in 4 inches thick layer one by one, repeating till the height is nearly one meter. Finally water is added to the contents. In 20 days organic fertilizer is ready. Farmers can use this organic fertilizer and can avoid buying from the market. This model of saving the environment from noxious gases is being followed by many farmers in U.P. Not burning the crop stubble and using it to make fertilizer, not only saved money but also the environment, besides further enriching the soil. This works on environmental-friendly method of farming.
- (ii) In the long run, area under paddy should be reduced by encouraging the cultivation of high value crops like vegetables, fruits, oil seeds, pulses, maize, bajra etc. This will save water, energy and also keep our air clean.
- (iii) Using in the packing industry.
- (iv) Using as raw material for electricity production in the specifically-designed thermal plant.
- (v) Basmati rice paddy straw is a nutritious fodder for animals. In place of common varieties of rice, the cultivation of basmati rice has to be encouraged.
- (vi) Rice straw can be converted into pulp by mixing and churning with water and organic chemicals. And further into biodegradable table wares and other products. Rice straw doesn't have any nutritious or commercial value. Wheat straw has both commercial and eco-friendly usage.
- (vii) The most prominent solution presented is the in-situ management which involves ploughing back the stubble in the ground. But this is economically unfeasible for farmers because of the high cost of both manual labour and mechanized options. Farmer's organizations have been demanding financial assistance from government to help defray the expenses of disposing stubble in an environmental friendly manner. The urgency to remove stubble arises from the necessity to sow wheat seeds by early November. Farmers though, take no blame for stubble burning saying it is the most convenient option for them.



## It's Not Just A CLOWN (Episode 6)

**Chyanis Tiwari**

“Oh God, When are they coming?” Uma yelled while sweating. Suddenly, she heard the siren sound. She was now relieved and stood up. The clown was gone. She saw Nina looking around so she quickly walked downstairs.

“There’s nothing here.” Nina said.

“I knew it!” Uma yelled out loud. “It was just here, and showed me sign of something.”

“What sign?” Nina asked.

“I can’t remember. I was freaking scared then.” Uma said.

“Are you sure?” Nina asked. “It isn’t like, a trick, right?”

“Hey chill. Why are you not trusting her?” Andy asked.

“Yeah. Why are you guys not trusting me?” Uma said.

“I was just doubting.” Nina said. “Make sure next time when you call, there’s something for us to see.”

“Be careful. If something happens, don’t hesitate to call us.” Andy said with a big, bright smile.

“Ew Andy. You just want her phone number.”

“Well... I think I need to go up and finish my project.” Uma said before going back to her apartment. Now, it’s time for Nina to find out about this. She looked at the CCTV camera.

“Let’s get back to the station. I need to take a look at those CCTV cams.” Nina said before entering the police car.

“How can you know so much about investigating crimes?” Andy asked while looking at Nina “I mean like, we’re new here.”

“It’s none of your own business.” Nina said. But then she looked at Andy who is looking at her. “You’re not gonna stop asking me, right?”

“Yep. You know me.” Andy said. Okay I know like Andy is handsome. He’s cool. But why does he want to know ‘everything’ on earth?

“... I don’t feel right telling you.” Nina said.

“Why? Is your dad a prisoner? or a thief? a burglar? A kidnapper?” He asked while Nina was looking at him. “Why? No?”

“You know what, you’re so annoying right now.” Nina said.

“I just want to know.” Andy said.

“Okay, Okay. My dad was a senior police officer, enough?” Nina said.

“Yeah. Now go.” Andy said.

“Such a time waste.” Nina said.

At the station. They headed to the CCTV room. Andy started asking for the footage they need.

“We need a CCTV footage for Karen street 30 minutes ago.”

“Okay... let me see.” The man said. “Here it is. Take a look.”

“Hmm...” Both of them quietly watched the footage.

“There’s nothing! She lies.” Andy said in the disappoint tone.

“No, Andy. Look carefully. There’s something strange.” Nina said.

“What strange?” Andy asked.

“Look at the time.” Nina showed the time. It turns from 11.13 to 11.32 “Someone cut the footage!”

“Maybe, you can find it in the trash. People always forgot that the footage that is deleted end up staying in the trash can.” The man said.

“Right. Can you open that please?” Nina asked. But found out the trash can was empty. “It’s all gone...”

“Okay, you know what. I think this guy or a clown or whatever, is a real creeper.” Andy said.

“So, the clue we get is that that person has something connect to this station” Nina said. “and... that girl, Uma either.”

“Why you think that?” Andy asked in a confused face.

“Cause, if he doesn’t, how could he delete the footage here in station?” Nina said. “And not forget to clean the trash can.”

“So, what do we do now?” Andy asked.

“We need to start all this situation again.” Nina said looking at the footage.



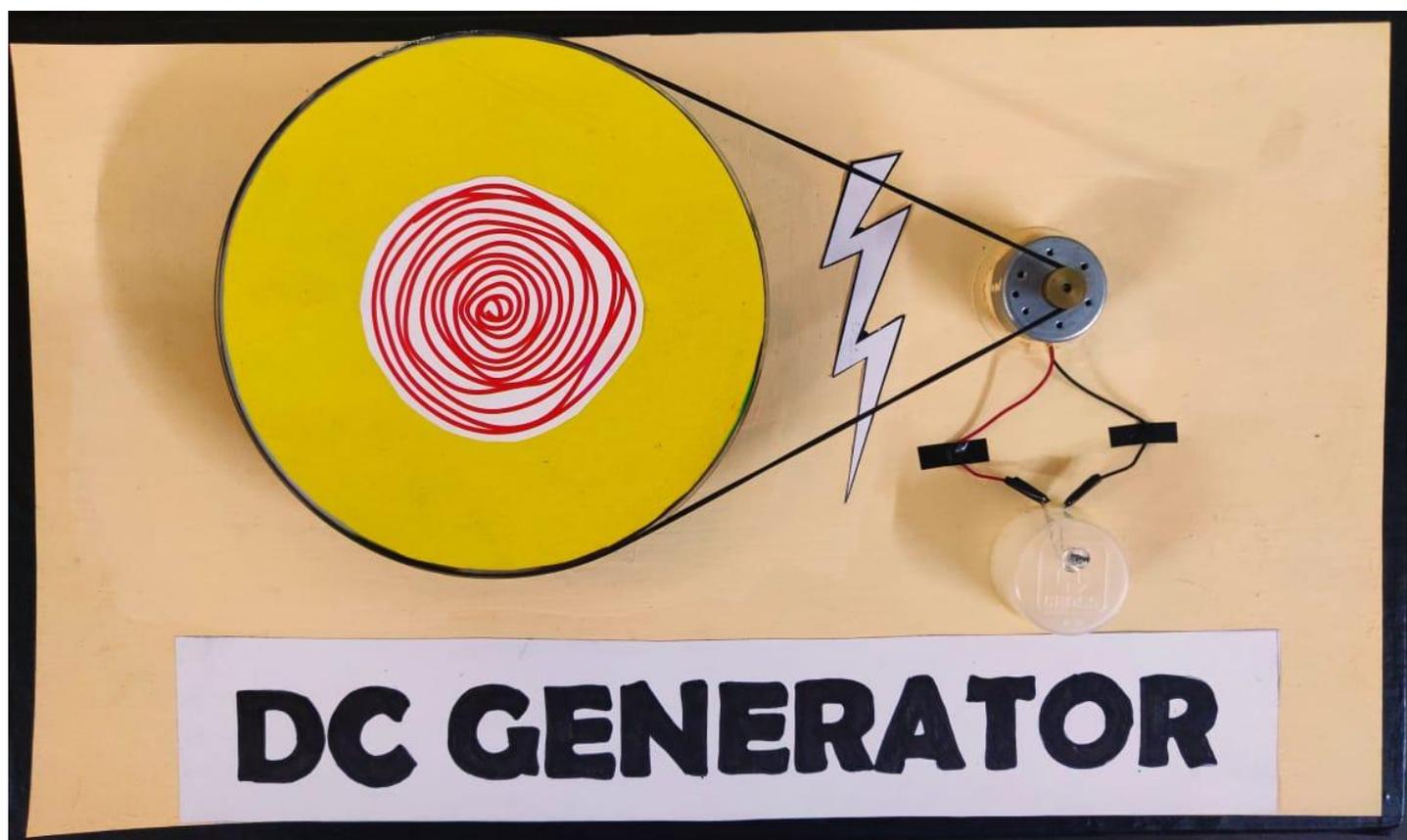
Author is a student of grade 9 at Thailand. She likes writing stories. Most of her stories are usually about social problems because she wants that the new generation teenagers should understand the social world. She hopes that the guys will learn about the new society from this story.

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## A Model

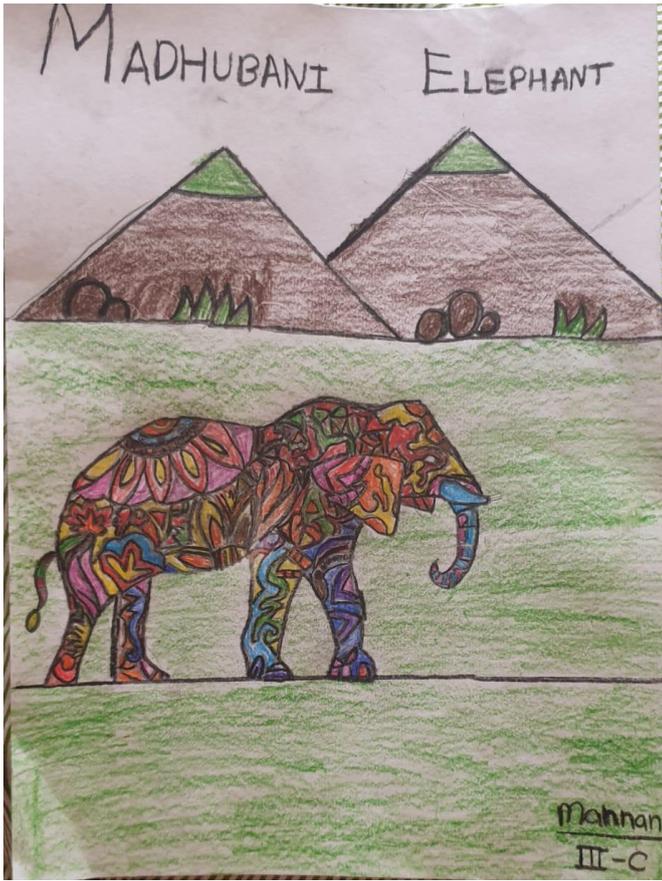
**Dishita Joshi**



She is a student of Class 8<sup>th</sup>, The Khaitan School, NOIDA. It is a home made model. Her hobbies include music, drawing and painting, swimming and playing Tennis. She is a member of Student’s Management Committee at School.

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**Mannan,**  
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**Navya Nayan**  
Class 4<sup>th</sup>, Birla Vidya Niketan, Delhi

## Life: An Unexplored Journey

**Drisana Buragohain**

Life is like a journey which is to be travelled no matter how bad the roads are. It is a journey full of adventures and, new and exciting things to look forward to. It is all about experiencing new things, exploring the unexplored, meeting new people, making your dreams come true and accepting everything with a smile and moving on. We need to understand that life is like a test- a trial. Tests are trials which are supposed to be difficult and which are supposed to mold us into our better versions to create a better tomorrow for ourselves.

It is a journey where all of us go through ups and downs, good times and bad ones, but, we have to make ourselves so strong that we are able to accept everything and move forward with a determination to do better in future. We should neither be too happy in our success, nor be too sad and depressed in our difficult times. We should always remember that nothing is permanent. We should not be scared of taking risks in our life because until we spread our wings, we will have no idea how far we can fly. We should never be hesitant to accept or face failure

because when we fail, we get up, and even then also we fail, and again we get up and this way we grow stronger.

It is alright to fail and it is alright to cry, but giving up should never be an option. We should never wait for the perfect moment; we should take the moment and make it perfect. We should keep trying until we are able to take out the best out of that situation.

All of us are imperfect at some or the other thing, and that is perfectly alright because we are not born to be perfect but to be real. We should try to recognize our capabilities and try to make them our strength. In this beautiful journey of life we should always try to be happy and contented with all that we have. We should be kind to ourselves because only then we can be kind to others. We should love others and spread that love to others. We should try to understand the real meaning of life to enjoy life to its fullest. All the beautiful journeys begin with a single step. We too should take such one step to enjoy life, because, the journey of a thousand miles, begins with a single step.



Author is a students of class Xth, Army Public School, Dinjan, Distt. Tinsukia, Assam. This school has implemented IOMS for class 9<sup>th</sup> and 10<sup>th</sup> in Nov'2019.

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*Nothing is more important than education,  
because nowhere are our stakes higher;  
our future depends on the quality of education of our children today.*

*- Arnold Schwarzenegger*

—00—

*Problems are meant to be solved; every solution open doorway to new problems.  
This is an endless journey to discovery of nature.  
We are, what we are, because of rigorous efforts of countless persons.*

—00—

Growing With Concepts - Mathematics

LET'S DO SOME PROBLEMS IN MATHEMATICS-XIV

Prof. SB Dhar

- Two circles (A and B) with radius 3 are externally tangent to a third circle having equation  $x^2 - 6x + y^2 - 8y - 21 = 0$  and also tangent to the line  $y = \frac{4}{3}x$ . If  $k$  is the distance between the centers of the two circles A and B, find all possible values of  $k$ .

**Solution:** The solution to this problem is rather lengthy; the challenge is to recognize that there are three ways to arrange the circles that match the given criteria. The answers are 6, 8, and 10.

- If  $f(x) = x^3 + x^2 - x$ , find all points where  $f(x)$  and its inverse intersect.

**Solution:** Wherever the function  $f(x)$  intersects the line  $y = x$ , it also intersects its inverse. Following this logic through gives us the following solutions (0,0), (-2,-2), (1,1).

- Does there exist a real function of a real variable  $f:R \rightarrow R$  such that for any real  $x, y$  it is true that  $f(x - f(y)) = y \cdot f(x) + x$ ?

**Solution:** Let us define,  $f(0)=c$ , for  $y=0, x \in R$ , we get  $f(x - f(0)) = 0 \cdot f(x) + x \Rightarrow f(x-c)=x$ . So, the given equation  $f(x - f(y)) = y \cdot f(x) + x$  becomes  $(x - f(y)) + c = f(x - f(y))$  and  $y \cdot f(x) + x = y \cdot (x + c) + x$ . Hence,  $x - f(y) + c = y \cdot (x + c) + x \Rightarrow x - y \cdot c + c = y \cdot (x + c) + x \Rightarrow 0 = y(x + c + 1)$ . We obtain a contradiction for  $x \neq -c - 1, y \neq 0$ .

- How many perfect cubes lie between  $2^8 + 1$  and  $2^{18} + 1$ , inclusive?

**Solution:**

We compute  $2^8 + 1 = 257$

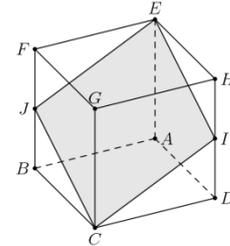
We're all familiar with what  $6^3$  is, namely 216, which is too small.

The smallest cube greater than it is  $7^3 = 343$

$2^{18} + 1$  is too large to calculate, but we notice that  $2^{18} = (2^6)^3 = 64^3$ , which therefore clearly will be the largest cube less than  $2^{18} + 1$ .

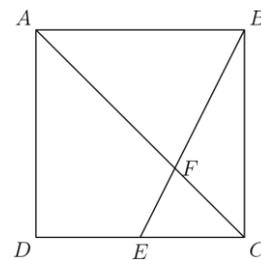
Therefore, the required number of cubes is  $64 - 7 + 1 = 58$

- In the cube  $ABCDEFGH$  with opposite vertices  $C$  and  $E$ ,  $J$  and  $I$  are the midpoints of vertices  $\overline{FB}$  and  $\overline{HD}$  respectively. Let  $R$  be the ratio of the area of the cross-section  $EJCI$  to the area of one of the faces of the cube. What is  $R^2$ ?



**Solution:** Note that  $EJCI$  is a rhombus by symmetry. Let the side length of the cube be  $s$ . By the Pythagorean theorem,  $EC = s\sqrt{3}$  and  $I = s\sqrt{2}$ . Since the area of a rhombus is half the product of its diagonals, the area of the cross section is  $\frac{s^2\sqrt{6}}{2}$ . This gives  $R = \frac{\sqrt{6}}{2}$ .

- Point  $E$  is the midpoint of side  $\overline{CD}$  in square  $ABCD$  and  $\overline{BE}$  meets diagonal  $\overline{AC}$  at  $F$ . The area of quadrilateral  $AFED$  is 45. What is the area of  $BCD$ ?



**Solution:** Let the area of  $\Delta CEF$  be  $x$ . Thus, the area of triangle  $\Delta ACD$  is  $45 + x$  and the area of the square is  $2(45+x) = 90 + 2x$ .

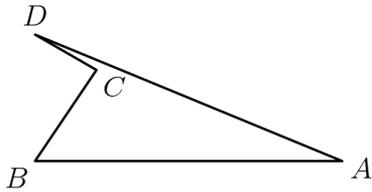
By AA similarity,  $\Delta CEF = \Delta ABF$  with a 1:2 ratio, so the area of triangle  $\Delta ABF$  is  $4x$ . Now consider trapezoid  $BED$ . Its area is  $45 + 4x$ , which is three-fourths the area of the square. We set up an equation in  $x$ :

$$45 + 4x = \frac{3}{4}(90 + 2x)$$

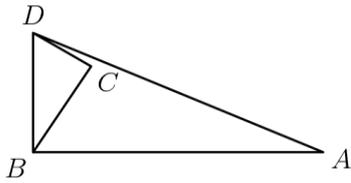
Solving, we get  $x = 9$ . The area of square  $ABCD$  is  $90 + 2x = 90 + 2 \cdot 9 = 108$

7. In the non-convex quadrilateral  $ABCD$  shown below,  $\angle BCD$  is a right angle,  $B = 12$ ,  $BC = 4$ ,  $CD = 3$ , and  $AD = 13$ .

What is the area of quadrilateral  $ABCD$ ?



**Solution:** We first connect point  $B$  with point  $D$ .



We can see that  $\triangle BCD$  is a 3-4-5 right triangle. We can also see that  $\triangle BDA$  is a right triangle, by the 5-12-13 Pythagorean triple. With these lengths, we can solve the problem. The area of  $\triangle BDA$  is  $\frac{5 \cdot 12}{2}$ , and the area of the smaller 3-4-5 triangle is  $\frac{3 \cdot 4}{2}$ . Thus, the area of quadrilateral  $ABCD$  is  $30 - 6 = 24$ .

8. Mrs. Sanders has three grandchildren, who call her regularly. One calls her every three days, one calls her every four days, and one calls her every five days. All three called her on December 31, 2016. On how many days during the next year did she not receive a phone call from any of her grandchildren?

**Solution:** In 360 days, there are  $360 \cdot \frac{2}{3} \cdot \frac{3}{4} \cdot \frac{4}{5} = 144$  days without calls. Note that in the last five days of the year, days 361 and 362 also do not have any calls, as they are not multiples of 3, 4, or 5. Thus our answer is  $144 + 2 = 146$ .

10. Consider the equation  $ax^2 - 5x + 2 = 0$ . Find the value(s) of  $a$  for which the equation has only one solution.

**Solution:** Some students may approach the problem as follows. A quadratic equation  $ax^2 + bx + c = 0$  has a single solution if its discriminant is equal to 0. This means:  $b^2 - 4ac = 0$  we get:  $(-5)^2 - 4a(2) = 0$  or  $25 - 8a = 0 \Rightarrow a = \frac{25}{8}$

This would seem to be the answer, but it is not the complete solution!

To see why, we will take a step back. We can solve a general quadratic equation using Brahmagupta's quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

The above has one solution if  $b^2 - 4ac = 0$  because that is when the  $\pm$  term vanishes. But there's a small catch. Since the denominator is  $2a$ , we also require  $a \neq 0$  to avoid a division by 0 error.

Consequently we have to consider two cases. If  $a \neq 0$ , and when  $a=0$ .

The quadratic equation  $ax^2 - 5x + 2 = 0$  then transforms into a linear equation  $-5x + 2 = 0$ . This obviously has a single solution  $x = 2/5$ . Hence, there are two values for which the original equation gives a single solution: either  $a = 25/8$  or  $a = 0$ .

11. One chicken has the same weight as one cat plus one owl; two chickens have the same weight as three turtles; and one owl plus one turtle together balance with one cat. What is the weight of one cat in terms of owls?

**Solution:** We can solve this problem logically. From the given information we have the following equations for the weights of the animals:

- (a) chicken = cat + owl
- (b) 2(chicken) = 3(turtle)
- (c) owl + turtle = cat
- (d) cat = ? owls

Substitute equation (a) for chicken into equation (b) to get:  $2(\text{cat} + \text{owl}) = 3(\text{turtle})$

$$2(\text{cat}) + 2(\text{owl}) = 3(\text{turtle})$$

Now add 3 owls to both sides:

$$2(\text{cat}) + 5(\text{owl}) = 3(\text{turtle}) + 3(\text{owl})$$

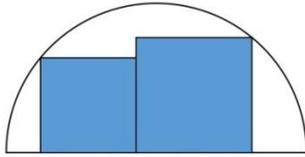
$$2(\text{cat}) + 5(\text{owl}) = 3(\text{turtle} + \text{owl})$$

From (c) we have owl + turtle = cat,

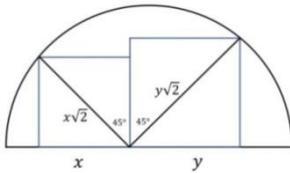
$$\text{So we can substitute to the right hand side: } 2(\text{cat}) + 5(\text{owl}) = 3(\text{cat})$$

We can subtract the weight of 2 cats from both sides, and we get our answer:  $5(\text{owl}) = \text{cat}$

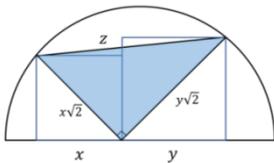
12. Two side-by-side squares are inscribed in a semicircle as shown in the figure below. The radius of the semi circle is 10 units. Find the total area of the two squares.



**Solution:** Let the squares have sides  $x$  and  $y$ . The total area of the squares is then:  $\text{Area} = x^2 + y^2$   
 Draw diagonals in the squares meeting at their common corner. The diagonals bisect the corner angles, so each diagonal creates a 45 degree angle. And together the two diagonals form a right angle—meaning the arc has a measure of 90 degrees. Each diagonal also has a length of  $\sqrt{2}$  times the side length of the square.

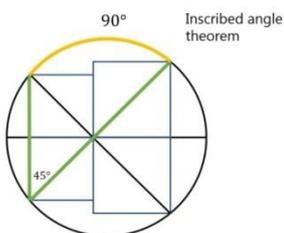


Draw a chord of the circle connecting the other endpoints of the diagonals of the squares, and label the side  $z$ .

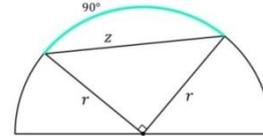


The sides  $x\sqrt{2}$ ,  $y\sqrt{2}$ , and  $z$  form a right triangle. Thus by the Gougu theorem:  $(x\sqrt{2})^2 + (y\sqrt{2})^2 = z^2$ ,  $2x^2 + 2y^2 = z^2$ .

Let's also find the arc subtended by the chord with length  $z$ . Reflect the semicircle and squares across the diameter. Consider the inscribed angle formed by the two sides of the small square and the diagonals across both squares. This is a 45 degree angle since the diagonal bisects the corner angle in a square. By the inscribed angle theorem, the inscribed angle subtends a circular arc of double the measure,  $2(45) = 90$  degrees.



From the center of the circle, draw radii to the endpoints of the chord with length  $z$ . Since the chord subtends the 90 degree angle, the central angle must also be a 90 degree right angle.



Thus the sides  $r$ ,  $r$ , and  $z$  form a right triangle, and by the Gougu theorem we have:  $r^2 + r^2 = z^2$ ,  $2r^2 = z^2$

We have two equations equal to  $z^2$ , so we set them equal to each other.

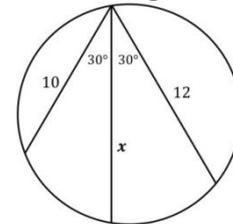
$$z^2 = 2x^2 + 2y^2 = 2r^2 \Rightarrow x^2 + y^2 = r^2$$

Recalling that the total area is  $x^2 + y^2$ , we can get the answer by substituting  $r = 10$ .

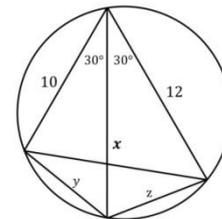
$$\text{Area} = x^2 + y^2 = r^2$$

$$\text{Area} = 10^2 = 100$$

13. Find the value of  $x$  in the figure shown below:

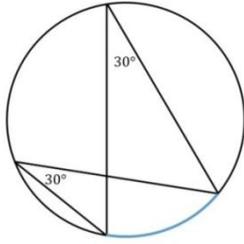


**Solution:** This problem is known as the chord progression puzzle.

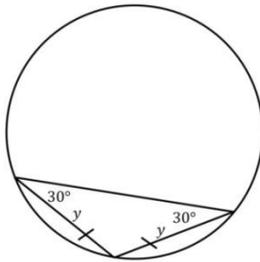


We will prove the two chords at the bottom have equal length  $y = z$ .

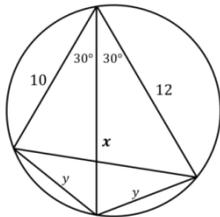
Two inscribed angles for the same arc of a circle have the same measure by the inscribed angle theorem. Thus, we can deduce the following two angles are 30 degrees.



Now consider the triangle at the bottom of the circle that has two angles of 30 degrees. The sides opposite those angles must have equal length  $y$ .



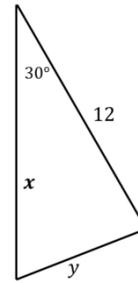
Thus we have proved  $y = z$ .



The author, is **Editor of this Quarterly e-Bulletin**. He is an eminent mentor, analyst and connoisseur of Mathematics from IIT for preparing aspirants of Competitive Examinations for Services & Admissions to different streams of study at Undergraduate and Graduate levels using formal methods of teaching shared with technological aids to keep learning at par with escalating standards of scholars and learners. He has authored numerous books of excellence.

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Now consider the triangle with sides  $y$ ,  $12$ , and  $x$ .



By Al-Kashi's law of cosines we have:  $y^2 = 12^2 + x^2 - 2(12)x \cos 30^\circ$ .

Now consider the triangle with sides  $y$ ,  $10$ , and  $x$ .

Again by Al-Kashi's law of cosines we have:  $y^2 = 10^2 + x^2 - 2(10)x \cos 30^\circ$

As both equations are equal to  $y^2$ , we can set them equal to each other.

$$12^2 + x^2 - 2(12)x \cos 30^\circ = 10^2 + x^2 - 2(10)x \cos 30^\circ.$$

The  $x^2$  terms will cancel out, and then it is routine to solve for  $x$ .

$$12^2 - 2(12)x \cos 30^\circ = 10^2 - 2(10)x \cos 30^\circ$$

$$12^2 - 10^2 = 2(12)x \cos 30^\circ - 2(10)x \cos 30^\circ$$

$$12^2 - 10^2 = 4x \cos 30^\circ$$

$$x = (12^2 - 10^2)/\cos 30^\circ$$

$$x = 22/\sqrt{3}$$

Another way we could write this answer is:  $x = 0.5(10 + 12)/\cos 30^\circ$ .

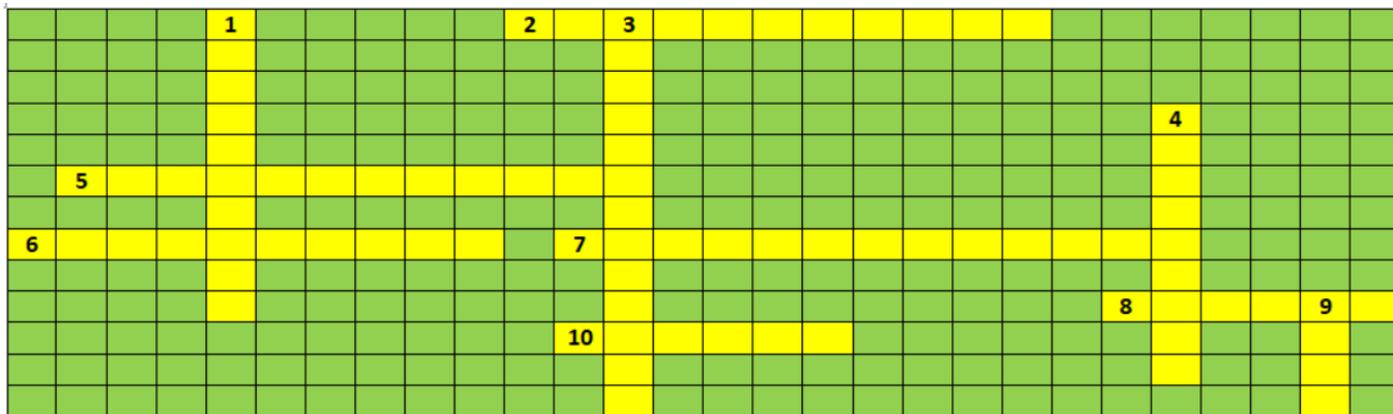
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*Modern cynics and skeptics... see no harm in paying those to whom they entrust the minds of their children a smaller wage than is paid to those to whom they entrust the care of their plumbing.*

*- John F. Kennedy*

### CROSSWORD PUZZLE December'2019 : POLLUTION

Prof. SB Dhar



**Across**

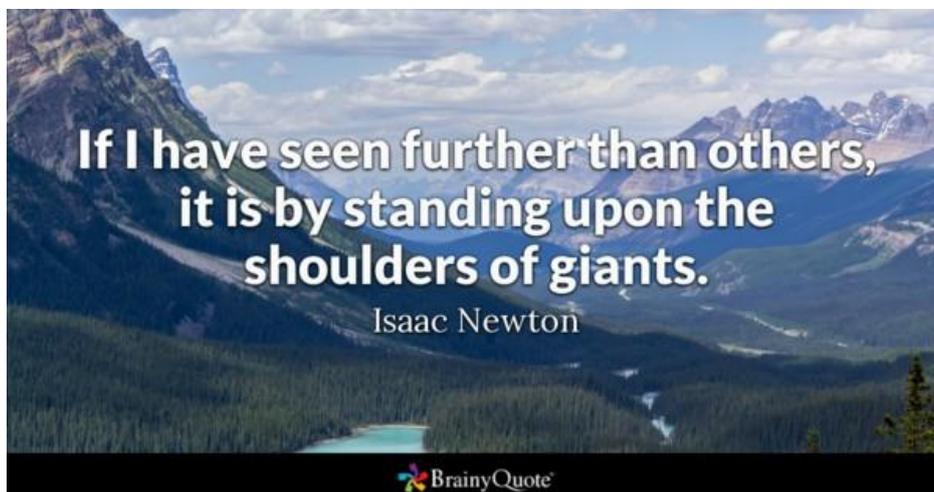
- 2. A furnace designed to burn waste at very high temperature
- 5. Pollution caused by harmful chemicals and particles emitting to ai
- 6. Thin protective layer of gas 10 to 50km above the Earth that works as a filter for UV radiation from the Sun
- 7. Organic waste coming from plants or animals sources
- 8. Another name for waste
- 10. Waste that is thrown away carelessly

**Below**

- 1. Mass of air surrounding the Earth
- 3. A colourless gas naturally produced by people and animals
- 4. Reducing degree of intensity of pollutio
- 9. Air pollution consisting of smoke and fog

**Answer to this Crossword Puzzle shall be provided in next issue of this e-Bulletin**

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*Growing with Concepts : Physics***Wave and Motion : Vibrations In Strings and Sound Waves–  
Objective Problems (Typical)**

*Vibrations in string and sound are the most perceived experience of Simple Harmonic Motion (SHM). Right form our voice to all musical instruments are influenced by it. Moreover at macro scale all high rise structure, transmission line and rope ways have to be made resistant to such vibrations.*

*In this set of questions some simple problems in respect of vibrations of strings and sound has been incorporated with necessary illustrations involving first principles, to th extent possible.*

Solving typical problems on a gradual degree of complexity helps to build power of visualization of concepts that are essential in understanding a problem/n observation and evolving solution/answer. At this stage simpler calculations are being skipped in elaboration, with a hope that reader would be able to decipher intermediate steps.

Mentors' Manual is one of the dimensions of the Gyan Vigyan Sarita through which efforts are being made to reach out to remote teachers through our experience of mentoring unprivileged children who are disconnected from us by virtue of multiple barriers. Direct interaction has been possible through Interactive Online Mentoring Sessions (IOMS) a working model of connecting unprivileged children in a selfless manner. This experience is being disseminated to the teachers spread out by writing of chapters of an open source Mentors' Manual. Simple Harmonic Motion is First of the Three parts of chapter Three covering Sound and Optics..

Science is a subject not to learn but a matter of realization through experiments and its visualization in surrounding. Every student is not equipped either to conduct experiment or an environment for visualization of science in his surroundings. This is where simulation is a technique to verify the concepts and study effect of variation in parameters related to the concept. There are various simulation tools leading to virtual laboratories.

India, growing digital, provides optimism to every student to be able to have an access to virtual laboratory, where without any physical laboratory, involving consumption of equipment and material, it is possible to carry out experiments in an e-environment. There are some excellent videos available on the web either free or on price which provide an experiences of kind in simulation of the concepts, The only problem with this is of sequencing and scaling of concepts and selection of an appropriate video out of a big list of search results. But, it is neither possible nor affordable for a student to first make a survey to select most suitable video and then view it for gaining proficiency in the concepts.

It creates a question, can one wait for suitable virtual labs to become available to each student to gain proficiency in concepts? Definitely not! then the only way to get going on acquiring proficiency in concepts and their applications,

Competitive examinations and more particularly in real life rarely expose to problems solved. Yet ability to solve such problems one groomed, it enhances competence to handle unknown problems speedily and correctly with a greater degree of clarity and confidence, an essential attribute of thought process needed for success in life.

soon after learning them, is solving problems of variety. This is a key, have patience and perseverance, to acquire proficiency without consumption of any other resource except time which is available with students. All that they miss is the direction in which they can deploy their efforts. Problem solving in mathematics and physics is inevitable to gain necessary proficiency.

Here, Question Banks include problems from various sources and they are being supported with illustrations. These are not just solutions but an attempt to bring home use of basics involved in solving a problem. In an effort to compile problem there some good text books including those authored by Prof. H.C. Verma and a team of authors Robert Resnick, David Halliday and Kenneth S. Krane and many more. Some objective questions from different examinations have also been included. These questions are graded and authors have attempted to incorporate all concepts covered in the book. Thus it necessitates a student to read each chapter carefully before taking up questions.

In the illustrations to the problems, supported with each question bank, some student may find them to be a bit lengthy and dwelling into basics more than what one requires. Since it targets students, who are in abundance, not directly connected to us, patience of well versed students is requested. Few question with their illustrations are drawn from the set-1, on Waves and Motion : Simple Harmonic Motion, covering and appended here. The complete set of 50 questions is being uploaded as a free web-resource.

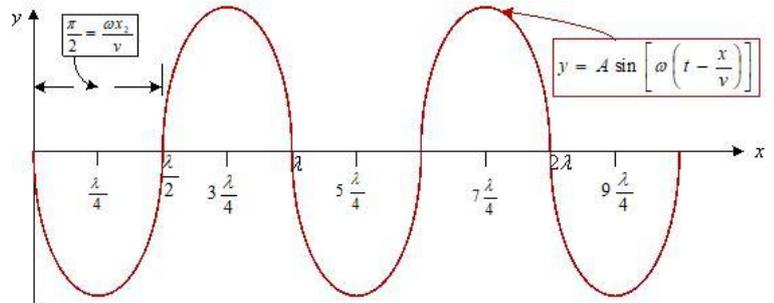
This initiative is aimed at to mentor unprivileged children is of a small group of passionate persons is driven with a sense of Personal Social Responsibility (PSR) in a non-organizational, non-remunerative, non-commercial and non-political manner. You are welcome to add value to this initiative by way of suggestion, advising correction or new type of questions. Or any other form that suits to your competence and convenience.

## TYPICAL PROBLEMS WITH ILLUSTRATION

**Question 01:** A sine wave is travelling in a medium. The minimum distance between two particles having same speed is –

- (a)  $\frac{\lambda}{4}$  (b)  $\frac{\lambda}{34}$  (c)  $\frac{\lambda}{2}$  (d)  $\frac{\lambda}{4}$

**Illustration-01:** Displacement of a particle executing sine wave in a medium is shown graphically in the figure and is  $y = A \sin\left(\omega\left(t - \frac{x}{v}\right)\right)$ , here  $x$  is the position of particle along direction of propagation of wave is shown on X-axis, and displacement of particle from its mean position is  $y$ . Therefore, speed of particle is  $v = \frac{dy}{dt} = A\omega \cos\left(\omega\left(t - \frac{x}{v}\right)\right)$ .



Let  $x_1$  and  $x_2$  are the distances particles having same

speed at same instant, say  $v_1 = A\omega \cos\left(\omega\left(t - \frac{x_1}{v}\right)\right)$  and  $v_2 = A\omega \cos\left(\omega\left(t - \frac{x_2}{v}\right)\right)$ . Speed implies that their magnitudes are same irrespective of the direction. Hence,  $\omega \cos\left(\omega\left(t - \frac{x_1}{v}\right)\right) = \omega \cos\left(\omega\left(t - \frac{x_2}{v}\right)\right)$ . Since velocity is a trigonometric function and hence for  $|v_1| = |v_2|$  it leads to  $\theta_2 = \theta_1 + n\pi$ , where  $n$  is an integer. Thus,  $\omega\left(t - \frac{x_2}{v}\right) = \omega\left(t - \frac{x_1}{v}\right) + n\pi \Rightarrow \frac{2\pi}{T}\left(t - \frac{x_2}{v}\right) = \frac{2\pi}{T}\left(t - \frac{x_1}{v}\right) + n\pi \Rightarrow \frac{2}{T} \times \frac{x_2}{v} = \frac{2}{T} \times \frac{x_1}{v} - n$ . It, further, solves into  $\Delta x = |x_1 - x_2| = \frac{nvT}{2} = \frac{n\lambda}{2}$ . Smallest integer is since 1 and the smallest  $\Delta x = \frac{\lambda}{2}$ . **Hence answer is (c).**

**N.B.:** Analytical approach is though longer, leads to correct answer, which by simple observation of graph may lead to interpretation errors.

**Question-02:** Which of the following equations represents a sine wave travelling along Y-axis?

- (a)  $x = A \sin(ky - \omega t)$  (b)  $x = A \sin(kx - \omega t)$  (c)  $x = A \sin ky \cos \omega t$  (d)  $x = A \cos ky \sin \omega t$

**Illustration-02:** Each of the given options are being examined for the equation given therein -

**Option (a):** It is the case of displacement of particle along X-axis for a single wave propagating along Y-axis, it is the case of a transverse wave.

**Option (b):** It is the case of displacement of particle along X-axis for a single wave propagating along X-axis, it is the case of a longitudinal wave.

**Option (c):** The displacement equation can be written as  $x = A \sin ky \cos \omega t = \frac{A}{2} [\sin(ky + \omega t) + \sin(ky - \omega t)]$ . Thus it is a combination of transverse Two waves travelling along Y-axis and not a single wave.

**Option (d):** The displacement equation can be written as  $x = A \cos ky \sin \omega t = \frac{A}{2} [\sin(\omega t + ky) + \sin(\omega t - ky)]$ . Thus it is a combination of transverse Two waves travelling along Y-axis and not a single wave.

From the above analysis, it is clear that Option (c) and (d) are of combination of Two waves and not a single wave, and are therefore ruled out.

The remaining Two options are (a) and (b) out of which Option (b) is ruled out as it is travelling along X-axis as discussed in the analysis.

The last option is of a single wave travelling along Y-axis. **Hence answer is option (a)**

**N.B.:** Here questions asks “...represents a sine wave...”, needs to be noted carefully that it asks for a single wave and not a combination of waves. This is the key to right answer.

**Question-03:** The equation  $y = A \sin^2(kx - \omega t)$  represents a wave motion with –

- (a) Amplitude  $A$ , frequency  $\frac{\omega}{2\pi}$
- (b) Amplitude  $\frac{A}{2}$ , frequency  $\frac{\omega}{\pi}$
- (c) Amplitude  $A$ , frequency  $\frac{\omega}{4\pi}$
- (d) Do not represent a wave motion

**Illustration 03:** The given equation  $y = A \sin^2(kx - \omega t) \Rightarrow y = \frac{A}{2}(1 - \cos 2(kx - \omega t)) \Rightarrow y = \frac{A}{2}(1 - \cos 2\omega(\frac{kx}{\omega} - t))$ . This equation in final form has magnitude  $\frac{A}{2}$  and angular velocity  $\omega' = 2\omega$ . Since,  $\omega' = 2\pi f' \Rightarrow f' = \frac{\omega'}{2\pi}$ . It leads to  $f' = \frac{2\omega}{2\pi} \Rightarrow f' = \frac{\omega}{\pi}$ . Thus, the given equation represents Amplitude  $\frac{A}{2}$ , frequency  $\frac{\omega}{\pi}$  and is matching with option (b). Hence answer is Option (b).

**N.B.:** The given equation has to be analyzed to determine amplitude and frequency and then these values are to be matched with the given options. Therefore, it is a case of straight matching and does not need analysis of each option

**Question 04:** A wave is represented by an equation:  $y = 0.001\text{mm} \sin[(50\text{s}^{-1})t + (2.0\text{m}^{-1})x]$

- (a) The wave velocity is 100 m/s
- (b) The wavelength is 2.0 m
- (c) The frequency is  $\frac{25}{\pi}$  Hz
- (d) The amplitude is 0.001 mm

**Illustration 04:** The given wave  $y = 0.001\text{mm} \sin[(50\text{s}^{-1})t + (2.0\text{m}^{-1})x] \Rightarrow y = A \sin \omega \left(t - \frac{x}{v}\right)$ .

Equating the coefficients we have:

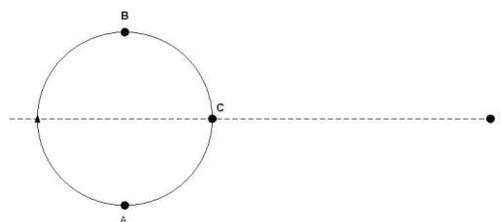
- (i) Given that  $A = 0.001\text{mm}$ . **This makes option (d) correct.**
- (ii) Given that  $\omega = 50 \text{ s}^{-1}$ , since  $\omega = \frac{2\pi}{f} \Rightarrow f = \frac{\omega}{2\pi} \Rightarrow f = \frac{50}{2\pi} = \frac{25}{\pi}$  Hz. **This makes option (c) correct.**
- (iii) Given that  $2 = \frac{\omega}{v} \Rightarrow \frac{50}{v} = 2 \Rightarrow v = \frac{50}{2} = 25 \text{ m.s}^{-1}$ . This calculated value of wave velocity does not match with that given at option (a). **Hence, option (a) is incorrect.**
- (iv) Since  $\lambda = \frac{v}{f}$  m. Using values of  $v$  and  $f$  derived at (ii) and (iii) above we have  $\Rightarrow \lambda = \frac{25}{\frac{25}{\pi}} = \pi \text{ m}$ . This calculated value does not match with that given option (b). Hence option (b) is incorrect.

**Thus answer is option (c) and (d).**

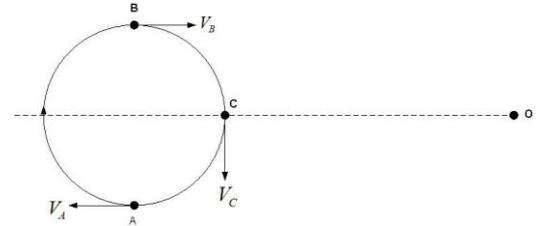
**N.B.:**The problems involves comparison of given equation of wave with the generic equation of a travelling wave. Hence, attempting this problem taking each option sequentially would be incorrect.

**Question 05:** A small source of sound moves on a circle in clockwise direction as shown in the figure and an observer is sitting at O. Let  $v_1, v_2$  and  $v_3$  be the frequencies heard when the source is at A, B and C respectively. Then

- (a)  $v_1 > v_2 > v_3$
- (b)  $v_1 = v_2 > v_3$
- (c)  $v_2 > v_3 > v_1$
- (d)  $v_1 > v_3 > v_2$



**Illustration 05:** Frequency heard by an observer is  $f' = f \cdot \left(\frac{V-V_o}{V-V_s}\right)$  where,  $V$  is the velocity of sound,  $V_s$  velocity of source,  $V_o$  velocity of the observer,  $f$  is the frequency of the sound produced by the source and  $f'$  is the frequency heard by the observer. Given that  $V_o = 0$  for observer and for source at A, B and C velocities of source w.r.t. observer are  $V_A = V_s$ ,  $V_B = V_s \cos \pi = -V_s$  and  $V_C = V_s \cos \frac{\pi}{2} = 0$ , respectively.



Accordingly, frequency heard by the observer when source is at A is  $v_1 = f \left(\frac{V}{V-V_A}\right) = f \left(\frac{V}{V-V_s}\right)$ , when source is at B it is  $v_2 = f \left(\frac{V}{V-V_B}\right) = f \left(\frac{V}{V-(-V_s)}\right) = f \left(\frac{V}{V+V_s}\right)$  and  $v_3 = f \left(\frac{V}{V-V_C}\right) = f \left(\frac{V}{V-0}\right) = f \left(\frac{V}{V}\right) f$ .

A close observation of the mathematical expressions of  $v_1$ ,  $v_2$ , and  $v_3$  reveals that only denominator is changing and it is maximum for  $v_1$  and hence it would minimum; the denominator is minimum for  $v_2$  and it would maximum, and for  $v_3$  it is in between the two values for  $v_1$  and  $v_2$  and  $v_3$  would be in between the two. Accordingly,  $v_2 > v_3 > v_1$ . These conclusions match with those given in option (c).

Hence answer is option (c).

**Question 06:** The displacement  $y$  of a particle executing periodic is given by  $y = 4 \cos^2 \left(\frac{1}{2}t\right) \sin 1000t$ .

This expression may be considered to be a result if superimposition of ..... Independent harmonic motions

- (a) Two    (b) Three    (c) Four    (d) Five

**Illustration 06:** This problem requires simplification of trigonometric equation of motion  $y = 2 \left(2 \cos^2 \left(\frac{1}{2}t\right)\right) \sin 1000t$ . It simplifies into  $y = 2(\cos t + 1) \sin 1000t = 2 \sin 1000t + 2 \sin 1000t \cos t$ . As per trigonometric identity  $\sin A \cos B = \frac{\sin(A+B) + \sin(A-B)}{2}$  we have  $y = 2 \sin 1000t + 2 \left(\frac{\sin 1001t + \sin 999t}{2}\right)$ . This, further simplifies into  $y = \sin 1001t + 2 \sin 1000t + \sin 999t$ . Thus displacement equation is superimposition three independent SHMs. This conclusion matches with option (b).

Hence answer is option (b).

**N.B.:** This answer can also be arrived at by simple observation of the equation and order of sinusoidal terms.

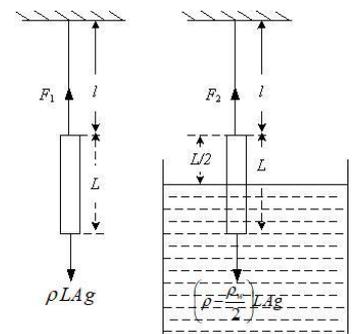
**Question 07:** An object of specific gravity  $\rho$  is hung from a thin steel wire. The fundamental frequency for transverse standing waves in the wire is 300 Hz. The object is immersed in water so that half of its volume is submerged. The new fundamental frequency in Hz is

- (a)  $300 \left(\frac{2\rho-1}{2\rho}\right)^{\frac{1}{2}}$     (b)  $300 \left(\frac{2\rho}{2\rho-1}\right)^{\frac{1}{2}}$     (c)  $300 \left(\frac{2\rho}{2\rho-1}\right)$     (d)  $300 \left(\frac{2\rho-1}{2\rho}\right)$

**Illustration 07:** This is the case of a string of length  $l$  kept taut by a force equal to the weight of the object suspended from it. In this at fundamental frequency  $\frac{\lambda}{2} = l \Rightarrow \lambda = 2l$ , and  $f_0 = \frac{v}{\lambda} = \frac{v}{2l}$ . Here, velocity of the wave in the string is  $v = \sqrt{\frac{F}{\mu}} \Rightarrow f_0 = \frac{1}{2l} \sqrt{\frac{F}{\mu}}$ .

In the problem this fundamental frequency changes with, initially the force, is weight of the object,  $F_1 = AL\rho g$  is weight of the object and it would leads to  $f_{01} = \frac{1}{2l} \sqrt{\frac{AL\rho g}{\mu}} \dots (1)$

Later, when half-length of the force is reduced due to buoyancy when half-length of the object is immersed  $F_2 = AL\rho g -$



$A \frac{L}{2} \rho_w g$ . This simplifies into  $F_2 = \left(\rho - \frac{\rho_w}{2}\right) ALg$ . Thus,  $f_{02} = \frac{1}{2l} \sqrt{\frac{\left(\rho - \frac{\rho_w}{2}\right) ALg}{\mu}} \dots(2)$ . Accordingly, using (1) and (2) we

have  $\frac{f_{02}}{f_{01}} = \frac{\frac{1}{2l} \sqrt{\frac{\left(\rho - \frac{\rho_w}{2}\right) ALg}{\mu}}}{\frac{1}{2l} \sqrt{\frac{AL\rho g}{\mu}}} \Rightarrow f_{02} = f_{01} \sqrt{\frac{2\rho - \rho_w}{2\rho}}$ . Given that  $f_{01} = 300\text{Hz}$  and using CGS  $\rho_w = 1$  we have

$f_{02} = 300 \sqrt{\frac{2\rho - 1}{2\rho}}$ . This derived value **matches with option (a) and hence it correct.**

**N.B.:** Since  $\frac{2\rho - \rho_w}{2\rho}$  the ratio is of quantities having same unit, and  $\rho_w = 1$  in CGS , it leads to simplification of calculations.

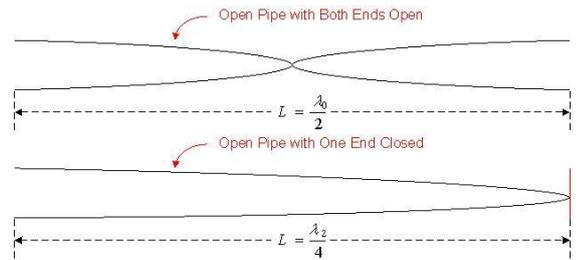
**Question 08:** An open pipe is in resonance in 2<sup>nd</sup> harmonic with frequency  $f_1$ . Now one end of the tube is closed and frequency is increased to  $f_2$  such that resonance again occurs in  $n$ th harmonic. Choose correct option

- (a)  $n = 3, f_2 = \frac{3}{4} f_1$
- (b)  $n = 3, f_2 = \frac{5}{4} f_1$
- (c)  $n = 5, f_2 = \frac{5}{4} f_1$
- (d)  $n = 5, f_2 = \frac{3}{4} f_1$

**Illustration 08:** Frequency is  $f = \frac{v}{\lambda}$  where  $v$  is the velocity of the sound in a medium and  $\lambda$  is the wavelength at that velocity. Natural frequency of an organ pipe open at both ends is  $f_0 = \frac{v}{\lambda_0}$ , since in this length of the pipe constitutes half wavelength  $L = \frac{\lambda_0}{2} \Rightarrow \lambda_0 = 2L$ . It leads to  $f_{01} = \frac{v}{2L}$ . Given that  $f_1 = 2f_{01} = \frac{v}{L}$ .

But, when organ pipe is closed at one end then  $L = \frac{\lambda_2}{4} \Rightarrow \lambda_2 = 4L$  and hence  $f_{02} = \frac{v}{\lambda_2} = \frac{v}{4L}$  and its  $n^{\text{th}}$  harmonics is  $f_2 = (2k + 1)f_{02} |_{k \in \mathbb{N}} \Rightarrow f_2 = (2k + 1) \frac{v}{4L} \Rightarrow f_2 = \left(\frac{2k+1}{4}\right) \frac{v}{L} \Rightarrow f_2 = \left(\frac{2k+1}{4}\right) f_1$ . It is given that that  $f_2 > f_1$  for which minimum value of  $k = 2$ . Accordingly,  $f_2 = \left(\frac{2 \times 2 + 1}{4}\right) f_1 \Rightarrow f_2 = \frac{5}{4} f_1$ . Further, order of harmonic of  $f_2$  with organ pipe closed at one end would be  $f_2 = \left(\frac{2 \times 2 + 1}{4}\right) f_1$  substituting value of  $f_1$  we have  $f_2 = \frac{5}{4} \times \frac{v}{L} \Rightarrow f_2 = 5 \times \frac{v}{4L} \Rightarrow f_2 = 5 \times f_{02} |_{n=5}$ . Thus, condition of  $f_2 > f_1$  is satisfied at 5<sup>th</sup> harmonic i.e. at  $n = 5$ . Thus,  $n = 5$  and  $f_2 = \frac{5}{4} f_1$  match with those given at option (d).

Hence, answer is option (d).



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*I don't think anybody anywhere can talk about the future...  
without talking about education.  
Whoever controls the education of our children controls our future.*

- Wilma Mankiller

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*Growing with Concepts: Chemistry***S-Blocks Elements****(Typical Questions Focused New Pattern of CBSE Examination)****Kumud Bala**

The comprehension given below is followed by some multiple choice questions. Each question has four options. Choose the correct option.

**Comprehension:** Alkali and alkaline earth metals along with hydrogen constitute s-block elements. They have low ionization enthalpies and hence exhibit characteristic flame colorations. They have high negative electrode potentials and hence are strong reducing agents. Their solutions in liquid ammonia are conducting and also act as strong reducing agents. Being stronger reducing agents than hydrogen, they are usually prepared by electrolysis of their fused chlorides. Their oxides are basic and the basic strength increases down the group. The solubility of carbonates and sulphates of alkali and alkaline earth metals show opposite trends. The carbonates of alkaline earth metals and lithium carbonate decompose on heating while the carbonates of other alkali metals do not decompose on heating. The bicarbonates of both alkali and alkaline earth metals on heating give carbonates.

1. The basic character of the oxides MgO, SrO, K<sub>2</sub>O, NiO and Cs<sub>2</sub>O increases in the order:

- (A) MgO > SrO > K<sub>2</sub>O > NiO > Cs<sub>2</sub>O
- (B) Cs<sub>2</sub>O < K<sub>2</sub>O < MgO < SrO < NiO
- (C) NiO < MgO < SrO < K<sub>2</sub>O < Cs<sub>2</sub>O
- (D) K<sub>2</sub>O < NiO < MgO < SrO < Cs<sub>2</sub>O

2. Which of the following are arranged in increasing order of solubilities?

- (A) CaCO<sub>3</sub> < KHCO<sub>3</sub> < NaHCO<sub>3</sub>
- (B) NaHCO<sub>3</sub> < KHCO<sub>3</sub> < CaCO<sub>3</sub>
- (C) KHCO<sub>3</sub> < NaHCO<sub>3</sub> < CaCO<sub>3</sub>
- (D) CaCO<sub>3</sub> < NaHCO<sub>3</sub> < KHCO<sub>3</sub>

3. The compound insoluble in acetic acid is -----

- (A) calcium oxide      (B) calcium carbonate
- (C) calcium oxalate    (D) calcium hydroxide

4. Property of alkaline earth metals that increases with their atomic number is -----

- (A) ionization energy
- (B) solubility of their hydroxides
- (C) solubility of their sulphates
- (D) electro negativity

5. Which of the following processes is used in the extractive metallurgy of magnesium?

- (A) fused salt electrolysis

- (B) self reduction
- (C) aqueous solution electrolysis
- (D) thermite reduction

6. Identify the correct order of acidic strengths of CO<sub>2</sub>, CuO, CaO and H<sub>2</sub>O.

- (A) CaO < CuO < H<sub>2</sub>O < CO<sub>2</sub>
- (B) H<sub>2</sub>O < CuO < CaO < CO<sub>2</sub>
- (C) CaO < H<sub>2</sub>O < CuO < CO<sub>2</sub>
- (D) H<sub>2</sub>O < CO<sub>2</sub> < CaO < CuO

**Directions:-** In each of the following questions, a statement of assertion is given followed by a corresponding statement of reason just below it. Of the statements, mark the correct answer as:

- (A) If both assertion and reason are true, and reason is the true explanation of the assertion.
- (B) If both assertion and reason are true, but reason is not the true explanation of the assertion.
- (C) If assertion is true, but reason is false.
- (D) If both assertion and reason are false.

7. Assertion- LiCO<sub>3</sub> and Na<sub>2</sub>CO<sub>3</sub> are thermally stable.

Reason- Both the carbonates are salts of large cations and large anions.

8. Assertion- Magnesium can be obtained by the electrolysis of aqueous MgCl<sub>2</sub>.

Reason- the electrode potential of Mg<sup>+2</sup> is far higher than that of H<sup>+</sup>.

9. Assertion- In rainy season, common salt becomes damp after sometime on keeping in air.

Reason- Common salt is NaCl which is hygroscopic in nature.

10. Assertion- Calcium and magnesium oxides are not reduced by carbon.

Reason- Calcium and magnesium oxides react with carbon to form their respective carbides

11. Assertion- The alkali metals are strong reducing agents.

Reason- They have only one electron to be lost from their valence shells.

12. Assertion- Potassium carbonate cannot be manufactured by a process similar to the Solvay's soda ammonia process.

Reason- Potassium hydrogen carbonate is less soluble in water than sodium hydrogen carbonate.

13. Assertion- Sulphur is estimated as  $\text{BaSO}_4$  and not an  $\text{MgSO}_4$ .

Reason- The ionic radius of  $\text{Mg}^{+2}$  is smaller than that of  $\text{Ba}^{+2}$ .

14. Assertion-  $\text{LiCl}$  is predominantly covalent compound.

Reason- Electro negativity difference between  $\text{Li}$  and  $\text{Cl}$  is too small.

15. Assertion-  $\text{Li}$  resembles  $\text{Mg}$ .

Reason-  $\text{Li}^+$  has same size as  $\text{Mg}^{+2}$ .

16. Assertion-  $\text{Be}$  and  $\text{Mg}$  give no characteristic flame colorations.

Reason- As compared to other alkaline earth metals ionization enthalpy of  $\text{Be}$  and  $\text{Mg}$  is high.

### Questions with one word answers (carrying One mark):

17. Name the metal which floats on water without any apparent reaction with it.

18. Name the chief factor responsible for the anomalous behavior of lithium.

19. Which alkali metal is radioactive? Write its atomic number also.

20. Which alkali metal acts as the strongest reducing agent in aqueous solution?

21. What are the raw materials used for the manufacture of washing soda by Solvay process?

22. Out of  $\text{LiOH}$ ,  $\text{NaOH}$  and  $\text{KOH}$  which is the strongest base?

23. Which is the most abundant metal among alkaline earth metal?

24. What is Hydrolith?

25. Which out of  $\text{Mg}^{+2}$ ,  $\text{Ca}^{+2}$ ,  $\text{Ba}^{+2}$  has maximum ionic mobility in water?

26. What is dead burnt plaster?

27. What is the formula of plaster of paris?

28. What is dolomite?

### Short answer questions (carrying 2 marks):

29. How do the following properties vary among alkali metals?(i) Ionization enthalpy (ii) metallic character.

30. What happens when (i) sodium metal is dropped in water (ii) sodium metal is heated in free supply of air (iii) sodium peroxide dissolves in water.

31. In what ways, lithium shows similarities to magnesium in its chemical behavior? Point out two such properties.

32. The second ionization energy of alkaline earth metals is greater than the first ionization energy, yet they prefer to form +2 ions. Explain.

33. Draw the structure of (i)  $\text{BeCl}_2$  (Vapour) (ii)  $\text{BeCl}_2$  (solid)

### Short answer questions (carrying 3 marks)

34. What happens when (i) calcium nitrate is heated (ii) chlorine reacts with slaked lime (iii) quicklime is heated with silica.

35. How would you explain the following observations?  
(i)  $\text{BeO}$  is almost insoluble but  $\text{BeSO}_4$  is soluble in water.  
(ii)  $\text{BaO}$  is soluble but  $\text{BaSO}_4$  is insoluble in water.  
(iii)  $\text{LiI}$  is more soluble than  $\text{KI}$  in ethanol.

36. Beryllium exhibits some similarities with aluminium. Point out three such properties.

37. Describe the preparation of each of the following starting with limestone:  
(i) Plaster of Paris  
(ii) Slaked lime  
(iii) Calcium carbide

38. An element of group 2 forms covalent oxide which is amphoteric in nature and dissolves in water to give an amphoteric hydroxide. Identify the element and write chemical reactions of the hydroxide of the element with an alkali and an acid.

39. Ions of an element of group 1 participate in the transmission of nerve signals and transport of sugars and amino acids into cells. This element imparts yellow colour to the flame in flame test and forms an oxide and peroxide with oxygen. Identify the element and write chemical reactions to show the formation of its peroxide. Why does the element impart colour to the flame?

40. Lithium hydride can be used to prepare other useful hydrides. Beryllium hydride is one of them. Suggest a

route for the preparation of beryllium hydride starting from lithium hydride. Write chemical equations involved in the process.

### Illustrations Of Answer of Each Question

- (C) Alkali metal oxides are most basic followed by alkaline earth metal oxides while transition metal oxides are least basic. Amongst alkali and alkaline earth metal oxides, basicity increases down the group. Thus,  $\text{Cs}_2\text{O}$  is more basic than  $\text{K}_2\text{O}$  and  $\text{SrO}$  is more basic than  $\text{MgO}$ . Therefore, the overall order is:  $\text{NiO} < \text{MgO} < \text{SrO} < \text{K}_2\text{O} < \text{Cs}_2\text{O}$ .
- (D) The solubility of bicarbonates of alkali metal increases down the group. But alkaline earth metal carbonates are insoluble in  $\text{H}_2\text{O}$ .
- (C)  $\text{CaO}$ ,  $\text{CaCO}_3$  and  $\text{Ca}(\text{OH})_2$  are all bases and hence must dissolve in acetic acid to form calcium acetate. Only Calcium oxalate does not dissolve in acetic acid.
- (B)
- (A)
- (A)  $\text{H}_2\text{O}$  is a neutral oxide. Non-metallic oxides (i.e.  $\text{CO}_2$ ) are acidic while metallic oxides ( $\text{CaO}$  and  $\text{CuO}$ ) are basic. However, oxides of alkaline earth metals are more basic than oxides of transition metals. Thus, the over acid strength increases in the order:  $\text{CaO} < \text{CuO} < \text{H}_2\text{O} < \text{CO}_2$ .
- (D) Correct assertion:  $\text{Li}_2\text{CO}_3$  is unstable and decomposes on heating to form  $\text{Li}_2\text{O}$  and  $\text{CO}_2$  but  $\text{Na}_2\text{CO}_3$  is thermally stable. Correct reason:  $\text{Li}_2\text{CO}_3$  is thermally unstable because it is salt of a small cation and big anion. In contrast,  $\text{Na}_2\text{CO}_3$  is thermally stable because a bigger cation stabilizes a bigger anion.
- (D) Correct assertion:  $\text{Mg}$  can be obtained by the electrolysis of fused  $\text{MgCl}_2$ . Correct reason: The electrode potential of  $\text{Mg}^{+2}$  is far lower (-2.37V) than of hydrogen (0.0).
- (C) Assertion is true, but reason is false. Correct reason: Common salt contains impurities of  $\text{MgCl}_2$ ,  $\text{CaCl}_2$ ,  $\text{MgSO}_4$  and  $\text{CaSO}_4$  etc. which are hygroscopic.
- (A)
- (A)
- (C) Assertion is true. Correct reason:  $\text{KHCO}_3$  is more soluble in  $\text{H}_2\text{O}$  than  $\text{NaHCO}_3$ .
- (B) Assertion is true. Correct reason:  $\text{BaSO}_4$  is insoluble while  $\text{MgSO}_4$  is soluble in water.
- (C) Assertion is true. Correct reason:  $\text{Li}$  being small polarizes the large  $\text{Cl}^-$  ion thereby making  $\text{LiCl}$  predominantly covalent.
- (A)
- (A)
- Lithium
- High polarizing power
- Fr, Z = 87 (Francium)
- Lithium
- $\text{NaCl}$ ,  $\text{CaCO}_3$  and  $\text{NH}_3$
- $\text{KOH}$
- Calcium
- $\text{CaH}_2$
- $\text{Ba}^{+2}$
- Anhydrous calcium sulphate ( $\text{CaSO}_4$ )
- $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$  or  $\text{CaSO}_4 \cdot 1/2 \text{H}_2\text{O}$
- $\text{CaCO}_3 \cdot \text{MgCO}_3$
- (i) Alkali metals have the lowest ionization enthalpy in each period. Within the group, the ionization enthalpies of alkali metals decrease down the group. The atomic size increases down the group therefore the valence electron are loosely held by the nucleus. By losing the valence electron, they acquire stable noble gas configuration and hence, they have low ionization enthalpies. Consequently, the ionization

enthalpy decreases down the group. (ii) Metallic character of alkali metals is increase down the family because alkali metals have low ionization enthalpies their atoms readily lose their valence electron. These elements are therefore, said to have strong electropositive or metallic character.

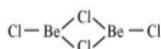
30. (i)  $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{Na}^+ + 2\text{OH}^- + \text{H}_2$  ( $\text{H}_2$  gas is evolved which catches fire due to exothermic nature of the reaction) (ii)  $2\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}_2$  (sodium peroxide is formed) (iii)  $\text{Na}_2\text{O}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2\text{O}_2$  (Hydrogen peroxide is formed)

31. (i) Lithium reacts with  $\text{N}_2$  to form lithium nitride. Magnesium also reacts with  $\text{N}_2$  to form magnesium nitride.  $6\text{Li} + \text{N}_2 \rightarrow 2\text{Li}_3\text{N}$ ,  $3\text{Mg} + \text{N}_2 \rightarrow \text{Mg}_3\text{N}_2$  (ii) both lithium and magnesium combine with oxygen to form monoxides.  $4\text{Li} + \text{O}_2 \rightarrow 2\text{Li}_2\text{O}$ ,  $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$  (the oxides  $\text{Li}_2\text{O}$  and  $\text{MgO}$  do not combine with excess of  $\text{O}_2$  to form peroxides and super oxides).

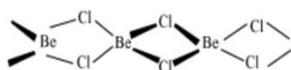
32. This can be explained as: (i) Divalent ions have the stable noble gas configuration (ii) The existence of divalent ions in the aqueous solution is due to greater enthalpy of hydration which counters balance the higher value of second ionization energy e.g.  $\text{MgCl}_2$  (aq) has much higher I.E. ( $774\text{kJmol}^{-1}$ ) than that of  $\text{MgCl}$  (aq) =  $74\text{kJmol}^{-1}$

33.

a) in vapour state



(b) In the solid state,  $\text{BeCl}_2$  has a polymeric chain structure.



34. (i) When calcium nitrate is heated, it gives  $\text{CaO}$ ,  $\text{NO}_2$  and  $\text{O}_2$   
 $2\text{Ca}(\text{NO}_3)_2 \rightarrow 2\text{CaO} + 4\text{NO}_2 + \text{O}_2$   
 (ii) Chlorine reacts with  $\text{Ca}(\text{OH})_2$  to form calcium hypochlorite  $\text{Ca}(\text{OCl})_2$ , which is a constituent of

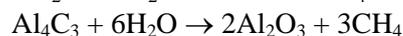
bleaching powder.  $2\text{Ca}(\text{OH})_2 + 2\text{Cl}_2 \rightarrow \text{CaCl}_2 + \text{Ca}(\text{OCl})_2 + \text{H}_2\text{O}$

(iii) when quicklime ( $\text{CaO}$ ) is heated with silica. It gives calcium silicate.

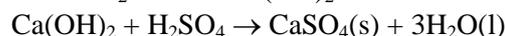
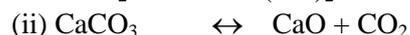
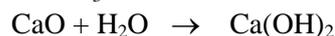


35. (i)  $\text{BeO}$  is insoluble in water because of its high lattice enthalpy. It is also covalent in nature and therefore, insoluble in water. On the other hand,  $\text{BaSO}_4$  is ionic. Its hydration enthalpy is much more than lattice enthalpy and hence it is soluble in water. (ii) Both  $\text{BaO}$  and  $\text{BaSO}_4$  are ionic compounds. However, the size of  $\text{O}^{2-}$  ion is much smaller than that of the  $\text{SO}_4^{2-}$  ion. Since a bigger anion stabilizes a bigger cation more than a smaller cation stabilizes a bigger anion, therefore the lattice enthalpy of  $\text{BaO}$  is smaller than  $\text{BaSO}_4$ . Therefore,  $\text{BaO}$  is soluble while  $\text{BaSO}_4$  is insoluble in water. (iii)  $\text{Li}^+$  is smaller in size than  $\text{K}^+$  ion. Therefore, according to Fajan rules,  $\text{Li}^+$  ion can polarize bigger  $\text{I}^-$  ion to a greater extent than  $\text{K}^+$  ion. As a result,  $\text{LiI}$  is more covalent than  $\text{KI}$  and hence is more soluble in organic solvents like ethanol.

36. (i) Both  $\text{Be}$  and  $\text{Al}$  have same electro negativity values ( $\text{Be} = 1.5$ ,  $\text{Al} = 1.5$ ) and their charge/radius ratios ( $\text{Be} = 0.064$ ,  $\text{Al} = 0.060$ ) are similar indicating similar field strengths (polarizing power). (ii) Beryllium and aluminium are resistant to the action of acids due to the formation of a protective film of oxide on the surface. (iii) The carbides of both  $\text{Be}$  and  $\text{Al}$  liberate methane with water.



37. (i) Limestone is  $\text{CaCO}_3$ . It is heated at  $1070\text{-}1270$ , gives calcium oxide (quicklime). By adding water to quicklime, slaked lime is prepared. This process is called slaking of lime.

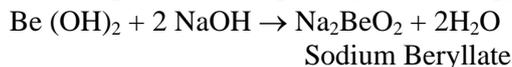
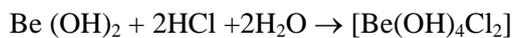
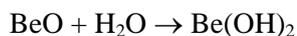


Gypsum Plaster of Paris

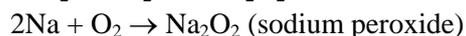
The temperature should not be allowed to rise above  $393\text{K}$  because above this temperature the whole of

water crystallization is lost. The resulting anhydrous  $\text{CaSO}_4$  is called dead burnt plaster because it loses the properties of setting with water.

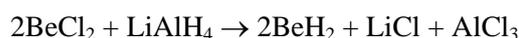
38. The element is Be and its covalent oxide is  $\text{BeO}$ . BeO is dissolve in water to give an amphoteric hydroxide.



39. Since the alkali metal imparts yellow colour in the flame test. It must be sodium. It reacts with  $\text{O}_2$  to form sodium oxide and sodium peroxide.



Sodium imparts yellow colour to the flame because ionization enthalpy of sodium is low. When sodium metal or its salt is heated in Bunsen flame, its outermost electron gets excited to higher energy levels by absorption of energy. When the excited electron returns to the ground state, it emits the extra energy which falls in yellow region of the visible spectrum. Therefore, sodium imparts yellow colour to the flame.



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—00—

*We are about to sacrifice our civilization for the opportunity of a very small number of people to continue to make enormous amount of money...*

*But it is the sufferings of the many which pay for the luxuries if the few...*

*You say that you love your children above everything else. And yet you are stealing their future.*

- Greta Thunberg

—00—

*The value of a college education is not the learning of many facts but the training of mind to think.*

- Albert Einstein

—00—

*A hundred times every day I remind myself that my inner and outer life are based on the labors of other men, living and dead, and that I must exert myself in order to give in the same measure as I have received and am still receiving.*

Albert Einstein

—00—

*Who cares what am I or I do, as long as I am not either useful or dreadful.*

*Can I take first step to befriend other by complementing my usefulness, for the larger good.*

**SCIENCE QUIZ : December'2019****Kumud Bala**

1. Which of the following statements is false?  
(A) Unicellular organisms have a one-celled body.  
(B) Muscle cells are branched.  
(C) Basic living unit of an organism is an organ.  
(D) Amoeba has an irregular shape.
2. What function do nerve cells perform  
(A) The function of the nerve cell is to receive and transfer messages, it helps to control and coordinate the working of different parts of the body.  
(B) The function of the nerve cell is only to receive and transfer messages.  
(C) It helps only to control and coordinate the working of different parts of the body.  
(D) None of these.
3. Which part of the cell contains organelles like mitochondria, Golgi bodies?  
(A) cytoplasm (B) nucleus of cell  
(C) nerve cell (D) animal cell
4. What is necessary for photosynthesis?  
(A) nerve cell (B) chlorophyll  
(C) organelle (D) cytoplasm
5. Which living substance is present in the cell?  
(A) protoplasm (B) cytoplasm  
(C) organelle (D) none of these
6. What are unit of inheritance present on the chromosomes?  
(A) Genes (B) Nucleus  
(C) cytoplasm (D) organelle
7. A Group of cells called -----  
(A) Tissues (B) organ  
(C) body (D) golgi bodies
8. What is the outermost layer of an animal cell?  
(A) Plasma membrane (B) cellulose  
(C) cell wall (D) none of these.
9. What is the name given to the green plastids?  
(A) chlorophyll (B) chloroplast  
(C) cytoplasm (D) cell wall
10. Which two organelles present in the plant cell but not in the animal cell?  
(A) cell wall and chloroplast  
(B) plasma membrane and lysosomes  
(C) vacuoles and centrosomes  
(D) plastids and plasma membrane.
11. Which four basic elements constitute 90% of protoplasm?  
(A) carbon, hydrogen, nitrogen, oxygen  
(B) carbon, nitrogen, oxygen and silicon  
(C) nitrogen, oxygen, helium and chlorine  
(D) oxygen, helium, chlorine and silicon.
12. What is the jelly-like fluid inside the nucleus called?  
(A) cytoplasm (B) nucleoplasm  
(C) protoplasm (D) vacuole
13. What are chromosomes?  
(A) Chromosomes are thread like structure which plays an important role in the inheritance of characters from one generation to another.  
(B) The jelly-like fluid present inside the nucleus.  
(C) This is necessary for photosynthesis  
(D) It separates the contents of the cell from the surrounding medium.
14. Mitochondria performs the function of respiration and provide the cell with energy known as ---  
(A) building blocks of life  
(B) power house of the cell  
(C) suicide bags  
(D) a system
15. Lysosomes are known as suicide bags because -----  
(A) They contain enzymes which help in breaking down or destroying the various materials.  
(B) They provide rigidity to the cell wall.  
(C) They do not provide protection against plant viruses and pathogens.  
(D) They allow materials to enter and leave the cell through the tiny holes.
16. Which is smallest cell in the living world?  
(A) ostrich's egg  
(B) pleuro pneumonia like organisms  
(C) hen's egg  
(D) none of these.
17. Who did discover the cell?  
(A) Robert Hooke  
(B) Ian wilmut  
(C) Haeckel

- (D) Schleiden and Schwann
18. Kitchen of the cells is known as -----  
(A) mitochondria  
(B) endoplasmic reticulum  
(C) chloroplast  
(D) golgi apparatus
19. Which organelle is known as the 'store house of the cell'?  
(A) mitochondria (B) vacuole  
(C) ribosome (D) golgi complex
20. Which of the following statements are true for eukaryotic cells?  
(i) They do not have a nuclear membrane  
(ii) They have a well organized nucleus  
(iii) They have a nuclear membrane  
(iv) Blue green algae are eukaryotic cells  
(A) (ii) and (iv) (B) (ii) and (iii)  
(C) (i) and (ii) (D) (i) and (iv)
21. Which of the following feature will help you in distinguishing a plant cell from an animal cell?  
(A) cell wall (B) mitochondria  
(C) cell membrane (D) nucleus
22. Identify the statement which is true for cells.  
(A) Cells can be easily seen with naked eyes.  
(B) Insect's egg is not a cell.  
(C) A single cell perform all the function in a unicellular organism.  
(D) The size and shape of cells is uniform in multicellular organisms.
23. The most important function of cell membrane is that it:  
(A) Controls the entry and exit of materials from cells  
(B) Controls only the entry of materials into cells  
(C) Controls only the exit of materials from cells  
(D) Allows entry and exit of materials without any control.
24. Read the different combinations of terms given below. The correct combination of terms with reference of an animal cell is ----  
(A) cell wall, cell membrane, nucleus, plastid  
(B) cell wall, nucleus, ribosome,  
(C) cell membrane, mitochondria, ribosome, chromosome
- (D) cell membrane, ribosome, mitochondria, chloroplast.
25. Which one of the following term is not a part of the nucleus?  
(A) ribosome (B) chromosome  
(C) nucleolus (D) gene
26. Read the following pairs of examples of organisms. The pair that belongs to the group prokaryotes is ----  
--  
(A) moss and sponge  
(B) yeast and amoeba  
(C) bacteria and blue-green alga  
(D) penicillium and spirogyra
27. The unit of measurement used for expressing dimension (size) of cells is ----  
(A) centimeter (B) micrometer  
(C) meter (D) kilometer
28. Paheli accidentally placed her hand over a flame and immediately pulled it back. She felt the sensation of heat and reacted due to the action of ----  
(A) blood cells (B) nerve cells  
(C) skin surface (D) nucleus of cells
29. Check cells do not have -----  
(A) cell membrane (B) Golgi apparatus  
(C) nucleus (D) plastids
30. Under a microscope Paheli observes a cell that has a cell wall but no distinct nucleus. The cell that she observes -----  
(A) a plant cell (B) a nerve cell  
(C) an animal cell (D) a bacterial cell
31. When is world AIDS day observed?  
(A) December 1 (B) January 1  
(C) October 1 (D) November 1
32. When was first AIDS day observed?  
(A) 1985 (B) 1966  
(C) 1988 (D) 1998
33. What does the acronym HIV stand for?  
(A) hemo-insufficiency virus  
(B) human immunodeficiency virus  
(C) human immobilization virus  
(D) none of these

34. Where did HIV originate?

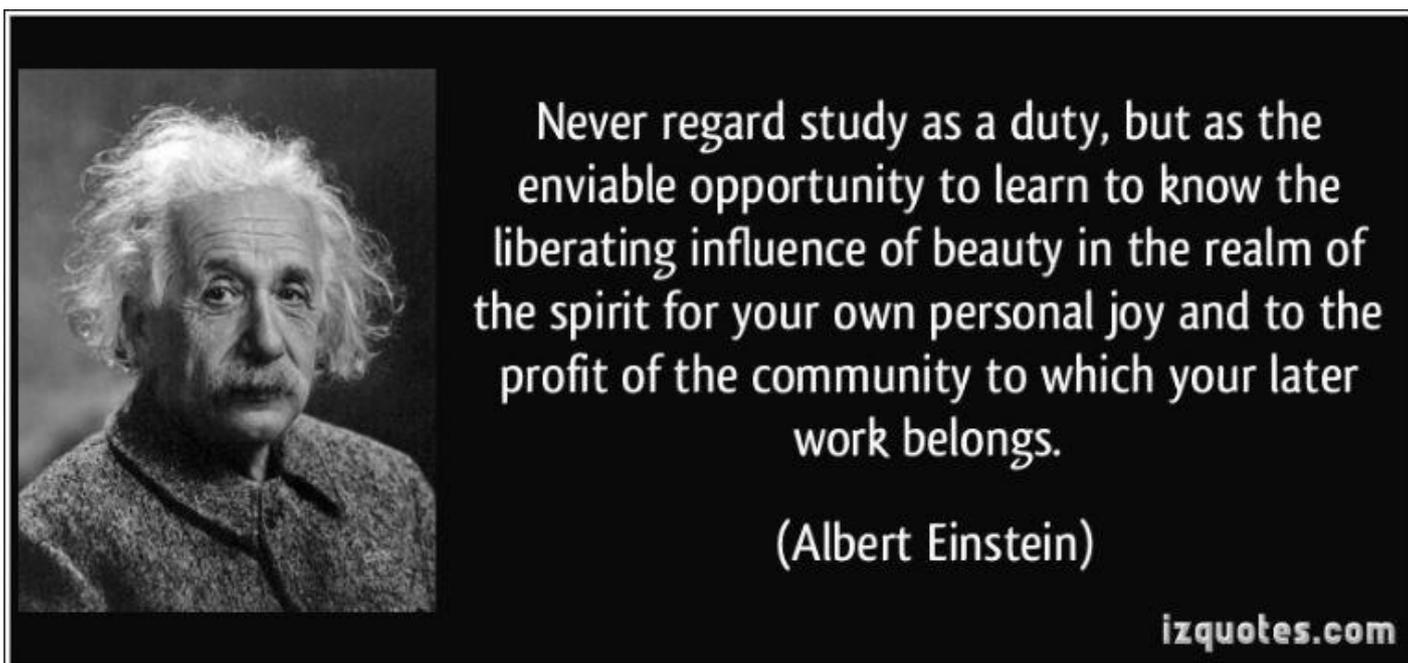
- (A) a chimpanzee
- (B) mad cow disease
- (C) a strain of the hepatitis virus
- (D) all of the above

35. When AIDS was first reported?

- (A) 1921 (B) 1991
- (C) 1981 (D) 1986

***(Answers to this Science Quiz shall be provided in Monthly e-Bulletin)***

—00—



***Nature is a beautiful integration of different entities. Mathematics and science only discover them.***

***Euler's Identity  $0 = 1 + e^{j\pi}$  is an excellent example of integration. Each of the constituent was discovered independently, by different mathematicians, at different point of time.***

***Yet they all complement each other.***

***Lest it not be there whole nature shall have to rediscovered***

—00—

## Theme Song :

**PREMISE:** *We are pleased to adopt a song “ इतनी शक्ति हमें देना दाता.....” from a old Hindi Movie Do Aankhen Barah Haath दो आँखें बारह हाथ of year 1957, directed by The Late V. Shantaram. The lyrics are by Shri Bharat Vyas, singer Melody Queen Sushri Lata Mangeshkar, and Music Direction by Vasant Desai. It has become a widely accepted inspirational song and/or prayer in many educational institutions and socially inspired initiatives engaged in mentoring of unprivileged children. This newly formed non-organizational initiative, being selflessly operated by a small set of compassionate persons, finds its philosophy in tune with the song and conveys its gratitude to all the eminent persons who brought out the song in a manner that it has attained an epitome of popularity. While working its mission and passion, the group invites one and all to collectively complement in grooming competence to compete among unprivileged children. The song/prayer goes as under -*

इतनी शक्ति हमें देना दाता, मन का विश्वास कमजोर होना  
हम चले नेक रस्ते पे हम से, भूलकर भी कोई भूल होना ॥

दूर अज्ञान के हो अंधेरे, तू हमें ज्ञान की रोशनी दे  
हर बुराई से बचते रहें हम, जितनी भी दे भली ज़िन्दगी दे  
बैर होना किसी का किसी से, भावना मन में बदले की होना ॥

इतनी शक्ति हमें देना दाता, मन का विश्वास कमजोर होना  
हम चले नेक रस्ते पे हम से, भूलकर भी कोई भूल होना ॥

हमना सोचें हमें क्या मिला है, हम ये सोचे किया क्या है अर्पण  
फूल खुशियों के बाँटे सभी को, सबका जीवन ही बन जाए मधुबन  
अपनी करुणा का जल तू बहा के, कर दे पावन हर एक मन का कोना ॥

इतनी शक्ति हमें देना दाता, मन का विश्वास कमजोर होना  
हम चले नेक रस्ते पे हम से, भूलकर भी कोई भूल होना ॥



**Together Each Achieves More  
(TEAM)**

*Every end, so also end of this e-Bulletin, is a pause for a review, before*

*Resuming of the journey far beyond ...*