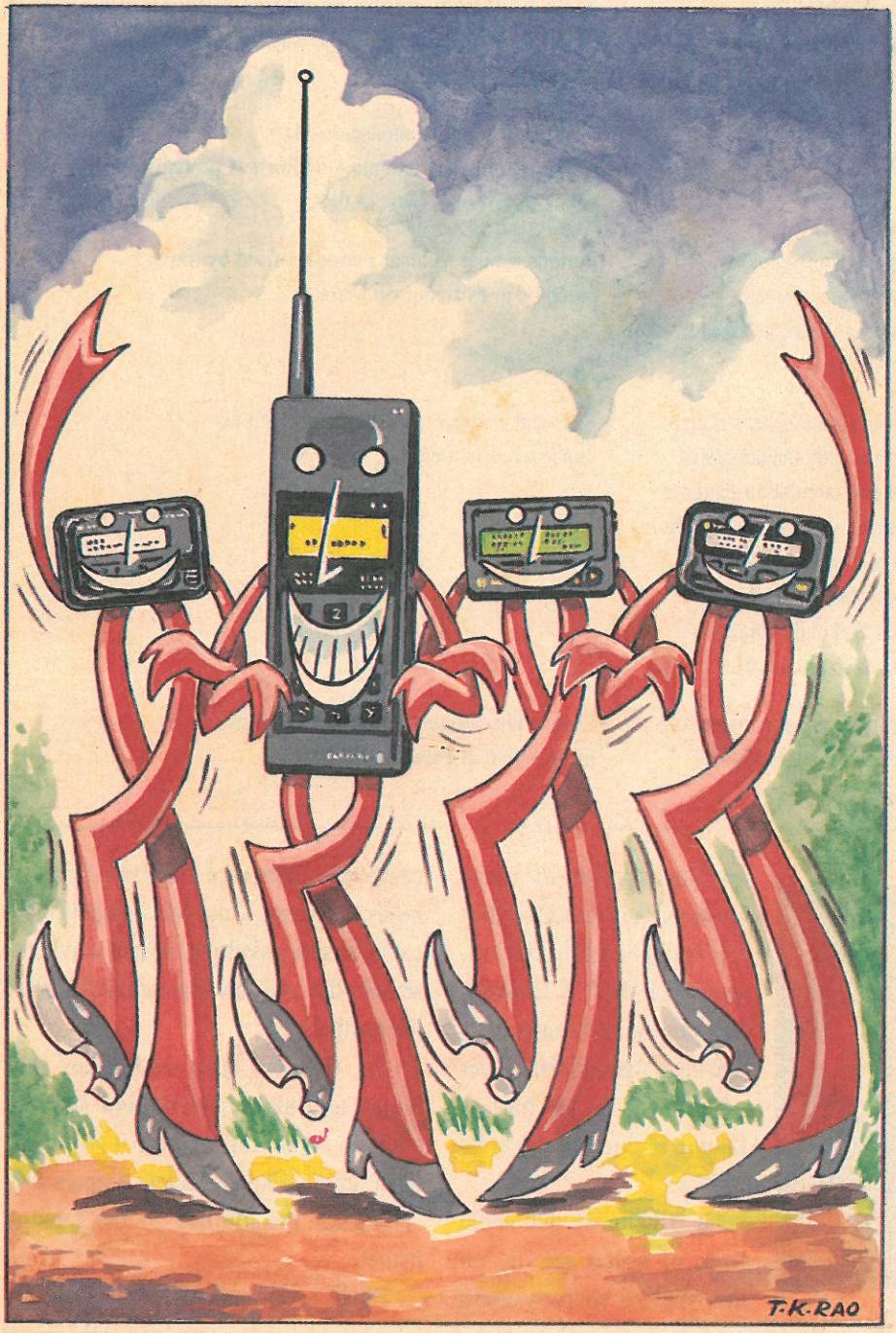
Celling a Dream



The only mode of interpersonal communication known to man till the early 19th century was mailers. In the later part of the 19th century, the obsession of a vocal philosophy professor with sound waves and electrical signals made him come up with an electrical device which revolutionised the way we communicate. But little did this professor - better known as Alexander Graham Bell - know that his invention - the telephone would actually turn the world smaller. Today, the option of personal communication is not restricted to speaking to others in far off places at a specified location, but is extended to people who are nomadic as well. G.P. Vinayababu *details the technology which has offered the option of Roaming communication.*

Striking commonalities and paradoxes between Mars and Earth.

Earth	Mars	Inference (Life Possibilities)
The day is 24 hours long	The Martian day is 24 hours, 37 min. and 23 seconds.	Time lag eliminated due to diurnal and nocturnal cycles being the same.
The major constituents of the Earth atmosphere are 73% N2, 23% O2 and 4% inert gases.	The major constituents are Co2 (95.3%) N2 (2%.1) and argon (1.6%).	Due to Martian atmosphere's 95.3% Co2 content, an air cycle could possibly be initiated through plant life. That would pave the way for a sustained O2 production source.
Bulk density is 5.5glcm3	Bulk density is 3.9 glcm3	Volcanic activity is intense on Mars. Olympus Mones the highest mountain on Mars is probably active as believed by scientists.
Orbited by one natural satellite-moon	Orbited by two irregularly shaped satellites named phoebes (fear) and the smaller Dimes (terror).	Periods similar to lunar periods caused by moon could be in existence on Mars.
The atmosphere is very active over the tropical and the polar regions	The Martian atmosphere is also very active with similar global atmospheric circulation patterns as on earth. warm air rises at the equator and moves poleward, deflects to the east and then descends at middle latitudes and returns to the equator.	Seasonal changes very similar to, and as conducive as on earth.
The temperatures could go to a maximum high of around 50 degree c.	Temperatures are conducive for life with a maximum high of 15 degree C.	Daily and seasonal temperature changes - life possible elements associated .

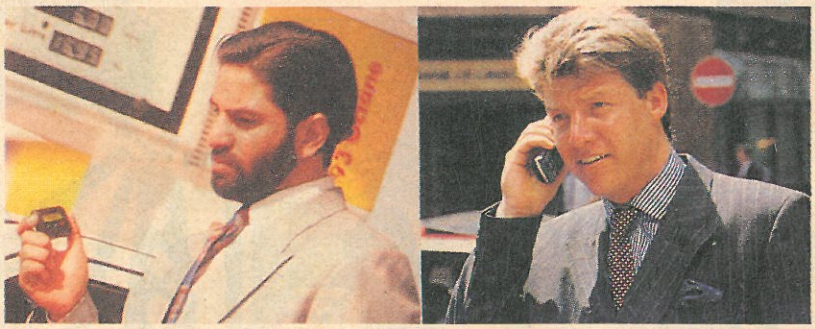
on Mars formed by water erosion is any indicator, then it is strongly believed by researcher at the U.S. Geological survey in Menlo park that there may still be a layer of water up to half a kilometer thick in the crust of Mars.

It is believed that some form of stellar activity on the Martian surface could cause the eruption of the water from beneath the planet. Once this happens there could arise a possibility which would resemble the 'pre- continental drift era' of the Earth.

So, the next time we hear of Carl Sagan and his 'green bodied Martian man',we better not perceive it as yet another Sci-Fi talk.Instead,let's prepare ourselves for the journey to the Orange planet.

Photo courtesy:NASA/REUTERS.

Pagers and cellular phones are the latest in personal communication which have offered the utility of communicating with people constantly – on the move in this fast paced world. With rapid progress in communication technology, who knows one day we may even energise ourselves to the location we desire the - 'star trek' way.



In the business capital of the country - Bombay, which is also one of India's more densely populated cities, where people spend most of their time in travelling from one part of the city to the other, with traffic snarls and bottle necks being the order of the day, it is a herculean task (if not impossible) to get in touch with an important business associate or a client for an urgent need at the peak hours of the day. It becomes doubly difficult if the person to be contacted is caught in a traffic jam. This is not the case only with Bombay but all major cities of the world where business and commerce are flourishing. Atleast a dozen cities are witnessing similar communication problems in our country itself.

Once again, technology has provided a solution to this in the form of pagers and cellular phones. All metros and almost all major cities in the country are now enjoying the utilities of this technological wonder.

Pagers were the first to hit the Indian market a year ago. As is the case with most other fruits of technology, even pagers were available in India only after a decade or so of its introduction in western countries and atleast 5 to 6 years after it was introduced in upfront countries in Asia. Nevertheless, the Indian consumers readily accepted and embraced this new pocket gadget almost instantaneously. In just one year of its introduction atleast 2,00,000 pagers are now in use in India and the demand is ever growing with increased affordability due to reduced prices and better services.

But the amazing thing is that even the cellular phones made its presence in India almost simultaneously with pagers (cellular phones were available in countries like Singapore only after a lag of 5 years from the introduction of pagers). Cellulars have not become as popular as pagers within the same time, for various reasons, the major one being the cost factor.

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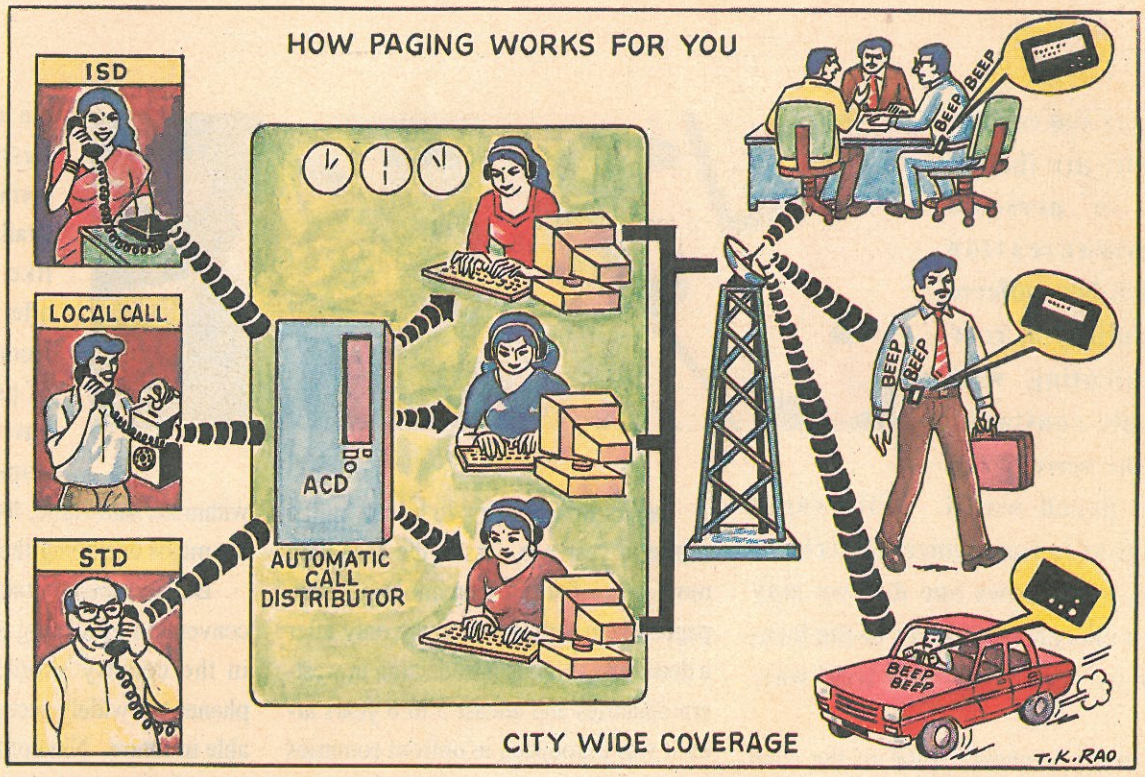
But a decision taken at the recent convention of leading telecom operators in the country should make cellular phones too widely acceptable and affordable in future. Nine of the country's major cellular operators have decided to form an alliance and work in tandem to provide cellular services throughout the country under the World One Banner. Cellular phones which are nothing but extensions of our traditional phones, provide the option of two-way communication to the users in real time, in sharp contrast to one-way communication through an intermediary operator offered by pagers. Further the cellular technology is easily understandable and comprehendable.

With the decision of major cellular operators to join together to provide services throughout the country, will the pagers be relegated to an insignificant slot in future?

"No!" say pager operators. Though cellular phones at the outset seem to have a clear advantage over the pagers, there are several utilities that only a pager can offer to its users.



An understanding about the operational principle of pagers and cellulars makes it clear that each has its own distinct advantages. Operationally cellulars and pagers use almost the same technology.

Pagers are electronic gadgets which offer one-way communication. Pagers are either numeric(display of only numbers)or alpha-numeric (display of both numbers and alphabet). Each pager service provider will be assigned a four-digit number (and a particular RF frequency to work under) which could be accessed by anybody. The pager service providers allocate six-digit number which is unique for a pager user. There are two ways of sending a pager message. In the first method, the first four- digits specific to a pager operator should be dialled which will provide access to the central pager service provider station where an operator picks up the call and asks for the six-digit pager number and the message. This message will be routed to the specific pager user via transmitters in RF frequencies. In the second method, all the ten-digits (the first four-digits specific to the pager provider and the next six-digits denoting the pager number of the user) are dialled together. This will provide access to the central pager service operator which will automatically open up a screen giving details about the pager user to whom the message should reach. The operator asks for the message only, giving the name of the pager user, which in a way is a confirmation to the caller that the message will reach the right person. The rest of the process is as usual.

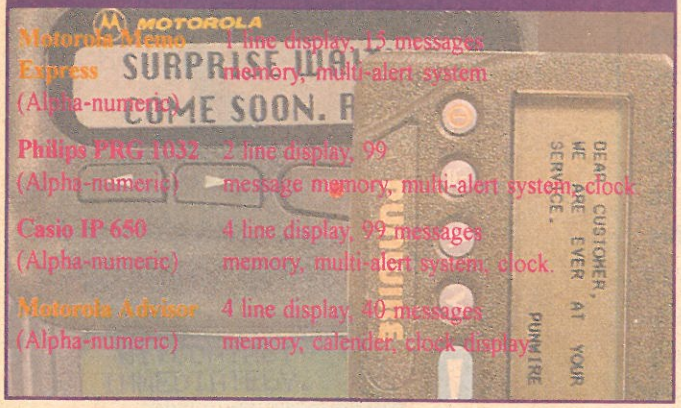
Any person can call the pager number and communicate the message to an intermediary operator who takes the message and confirms it. The pager user is alerted about the incoming message by vibrations or beeps and the message is flashed on the LCD display of the pager.

The basic principle of working of a pager is one of direct inward di-

Players in the Indian Pagers Market

Bangalore	H.Max	Arya Comm.	DSS(IXL)	Tele Systems
Bhopal	Easycall	Telecom Info.		
Bombay	Arya Comm.	Microwave	Easycall	DSS(IXL)
Calcutta	Easycall	DSS(IXL)	Microwave	Modi
Delhi	PRG Paging	ABC Comm.	Modi	Weston
Hyderabad	H.Max	Easycall	DSS(IXL)	Arya Comm.
Madras	Modi	PRG Paging	DSS(IXL)	Easycall

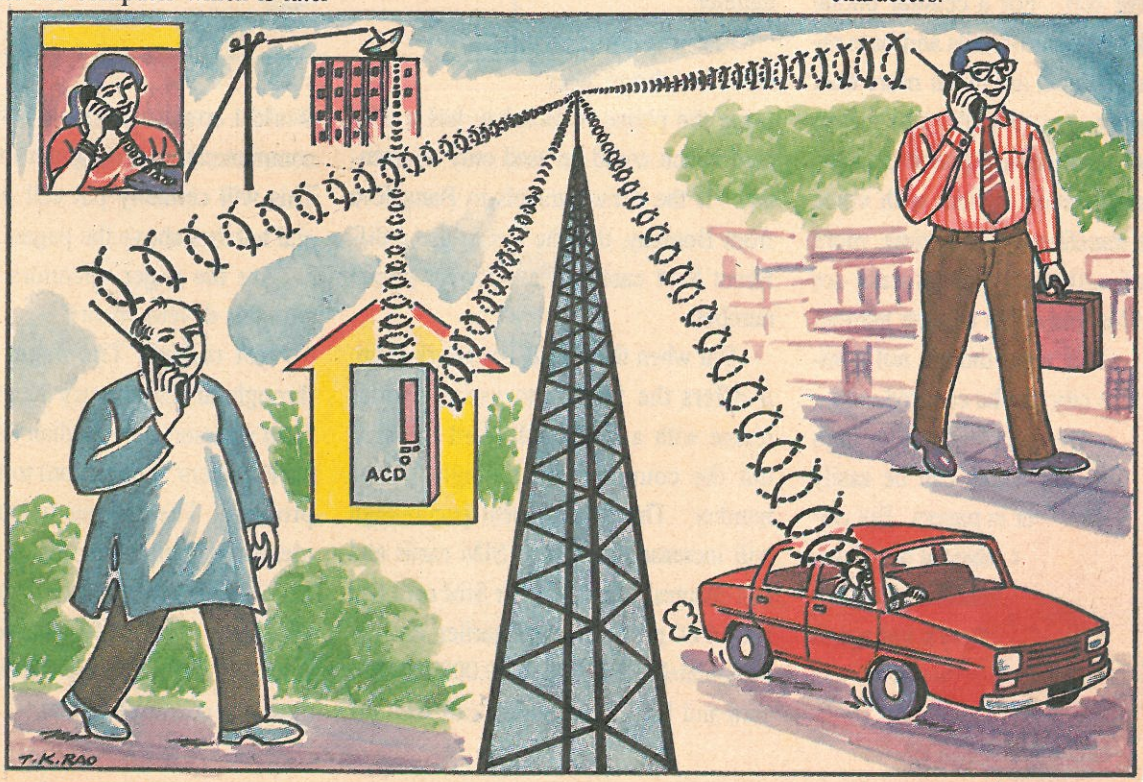
Popular Pager brands in the Indian market



Motorola Memo Express (Alpha-numeric)	1 line display, 12 messages memory, multi-alert system
Philips PRG 1032 (Alpha-numeric)	2 line display, 99 message memory, multi-alert system, clock
Casio IP 650 (Alpha-numeric)	4 line display, 99 messages memory, multi-alert system, clock.
Motorola Advisor (Alpha-numeric)	4 line display, 40 messages memory, calender, clock display

alling. Each service provider's number has a separate routing from DOT (Department of Telecommunications)to their central service station. As soon as the first four-digits are dialled the line can automatically be routed to the central exchange of that service provider who has a computer interfaced transreceiver. The pager number along with the message is entered into the computer which is later converted into electrical signals in the encrypted pocsag (post office code standard advisory group) format and sent to the paging terminal. From here the signals are transferred onto a tower which has a powerful transmitter having UHF and VHFtransmitters

This central transmitter has a power of 125W. Along with this central transmitter, several other cells are identified and transmitters are set up in different parts of the city at appropriate places so that there is a uniform distribution of signal waves. The message sent by the caller is beamed from the central transmitters as also the other local repeater transmitters in synchronization. This is done by having a time-delay set on each of the transmitters which is derived from the distance of each local transmitter from the main transmitting station. So the signals are beamed simultaneously throughout the city. All pagers in the area receive the signal, but the radio message includes a code so that only a specific pager responds. Each pager has something called as a cap code which senses the encrypted message signal and alerts itself. Prior to the message a preamble signal wakes up the pager from the "sleeping mode". The pager device will have a discriminator and a decoder, which discriminates and decodes the pocsag encoded format to its tuned frequency. This is how the message is displayed on the LCD of the pager. A pager can receive messages of anything upto 80 characters.



Paging is not just restricted to one way communication access. Pager operators provide several other value added services to its users. It offers services like regular alarm services, schedule reminders, updates on sensex and latest news etc. It also provides the option of group paging wherein a single message could be available to a group of people who belong to the same department in a company.

The cellular phones also work on similar lines, the basic difference being the mode of communication. It is simply an extension of our traditional phones. Cellular phones derives its name from its operation through a network of cells. Each cell is served by its own low powered radio transmitter, called a base-station. When a user leaves the jurisdiction of one cell, the user is switched onto the adjacent cell. For a cellular phone network the number of cells and base radio stations needed are much more than needed for a pager network. The reason is obvious. Since cellular phone is a two-
ay communication system with voice
to be transferred in real time, more
er of cells and transmitters are
Also, only with a larger number
wider area, though not com-
e city can be covered.
ive messages from high
rs which can be easily
ver in pagers. But cel-
inherent drawback
nsmit signals at a
ery's voltage is
ss of contact

Cellular phones have a SIM card (Subscriber Identity Module) which is inserted in the phone instrument. This is an intelligent card that comes equipped with a microchip containing all the customer's data including phone number and security codes. SIM cards are prepaid cards valid for a predetermined period of use. Also SIM cards are area specific as of now. A SIM card can be used only in a particular city with a unique phone number.

For example, a cellular phone user using the phone in Bombay has a SIM card which could be used only in Bombay. If the person travels to Bangalore from Bombay, then he has to use a different SIM card and a different phone number.

But when the World 1 network is up, it offers the facility to use a cellular phone with a single SIM card throughout the country with a single phone number. This arrangement eventhough will increase the cost of SIM cards and call charges, (Rs. 4,200 per SIM card and Rs. 16.80 per minute call earlier, and approximately Rs. 5,000 to 10,000 per SIM card and Rs. 20 per minute call with the World 1 arrangement) will offer roaming communication throughout the Country. This will certainly put cell phones several notches above the pagers.

Are the pager operators threatened with this development ?

Not really ! The pager operators throughout the country have joined to form an association (Indian Paging Service Providers' Association) to address this problem. The paging operators have identified their own strong points and have decided to work on it to create an awareness even while accepting the fact that cell phones have certainly taken away the charm of pagers.

World 1 Network Partners

Circles	Operators	Joint venture partners
Delhi, Himachal Pradesh	Airtel	Bharti Telecom, SFR-France, STET-Italy, Mobile Sysyems International, UK
Punjab, Karnataka	Modicom	Modicorp, Motorola, USA, Digicom, Hong Kong
Haryana, Kerala, Uttar Pradesh (W)	Escotel	Escorts group, First Pacific Ltd, Hong Kong
Rajasthan, Manipur, Arunachal Pradesh, Nagaland, Mizoram, Agartala	Hexacom	Shyam Telecom TCIL
Gujarat, Maharashtra (excluding Bombay)	Birala & AT & T	AT & T, USA Birla group
Madhya Pradesh, Madras	PRG Cellular	PRG Enterprises, Airtouch International, USA and Vodafone Plc, UK
Calcutta	Mobilenet	Modicorp, Telstra, Australia
Bombay	Max Touch	Max group, Hutchison Whampoa, HongKong
Andhra Pradesh	Tata Communications	Tata Industries, Bell Canada International

Mr.Shiva Kumar, a senior executive with Hutchison Max Page says that cellular phones can never be a competitor for pagers since anybody who would want to buy a cellular phone would have bought a pager already and so cell phones can only be complimentary to pagers and not contradictory.

As the technical manager of a leading paging service company who didn't want the name of his company to be disclosed (obviously with instructions from his superiors) put it "Pagers have a few clear advantages over cell phones".

Though pagers cannot provide glamour and status to its users as in the case of cell phones, they are fast emerging as an integral part of every man in the metros.

"One major aspect which weighs in favour of pagers is the option it provides to retrieve messages which is not possible with cell phones. Midway through a call if the cell phone contact snaps there is no way you can retrieve it. Also since the communication is verbal, the message interpretation may be wrong" he says. Also one distinct aspect which will keep the pager ahead of other communication modes is its message protection option. If commitments and promises are agreed upon through pagers and not complied with the protected message printouts could put a pager user in a better position in case of legal battles.

Also cell phone signals have poor penetration levels. In open air where the medium is ether, the signals travel faster. But it is not the same if signals encounters concrete barriers. For example, if a cellular phone caller in a car coming out of the basement of a building tries to contact a cellular phone user also in a car entering into the basement cannot get the message in most cases. This is due to the weak signal penetration through concrete.

As of now, cell phones, because of its status symbol and glamour, have been the talk-of-the-town today. Though pager operators do not dispute the better edge cell phones enjoy among masses, they are convinced of pagers' distinct position in the society. Pagers no longer remain the sole property of the rich and the learned and is no more a luxury. It has become an absolute necessity with even car drivers and panbeedawallahs using them. "We want to make the pagers usable by everyne including essential service workers like plumbers, carpenters and electricians", says Jai Prasad an executive of Max Page. But cell phones will remain to be a rich man's priced possession atleast for the next few years to come.

	PAGERS	CELL PHONES
(a)	Interaction with phone operator and one-way communication	Mobile extension of traditional phones
(b)	Simple and economical to send messages and easy to carry	Not economical and not as handy
(c)	Enables you to screen-call, prioritise them and formulate your responses in the complex business environment.	No such option but only offers option to pick call or not
(d)	Rs. 250/- per month gives unlimited access	Rs. 16.80 / min. for outgoing calls and Rs. 8/- min. for incoming calls
(e)	Long battery life	Lesser battery life
(f)	Not only for call back but to give information on various topics like option on eateries & entertainment sensex updates and so on	No such option available
(g)	Retrieval of messages at anytime is possible	Retrieval of messages not possible
(h)	Printouts possible	Not possible
(i)	Penetration of signals better	Prenetration of signals poor
(j)	No guarantee of response from the called person	Can speak to the called person