

CIVIL SERVICES MAIN EXAMINATION 2012

General Studies

Tracing trendless trends

We are presenting the model answers for General Studies (Mains examination 2012). The paper has given once again a new trend in dealing with GS paper. The UPSC has further tried to delink the textbooks and prepared materials. This time the national issues got top priority and the conventional parts of Modern History and Indian Polity were totally given a secondary treatment. This indicates that the day-to-day coaching classes have nothing to do with the examination requirements. Most of the questions are fact based and if someone does not know about that nothing can be done. Some of the questions check your ability to link the things impromptu, i.e., at spot orientation of facts and concepts in relation to the given scope of the answer. In this regard, it becomes necessary for the examinee to understand the scope, context and dimensions of the question. For this, a thorough study is needed and traditional notes cannot be enough to meet such challenges.

GENERAL STUDIES - Paper ONE

1. Answer any five of the following in about 250 words each: 25x5=125

(a) What do you understand by the term "Innovation"? Discuss the need for launching a national innovation policy in India.

Answer: Innovation generally refers to renewing, changing, or creating more effective processes, products, or ways of doing things. Innovation is mainly composed of two parts - (a) The generation of an idea or invention and (b) The conversion of that invention into a business or other useful application. In order to remain competitive, every organisation looks towards innovation because constant injection of new ideas keeps an organisation progressive and gives them an edge in the marketplace, especially in today's globalized marketplace. Unlike the developed countries and other emerging economies like China, the share of private sector in R&D expenditure is only about 24 per cent, while the remaining three-fourths is accounted for by the public sector. In the world of patent and intellectual property rights, India definitely needs to develop further and strengthen a culture of innovation. In order to face the twin challenge of inclusive development and sustainable development, India needs an effective national innovative policy that will provide greater technological inputs. Innovation as a national policy agenda certainly makes eminent sense for fast expanding our body of knowledge, termed as the economics of innovation. The national innovation policy will help to cater incentives and frameworks to shore up a much broader set of innovation inputs that just Research and Development. India needs to adopt more focused policy to boost academic research nationally that will promote more global R&D in India, which in turn will boost FDI in the core innovative sectors in the country. Thus, it can be said that the proposed National Innovation Policy will help to revamp the entire national system of innovation for holistic, comprehensive innovative effort.

(b) Keeping in view the informal sector's share in the total workforce of the country, critically examine the relevant inclusive measures initiated by the Government of India and their effectiveness.

Answer: Only 15.6 per cent of the total workforce had regular wage employment/ salaried work during 2009-10 while 33.5 per cent was casual labour and 51 per cent was self-employed. **Rashtriya Swasthya Bima Yojana (RSBY):** The RSBY was launched on 01 Octo-

ber 2007 to provide smart card-based cashless health insurance cover of Rs. 30,000 per family per annum on a family floater basis to BPL families (a unit of five) in the unorganized sector. The scheme became operational from 01 April 2008. The premium is shared on 75:25 basis by the centre and state governments. In the case of the northeastern states and Jammu and Kashmir, the premium is shared in a 90:10 ratio. More than 2.55 crore smart cards have been issued.

The Unorganized Workers Social Security Act 2008: The Act came into force from 16 May 2009 with the objective of providing social security to unorganized workers. The Unorganized Workers-Social Security Rules 2009 have also been framed. Constitution of the National Social Security Board in 2009 was another significant step. The Board recommended that social security schemes, namely the RSBY providing health insurance, JBY providing death and disability cover and Indira Gandhi National Old Age Pension Scheme (IGNOAPS) providing old age pension be extended to building and other construction workers, MGNREGA workers, Asha workers, Anganwadi workers and helpers, porters/coolies/gangmen, and casual and daily wagers.

The Government has approved the constitution and operation of the National Social Security Fund for unorganised sector workers with an initial allocation of Rs 1,000 crore. The fund has been created with the aim and objective of providing social security schemes for various segments of unorganised workers like weavers, toddy tappers, rickshaw pullers, beedi workers etc. It is an irony that around 94 per cent of India's workforce is in the unorganised sector and most of the workers of the unorganised sector do not have social security cover in the form of life or disability insurance, health care and pensions. The fund will also facilitate evolution and funding of schemes by various departments which are currently involved in welfare of these segments of workers. Ministry of Finance is the custodian of the National Social Security Fund and the Ministry of Labour & Employment has been designated as the nodal ministry for operation of the fund.

Source: CST May 2012, Page No. 227, Column 2 and CST June 2012 Page 268 and column 1.

(c) Examine the causes and the extent of 'desertification' in India and suggest remedial measures.

Answer: The hot arid regions of India lie between 24° and 29° N latitude, and 70° and 76°

● It has to be mentioned that although the number of questions were reduced in 2012 but the word limit has remained more or less the same. For example in 2010, there were 44 questions and those questions were to be answered in stipulated 3,520 words. In 2011, there were 38 questions and were to be answered in 3,390 words and in the year 2012 although the numbers of questions were reduced to 33 questions but those questions were to be answered in 3,150 words. It means that once again the emphasis is shifted on 250/150 words writing instead of 20/50 words.

● It has been observed that proper classification of Paper I and Paper II has been not followed by the UPSC. In fact Paper I has been become more unpredictable in nature and it needs better reinforcement from the newspaper update. All the recent schemes and documents of the Central Government and even State Governments should be carefully compiled. Besides that all the Acts and provisions should be taken care of. The margin of error is becoming less and proper understanding of the requirements and scope of the question needs to be done before the formulations of the answer. Once the scope and the requirement is the question is derailed it is very difficult to come back and rectify them.

E longitude, covering an area of 31.70 million hectares, and involving seven states: Rajasthan, Gujarat, Punjab, Haryana, Andhra Pradesh, Karnataka, and Maharashtra.

Source: CST Mains Examination 1, Page No. II. 33, Column 1 and 2.

The Space Application Centre in 2007 brought out the Desertification and Land Degradation Atlas which shows 81.45 million hectare land in the country has turned into arid, semi-arid or dry sub humid region.

India has always maintained that desertification is a function of the interplay of a number of causative factors and thus only a multi-sectoral approach alone will be able to arrest and reverse the process of desertification. The three schemes of Desert Development Programme, Drought Prone Area Programme and Integrated Wasteland Development Programme have been consolidated into a single programme of Integrated Watershed Management Programme (IWMP) with effect from 1st April, 2008. Other initiatives include sustainable Land and Ecosystem Management (SLEM Programmatic Approach) 2007; Common Guidelines for Watershed Development Programme- 2008; Integrated Watershed Management Programme (IWMP) and Guidelines for Convergence between NREGA and NAP 2009.

As a part of the development of Dry zone Agriculture, special schemes like National Oilseeds Development Project and National Pulses Development Project have also been started. But there are many constraints to these programmes like non-demonstration of the developed technology, unprepared lands before hand leading to loss of valuable time during limited rainfall, non-subsidisation of inputs, least motivation among farmers, lack of NGO's, non-percolation and extension of innovation etc. Development of cottage and village industries is necessary to minimise the extent and intensity of seasonal and disguised unemployment in the area.

Source: CST February 2012, Page No. 28, Column 2 and page No. 29, Column 1.

Dry farming areas are rich in natural resources - stone, limestone, khair, medicinal herbs, wood, tobacco leaves and tendu leaves. The cottage industries in arid and semi-arid areas based on these natural resources will be helpful in mitigating rural employment.

Appropriate support should be given to decentralised user-centred approach which provides opportunities for broad-based participation through 'Pani-Panchayat' in the Panchayati Raj system, including shared control of water resources and responsibility particularly to women groups.

Though global changes of various kinds have

heightened the bio-physical vulnerability of the dry tropical ecologies to natural catastrophe, unprecedented increase in population, large withdrawals of ground water resources, land degradation, deforestation and movement of capital to high climatic risk areas exposed to periodic droughts have contributed to unsustainable agricultural production in these areas.

Source: CST Mains Examination 1, Page No. II. 32, Column 1 and 2

(d) In the context of the growing demands for the ban of Endosulfan in the country, critically examine the issues involved. What, in your view, should be done in the matter?

Answer: In its response to a petition filed by the Democratic Youth Federation of India, the central government has told the apex court that endosulfan is unlikely to cause any public health concern or hazard and therefore, it is not the reason behind health problems in Kasargod, Kerala. In this regard, the central government told that there is an overall weight of evidence from in-vitro and in-vivo screening tests that Endosulfan is not an endocrine disruptor. It is reported that Endosulfan is either carcinogenic or mutagenic.

Source: CST June 2012, Page No. 274, Column 3

The centre to the dismal of various sufferers of the toxic pesticide Endosulfan has asked the supreme court in an affidavit to allow the exhaustion of internationally banned Endosulfan stock for agriculture use in states except Kerala and Karnataka on the grounds that its incineration will cost a whopping 210 crore. Centre has also argued that phasing the pesticide out will not only save the exchequer money but also help in agriculture production.

Endosulfan pesticide is an Organochloride insecticide that was banned globally in May 2011 under the Stockholm convention but is still used extensively in countries like India and China, in India it is manufactured by three major companies namely Excel crop care, Coromandal fertilizers and state owned Hindustan insecticides limited (HIL). It is used in various plantations crops in India such as cotton, cashew, ornamental plants etc and is seen to increase the yield output because of its superior effectiveness against major pests. Nonetheless Endosulfan has various harmful side effects such as reproductive and developmental damage in animals and humans alike, it has already taken lives of more than 500 people due to excess use in cashew plantation in Kasargod, Karnataka. Considering all these developments, the use of endosulfan should be banned.

Source: CST September 2012, Page No. 129, Column 1 and 3

● In the year 2012, we saw that the UPSC did not ask any question on historical personalities. The questions on culture were utterly unpredictable and unmanageable. Some of the questions were very specific and it was almost impossible to control them. This promotes conjectural answers and sans the purpose the examination. The examinee must try to consolidate the predictable questions and does not heed to much to those speculative and remote questions. Overall, these questions do not make a huge sense in getting the paper done.

● Once again the relevance of Modern India is on a declining trend but it should not be treated as a benchmark and a deep and wide study of the material should be needed and for this along with NCERT Class XI and XII, one should also refer Grover and Mehta along with Tara Chand Vol. 3 and 4. Bipan Chandra's India's struggle for independence is still the basic text. The area wise spread of mass movement, along with tribal, caste, civil rebellion should be done from Sumit Sarkar. The trend indicates that the questions are basically asked on wider perspective and it requires immediate ability to sum up those developments within limited time and space.

(e) "The Indian independence movement was a mass-based movement that encompassed various sections of society. It also underwent the process of constant ideological evolution? Critically examine.

Answer: The tribals participated due to their disruption of communal mode of production was perturbed with introduction of British legal concept of private property;

Source: July 2012, Page No. 33, Column 1

The new land tenures originated new types of land ownership and new social classes emerged in rural India. Land became a marketable commodity. The circumstances drove the peasant into the clutches of the moneylenders and the trader. Thus, the peasant was pushed deeper into the depth of poverty. India witnessed a number of peasant revolts.

Source: July 2012, Page No. 33, Column 2

The first half of 20th century saw workers and middle class alongwith middle class got an organizational character and pressurized the colonial regime to change its policy.

(a) The emergence of new trends in the national movement – particularly, the shift to mass politics and mass mobilization. (b) The economic and social consequences of the First World War which adversely impacted different sections of the Indian people. (c) The impact of Bolshevik Russia and the growth of socialistic ideas in India.

Source: CST Mains Examination 1, Page No. I. 63, Column 2

The extremists had developed systematic critique of moderates and rightly emphasized the role of the masses and the need to go beyond prayer, petition and procession. What they said, what they believed, what they conceived was very much different from moderates but what they did was what moderates had already done. Therefore, they were ideologically different but almost same in practice.

Source: July 2012, Page No. 55, Column 1

The revolutionary terrorists have consciously or unconsciously sent a message of failure to both Moderates and Extremists and proved that a vacuum had been created and thereby a new reorientation was needed. Thus they contributed to some extent to the emergence of Gandhism. They also gave the message to the younger generation that role of patience is more powerful than role of impatience in Indian context and for a long drawn movement this helped Gandhiji.

Source: July 2012, Page No. 59, Column 1

Gandhism was the most pragmatic solution to the existing problems. It was a blend of terrorism, extremism and revolutionary terrorism. The revolutionary terrorism was the last trend before the Gandhism. Its limited success

proved that it requires a different orientation in the national movement. The new trend must be a conglomeration and combination of the past trend and for this Gandhism was created.

Source: July 2012, Page No. 59, Column 2

(f) The issue of tourism in core areas of tiger reserve forests in the country is a subject matter of debate. Critically examine various aspects of this issue, keeping in view relevant recent judicial pronouncements.

Answer: In an important judgement, the Supreme Court has banned all tourism in the "core areas" of the country's 41 tiger parks. On its face value the decision of the Court is worth welcome but we cannot deny the fact that the judgement will ultimately harm the tiger population in the country. The presence of tourist and their support staff is a deterrent for poachers involved in the trading of tiger teeth, skin, and bones, which is a business worth millions of dollars. Along with forest officials, tourists provide the additional eyes and ears to keep poachers away. A complete lack of human presence in the core zones would mean no surveillance and would give poachers easy access to tigers by co-opting forest officials. Finally, the economic disadvantage that comes with this ban is that many local people depend on tourism for their livelihood and hence stoppage of tourism in core areas of tiger reserves would result in loss of such income leading to discontent which may pose a threat to wildlife and forest. Thus, we need to strictly regulate and control the wildlife tourism in the country, and placing a complete ban on any kind of tourism activities in the core areas will certainly not help the wildlife of the tiger reserves.

Source: CST October 2012, Page No. 88 and Column No. 2

CST performance: 125/125 i.e 100 per cent because except the first question, all the other questions were directly asked from CST. The candidates had to answer any 5 question out of 6 questions, therefore, it is 100 per cent performance from CST.

2. Answer any seven of the following in about 150 words each: 15X7=105

(a) "There is an urgent need for the Planning Commission to revise the chapter on health in the 12th Plan document." Comment.

Answer: Definitely, considering the poor health condition and malnutrition, the 12th Plan must take following measures like:

1. Care needs to be given right from the pregnancy levels, by addressing all the critical stages of the birth and development of the baby. This is at present taken by integrated child de-

● In the Geography section, there is much emphasis has been given on dryland farming, arid and semi-arid zones, agro-forestry, organic farming, contract farming, rainfed farming system, slum, urbanisation, sanitation, migration, demography and rural settlement. Only a detailed compilation of Indian physiographic division is the most important chapter in this context. Besides that questions related to multipurpose projects, sanctuaries, infrastructure - especially roads, greenfield airports, commercial ports, census, tribals, urbanization, urban planning, crop pattern, different revolution in production needs special treatment.

● The source-material for the preparation of Indian geography should relied upon the various reports of the Ministry of Agriculture, Ministry of Environment and Forests, Dr D R Khullar's Indian Geography, RS Tiwari's Indian Geography, NCERT class VII to XII. Nonetheless, the current developments published in Hindu newspaper may be also supplemented.

velopment centres across the country.

2. Iron fortification and iodine supplements in the stage of pregnancy and early childhood.

3. Improvement In the governance structures, political will food security enhancement and bringing women into the development process with decision making powers.

4. Improvement in the infant feeding, sanitation, clean water, affordable and accessible health services.

5. Community participation and grass root level approaches must be promoted.

6. Separate strategies for rural and urban areas must be chalked out. It is pertinent to involve the local government agencies viz. PRIs and other stakeholders with expertise and interest in nutrition and health; this will decentralize the operations of our hunger and poverty elevation programmes.

7. Coordination, convergence and monitoring of all government programs on poverty and malnourishment related issues.

8. Use of neo-natology and pre-natal care technologies.

9. We need to think on lines of national nutrition strategy.

Source: CST September 2012, Page No. 18, column 1 and 2.

(b) The Union Cabinet recently cleared the proposal to rename and amend the Child Labour (Prohibition and Regulation) Act, 1986. What are the salient features of the proposed amendments?

Answer: A proposal to put a complete ban on employment of children up to the age of 14 both in hazardous and non-hazardous work by amending an anti-child labour Act has been approved by the Union Cabinet. In an important decision the Union cabinet has given its nod to amend the Child Labour Act and put a complete ban on employment of children up to the age of 14 in any industry. As per the existing Act, children below 14 years of age are allowed to work in industries not considered to be hazardous. Any violation will be a cognizable offence, punishable with a maximum three years imprisonment or fine up to a maximum of Rs. 50,000. It should here be noted that Census 2001 says that there were 12.6 million economically active children in the age-group of 5-14 years while the National Sample Survey data said the child workforce during 2004-05 was estimated at 9.07 million. Banning any employment of children below 14 years will go a long way in enforcing the Right to Education Act, 2009 which mandates free and compulsory education of all children in the age group of 6-14 years. Cabinet's decision to ban child labour below age of 14 will also enable India to ratify ILO Convention 138 (minimum age for entry

to employment) and Convention 182 (prohibition of employment of persons below 18 years in hazardous occupations).

Source: CST November 2012, Page No. 126 and column 1.

(c) "Domestic resource mobilization, though central to the process of Indian economic growth, is characterized by several constraints? Explain.

Answer: Fiscal management in the Indian economy has been a challenge for the government since the beginning of economic reforms in 1991. Retirement of public debt, managing the extent of fiscal deficit and presenting excessive crowding out of investment has been the main target.

Amongst the structural weaknesses that mar the efficient management of fiscal situation in India, underdeveloped capital markets are important. Improper channelisation of savings has led to widening gap between savings and investment. This gap needs to be financed by pooling in of the resources in the form of debt. RBI raises debt on behalf of GOI from its captive markets. Funds those should have tended to move into retiring government debt. This crowding out of investment has made the process of Gross Domestic Capital Formation (GDCF) even more difficult.

Taxes which could be used to retire a part of debt have not yielded enough. The general tendency in a developing nation like India with respect to indirect taxes has been on the regressive side. Even direct taxes are not sufficient to pool in resources.

Resources could be pooled in from the underdeveloped exports market have rendered exports less competitive. Quality-wise the exports can't compete.

Moreover, frequent fluctuations in the value of currency also create weaknesses in the management of fiscal programme.

Targeting public expenditure in programmes with long gestation lags causes the resources to be blocked for a long time. These tendencies again add to the fiscal crunch. Inflationary tendencies owing to supply side bottlenecks or demand-crunch have led to variations in rates of interest and liquidity.

Again the Government has to intervene into the market. Deficit financing, if done, further adds to the disadvantages involved under inefficient fiscal management.

Source: CST August 2012, Page No. 83, column 2 and Page No. 84, column 1.

(d) The 'flute-playing Krishna' theme is very popular in Indian art. Discuss.

Answer: In Indian culture, Lord Krishna is portrayed as the eighth avatar of Vishnu. Krishna's favourite musical instrument was a flute

● Although the proportion of Indian polity was exceptional less during 2012 but this section always occupies an important position in the preparation for GS. In the Indian Polity section, both traditional and contemporary issues are important and for each and every topic a personal opinion is needed and for this best source is TMH's Laxmikanth's Indian Polity along with Subhas C Kashyap's Current Perspective on Indian Polity and PM Baskshi's Indian Constitution. Through writing practice, one has to interrelate constitutional issues with general issues and current issues.

● The current trend has supported that all the relevant socio-politico-economic topics should be prepared from opinion based point of view. The strategy to deal with opinion-based questions is to weigh both positive and negative facets of the concerned topic and then point out your conclusion by bringing out the real state of the concerned topic and this shows your ability to analyse and understand by interlinking relevant points in arriving at a particular point.

and in all his forms he is mainly represented as a flute player. His flute is considered the most important epitome of our art, culture and also has many social manifestations attached to it. His flute teaches us three important lessons i.e. (a) A flute speaks only when we want it to speak. (b) Whenever it speaks, it speaks sweetly, (c) It always remains empty inside. Since the times of Lord Krishna, the flute has been envisaged as an embodiment of Indian culture. All major ragas of Indian music have some connection with Krishna's flute. In Indian art forms, Krishna's flute symbolizes the sound of serenity and love. The flute playing Krishna is also an important embodiment in Indian dance forms and it had shown its impact on Indian painting since the Bhakti Vedanta period. It can be concluded that flute-playing Krishna symbolizes his involvement in human affairs, feelings, and Indian art forms. Thus a beautiful melody that Krishna plays can span all the emotions of a human lifetime in mere minutes.

(e) What are the salient features of the Consumer Protection (Amendment) Bill, 2011 introduced in the Lok Sabha in December 2011?

Answer: The amendment is aimed at speedier redressal of consumer grievances by overcoming several shortcomings in implementing the existing Consumer Protection Act. In fact, Delay in complying with the orders of consumer courts could invite a fine of Rs 500, or 1.5 per cent of the amount of the penalty, as the government is planning to amend the consumer act. This modification (imposition of monetary penalty) is considered essential in view of experiences gained during implementation of the Act and is intended to deter willful offenders, an official statement said here today. Another amendment aims at making provision for online filing of complaint.

The amended bill seeks to rationalise the qualifications and procedure of selection of presidents and members of the National Commission, State Commission and District Forum. Accordingly, if members of Commission or Forum continue to be office bearer of any political party even after appointment to the forum or commission, they shall face disqualification.

The minimum age for membership of the state commission has been raised to 45 years and in case of National Commission, to 55 years.

Besides, it also proposes to increase the period of experience for appointment as member in the case of State Commission from 10 years to 20 years and in the case of National Commission from 10 years to 30 years. This is proposed in order to improve the quality of persons applying for these posts. It also gives powers to the national and state commission to direct any

expert of organization to assist it in the in the cases of large consumer interest.

Source: CST March 2012, Page No. 54, Column 1 and 2.

(f) What do you understand by the term "Multi-Drug Resistant Tuberculosis" (MDR-TB)? What measures would you advocate for its containment and what are the implications of its spread in the community?

Answer: As per recent World Health Organization estimates, India has recorded about 63,000 cases of notified multi-drug resistant tuberculosis (MDR-TB) in 2010, the highest in the South East Asia region. As per data released by WHO, the percentage of MDR in newly recorded TB cases in India, estimated to about 2.1 (1.7- 2.5) per cent, while the percentage of MDR among previously treated cases was 15 (13 -17) per cent.

Source: CST May 2012, Page No. 86, Column 2 and 3.

(a) political and administrative commitments; (b) good quality diagnosis; (c) good quality drugs; (d) the right treatment, given in the right way; and (e) systematic monitoring and accountability.

Controlling TB in India is a tremendous challenge. The TB burden in India is still staggering. Every year, 1.8 million persons develop the disease, of which about 800,000 are infectious; and, until recently, 400,000 died of it- 1,000 every day. The disease is a major barrier to social and economic development. An estimated 100 million workdays are lost due to illness. Society and the country also incurred a huge cost due to TB.

Source: CST Science and Technology 2012, Page No. 375.

(g) Given the accelerated pace of development and demand for energy, would you consider renewable energy as a viable option for India's future?

Answer: Energy in India: India faces an acute energy scarcity which hampers its industrial growth and economic progress. Setting up of new power plants is inevitably dependent on import of highly volatile fossil fuels. Thus, it is essential to tackle the energy crisis through judicious utilization of abundant the renewable energy resources, such as biomass energy, solar energy, wind energy and geothermal energy. Apart from augmenting the energy supply, renewable resources will help India in mitigating climate change. India is heavily dependent on fossil fuels for its energy needs. Most of the power generation is carried out by coal and mineral oil-based power plants which contribute heavily to greenhouse gases emission. Energy is a necessity and sustainable renewable energy is a vital link in industrialization and

● There is no specific trend of asking questions related to geography, polity and history and the best way is to prepare them thoroughly irrespective of the trends of the question and their weightage in the paper. CST believes in text book reading because without this one cannot build specific opinion about the subject matter.

● For the Arts and Culture section, you have to rely on the Gazetteer of India, Volume II, published by Publications Division.

The matters are exhaustive and comprehensive and make diagrammatic notes of the various patterns and architectural designs. The architectural terms and concepts must be properly understood. There should be special emphasis to paintings, sculpture, temples, architectural style, literature and epics.

For Arts and Culture, CST 2 and 5 Marker may be sufficient but prefer Gazetteer of India, Volume II, if you have enough time. Nevertheless, in the 2012 GS paper, the question related to culture was very unexpected.

development of India. A transition from conventional energy systems to those based on renewable resources is thus necessary to meet the ever-increasing demand for energy and to address our environmental concerns.

The available renewable energy sources in India: (a) Solar Energy- It is a clean renewable resource with zero emission, has got tremendous potential of energy which can be harnessed using a variety of devices. With recent developments, solar energy systems are easily available for industrial and domestic use with the added advantage of minimum maintenance. Solar energy could be made financially viable with government tax incentives and rebates. (b) Wind Energy: Wind power is one of the most efficient alternative energy sources. There has been good deal of development in wind turbine technology over the last decade with many new companies joining the fray. Wind turbines have become larger, efficiencies and availabilities have improved and wind farm concept has become popular. It could be combined with solar, especially for a total self-sustainability project. (c) Bio-mass Energy: Biomass energy can play a major role in reducing India's reliance on fossil fuels by making use of thermo-chemical conversion technologies. In addition, the increased utilization of biomass-based fuels will be instrumental in safeguarding the environment, creating new job opportunities, sustainable development and health improvements in rural areas. Biomass energy could also aid in modernizing the agricultural economy. (d) Waste-To-Energy: Waste-to-energy plants offer two important benefits of environmentally sound waste management and disposal, as well as the generation of clean electric power. Waste-to-energy facilities produce clean, renewable energy through thermo-chemical, biochemical and physicochemical methods. Moreover, waste-to-energy plants are highly efficient in harnessing the untapped sources of energy from a variety of wastes.

Conclusion: There is an urgent need for transition from petroleum-based energy systems to one based on renewable resources to decrease reliance on depleting reserves of fossil fuels and to mitigate climate change. In addition, renewable energy has the potential to create many employment opportunities at all levels, especially in rural areas. An emphasis on presenting the real picture of massive renewable energy potential, it would be possible to attract foreign investments to herald a Green Energy Revolution in India.

Sources: CST September 2011, Page No.102 column 1, 2 3 and Page Page 103 column 1 and 2..

(h) Many food items contain "trans fats". What

do you understand by this term? Which Indian food items contain trans fats? What are the implications of Trans fats on human health?

Answer: Unsaturated fats may be converted to saturated fats by adding hydrogen atoms in a process known as **hydrogenation**. This process creates saturated fats called **trans-fatty acids**.

Sources: CST General Science, Page No. 63. Trans fats are by-products of hydrogenation, a chemical process used to change liquid unsaturated fat to a more solid fat. Structurally similar to saturated fat, trans fatty acids may have a great impact on raising total and LDL cholesterol levels. The examples include stick margarine and fats found in commercially prepared cakes, cookies, and snack foods. Total fat intake should be no more than 30 percent of your daily calorie intake.

Sources: CST General Science, Page No. 55. The research, funded by the British Heart Foundation (BHF), found that 'ultra-bad' cholesterol, called MGmin-low-density lipoprotein (LDL), which is more common in people with type 2 diabetes and the elderly, appears to be 'stickier' than normal LDL. This makes it more likely to attach to the walls of arteries. When LDL attaches to artery walls it helps form the dangerous 'fatty' plaques' that cause coronary heart disease (CHD).

Sources: CST June 2012, Page No. 113, Col 2

CST performance: 105/105 i.e 100 per cent because except the fourth question, all the other questions were directly asked from CST. The candidates had to answer any 7 question out of 8 questions, therefore, it is 100 per cent performance from CST.

3. Answer the following in about 50 words each: 5X11=55

(a) What is the 'Parivarik Mahila Lok Adalat'?

Answer: The NCW received a large number of complaints and acted suo-motoin several cases to provide speedy justice, took up the issue of child marriage, sponsored legal awareness programmes, Parivarik Mahila Lok Adalats and organized workshops/consultations, constituted expert committees on economic empowerment of the women, conducted workshop/seminars for gender awareness and took up publicity campaign against female foeticide, violence againstwomen, etc. in order to generate awareness in the society against these social evils.

Sources: CST 2 and 5 Marker, Page No. IX 7, and Column 2

(b) List the main objectives of the National Manufacturing Policy (NMP), 2011.

● In the section of topics of national importance, you have maintain a regular register to mention the developments and any incomplete and without updated information, the preparation is incomplete and therefore maintain topic wise register and with the passage of time you update them through newspapers and newsmagazines.

● For the rural-development and poverty alleviation schemes, consult the Economic Survey of India, chapter 10, i.e. Social Sector; India Year Book 2012 and if you have enough time then Yojana and Kurukshetra magazines. The topics of social relevance could be also studied from CST's 2 and 5 Marker. These topics require micro-level fact compilation and orientation.

NOTE

Time-management has become very crucial in these exams not only at the preparation level but also at the writing of answers in the examination hall. Therefore, don't kill your time and first prepare and then appear. In other words, first prepare Mains and then go for CSAT because the amount of information cannot be tackled in a few months. CST's slogan is 'First Prepare then Appear'.

Answer: (a) The policy aims to create industrial enclaves that will offer lower taxes, faster permits, and easier labour laws to boost the share of manufacturing.

(b) The policy aims to increase the sectoral share of manufacturing in GDP to 25 per cent by 2025 from existing 16 per cent.

(c) The policy seeks to empower rural youth by imparting necessary skill sets to make them employable.

(d) Sustainable development and technological value addition in manufacturing have received special focus in the NMP.

(e) The policy envisages specific interventions broadly in the areas of industrial infrastructure development and improvement of the business environment through rationalization and simplification of business regulations.

(f) A defining feature of the policy has been the endeavour to improve the business regulatory environment by providing single window clearances.

(g) The new policy proposes developing National Investment and Manufacturing Zones, or mega-industrial parks that will reduce the compliance burden on industry.

Sources: CST May 2012, Page No. 163, and Column 3

(c) Comment on the significance of Rasarnava in studying the history of Indian Chemistry.

Answer: Rasarnava by an unknown author, 11th-12th century AD text, basically described a large number of equipment or apparatus, crucibles, furnaces etc., for processing of minerals and metals. Procedures were described for making metal from maksika vimala, sasyaka etc., the first two being pyrites bearing copper, and the third copper sulphate, and the wonderful observation was made that all the three red, products seemed to be identical: Cantra or copper. In fact, Rasarnava had arranged six metals: gold, silver, copper, iron, tin and lead in the order of increasing rate of corrosion and poetically described high reactivity of sulphur with most of the metals.

(d) What are the Rights within the ambit of Article 21 of the Indian Constitution?

Answer: (1) Right to live with human dignity: In the Maneka Gandhi's case SC added another dimension to Article 21. It held that the right to 'live' is not merely confined to physical existence but it includes within the ambit the right to live with human dignity.

(2) Right to livelihood: In 1993 in the case of DK Yadav v. JMA Industries the SC held that the right to life enshrined under Article 21 includes the right to livelihood. The procedure prescribed for depriving a person of livelihood must meet the challenge of Article 14 and so it must be right, just and fair and not arbitrary

and illegal.

(3) Right to privacy: In 1997 in a historic judgement in People's Union for Civil Liberties v. Union of India (Phone tapping case) the SC held that telephone tapping should not be restored to by the State unless there is public emergency or interest of public safety requires.

(4) Right to die: In P.Rathinam v. Union of India (1994); SC held that the right to live in Article 21 of the constitution includes the right not to live therefore the Section 309 of the IPC was violative of Article 21 and hence it is void. But in 1996 in the case of Gian Kaur v. State of Punjab SC overruled the P.Rathinam's case and held that right of life under Article 21 of the constitution does not include right to die or right to be killed. "The right to die, inherently inconsistent with the right of life as is death with life. The apex court made it clear that the right to life including the right to live with human dignity would mean the existence of such a right up to the end of natural life.

(5) Right to get pollution free water and air: In 1991 in the case of Subhas Kumar v. State of Bihar, it has been held that public interest litigation is maintainable for ensuring enjoyment of pollution free and air which included the right to live under Article 21 of the constitution.

(6) Protection of Ecology and Environmental Pollution.

(7) Right of Education:

(8) Prisoner's Right and Article 21: Even a convict is entitled to the precious right guaranteed by Article 21 and he shall not be deprived of his life or personal liberty except according to procedure established by law.

(9) Right to free legal aid: The right to free legal aid and speedy trial are guaranteed FRs under Article 21. Article 39 A provides 'equal justice' and free legal aid'. It means justice according to law.

(10) Right against solitary confinement: SC in the case of Sunil Batra v. Delhi Administration (1978) held that whether solitary confinement imposed upon prisoners who were under sentence of death was violative of Articles 14, 19, 20 and 21 of the Constitution.

(11) Right to Speedy trial: Speedy trial is the essence of criminal justice. In the case of AR Antuley v. RS Nayak in 1992 the SC held that the accused couldn't be denied the right of speedy trial merely on the ground that he had failed to demand a speedy trial.

Sources: CST Indian Political System, Page No. 168 and 169.

(e) Comment on the significance of the Preamble contained in the Right to Information Act.

Answer: The basic object of this Act is to empower the citizens, promote transparency

● At the preparation level, the important aspect is the review of the previous question papers of the last thirty years. This gives a lot of ideas about the changing trends of the paper and also your requirement of the material and its quality to meet the standards of the question. This will enable you to assess your preparation level and discourage a 'touch and go approach' of the candidates and their coaching institutes. A complete self-preparation is needed under the guidance of newspapers and newsmagazines.

NOTE

The coaching institutes have an instrumental role to play in shaping your preparation but their role is limited and don't give them importance if they overstretch their role to confuse you. In this realm you must clarify the requirements of the examination and a specific source and material to tackle them. Ask them to match the required level of the material and mind it in UPSC nothing guaranteed and nobody can claim one's mastery and UPSC gives every time a lot of lessons to learn and act.

and accountability in the working of the Government and make our democracy work for the people in real sense. It goes without saying that an informed citizen is better equipped to keep necessary vigil on the instruments of governance and make the government more accountable to the governed. The Act is a big step towards making the citizens informed about the activities of the Government allowing to the share power with the humblest and poorest of the society.

Sources: CST Indian Political System, Page 53, and Column 1

(f) To implement one key recommendation of the Mohini Giri Committee, the Government has recently announced the constitution of a National Council. Highlight the composition and the mandate of this National Council.

Answer: In order to improve the social sector reforms, the Union government has given its approval to constitute the National Council for Senior Citizens to advise the Central and State governments on issues relating to the welfare of senior citizens. In order to improve the quality of life of senior citizens, the council will form suitable policies, programmes, and legislative measures. The major aim of the council will be to promote the physical and financial stability of our senior citizens so that they are able to live a dignified life. It is here mentioned that setting up of such a council was one of the recommendations made by an experts committee headed by Mohini Giri in the draft National Policy on Senior Citizens.

The Council will be chaired by the Social Justice and Empowerment Minister and will include the Minister of State in the Social Justice and Empowerment Ministry, oldest members of the Lok Sabha and Rajya Sabha, representatives of five state governments (one each from the North, South, East, West and North-Eastern regions) and one union territory by rotation, five representatives each from senior citizens' associations. The Council will be anchored in the Social Justice and Empowerment Ministry.

Source: CST April 2012, Page No. 127, Column 1 and 2.

(g) Comment on the recent launching of the National Mission on Libraries (NML).

Answer: The government of India has launched the National Mission on Libraries (NML) with the aim and intention to modernise and digitally link almost 9000 libraries across the country in a bid to provide readers access to books and information. The launch of NML is very important for India because it will assist in preparing long term plans and strategies for development of the library sector, including conceptualization and approval of

projects and preparation of a "National policy on Library and Information Systems for India". The NML will focus on improvement of the public library system of the country particularly concentrating on the states where library development is lagging behind. For the successful execution of NML it is quite important that the state governments, and municipalities and panchayats pay special attention towards setting up and maintenance of public libraries, including community, locality, and village libraries.

(h) What are the groups into which musical instruments in India have traditionally been classified?

Answer: 'Instruments must speak' was the axiom and if any instrument failed to produce what the human voice could, it was contemptuously referred to as Suska Vadyam-dry instrumentalism. Govind Dikshit fixed the frets of the southern vina, so that all the ragas could be played. Prior to this, the frets were movable and their numbers varied.

A large number of instruments particularly of the stringed variety were evolved out of the old forms. Tradition links names of certain musicians with some of these instruments like vicitra vina with Abdul Aziz Khan and Surabhar with Omrao Khan. There is also some evidence to the effect that dilruba, esraj and sarod were evolved during this period and sarangi was lifted from its place in the folk music and established as a respectable court instrument. Vina has always been the foremost traditional instrument.

The nom-tom in raga-alap of Hindustani music, the tanam in Karnataka music, the bols of tarana, the various gamaks or graces and other musical accents in both Hindustani and Karnataka music are obviously based on nuances which appeared in the perfecting of the accompanying instruments.

Source: CST Mains Examination 2, Page No. VI.36 and Column No. 1 and 2

(i) Comment on the significance of fire in Zoroastrianism.

Answer: Fire, the provider of heat and light plays an important role in the religious ceremonies of Zoroastrians. In Zoroastrianism, Fire is scrupulously tended with sandalwood and frankincense and is kept burning in a silver urn in the inner sanctum of every Zoroastrian 'fire-temple' also called a 'Darbe Mehr'. For Zoroastrians Fire is a symbol of Illumined Mind, Enlightenment, and Truth.

(j) Why is Laurie Baker called 'the conscience keeper of Indian architecture'?

Answer: Laurie Baker, an Indian architect of British origin is aptly called the conscience keeper of Indian architecture because he add-

● For the last four-five years, UPSC has emphasized on various Acts and amendment bills and even those bills which were enacted before three-four years back and are pending in different Houses. This is a big challenge for us. Even CST has decided to list and give details of the various acts and bills of the last five years. In March 2012 and April 2012 issues we had tried to list the schemes and Acts and ultimately this time, we have managed perform relatively better.

NOTE

The recent trend of UPSC paper indicates that days of classroom teaching is over. The roles of prepared materials are limited. Besides, them one has to go for broad-based opinion on any subject-matter. There should not be any inconsistencies or discrepancies at the perception level.

A very clear and relevant perception has to be evolved in course of time. The UPSC believes that the candidates must have a sense of proper awareness and originality.

ed modernity to Indian sense of architecture. India will always remain in debt to him as he focused on converting or replacing asylum into cost effective architecture style. He gave the concept of building affordable homes for the poor; he was also a unique creative artist, who always had in mind the concept to create unique sense of space for building low cost yield high architectural quality homes for everyone.

(k) You are stationed in a small district town in the plains of Northern India, the summer has been severe. Suddenly, a colleague, who had been out since morning, returns to the office complaining of headache, restlessness and confusion. Shortly, he becomes unconscious. His body temperature is 40°C. What first aid steps would you take to revive him?

Answer: My first task will be to identify what precisely has happened to my colleague. Judging by his conditions I will not waste a single minute to identify that he is suffering from heat stroke because when the body temperature reaches 104 degrees Fahrenheit (40 degrees Celsius), a person is believed to be suffering from a serious condition called heat stroke.

(i) First aid must be immediate and consist of measures to bring the temperature below at least 102° F.

(ii) I will move my colleague out of the sun and into a shady or air conditioned space.

(iii) This will be accompanied by rubbing the victim's skin with cold water or alcohol.

(iv) I will give him plenty of cold water or other non-alcoholic beverage to drink, if he is able to.

(v) Meanwhile, I will also call an ambulance to rush him to hospital for proper medication.

CST performance: 30/55 i.e around 55 per cent as six questions were directly asked from CST. The candidates had to answer outrightly 11 questions. There were no options. This makes the third segment very tough and besides that the questions on culture were really challenging.

4. Comment on each of the following in about 20 words each: $2 \times 5 = 10$

(a) The significance of Patharughat in the Indian freedom struggle

Answer: 140 unarmed peasants who fell to the bullets of British military police in 1894. It was J R Berington, officiating commandant of the military police, who ordered the firing against hundreds at Patharughat in Darrang district when they protested against the British government policy of imposing exorbitant taxes.

(b) Bagurumba folk dance

Answer: Bagurumba is the most attractive dance of the Bodo community. Girls dressed in colourful attires perform this dance in tune of Bodo traditional musical instruments.

(c) Determining the 'value' assigned to the vote of a Member of a State Legislative Assembly and of a Member of Parliament in the Indian Presidential elections.

Answer: Value of each MP's vote =
Total value of all MLAs / Elected MPs
or $5,49,474 / 776 = 708$

(Lok Sabha + Rajya Sabha)

Total value of votes for Parliament = $776 \times 708 = 5,49,408$

Total value of votes for MLAs = $MLAs (4120) + M.Ps (776) = 4896$

Total value of 4896 electors for the Presidential election 2012 = $549474 + 549408 = 1098882$

Value of vote of each Member of Legislative Assembly (rejecting the remainder less than 500 but in creasing the number by one if the remainder is five hundred and more).

Source: CST September 2012, Page No. 25, Box.

(d) Significance of the SPOT-6 rocket launch for ISRO.

Answer: The PSLV in its 22nd flight (PSLV C-21) launched the French earth observation satellite SPOT 6 along with a micro satellite from Japan in to a 655 km polar orbit inclined at an angle of 98.23 degree to the equator. With a lift-off mass of 712 kg, SPOT 6 is the heaviest satellite to be launched by PSLV for an international customer.

Source: CST November 2012, Page No. 126, Box.

(e) Issues highlighted through the work of Palagumrni Sainath

Answer: An Indian journalist and photojournalist has mainly focused on social problems, rural affairs, poverty and the aftermaths of globalization in India and suppose to be a great experts on famine and hunger.

CST performance: 04/10 i.e around 40 per cent as two questions were directly asked from CST. The candidates had to answer five out of five questions. There were no options. This makes the fourth segment very unpredictable and intractable.

5. Why have the following been in the news recently?. (Answer to be in one sentence only).

$1 \times 5 = 5$

(a) P.V. Sindhu: The 17-year-old took a giant leap towards confirming that status with an incredible victory over newly-crowned Olympic champion Li Xuerui, 21-19, 9-21, 21-16, in the quarterfinals of the China Masters Super Series in Changzhou.

● UPSC has introduced situational questions in which they ask for your opinion and action over a given situation. CST suggests that bring out practical suggestion and always maintain relations with existing resources and any suggestion beyond the level available resources should be discouraged. At the same time, your answer should be based on both preventive and curative level and the suggestion should not be utopian. It tests the IQ and rational faculty of the candidate.

(b) Aditya Kumar Mandi: Winner of the Sahitya Akademi Award, 2011 for *Banchao Larchai* in Santali.

Source: CST June 2012, Page No. 135 and Column 2.

(c) Cyrus Mistry: Cyrus Mistry, the Managing Director of Shapoorji Pallonji Group has been announced by Tata Sons to succeed Ratan Tata, when Ratan Tata retires. Cyrus Mistry, the son of Pallonji Mistry, Chairman of the Shapoorji Pallonji Group that holds 18 per cent stake in Tata Sons, will take over the reins when Tata retires in December, 2012.

Source: CST June 2012, Page No. 159 and Column 1.

(d) Ashoke Sen: Ashoke Sen, a theoretical physicist and string theorist at Allahabad's Harish Chandra Research Institute, has been awarded with one of the world's most prestigious and richest academic awards of \$3 million, which is almost three times higher than that of Noble Prize.

Source: CST October 2012, Page No. 132 and Column 3.

(e) Mario de Miranda: Legendary cartoonist of India Mario Miranda, who left an indelible stamp of the Goan ethos on the national consciousness, has died. He was conferred India's highest civilian awards - the Padma Shri in 1988 and the Padma Bhushan in 2002. **Source:** CST June 2012, Page 178 and Column 3.

CST performance: 04/51.e around 80 per cent as four questions were directly asked from CST. The candidates had to answer five out of five questions. It has to be noted that the news on P V Sindhu was taken on 15th September 2012 which means that the questions were set only a few days before the examination and not a month before.

OVERALL PERFORMANCE
268 out of 300 i.e around 90 per cent of the First Paper. We have excluded the opinion-based questions. We expect that a candidate who has attempted 260 effectively can be satisfied. ■

GENERAL STUDIES - Paper TWO

1. Answer any four of the following in about 250 words each: (25×4=100)

(a) Do you think that China's emergence as one of the largest trading partners of India had adversely affected the settlement of the outstanding border problem?

Answer: China is India's largest trading partner. China and India have agreed to endeavour to raise the volume of bilateral trade to US\$ 100 billion by 2015. China is India's largest trading partner in merchandise.

India and China have agreed to stay committed to deepening bilateral investment cooperation, further opening markets, and improving the investment environment in India and China so as to lay a solid foundation for pragmatic cooperation between the businesses of the two countries on the basis of complementarities, mutual benefits and win-win outcomes.

India wants to increase its exports to China, and China hopes to raise the issue of allowing its commodities with a competitive edge to enter the South Asian country. India and China have agreed to enhance co-operation in infrastructure development, particularly in the railway sector on the basis of mutual complementarities and benefit. The two sides also agreed to strengthen communication on macro-economic policies, share development experiences and enhance coordination in addressing economic challenges.

The Strategic Economic Dialogue which is partly aimed at boosting mutual trust, will enhance

cooperation between China and India in various fields and help the two countries find solutions to common problems. This will help promote the long-term economic development of the two economies and will have a profound impact on people in China and India.

Source: CST Foreign Policy of India, Page No. 140-141.

Considering developments at diversified levels, one can say that the border disputes have become irrelevant and taken a back seat. It cannot be said that the recent economic and strategic developments have affected the outstanding border issues. Nonetheless, the 15th round of boundary talks with India had yielded "positive progress" by upholding the need to maintain peace in border areas and giving a push to the process of framework negotiations to settle the longstanding border dispute. The talks resulted in the signing of an agreement for setting up a mechanism to avert any untoward incident on border.

Source: CST Foreign Policy of India, Page No. 148.

(b) Discuss the globalization of R&D and its impact on India's development. Provide an illustration from at least one sector such as Information Technology or Health.

Answer: In the era of globalization no nation is in isolation. Similarly in the field of research and development (R&D) globalization has caught its grip on each patent, innovation, research, invention and development taking

NOTE

For current personality and short news, one can rely on newspapers and newsmagazine. For this maintain a regular note to mention the newsmakers and their details. Unlike common view, this time UPSC has covered till 16th September 2012, i.e., almost 15-20 days before the GS paper. Therefore, span of current news has further widened. CST advises all candidates remain in touch with current news especially the personalities till the last week of the exams.

● In nutshell, it can be concluded that UPSC has started to balance the conceptual, contextual and factual orientations of a candidate and any imbalances between these three components may acquire dangerous proposition. For this one has to read, write and internalize the information. In other words, the preparation of UPSC has three stages: (a) acquiring of facts and figures; (b) internalizing them through reprocessing to develop a natural link between two concepts; and (c) reproducing them on paper through writing practice for better articulation.

Paper II

General Studies Paper II represents a classical combination of facts and concepts. It requires the ability to formulate, coordinate and articulate the facts within word limit. The basic requirement is the time management. In addition, for this, a lot of practice is needed. In 2012, the paper was very specific and needed much greater compression of points and facts than previous year's questions.

place in any part of the globe. Various countries have to conform to the rules of world intellectual property organization (WIPO) regarding patent laws. This has huge implications for the Indian pharmaceutical companies which are known worldwide for their cheap and affordable drugs. In India the apex body for formulating, coordinating and promoting biomedical research is Indian council of medical research (ICMR) situated in Delhi. Some of the major centers/institutes working under the aegis of ICMR are institute of pathology, centre for research in medical entomology, national institute of virology, vector control research centre, national aids research centre etc. Parallel to ICMR there are councils such as central council for research in ayurveda and sidha (CCRAS), central council for research in unani medicine (CCRUM), central council for research in homeopathy (CCRH) and central council for research in yoga and naturopathy (CCCRYN) that engage in conducting clinical research in health care, drug research, toxicology, drug standardization etc. The breakthrough development in R&D relating to international standards came when India and United States of America signed a memorandum of understanding (MOU) for setting up a global disease detection centre in New Delhi for research in detection and response to emerging infections. Globalization has helped in not only mitigating certain tropical diseases such as malaria, cholera, typhoid etc via new researches and development but also by setting up institutions to enhance human capacity in R&D.

(c) Discuss the contentious issues that have caused the prolonged constitutional logjam in Nepal.

Answer: The parties failed to revive the old CA due to the impasse created on the question of federalism as proposed by the old CA. Parties stuck to their stated positions on the names, numbers, and boundaries of federal states. The Maoists and Madhesi parties stood for either 10 or 14 primarily identity-based states, as recommended by the CA committee and State Restructuring Commission concerned. The NC pushed for 11 states, which would have carved out the Tarai plains into five provinces, and the UML argued in favour of a seven-state model. Though ruling partners in the coalition government, UCPN (Maoist) and UDMF, had proposed to settle the disputes related to the constitution writing and revive the CA for a short period to promulgate new constitution, but they could not forge consensus on the reinstatement as no parties showed flexibility on their stances, mainly on the restructuring of the state. NC and UML leaders put strong reservation

on the Maoist proposal to reinstate the CA. Conducting fresh elections to select a new Constituent Assembly is the only available solution to Nepal's constitutional deadlock. Fresh elections will end the debate whether the dissolved CA should be revived or not. Another point of disagreement among the political parties is regarding the formation of national unity government and under whose stewardship the fresh elections should be held. While the ruling coalition wants Maoists to continue heading the government with other parties joining it, NC is insisting on taking that role.

Source: CST November 2012, Page No. 23, Column 2 and Box.

(d) The human population is slated to grow to 9 billion by 2050. In this context, many scientists predict that plant genomics would play a critical role in keeping out hunger and preserving the environment. Explain.

Answer: The establishment of the Centre followed several years of intensive research on various facets of both fundamental as well as applied aspects of plant molecular biology, under the auspices of the DBT-sponsored Centre for Plant Molecular Biology (CPMB) in the School of Life Sciences, Jawaharlal Nehru University, New Delhi. Consequently the research projects of four principal investigators who initiated the CPMB constitute the ongoing research programme of the Centre. With the identification of chickpea (*Cicer arietinum*) as a mandate crop of the Centre to pursue genomic studies, the focus of the research is slowly shifting to chickpea genomics.

Source: CST Science and Technology 2012, Page No. 735-736.

▶ New studies have been launched on signal transduction, floral development and root differentiation. A Solanaceae Genome initiative has also been launched focusing on sequencing of chromosome 5 of tomato and functional genomics studies for nutritional quality, disease resistance and fruit ripening.

▶ Studies are also being supported on some important floricultural crops—chrysanthemum, orchids, carnation, rose and gladiolus. In plantation crops, demonstration of tissue culture raised black pepper is being conducted in 4 states, 63 ha has already been covered.

▶ Under Horticulture crops, the thrust has been on post harvest improvement through molecular approaches for important crops such as tomato, banana and grapes. Protocol is being standardised for large-scale multiplication of apple rootstock.

▶ In the area of plant tissue culture studies continued for protocol refinement of identified priority species and large scale production for demonstration of bamboo, eucalyptus and arid-

● CST has been told by some people that we give too much emphasis on international developments and international relations.

In an era of globalization and economic driven world, the politics and policies are deeply governed by imperatives of economic relations. For this, Foreign Policy of India of CST may provide a strategic base to your knowledge level from where you can develop your own understanding and start co-relating with the contemporary and current developments. In this section special emphasis should be made on neighbouring countries and shifting Indian foreign policy especially 'Look East Policy', 'Look West Policy' and South-south cooperation.

● For international relations Hindu newspaper is may be regarded as a very authentic source to keep pace with the current development of the events. The editorials of the newspaper must be read and summary should be written in 200 words. This will enhance your power of comprehension.

zone species.

▶ A new network programme has been initiated on production and demonstration of quality planting material of bamboo in different locations.

▶ In the case of coffee, 150 molecular markers have been developed. Complete morphological and molecular characterisation of 150 clones of tea has been completed.

▶ Transformation studies have been supported on Populous and Leucaemia for developing transgenics with desirable characteristics mainly with reduced lignin content.

▶ Projects have also been supported on genetic diversity characterisation of Eucalyptus, teak, Pinus and Casuarina.

Source: CST Science and Technology 2012, Page No. 741.

(e) "The situation today is far different to that prevalent fifty years back when the Indus Water Treaty was signed." Highlight the complexity of the current challenges on both sides of the border in this regard. Do you think that a review of the Treaty is in India's best interests?

Answer: The bilateral water disputes like the Wullar barrage-Tulbul project, Kishanganga project, Nimoo-Bazgo hydroelectric plant still pending. It seems that Pakistan feels that if there would development of the region in terms of electricity and water management, then their designs would be deeply affected and therefore, they have tried to misinterpret the provisions of Indus water treaty to inhibit the growth and development of the region.

Source: CST Foreign Policy of India 2012, Page No. 88.

But Pakistan must change this attitude towards using IWT against Indian projects as both nations should realize that coexistence and cooperation should be the guiding principles. That terrorism is a curse that both the countries are suffering from. It is in this context both need to act more responsibly and read through the nefarious designs of the trouble makers. Pakistan on the one hand should act more responsibly and address India's concerns while India should resist from making any blatant and teasing statements during the painful moments of Pakistan. The post - Osama period needs to be treated with utter care. India must help Pakistan to mend their ways by going all out against all the terrorist camps and India must convince Pakistan that if the old policy of giving protection to terrorists is continued then their entire sovereignty would be jeopardized.

Source: CST Foreign Policy of India 2012, Page No. 93.

Therefore, considering the global imperatives the Indus Water Treaty must be made more feasible to solve the growing energy demands

and water scarce management of both nations, especially for emerging nations like India.

CST performance: 100/100 i.e 100 per cent because except the fourth question, all the other questions were directly asked from CST. The candidates had to answer any 4 question out of 5 questions, therefore, it is 100 per cent performance from CST.

2. Answer any five of the following in about 150 words each: (15×5=75)

(a) Write a short analytical note on Indian Diaspora. How is the "New Diaspora" different from the "Old Diaspora"?

Answer: NRIs have always played a pivotal role in shaping modern India. Great leaders and freedom fighters like Gandhi, Nehru and Ambedkar were NRIs, at some point of their lives, who've led their country towards freedom and beyond. NRI scholars have been bringing accolade to their home country over and over again. Every one of these people have something in common - love for their motherland. They've always aspired to see India as a great nation with every citizen realizing their dream- taking our nation ahead globally by leaps and bounds. Also, their important economic contribution to the nation cannot be ignored.

Source: CST Indian Political System, Page No. 128.

Unlike the old Diaspora, the new Diaspora is contributing more to Indian foreign exchange. Remittances are an important source of financial flows and, as per World Bank estimates, remittance flows into developing countries in 2011 were to the tune of US \$ 351 billion. Remittance flows into India are estimated to be of the order of US \$ 58 billion. In 2010, remittances into the country accounted for 3 per cent of GDP.

Source: CST May 2012, Page No. 242, and column 2.

(b) Why have the resource rich African and South Asian countries remained poor for decades? Explain.

Answer: Besides colonial past, population explosion, the global warming and climate changes are phenomena to which developing countries like the ones in Africa and South Asian have contributed the least but from which they suffer the most. The vagaries of climate change are faced to the greatest extent by the world's poorest, who do not have the financial and technological capacity to protect themselves from the fury of Mother Nature, a fury stoked to no insignificant extent by the greed of developed countries. Herein lies the inherent injustice in the phenomenon of climate

● In the international section, a diary of all the major issues should be maintained continent wise and every month the status should be checked by the Internet because in this context magazines and newspapers sometimes fail to maintain the follow up events. We have to follow certain international development like in Somalia, Sudan, Middle-East, Far-East even till the last week of the examination. The myth that UPSC covers a month before the examination has been terminated again as a number of questions were asked which has taken place during the whole month of September 2012. The various international reports, summits, joint statements, should be reviewed to refer in your opinion and perception to substantiate your point of view.

● The trend of Mains questions have also indicated that not only bilateral relations are important but also trilateral relations are important, especially those countries which are important to us like China and Bangladesh or any other neighbouring states. This year some of the questions were not very relevant and it is very difficult to have cognizance of such information during the preparation.

change.

Source: CST Foreign Policy of India 2012, Page No. 791.

Therefore, the absence of surplus production failed to create capital accumulation needed for industrialization rendering the resources redundant.

(c) Does Putin's return as President of Russia mark a shift to a confrontationist stance in international diplomacy towards the West?

Answer: The Arab spring, the Syrian, and Iranian crises, the deployment of the missile shield in Turkey and instability in the Caucasus are bound to be the starring themes in Putin's foreign policy strategies. Vladimir Putin's third term as president is definitely going to augment pressure on Russia from Western nations that have overtly and covertly sought to foment unrest throughout the Russian Federation. But there is one area where Putin is not going to change – foreign policy. Throughout his presidential campaign he made it clear that he was not going to sacrifice on his foreign policy stand and the world is going to witness the same Putin. It is also expected that Putin's Russia will witness enhanced partnership with China. By and large, Russia's bottom line is no foreign intervention (even by humanitarian corridors) and no external demand for regime change (the Syrians must themselves decide. Putin seems to be strongly maintaining these lines in coming future.

Source: CST May 2012, Page No. 34, Column 2 and 3.

(d) Analyse critically the interlinkages between the Convention on Biological Diversity and FAO Treaty on Plant Genetic Resources for Food and Agriculture.

Answer: Plant genetic resources for food and agriculture are crucial in feeding the world's population. They are the raw material that farmers and plant breeders use to improve the quality and productivity of our crops. The future of agriculture depends on international cooperation and on the open exchange of the crops and their genes that farmers all over the world have developed and exchanged over 10,000 years. No country is sufficient in itself. All depend on crops and the genetic diversity within these crops from other countries and regions.

The CBD entails provisions which have similarities and parallels to the FAO resolutions from 1989 and the later International Treaty on Plant Genetic Resources for Food and Agriculture. With Article 8(j), the Parties to the CBD agree to respect, preserve and maintain traditional knowledge, innovation and practices, as far as possible, as appropriate and subject to their national legislation. Reference is made to

indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. The Parties also agree to promote the wider application of such knowledge, innovation and practices.

(e) Critically review the international concern in achieving the targets set for the Millennium Development Goals.

Answer: According to the Millennium Development Goals Report 2010, launched on 23 June, the economic crisis took a heavy toll on jobs and incomes around the world, but its impact does not threaten achievement of the Millennium Development Goals (MDGs) target of cutting the rate of extreme poverty in half by 2015. The share of people in the developing world who subsist on less than \$1.25 a day, in constant US dollars, dropped from 46 per cent in the baseline year of 1990 to 27 per cent in 2005 – led by progress in China and Southern and South Eastern Asia – and is expected to tumble to 15 per cent by the target year of 2015.

Source: CST June 2011, Page No. 19, Column 3.

The Millennium Development Goals, 2012, report, released by the United Nations, India's poverty rates has come down from 51 per cent to 37 per cent between 1990 and 2008. But the report has expected that the required MDG target Poverty Headcount Ratio (percentage of population below the national poverty line) of 23.9 per cent could not be achieved by 2015. At present, the national HCR stands at 47.8 per cent, and India will achieve poverty HCR level of 26.72 per cent by 2015. India's MDG country report says that 49.2 per cent of Indian households lack toilets of any kind. There is a sharp rural-urban divide with this amounting to 65.2 per cent in villages and 11.3 per cent in towns and cities in 2008-09. Schedule castes (SCs) and scheduled tribes (STs) appear to be worst off, with 76.3 per cent SC and 75 per cent ST households lacking toilets.

Source: CST August 2012, Page No. 12, Column 1.

(f) Discuss the likely negative impact of the protectionist measures proposed by the US on India's software industry.

Answer: This decision is bound to affect India's nearly \$60-billion outsourcing industry. 1. Software companies association Nasscom has said that ending tax-breaks for companies that ship American jobs overseas would hardly impact the tech and BPO (business process outsourcing) sectors.

2. In any case, the issue would not have a great impact on the Indian IT industry. It has been believed that companies get tax benefits on the funds they repatriate back from overseas oper-

● In the IBRD, IMF and WIPO and WTO section, only superficial informations will not do and for this you have to do each and every component and their relations with India. The Indian economy has basically become the India's economic interaction with the world. For this section all the micro and macro informations and developments must be taken into considerations. All the follow ups related to PTAs, FTAs, RTAs must be fully analyzed with an eye over future prospectus. The current newsmakers are very important to score better in the examination.

● A coherent material only provides basis on which you have to update and develop your own perception to defend your individual opinion. In this regard, the Foreign Policy of India, 4th edition has once again emerged as an effective compilation to tackle the specific as well as conceptual questions.

ations. The difference is minimal. In the worst case scenario, those who are thinking about offshoring for the first time may decide not to go ahead. Those who have already tasted the benefits of offshoring will continue.

3. India will have to develop their own market by strengthening the domestic market as well as diversifying foreign markets and in any case the dependability to American market has to go.

Source: CST Foreign Policy of India 2012-13, Page No. 571.

CST performance: 75/75 i.e 100 per cent because except the fourth question, all the other questions were directly asked from CST. The candidates had to answer any 5 question out of 6 questions, therefore, it is 100 per cent performance from CST.

3. Answer any six of the following in not more than 100 words each: (10×6=60)

(a) In the context of Assisted Reproductive Technologies, India has emerged as a hub of commercial surrogacy. What key biological, legal and ethical issues merit consideration while framing the regulation to govern surrogacy in India?

Answer: Being the second largest populous country in the world and having cheap and affordable medical industry commercial surrogacy is becoming a viable option for childless couples around the world. In such a scenario it becomes imperative to create a law on the issue so that misuse does not occur. The law should be framed while keeping in mind the values and ethics of the Indian patriarchal society. The law should make sure that the health and nutrition needs of surrogate mother are satisfied. It should be noted that even though the concept provides financial empowerment to women but can have implications on her health and social status. The law should also clarify the citizenship of the child born.

or

Commercial surrogacy is a controversial issue and is banned in many countries. But in India, surrogacy has thrived since the SC legalised the practice in 2002. While formulating a law on commercial surrogacy the government should set some "national guidelines" to regulate the biological, legal, and ethical issues related with this issue. Following points thus may be kept into consideration in this regard

(a) Surrogacy is an exercise of reproductive choice and the freedom to contract but while formulating a law on surrogacy it should always be kept in mind that the practice should not be allowed to play with women's health and their poverty.

(b) The law must be effective enough to tackle the problem of black marketing of fertility services. The practice should create a war of competitive prices and should not be allowed to compromise the compensation aspect and safety standards.

(c) Biologically speaking, a baby soaks up nutrition from its host's body and though the 'mother' might have a better diet during the pregnancy because of the money and care provided by the biological parents, her health may not be that good enough to begin with.

In conclusion it can be said that the law on surrogacy must meet all the three pillars of medical ethics i.e. autonomy, beneficence, and non-maleficence.

(b) Why is international trade perceived to have failed to act as an "engine of growth" in many developing countries including India?

Answer: According to the TDR, 2011 the volume of international trade, particularly in developed economies, is expected to return to a single-digit growth rate in 2011, from 14 percent in 2010. Regarding South Asia, of which India is a part, the report said the region is likely to be among the best performers with a growth of 7 percent in 2011. With several factors hindering growth, recent developments across the Middle East have also contributed to and been affected by the global economic crisis. The developing nations have witnessed a strong economic expansion but the nations of North Africa and some West Asian nations failed to show rapid economic progress due to political unrest in the region that adversely affected investment and tourism.

The TDR highlights that emerging markets including Brazil, South Africa, Turkey and India have all had to cope with the challenge of short term capital inflows, attracted by higher interest rates that reflect higher inflation rates or tight monetary policies. According to the report, these inflows have been putting enormous appreciation pressure on their domestic currencies, and tend to weaken their export sectors and widen their current-account deficits. In order for developed countries to stride past this on-going global economic crisis, they have to work together.

Source: CST May 2012, Page No. 138, Column 3 and Page No. 139, Column 1.

(c) Despite strict prohibitory regulations, "doping" has become increasingly common amongst athletes. Name five commonly used performance-enhancing drugs. What are the risks associated with their use?

Answer: The National Anti-Doping Agency (NADA) has banned seven athletes include six quartermilers – Mandeep Kaur, Sini Jose, Mary Tiana Thomas, Priyanka Pawar, Jauna Murmu

● In the Science and Technology section, a vast information level has to be developed and facts should be carried out till the coming out of examination hall and therefore, it is necessary to revise the notes at least 10 times before writing the examinations.

The important topic may be enumerated as Information Technology, Energy Conventional and Non-Conventional, Nuclear Technology, Alternate Source of Energy, Health and Family Welfare, Environment, Ecology and National Heritage, Space Technology, Defence and Allied Services, Robotics and Artificial Intelligence, Super Conductivity, Laser and Maser, Nanotechnology, Fiber Optics, Biotechnology and Genetic Engineering, Contributions of Nobel Award Winners

● In 2012, CST has performed well and has surpassed more than 92 per cent. It has been generally believed that the newsmagazine is only good at covering international relations and international developments, but in the last 10 years we have continued to perform more than 80 per cent in both the papers. Therefore, continue to support us to manage the best in the forthcoming exams too.

and Akkunji – and long jumper Harikrishnan Muraleedharan – who flunked dope tests for banned steroids.

They include: diuretics, desmopressin, plasma expanders (e.g. glycerol; intravenous administration of albumin, dextran, hydroxyethyl starch and mannitol), probenecid and other substances with similar biological effect(s).

Source: CST February 2012, Page No. 128, Column 2 and 3.

(d) Compare the significance of IBSA and BRICS in the context of India's multilateral diplomacy.

Answer: India's Stand IBSA Summit India participated at the 5th IBSA summit at Pretoria to get the forums focus on increased coordination on a host of global issues, including the UN reforms, the international economic situation, and climate change. India used the platform to show the world that global financial and capital markets are now showing signs of acute distress due to the negative signals sent by the sovereign debt crisis in Europe and recessionary trends in the traditional engines of global economy- the USA, Europe, and Japan. **Source: CST October 2012, Page No. 42, Column 2.**

No doubt, the BRIC (Brazil-Russia-India-China) and IBSA (India-Brazil-South Africa) countries need to continue working together to improve and assert their dominance. This must not come at the expense of the principles of South-South co-operation, which are meant to protect and to advance the development of the weaker states. It is therefore imperative for countries of the South, and particularly Africa as the most vulnerable continent, to be circumspect and not take these new South-South alliances at face value.

Source: CST October 2012, Page No. 42, Column 3.

(e) The safe landing of the "Curiosity" Rover under NASA's space programme has sparked many possibilities. What are those and how could humankind benefit from them?

Answer: NASA has launched its Mars rover, to investigate whether the Red Planet could ever have hosted microbial life. Nicknamed Curiosity, the robot would scour Martian soils and rocks for any signs that current or past environments on the planet could have supported microbial life. The nuclear-powered mobile laboratory – holding 10 science instruments, including one designed and built in Canada – will sample Martian soil and rocks, and analyze them right there on the surface. The mission is expected to last for at least two years. With a length of 3 metres and weighing 899 kilograms, Curiosity dwarves the golf cart-sized Spirit and Opportunity Mars rovers that

landed in 2004.

Source: CST June 2012, Page No. 109, Column 2 and 3.

(f) How have the US sanctions against Iran affected India's bilateral relations with Iran?

Answer: India's crude oil imports from Iran declined by about 38 percent in May from a year ago a second month of steep cuts as they switch suppliers to cushion the impact of new U.S. sanctions on Tehran over its disputed nuclear programme. Crude imports from Iran have a steadily declining share in India's total oil imports dropping from a level of over 16 per cent in 2008-09 to almost 10 per cent in 2011-12. US has exempted India and six other countries from tough new financial sanctions on Iran's oil trade citing significant reduction in imports of Iranian oil by them. Iran is the second largest crude supplier to the country after Saudi Arabia and accounts for about 12 per cent of India's annual oil needs.

Source: CST Foreign Policy of India, Page No. 478.

(g) What is Permaculture? Give at least three common examples where permaculture concepts are being put to use.

Answer: The permaculture (permanent agriculture) experiments of Bill Mollison and Holmen in the 1970s gave hope to many farmers the world over. The permaculture wave had its impact in Kerala too and since then many farmers have started experimenting with this methodology and they found that this is one of the best practices for Kerala with its topographical peculiarities and high rainfall so as to conserve soil and water and improve productivity of their farms.

Aranya has developed Permaculture farms in 11.5 acres (5 hectares) in Bidakanne village, Jharasangam mandal, Medak district, Andhra Pradesh with Ecofriendly methods, i.e farming without disturbing the laws of nature.

Punarvasu is an emerging permaculture site. A traditional family farm that is becoming a model of how traditional practices and culture can thrive while evolving into a model of sustainability in our globalized world. People will stay in the traditional family home or converted barn, and eat Amma's delicious traditional vegetarian Udupi food.

CST performance: 5/6 i.e 83 per cent because except the first and seventh question, all the other questions were directly asked from CST. The candidates had to answer any 6 question out of 7 questions, therefore, it is 83 per cent performance from CST.

4. Answer the following in not more than 50 words each: (5×6=30)

● **Statistics section** in GS (Paper-II) aims to check basic knowledge of statistics and data interpretation of candidates. This particular section is most direct and piece of cake in comparison with other descriptive sets of question. Statistics is a relationship between data and decision making in the following manner:

- summarizing,
- presenting,
- analyzing,
- interpreting, and
- drawing conclusions

Looking into the utility of Statistics, one can summarize and simplify large amounts of numerical data using this tool. One can draw conclusions about data. Statistics may reveal underlying patterns in data not normally observable (especially true in multivariate analyses). One of the sub-sections, CORRELATION is a discipline that examines data and can calculate numerical estimates of so called estimated/probable/true values. The estimation or correlation comes along with the concept of PROBABILITY, as one cannot prove anything- estimates are normally presented in probabilistic terms (e.g. we are 95% sure ...)

● Statistics can be useful tools for helping professionals of different backgrounds while taking any decisions. Researchers and scientists often use tables and graphs to report findings from their research. In newspapers, magazine articles, and on television they are often used to support an argument or point of view.

(a) The Sequoia supercomputer was launched this year. What are its specific features and what is its purpose?

Answer: The Sequoia performed 16 quadrillion calculations per second, or 16.32 petaflops-trillions of floating-point calculations per second – using more than 1.5m processor cores. Sequoia is a Linux IBM BlueGene/Q system – a range which has an impressive history when it comes to supercomputers – and is made up of 96 computer racks and powered by Power BQC 16-core, 1.6 GHz processors. The computer will be used carry out simulations to help extend the life of nuclear weapons, in a bid to avoid real-world underground tests.

Source: CST August 2012, Page No. 115, Column 1.

(b) What is meant by the G8+5 group?

Answer: The G5 accounts for 42 per cent of the world's population and 11 per cent of the global economy, measured by real exchange rates. The Group of Eight industrialised nations - the US, Japan, Germany, Italy, Britain, France, Canada and Russia - makes up about 13 per cent of the world's population and 62 per cent of its economy. While the G8 countries have underlined their resolve to halve global greenhouse gas emissions by 2050, the developing countries represented largely by the Group of Five countries (G5)- India, China, Brazil, South Africa and Mexico- are not ready to accept any timeline-driven targets on cutting emissions given that it may slow progress on the development front.

Source: CST September 2008, Page No. 35.

(c) The Human Papilloma Virus vaccine has been making the headlines in the recent months. Who make the ideal candidates for receiving this vaccine and what are its benefits?

Answer: In April 2010, the Indian Council of Medical Research suspended research on the feasibility and safety of HPV vaccine in Andhra Pradesh and Gujarat amid public concerns about its safety. A recent study has shown that the current available data on human papillomavirus (HPV) type and cervical cancer incidence do not support the epidemiological claims made by the Programme for Appropriate Technology in Health (PATH) regarding India having a large burden of cervical cancer. The bivalent human papillomavirus (HPV) vaccine (Cervarix, GlaxoSmithKline), which is indicated for the prevention of cervical diseases caused by infection with HPV-16 and HPV-18, also provides "strong protection" against anal infection with these HPV types in young women.

(d) What are India's stakes in the South China Sea?

Answer: The Chinese aggressive nature could be easily seen when India in collaboration with Vietnam started oil joint venture in the South China Sea. Despite the fact that India had conveyed to the Chinese leader that India considers its oil joint venture with Vietnam in the South China Sea to be a purely commercial enterprise, devoid of any political intent, the Chinese continued to pursue its efforts to counter India in Indian and Pacific Ocean. India has also clarified that if there is a dispute, it should be settled peacefully under the terms of internationally recognised principles and laws.

Source: CST October 2012, Page No. 19, Column 2.

(e) Explain the concepts "Environmental Sustainability" and "Sustainable Development of People".

Answer: Sustainable development is the management and conservation of natural resource base and the orientation of technical and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generation. Such sustainable development conserves land, water and future generation animal genetic resources, is environmentally non-degrading technologically appropriate, economically viable and socially acceptable.

Source: CST April 2011, Page No. 75, Column 1.

(f) Explain briefly the "Clean Development Mechanism" as provided under the United Nations Framework Convention on Climate Change (UNFCCC).

Answer: The Clean Development Mechanism is a program under the United Nations Framework Convention on Climate Change (UNFCCC), which allows greenhouse gas emission-reduction projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one tonne of CO₂. These CER credits can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol. CDM projects can be developed in different sectors like energy, transport, forestry etc. In the forestry sector, afforestation and reforestation are the only activities permitted.

Source: CST Science and Technology 2012, Page No. 583.

CST performance: 5/6 i.e 83 per cent because except the third question, all the other questions were directly asked from CST. The candidates had to answer all the six questions; therefore, it is 83 per cent performance from CST. In this segment all the questions were mandatory and there were no choice. One question was dated back to 2008.

● Statistics is important in the field of engineering by it provides tools to analyze collected data.

For example, a chemical engineer may wish to analyze temperature measurements from a mixing tank. Statistical methods can be used to determine how reliable and reproducible the temperature measurements are, how much the temperature varies within the data set, what future temperatures of the tank may be, and how confident the engineer can be in the temperature measurements made.

There are some common terminologies followed in statistics:

- Population: Population is a collection of all subjects possessing a common characteristic that is being studied.

- The total set of measurements.
- Census: Census is the collection of data from every element in a population.
- Sample: A subgroup or subset of the population. Collection of objects which are a subset of the population of interest and are taken as representative of the population.

OVERALL PERFORMANCE
250 out of 265 i.e around 94.33 per cent of the Second Paper. We have excluded the opinion-based questions as well as Statistics. We expect that a candidate who has attempted 250 effectively can be satisfied.

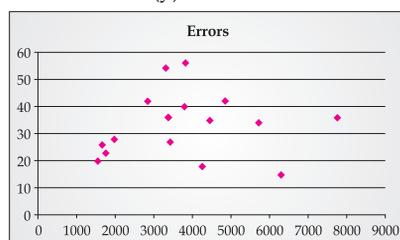
5. (a) The following table gives the number of mistakes made by 16 data entry clerks who enter medical data from case report forms. The column Entered indicates the number of values entered, and the column Errors gives the number of coding errors that were detected among these.

Entered	Errors
4,434	35
4,841	42
6,280	15
1,958	28
7,749	36
2,829	42
4,239	18
3,303	54
5,706	34
3,770	40
3,363	36
1,740	23
3,404	27
1,640	26
3,803	56
1,529	20

i. Make a scatter-plot of these data. Which do you choose for the response and which for the explanatory variables? Describe any patterns.
 ii. Does the scatter-plot indicate any relation between the two variables?
 iii. One analyst concluded, "The clerks who enter more values make more mistakes. Evidently they become tired as they enter more values." Is this an appropriate conclusion? (9 marks)

Solution:

i. Scatter plot: In this data base, the deciding factor is the errors and then the data entered. Data is extracted in such a manner in manner to correlate the errors with respect to the number of data entered. Hence the Explanatory variable or the Independent variable (x) is "Data entered" and the responsive variable or the dependent variable (y) is "Errors".



Pattern: Directly no perfect correlation is observable in the above scattered area. However, if we discard some values from the above plot, a positive correlation between x and y is observable.

ii. No direct correlation is there.

iii. Partially appropriate as explained in answer to Q i.

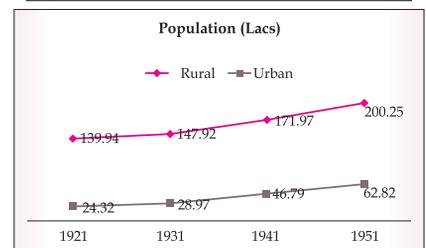
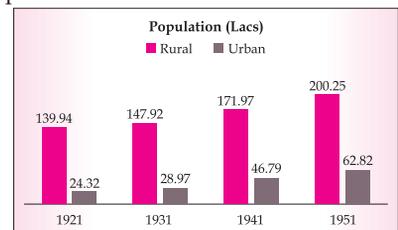
5 (b) The following table provides the Rural and Urban population of West Bengal according to the Censuses of 1921-1951. (Population in Lakhs) :

Census year	Population (in lakhs)	
	Rural	Urban
1921	139.94	24.32
1931	147.92	28.97
1941	171.97	46.79
1951	200.25	62.82

(i) Construct a suitable diagram to compare the population figures.

(ii) Comment on the changes in populations. (6 marks)

i. Graph:



ii. Rate of growth of population:

Census-year	Rural	Urban	% (Rural)	% (Urban)
1921	139.94	24.32		
1931	147.92	28.97	5.7	19.1
1941	171.97	46.79	16.3	61.5
1951	200.25	62.82	16.4	34.3

Rate of growth in Rural areas, grew at faster rate in 1941 with respect that in 1931. However the same got stagnant for the next 10 years.

Rate of growth in Urban areas, grew at very fast rate in 1941 with respect that in 1931. However the same decreased for the next 10 years.

5 (c) Suppose milk is being sold at the rates of 18, 20, 22 and 25 rupees per litre in four different months. Assuming that equal amounts of money are spent on milk by a family in the four months, using a suitable measure, determine

• Data Interpretation and Graphs

This type of questions aims at converting the data (in form of table or language) into Graphical mode and vice-versa. A basic practice of Data Interpretation section for the CSAT paper will prove a big advantage in the mains examination. DI questions evaluate the test takers' ability to interpret the given data one way or the other by forcing him to use mathematical calculations to reach the desired result. The questions are calculation-intensive and hence pose a lot of problems for individuals who cannot calculate and approximate the given data fast.

A graph is a visual way to display information from different areas including engineering, sciences, economics etc. A basic knowledge of all varieties of graph is essential in order to same time.

Following points must be taken care-of, while playing with data or graphs,

- Never ignore the units given for the variables (in million dollars, in thousands etc.)
- Instead of wasting time in doing lengthy calculations, you must try to solve the questions using approximations. Use direct per cent to ratio conversions, to speed up the calculations.
- Read the question as well as the Graph axes titles, accurately. The common errors are like absolute difference vs. relative difference etc.

the average price in rupees per litre. (2 marks)
 Solution: Assuming a total of Rs. T is spent on milk every month. Then volume (liter) of milk in 4 months would be T/18, T/20, T/22 and T/25.

$$\text{Average unit price} = \frac{T+T+T+T}{\frac{T}{18} + \frac{T}{20} + \frac{T}{22} + \frac{T}{25}} = 20.94 \text{ Rs. per liter}$$

6. (a) (i) Determine the median and mode for the following distribution of monthly income for 580 middle-class people of a country:

Monthly Income (in ₹ thousands)	Frequency
25 - 30	53
30 - 35	81
35 - 40	114
40 - 45	195
45 - 50	63
50 - 55	32
55 - 60	20
60 - 65	11
65 - 70	8
70 - 75	3

(ii) Also obtain an approximate value of the mean income from the values of median and mode.

(iii) Comment on the nature of the income distribution. (8 marks)

Solution: (i) and (ii)

Monthly income for 580 middle-class people of a country:

Monthly income (Rs. Thousand)	Mid Point (X)	Step Deviations from A=4.0	Frequency	Product	Cumulative Frequency
	X	$\frac{dx = (X-A)}{1}$	f	f * dx	
25-30	27.5	-4.5	53	-238.5	53
30-35	32.5	-3.5	81	-283.5	134
35-40	37.5	-2.5	114	-285	248
40-45	42.5	-1.5	195	-292.5	443
45-50	47.5	-0.5	63	-31.5	506
50-55	52.5	0.5	32	16	538
55-60	57.5	1.5	20	30	558
60-65	62.5	2.5	11	27.5	569
65-70	67.5	3.5	8	28	577
70-75	72.5	4.5	3	13.5	580
TOTAL		N= 580		-1016	

$$\bar{X} = A + \frac{\sum fd'x}{N} \times i$$

Arithmetic mean $\bar{X} = 50 + \frac{(-1016)}{580} \times 5 = 41.24$

Median $M = l + \frac{i}{f}(m - c)$

Median = Size of $\frac{N}{2}$ or $\frac{580}{2}$ or 290th item

which lies in (40 - 45)

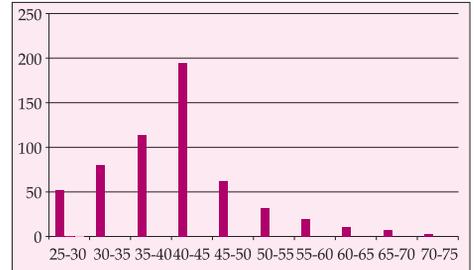
$$M = 40 + \frac{5}{195}(290 - 248) = 41.08$$

Empirical relationship between, M and Z -

$$\bar{X} - Z = 3(\bar{x} - M) \quad \text{or } Z = 3M - 2\bar{x}$$

$$Z = 3 \times 41.08 - 2 \times 41.24 = 40.76$$

(iii) Nature of the income distribution: Positively skewed



6 (b) From the frequency distribution of height for 177 Indian adults given below, draw the 'more than type' ogive. Also locate the position of the median. (3 marks)

Height (cm) Class Interval	Frequency
144-55 - 149-55	1
149-55 - 154-55	3
154-55 - 159-55	24
159-55 - 164-55	58
164-55 - 169-55	60
169-55 - 174-55	27
174-55 - 179-55	2
179-55 - 184-55	2

Solution: The frequencies of the succeeding classes are added to the frequency of a class. The greater than cumulative frequency table is given below.

Lower limit	Frequency More than	Cumulative Frequency
144.55	1	177
149.55	3	177 - 1 = 176
154.55	24	176 - 3 = 173
159.55	58	173 - 24 = 149
164.55	60	149 - 58 = 91
169.55	27	91 - 60 = 31
174.55	2	31 - 27 = 4
179.55	2	4 - 2 = 2
184.55		0

Now we draw the horizontal and vertical axes and label them. Plot the cumulative frequencies corresponding to the lower limit of each class and join the points using a smooth curve. The more than cumulative frequency curve is shown below.

NOTE

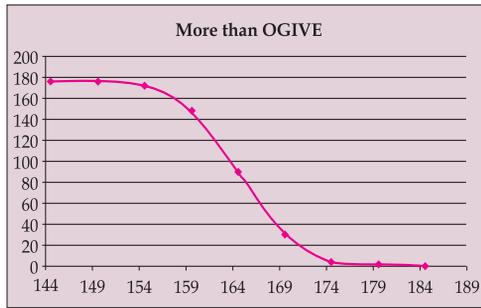
We are presenting the model answers of the Mains GS 2012 and some of the answers of the opinion-based questions may differ from the candidates and in this case CST wants to clarify that those answers are subject to the evaluation of UPSC.

• Tables vs. Graphs:

Although both are form of data only but still both possess a peculiarity of their own. Tables and graphs are both ways to organize and arrange data so that it is more easily understood by the viewer. Tables and graphs are visual representations. They are used to organize information to show patterns and relationships. A graph shows this information by representing it as a shape.

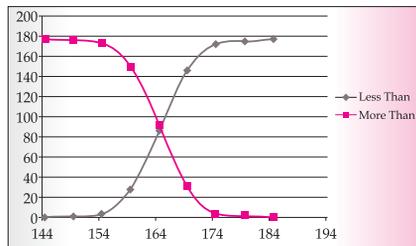
Tables and graphs are related in the sense that the information used in tables is frequently also used for the basis of graphs. It is important to know how to create and interpret tables and graphs as they are used in many important areas of research, and used to help people in decision making.

Tables and graphs are relevant to almost all areas of the curriculum. The conventions of tables and graphs are consistent across all curricula. It is the context in which they are used that identifies them as science, social sciences, geography, etc.



For median calculation we need to draw the less than ogive curve also.

Lower limit	Frequency	Less than Cumulative Frequency
144.55	1	0
149.55	3	1
154.55	24	4
159.55	58	28
164.55	60	86
169.55	27	146
174.55	2	173
179.55	2	175
184.55		177



Median= 164 cm

6 (c) A survey of 1000 large U.S. companies conducted by a Research Organisation asked their level white collar jobs to countries outside the U.S. The following table shows the percentage that indicated a certain action. The data for 2003 are real, the data for 2008 are speculative. **(7 marks)**

Plan to	2003 (%)	2008 (%)
Do virtually no white-collar offshoring	63	46
Offshore white-collar work to some extent	33	44
Offshore any white-collar work possible	4	10

The following Bar chart with side-by-side columns summarizes the data:

- Does the Bar chart compare the impression of any anticipated in outsourcing of the white collar jobs?
- Does the mode differ from the median for the distribution of percentages in 2003 and 2008?

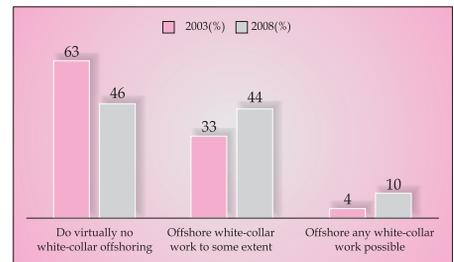
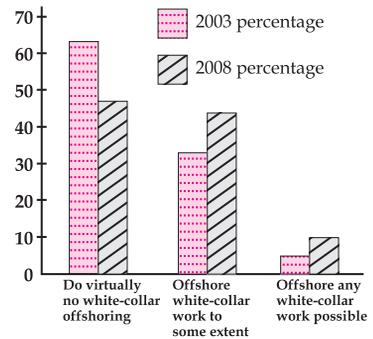
Solution: (i) Since the Total number of companies remains same for both years, we can directly compare the % numbers. In order to ex-

plain the above, we will categorize the same into 3 fields:

- I: Do virtually no white-collar off shoring
 - II: Offshore white-collar work to some extent
 - III: offshore any white-collar work possible
- The downfall in I and the subsequent growth in II and III clearly indicates that the perception is changing towards off shoring the White collar job works.

(ii) It remains same and equal.

It will be demonstrated by a bar chart:



OVERALL PERFORMANCE OF CST
Paper ONE - 268/300
Paper TWO - 250/265
Complete GS: 518/565

Column: This graph shows the differences in individual values vertically. It can be used to show the differences between values in different time periods or other data groupings. Examples include showing the total number of phone calls each month for the past year or the number of orders received by each order method (fax, phone, e-mail, web, walk-in) over the last month. This graph works best with fewer (1-3) data series. Column graphs are similar to bar graphs and line graphs. All three have grid lines going horizontally and vertically. The column graph is more similar to the bar graph in that it is used more for one time or single events rather than continuous events. In the column graph the data is literally presented in columns. The category names can be on the graph or underneath the column. It is not necessary to assign different colors to the columns although one could do so and then attach a legend that would explain the different colors and which category they stood for.