

# The Five Freedoms of the Information Age

by AMM Aabad

*Time and distance have disappeared, and size or volume is not a problem. Enjoy the freedom of restriction from space, volume, time and distance. The fifth freedom is a combination of the other four — the freedom from intermediaries*

FROM Inside the mosquito net in my bedroom in Dhaka I can telephone my sister residing in London and get instant direct connection (ISD via satellite). I can use a compact cellular set, or a smaller folding, pocketable, cordless telephone the size of a small calculator. Next morning I send her a document in Bengali using my mini fax machine fitted in my home-office. This fax machine had been printing out (for the last eight years) the list of all the telephone calls made during the previous weeks, to enable me to check the subsequent telephone bill.

Sitting before my computer I can contact millions of Internet users, or send a message on e-mail, within Dhaka or to any part of the world (there are several electronic mail providers in Dhaka). My son, an A-level student, goes to the homes of his class mates to browse on the computer screen the big encyclopedia on the CD (compact disc); and also listens to music, and plays interactive computer games with distant friends on the local LAN or local area network. Another CD and tour of India is possible as an armchair

tourist. With virtual reality, it is possible to enter a departmental store in London and do window shopping.

An Internet network user can instantly contact any one of the millions of its subscribers in any part of the world (at local call rate). The world is at his fingertips. The big players in the global information industry are urgently reviewing the changing market strategies in the information business (in the USA the information industry generates more than one half of the total business in the country). Now even the International Telecommunications Union (ITU) — a specialised agency of the UN regulating the telecom standards is getting interested in making use of the vast potentials of Internet services.

Networking may become a booming business as the century closes. The situation is fluid with proprietary giants vying with international standardization exercises. The popular PC or personal computer design is poised for a possible showdown — the other camp is contemplating a cheap \$500 computer to be led via the network to the office or home (no

hard disc; no programmes to buy or store). The pace of R&D is so fast that the PC motherboard cannot keep pace with the new chips coming out (the multimedia chip, for example); so Intel has decided to make and market motherboards to match with its latest chips.

Satellite broadcasting has shrunk the world. Now direct-to-home satellite service is possible using small dish antennas; some have the size and shape of a window pane, to bring the world right into the (middle-class) drawing room. Fixed wireless local loop telephone systems for the rural areas have sprung up in the developing countries (including Bangladesh). Cellular telephones will soon be flooding the local market through three private operators.

It is all affordable (at least in the developed countries). In this Information Age, technology is building up a new breed of information society with a differ-

ent life style.

IT has blessed (!) the society with five freedoms unthinkable even a couple of decades back. Time and distance have disappeared, and size or volume is not a problem. Enjoy the freedom of restriction from space, volume, time and distance. The fifth freedom is a combination of the other four — the freedom from intermediaries — go direct to the objective without any via media.

The computer can now replace the human secretary in the small home office (SOHO); the vertical hierarchy is becoming redundant during working or business hours. It is horizontal or peer-level relationship. It reminds of something elusive — democracy in action!

A new trend is slowly emerging in the industrialised countries. The employment pattern is set to change. The work-place is being decentralized. Part of the daily workload can be taken home, and returned to the office

through electronic means.

It means 20 per cent saving in the travel time between home-office. In fact the researchers have found that productivity or output while working at home increases by 80 per cent, due to less distraction, interruption, and interaction.

The employer-employee relationship is set to change, analysts feel. Less permanent jobs would be available in the offices of the future. More work will be given out of contract basis. So an employee may work for several offices in different fields. Corporate loyalty will be at stake. This trend is already creeping in Dhaka. Small consultancy agencies or offices are employing multi-working resource persons project-wise. It is expensive to have an expert on the payroll full-time for months.

The educationists are examining the impact of future employment pattern on existing

secondary education, to enable the youth to enter the new world mentally prepared. It is the age of change, controlled by electronics.

Watch the acronym SOHO. It stands for small office, home office. The latest computers are being designed for such users; as also for multimedia applications right in the drawing room. A small computer remote-control hand-held device takes over the home entertainment requirements for each individual in a family for all the rooms. One watches TV on the monitor, another plays games in his room, others are busy with the computer, VCR, audio cassette, or cable TV. The family does not sit together. Good or bad?

The cashless society is another benefit (or bane) of the IT revolution. Insert the credit card into a machine in a foreign country and find out the balance in your account in your country. While in Singapore,

for example, one could draw cash after the electronic system checks the person's account in Malaysia — currency in cash without boundary.

The latest fax machines now have multi-functions: it can also work as a computer printer, a copying machine (plain-paper), and a scanner to insert text or graphics into the computer. The machine works as a telephone and doubles as an answering machine, and records the incoming messages. It goes into the sleep mode, and wakes up on receiving a call, using less power.

The chemical camera film is going out of date. Photographs taken with the computerised disc camera can be stored in the hard disc of the computer, then edited and enhanced, before getting the colour print-out from the jet printer (or on the fax machine described above).

As an example of older technology applied at local level, the recent broadcast relays of the parliamentary debates on the radio and TV networks in Bangladesh had tremendous impact on the voters all over the country, especially in the rural areas. The power of information is too powerful to be ignored. In the third world, due to low literacy rate, television exerts considerable influence as

a mass medium — the foreign satellite transmissions fed through the local cable networks are changing the mores of the conservative society.

The philosophical question now being debated at the intellectual level is whether too much bombardment with news and information disintegrate or destabilizes a society. There is a nasty side effect: a lot of electronic garbage is produced and exposed to unwilling viewers. Too much garbage is good neither for the body nor for the mind. The acquisition of knowledge is a one-way action in the sense that the resulting change in consciousness is irreversible. How to 'dis-inform' a person has become a topical and philosophical issue.

The new informatics is convergence technology in action in the Global Village. Time, space, and volume have been squeezed into micro dimensions in a decentralized society. Is this going to be the life style in the 21st century?

There is no definitive answer, as technology is outstripping applications of the new knowledge. Beware, he or she may become IT, or dehumanized!

— Dharitri/feature

The writer works in the IT sector.

## Role of Biochemistry in Food Processing: Problems and Prospects of Industry

by Dr SF Rubbi

FOOD processing in industry provides the most favourable stimulus for manufacturing sector. Its growth implies the expansion of all activities that supply inputs to it. The intervention of food industry is imperative to maintain and improve health status by making available more food in different forms. Food processing should be based on a profound understanding of the physical or biochemical mechanisms underlying the process.

In the natural state most foods can be kept for a certain period if they are harvested in good condition. Cereals, legumes and oilseeds are low in moisture when harvested and require minimal processing. Foods with high moisture like fish, fruits and vegetables, commonly known as perishable commodities, require proper handling and processing for their preservation.

**Deterioration and spoilage of foods:** The causes of deterioration and spoilage of foods include growth of microorganisms (most common with moderate to high water content), contamination — (filth, absorption of off flavours and odours), normal respiration (plant tissues), loss of water, sprouting, autolysis (especially fish), various chemical reactions (oxidation), physiological disorders (chilling injury, cold shortening of muscle, scald of apples, anaerobic respiration of plant tissues) and mechanical damage.

**Preservation:** The aim of commercial preservation is to ensure wholesomeness, nutritive value and sensory quality of food by economical methods which will control growth of microorganisms, reduce chemical, physical and physiological changes of undesirable nature and obviate contamination. Preservation of foods can be accomplished by: a) biological preservation — alcoholic and acid fermentation; b) chemical preservation — addition of sugar, salt or acids and exposure to smoke or fumigants; c) physical preservation — increase of temperature in product energy (heating, irradiation), controlled reduction of product temperature (chilling, freezing), controlled reduction in products water content (concentration, dehydration

and freeze-drying), and d) use of protective packages.

In the present day world market there are more than 8000 food items which range from conventionally processed products, traditionally processed items, leaf proteins, novel seed proteins, novel animal proteins, health foods, nutritional supplements, dietary supplements etc.

**Biochemical components in foods:** Before we deal with the role of biochemistry in food processing it is necessary to know the biochemical components in food commodities. The important groups of compounds are: 1) carbohydrate, 2) proteins and amino acids, 3) lipids, 4) nucleic acid, 5) enzymes, 6) pigments, 7) organic acids, 8) polyphenols and tannins, 9) flavouring principles, 10) vitamins. Water is also an important constituent of foods.

**Effect of Processing** Biochemistry plays a very important role in determining the quality of raw materials, the nature of spoilage and development of appropriate method for processing and preserving.

**Biological preservation — alcoholic and acid fermentation:** Fermentation is the decomposition of carbohydrates by enzymes and microorganisms into substances which when present in sufficient concentrations, prevent the growth of spoilage organisms. In the primary or alcoholic fermentation, simple sugars in a product are converted into alcohol by the action of yeast, as in the production of wines and ciders. Air must be excluded from such fermented products to prevent further attack by aerobic organisms, e.g. bacteria, moulds etc.

Vinegar fermentation is brought about by acetic acid bacteria after the normal alcoholic fermentation. Vinegar (acetic acid) produced helps in preserving pickles, due to its antimicrobial action. In lactic acid fermentation, hexose sugar is decomposed into lactic acid which helps in the preservation of sauerkraut, pickles etc. The product must be sealed from air to prevent the growth of acid destroying bacteria.

Besides traditional fermented products milk products, soya products, idli, flavouring compounds can be produced by fermentation process with the

aid of genetic alteration. Many gums used in food processing can be produced by bacteria.

**Chemical preservation:** Sugar used in concentration of 70 per cent or above preserves, by osmosis, most foods such as fruit, jellies, jams etc. against most organisms. Sugar with acid and pectins form gel structure. Salt and acetic acid in concentration of 15 per cent and 1 per cent respectively preserve most foods by osmosis.

**Physical preservation:** Physical methods of preservation result in death of microorganisms (by temporary increasing the energy level of a food which is suitably packaged to avoid recontamination) or suppression of their growth (by maintaining the food at sub-ambient temperature or by removing water followed packaging to avoid reabsorption of water). None of these methods completely stop chemical and physical changes, although these methods can stop or greatly retard the growth of microorganisms.

In frozen foods stored at 18°C recommended temperature, microorganisms cannot grow but degradation of vitamin C, insolubilization of protein, oxidation of lipid and recrystallisation can occur at sufficient rate. They have also some undesirable consequences on the sensory and nutritive value of food. Thermal sterilisation softens food tissues, degrades chlorophyll and anthocyanins, alter flavours and results in loss or degradation of substantial amount of vitamins. This shows that none of the processes are perfect — one has to increase the advantages and decrease the disadvantages.

**Packaging:** It protects chemical, physical and biological mechanisms of food deterioration by controlling the effect of light, O<sub>2</sub>, water, temperature, attack by biological agents. It also serves as a processing aid like metal can for sterilization. It serves as a material handling tool containing desired unit amount within a single container, marketing aid, convenience item for consumer and can also be a cost saving device.

Packaging materials may be glass, metals, metal foils, paper, plastics, cellophane, cellulose, polyethylene, vinyl derivatives, polyesters, polyimides, other films and wood.

**Biochemistry and Biotechnology** The food processing industry is the oldest and largest user of biotechnological processes. Biotechnology is the utilisation of biological process. In this biochemistry plays a major role besides other subjects. The genetic aspects of biotechnology are having a great impact in all areas of food processing from raw material production to new processing aids and food additives that enable the processors to improve shelf life, acceptability and nutritive value of foods. Advances in modern biotechnology, together with the increased activity in traditional biotechnology like fermentation are poised to have a profound effect on the key segments of food production chain. The driving force for the food industry's investment in biotechnology include:

• Consumers' demand for convenient, superior quality food products at a reasonable price. The key elements of quality include taste and appearance, healthiness (natural, additive free and nutrition), safety (microbiology and toxicology).

• The need to develop more efficient process with reduced environmental impact.

• Competition between food of both traditional and emerging markets. The potential target for both plant and animal food productions are a) higher yield, b) improved resistance, c) altered product composition, d) improved nutritional composition, e) better keeping quality (storage/shelf life), f) reduction of process waste.

**Quality Control** Quality is a measurement of the degree to which a product meets the expectations of the consumers within the framework of legal requirement. Control of quality requires necessary machinery or organization. Quality control measures

ensure that the product could be manufactured to a consistent quality from available materials under safe and hygienic conditions. It involves three kinds of variables: i) control of quality of raw materials; ii) control of critical points in the process; iii) control of finished products.

The rapid growth of on/in line quality control systems will continue. Instead of controlling the end product, the process will be controlled, where necessary corrected. In this way production problem is minimised. Total quality control (TQC) encompasses eight stages of the product life cycle — i) marketing, ii) engineering, iii) purchasing, iv) manufacturing engineering, v) production, vi) inspection and test, vii) shipping, viii) installation maintenance and service.

Quality planning is the heart of TQC, directed towards preventing quality problems and it includes: i) establishing quality guideline, ii) building quality into design, iii) procurement quality, iv) in-process and finished product quality, v) inspection and test planning, vi) control of nonconforming materials, vii) handling and follow-up on customers complaint, viii) education and training on quality.

**Existing scenario of food processing industries in Bangladesh:** At present there are about fifty processing units in public and private sector. In public sector, Bangladesh Small and Cottage Industries Corporation is mainly taking interest in promotion of food processing industries. These are mainly dealing with fruits and vegetables, besides two milk processing plants. These fruits and vegetables processing industries are mainly of traditional cottage industry type. They produce fruit juice, squash, sauce, ketchup, jam, jelly, marmalade and similar other products in small scale. The packaging materials they use are mostly glass which are neutral, plastic containers and flexible packs, produced locally. They mostly use aluminum pots and pans as against stainless steel materials of food grade.

**Constraints:** At present the development of a proper industrial base and the promotion of food processing industries are being help up due to the follow-

ing constraints: 1) lack of sufficient raw materials of specific variety and right quality which can withstand processing; 2) lack of post-harvest handling system which has to be developed to minimise spoilage and wastage particularly for perishable commodities; 3) lack of necessary infrastructure for handling/transport, manufacture of plant and machineries, processing, auxiliary chemicals, storage and marketing; 4) lack of skilled manpower, technical know-how, need-based information and managerial efficiency; 5) lack of adequate assistance in the form of bank loan which has to be made with wide publicity of feasible projects to attract prospective investors; 6) absence of processional entrepreneurial ability in the private sector; 7) lack of awareness for importance of controlling quality, maintaining hygienic and sanitation; 8) lack of a Pure Food Rules with specifications for standards.

**Prospects:** There is a need for concerted efforts by policy makers, financing institutions, research organisations, marketing institutions and quality control authorities to bring in a harmonious growth for proper development of food processing industries. The benefits that are expected to be derived from the development of food processing industries include: i) development of appropriate technique and capabilities for processing goods, with good manufacturing practices; ii) development of engineering design and capability to manufacture food processing machineries, ancillary equipment, auxiliary chemicals, and other supporting industries; iii) reduction of post-harvest loss, care of seasonal and surplus, availability of more raw materials for a longer period, better returns to farmers and producers; iv) employment generation by promoting industrial growth in different underdeveloped areas and nearer to the source of production; v) increase of foreign exchange by exporting processed products as well as fresh commodities.

The writer is ex-Director, Institute of Food Science and Technology, BCSR, Dhaka. The above are excerpts from his paper presented at a recent symposium of Biochemistry and New Industrial Revolution Prospect and Possibilities.

## Women and AIDS

by Dr Julia Ahmed

WITH HIV/AIDS we are confronting an epidemic that began with a whisper only a decade ago. Now it roars like thunder around the globe. In the past, it was known that AIDS is a disease of the gay people. Epidemiologists, physicians and behaviour specialists failed to grasp that HIV would not respect the artificial boundaries that mainstream science had drawn around it. Like till mid-eighties 'Women and AIDS' was an isolated voice. But gradually it was recognised that what has been growing slowly and quietly behind the scene is now growing at faster rate and pace. The fact is well evident by the following:

**WHO's estimation:** In mid-1994, 17 million people were HIV-infected in the world — an increase of 3 million adults within one year of which half are women. By the year 2000, 13 million women will be HIV-positive.

**HIV sero prevalence level:** In Kenya among women attending antenatal clinics at urban and semi-urban sentinel sites have risen on average from 2 per cent in 1985 to 14 per cent in 1992.

In India, in 1987, only 1 per cent of commercial sex workers (CSWs) were tested positive for HIV. By 1992, the figure had shot up to 40 per cent.

UNICEF estimates, currently in sub-Saharan Africa, 28 million children alone will have lost at least one partner to AIDS — mostly mothers. In 1985 the ratio was Men: Women, 1:10. And the ratio is now 5:6, and the number continues to rise.

Now let us see the contributing forces of the discrepancy towards women's vulnerability to HIV infection. These can be seen as biological and socio-economic factors.

**Biological factors are:** As a receptive partner, women have a much larger mucosal surface area of exposure during sexual act. The fact that semen has a higher concentration of HIV than vaginal fluid. Women are particularly susceptible to sexually transmitted disease (STD). By now it is a well established that STDs facilitate the transmission of HIV/AIDS.

(The reproductive tract of women is biologically engineered to permit two-way 'traffic'. Once an infection has been established the damaged tissues provide an ample opportunity for a pathogen to harbour.)

**Social factors are:** Cultural, legal, religious and economic resulting in practices like — polygamy, violence against women and widespread acceptance of male promiscuity.

Restrictions on women's mobility: a) limits women's access to information. In this way like other areas, women remain far more ignorant about the epidemic; b) women diagnose later in their illness; c) too often the universal behaviour change message — to use a condom every time you have sex — bypassing entirely the question of who controls the decision to use a condom at all; d) fears of negative impact of refuse, unsafe sex or negotiating condom use; e) perception that safer sex is irrelevant, as care-givers women need to cope with triple jeopardy — as women, mother, grand-mother etc.; f) lack of control of methods of STDs and HIV protection; and g) women are disproportionately the recipients of blood transfusion and other blood products (for anaemia, or childbirth complication).

Till now we know that attention has tended to focus on women as transmitters — either through commercial sex workers or prenatal transmission to child — rather than as a group of particularly vulnerable to HIV infection. Since Bangladesh finds itself at an early stage of the epidemic, it provides an unique chance of learning from mistakes and experiences of other countries. The fact is that due to the complexity of the issue and moreover now this shift in the profile of the epidemic calls for an active and comprehensive approach that addresses the needs of women.

The article has been prepared on the basis of papers, poster exhibition and various interactions that took place at the XI international conference on HIV/AIDS held in Vancouver, Canada 1996.

### Monday 14th October

(All programmes are in local time. There may be changes in the programmes.)

### BTV

3:00 Opening Announcement  
Al-Quran Programme Summary  
3:10 Recitation From The Bible  
3:15 Cartoon Film: Macron 3:45  
Drama Series: Reticelact of  
Selected Dramas 4:00 News in  
Bangla 4:45 Rumjhum 5:00  
News in Bangla 5:25 Nazrul  
Sings 5:30 Sports Programme  
6:00 News in Bangla 6:30  
Shikhanggan 7:00 The News  
7:25 Open University 7:25  
Chandabritiya 8:00 News in  
Bangla 8:40 Package Drama  
10:00 News in English 10:30  
Shasthattha 10:35 Sukher  
Thikana : Family Planning Programme  
10:55 Comedy Series:  
Coach 11:30 News in Bangla  
11:35 Tuesday's Programme  
11:40 Close down

### BBC

6:00 BBC Newsroom inc. Asia  
Today World Business Report  
24 Hours 9:00 BBC World  
Headlines 9:05 The Money Programme  
10:00 BBC Newsday in  
Europe Today 1:00 pm BBC  
World News 1:15 The Money  
Programme 2:00 BBC World  
News 2:30 Time Out: Floyd's  
American Pie 3:00 BBC World  
News 3:30 Time Out: Fat Man  
in France 4:00 BBC Newsdesk  
in Europe Today 6:00 BBC  
World News Headlines 6:05  
Correspondent 7:00 BBC World  
News 7:15 World Business Asia  
Pacific 7:30 BBC Newsday Asia  
Pacific 8:00 News in English  
8:30 Time Out: The Past 9:00  
BBC World News 9:15 The  
Money Programme 10:00 BBC  
World News inc. WB10:30  
Time Out: Tomorrow's World  
11:00 The World Today in Europe  
Today 1:00 BBC World  
Headlines 1:05 The Money Pro-

### CHANNEL V

6:00 Frame by Frame 7:00  
Rewind VJ Sophia 8:00 Jump  
Start VJ Trey 9:00 Frame by  
Frame 11:00 The Vibe VJ Luke  
12:00 Rewind VJ Sophia 1:00  
By Demand VJ Trey 2:00 Frame  
by Frame 2:30 First Day First  
Show 3:30 Sarayu Mangla Has  
4:30 Planet Ruby 4:30 By Demand  
VJ Trey 5:30 Rewind VJ  
Sophia 7:00 Big Bang VJ  
Alessandra 8:00 Planet Ruby  
8:30 The Vibe 9:00 BPL Oye!  
10:00 First Day First Show  
10:30 Launch Pad VJ Sophia  
11:33 The Ride VJ Trey  
12:00 On the Edge VJ  
Sophia 12:30 Big Bang VJ  
Alessandra 1:00 Haysah 2:00  
By Demand VJ Trey 3:00 Big  
Bang VJ Alessandra 4:30 Asian  
Top 20 VJ Trey

### STAR PLUS

6:30 Voltin 7:00 Teenage Mutant  
Ninja Turtles 7:30 G I Joe  
8:00 Sabre Rider And The Star  
Sheriff 8:30 Adventures Of  
Black Stallion 9:00 Aerobics Oz  
Style 9:30 Charles in Charge  
10:00 Mr Belvedere 10:30  
Nathalie Dupree Cooks 11:00  
VideoFashions News 11:30 The  
Flying Doctors 12:30 Santa  
Barbara 1:30 The Bold & The  
Beautiful 2:00 The Oprah Win-  
frey Show 3:00 Remington  
 Steele 4:00 Nathalie Dupree  
Cooks 4:30 Family Blue Fire  
Lady G (Hindi Subtitles) 5:30  
5:00 Teenage Mutant Ninja  
Turtles 5:30 Adventures Of  
Black Stallion 6:00 Lost In Space  
7:00 Home and Away 7:30  
Charles in Charge 8:00 MASH  
8:30 Mystery Movies: Inspector  
Morse 'Settling of the Sun'  
10:30 The Bold & The Beautiful

### 11:00 Santa Barbara 12:00m

The New Twilight Zone 12:30  
Hearts Alire 1:00 Grace Under  
Fire 1:30 Barnaby Jones 2:30  
VideoFashions News 3:00 The  
Oprah Winfrey Show 4:00  
Hooperman 4:30 Home and  
Away 5:00 The Sullivan 5:30  
The Flying Doctors

### STAR SPORTS

6:00 Prime Boxing Camacho vs  
Todd 7:30 Wild Rally Champ  
Teistra Rally Australia 8:00  
Watersports World 9:30 Cricket  
The Great Asian Matras Wars,  
World Cup Cricket India v Sri  
Lanka From New Delhi, India  
3:30 Formula One World  
Championships 1996 Japanese  
Grand Prix 5:30 The Asian  
Football Super 6:00 Inside PGA  
Tour 6:30 Trans World Sport  
7:30 1996 Omega Tour Yokohama  
Singapore PGA Champ  
H/L 9:00 Beijing Open 1996  
Finals 10:30 Gillette World  
Sport Special 11:00 The European  
Cup Day 4 Highlights 1:00  
Same Day Delay National  
Football League, 1996-1997  
Miami @ Buffalo 3:30 Futbol  
Mundial-40 4:00 Asia Sports  
Show 4:30 J&B Arena Polo  
5:30 The European Tour Alfred  
Dunhill Cup Day 4 H/L

### STAR MOVIES

7:30 Comedy: Window's Peak  
12 (Arabic Subtitles) 9:30 Adventure:  
The House On Carol Street 12 (Arabic Subtitles)  
11:30 Western: The Cisco Kid  
12 (Hindi Subtitles) 1:30 Adventure:  
Time Bandits 12 (Hindi Subtitles)  
2:30 Family Blue Fire Lady G (Hindi Subtitles) 5:30  
Comedy: Best Of Friends 12 (Hindi Subtitles) 7:30 Film Fiction:  
How Green Was My Valley PG  
(Hindi Subtitles) 9:00 Deccan  
Dream 9:30 This Week That  
Year 10:00 Comedy: Foreign  
Body 18 (Hindi Subtitles) 11:30  
World Cinema: Mon Ami Max

### 15 (English Subtitles) 1:30 Film

Club: Simple Men 18 (Arabic  
Subtitles) 3:30 Action: Paltan  
18 (Arabic Subtitles) 5:30 Future  
Shock: Salute to the Jugger  
18 (Arabic Subtitles)

### ZEE TV

5:30 Surtal 6:00 The News  
6:30 Jagran 7:00 ZED 8:30  
Dream Merchants 9:00 Hum  
Zameen 9:30 Gaane Anjane  
10:00 Salaab 10:30 Positive  
Ghar 11:00 Dak Ghar 11:30 Gopal-  
jee 12:00 Suno Suno Tring  
12:30 Celeste 1:00 ZED (Serial)  
1:30 Asian Sky Shop 2:30 Tara  
3:00 Kurushetra 3:30 Mere  
Gher Ana Zindagi 4:00 Mano  
Ya Na Mano 4:30 Lijjat Khana  
Khanaza 5:00 ZED 5:30 Akbar  
Bartal 6:00 Cartoons 6:30 Love  
Story 7:00 ZED 7:30 Gaane  
Anjane 8:00 Toi Moi Ka Bol  
8:30 TVS Sa Re Ga Ma 9:30  
Campus 10:00 Daraar 10:30  
The News 11:00 Shayad 11:30  
Close Up Antakshari 12:00  
Parivartan 12:30 Andaz 1:00  
Malabar Hill 1:30 Apollite Arabic  
Ap Ki Pasand 2:00 Arabic  
Programme 4:00 Index 4:30 All  
Out For No Loss 5:00 Jagran

### PTV

8:00 am Tilawat Aur Tarjuma-  
Hamid/Naat 8:20 Cartoon 8:30  
9:05 Khat Farmaish 9:20  
Sargam Sargam 9:45 Ilaai-Bil-  
Gaiz Pakistan 10:05 Shab  
Daigh 10:35 English Film Gool  
Troop 10:55 Milli Naghma  
11:00 Khabrain 11:10 The  
Saint (Roger Moor) 12:00  
Jama (Drama Serial) 12:55pm  
Quran-e-Hakeem 1:00 Barnhill  
1:15 Angaar (Drama Serial)  
2:00 Sherkard (Drama Serial)  
2:50 The Face Of Cultural 3:15  
Roushni 3:30 Paimaney 4:00  
Gharani 4:35 Biology for 10th/  
Geography/ Chemistry 5:55 in

### ter College Quiz 6:25 Aio

Courses 7:00 Tararum (Drama  
Serial) 7:45 English News 8:00  
Poetry 8:10 Al Bala 8:45 Tum  
Se Kahani Tha (Serial) 9:00  
Break For Headline News 10:00  
Khabrain 11:15 Classics  
Drama Serial: Janghes 12:20  
Special: TBA 1:00 Khas Khas  
Khabrain/ Close down

### SONY ET

8:30am Yaadon Ki Baarat 9:00  
The Three Stooges 9:30 Den-  
The Menace 10:00 Dream  
Of Jeanne 10:30 Surf-Wheel  
Of Fortune (Game Show) 11:00  
Cover Story-Hostel 11:00  
12:00 Mere Message Meri Geet  
1:30 Baat Ek Raz Ki (Serial)  
2:30 Cine Matinee-Hindi Feature  
Film 4:30 The Rasoi  
Show 5:30 The Three Stooges  
6:00 Mere Message Meri Geet  
6:30 Dennis The Menace 7:00  
Premier 7:30 Dream Of Jean-  
ne 8:00 Surf-Wheel Of Fortune  
8:30 Taak Jhaank 9:00 Jevan  
Murti (Serial) 9:30 Yeh Sadi  
Nahi Ho Sakti 10:00 Chamfari  
(Drama Serial) 10:30 Ghave  
11:00 The Young And The  
Restless 12:30 O'Maria (Serial)  
1:00 Pehli Mulakat 1:30 Surf-  
Wheel Of Fortune 2:00 Premier  
2:30 Closed

### DD 7

10:30 Janmadin 10:35 Educ  
Prog 11:00 Nazrudgeeti 11:15  
Folk Songs 12:30 Ek Sapna  
Gaan 1:00 Janani 1:30 Mono-  
rama Cabin 2:30 Ek Din Sur  
3:00 Gaan Niye/Darpan  
3:30 Isha 5:05 Nepali  
Programme 5:30 News 5:35 Desh  
Bidesher Khela 6:00 Pali Katha  
6:30 Batayan 6:55 Arsi 7:30  
Bangla Sambad 7:55 Dinidin  
8:00 Dik Darshan 8:45 Sap-  
tahiki 9:00 Janani 9:30  
Pracheer 10:00 Bengali Movie  
Club Film Show 1:00 Closed

### EL TV

12:30am Shammii Kapoor Special  
1:30 Dance Dance 2:30  
Jugal Jodi 3:30 Party Time 4:30  
Tarane Aur Fasane 5:30  
Shammii Kapoor Special 6:30  
Dance Dance 7:30 Jugal Jodi  
8:30 Party Time 9:30 Tarane  
4:30 Emami The Real Court

### Down 5:00 Talaash 5:30

Jhoomo Nacho 6:30 Its My  
Combination 7:30 Siyaram Kamal  
7:30 To Be An-  
nounced 8:00 Fat Of Fit 8:20  
Kinetic Haseen Pal 8:30 Sory  
Mery Lory 9:00 Zandu Balm  
Dance Mania 9:30 Karz 10:00  
Chalo Cinema 10:30 Stand By