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ESE
(Prelims)

Current Issues
(August and September 2018)

On
Economic & Industrial Development
Issues on Social Development
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Environment
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Foreword
Current Issues for ESE

Dear Students,

This book is intended to help students, prepare current affairs on a monthly basis. The topics covered give a comprehensive understanding on issues related to Socio, Economic, Industrial Development, Energy and Environment and ICT based tools.

Apart from technical knowledge, current affairs help an aspirant to understand issues in a multi-dimensional approach and contributes to a holistic personality development. The coverage of news and events given are the most pertinent for ESE Revised pattern.

The key to master current affairs is a 'piece-meal preparation' over a period of time and this material is an endeavor to help students prepare in a systematic manner.

This issue covers Current Affairs from August - September 2018 and 100 GS Practice questions are given in this issue for the benefit of students because perfection cannot be achieved without practice.

With best wishes to all the Students

Y.V. Gopala Krishna Murthy,
M Tech. MIE,
Chairman & Managing Director,
ACE Engineering Academy,
ACE Engineering Publications.

CONTENTS

1 Economy and Industrial Development

BANKING

1. Iris Scan Authentication feature for Aadhaar-based transactions

➢ Axis Bank has become the first bank in the country to introduce Iris Scan Authentication feature for Aadhaar-based transactions through its micro ATM tablets.

➢ The bank has deployed highly secure iris powered micro ATM tablets which are STQC (Standardisation Testing and Quality Certification) certified and UIDAI compliant registered devices with completely integrated iris sensors.

➢ Micro ATMs completely eliminate the requirement of debit cards, passwords, PINs, and user IDs, and empower consumers to avail banking services using only their Aadhaar numbers and biometrics (iris scan/fingerprint scan).

Significance:

➢ This service, which requires a customer to scan their iris on a tablet, will boost the bank's financial inclusion efforts by making Aadhaar authentication process hassle-free and offering easier access to digital banking for consumers especially in the rural parts of the country.

➢ Iris scan technology is completely contactless and provides up to 98.2% authentication success rate (as per study conducted by the International Centre for Biometric Research) and offers an edge over other prevalent biometric modes.

2. India Post Payments Bank

➢ India Post Payments Bank (IPPB) has been launched to focus on providing banking and financial services to people in rural areas.

➢ The government aims to link all the 1.55 lakh post offices to the India Post Payments Bank system by 31 December, 2018.

➢ The India Post Payments Bank (IPPB) is a public sector company under the department of posts and Ministry of communication with a 100 per cent equity of the government of India, and governed by the Reserve Bank of India (RBI).

➢ It started operations on 30 January, 2017, by opening two pilot branches, one at Raipur and the other at Ranchi.

➢ India Post Payments Bank will offer 4 per cent interest rate on savings accounts.

India Post Payments Bank will offer a range of products such as savings and current accounts, money transfer, direct benefit transfers, bill and utility payments, and enterprise and merchant payments.

➤ India Post Payments Bank has been allowed to link around 17 crore postal savings bank (PSB) accounts with its accounts.

3. Ombudsman scheme

➤ The Reserve Bank of India has tightened the banking ombudsman scheme with the objective to strengthen the grievance redressal mechanism for customers.

➤ The banking regulator has asked all commercial banks having 10 or more banking outlets to have an independent internal ombudsman (IO) to review customer complaints that are either partly or fully rejected by the banks.

➤ The Internal Ombudsman Scheme of 2018 mandates banks to grant a fixed term of three to five years, which cannot be renewed, to the IO.

➤ The IO can be removed only with prior approval from RBI. The remuneration would have to be decided by the customer sub-committee of the board and not by any individual.

➤ The Ombudsman Scheme of 2018 covers appointment/tenure, roles and responsibilities, procedural guidelines and oversight mechanism for the IO, among others.

➤ The implementation of IO Scheme 2018 will be monitored by the bank's internal audit mechanism apart from regulatory oversight by RBI.

Banking ombudsman is a quasi judicial authority, appointed by RBI, to resolve customer complaints against banks relating to certain services provided by them.

It covers all kinds of banks including public sector banks, Private banks, Rural banks as well as co-operative banks.

4. Dena Bank, Vijaya Bank and Bank of Baroda to be merged

➤ The Centre has proposed the merger of state-owned Bank of Baroda, Dena Bank and Vijaya Bank to create India's third largest bank as parts of reforms in the public sector banking segment.

➤ The proposal will now need the approval of the boards of these individual banks.

➤ The merger of these three state-owned banks is a part of the government's agenda of consolidation of public sector banks.

➤ The Union Cabinet in August 2017 approved amalgamation of Public Sector Banks through Alternative Mechanism (AM) with an aim to facilitate consolidation among the Nationalised Banks to create strong and competitive banks.

Merits:

➤ The merger benefits include getting economies of scale and reduction in the cost of doing business.

➤ Mergers help small banks to gear up to international standards with innovative

products and services with the accepted level of efficiency.

➢ The size of each business entity after merger is expected to add strength to the Indian Banking System in general and Public Sector Banks in particular.

➢ This will also end the unhealthy and intense competition going on even among public sector banks as of now. In the global market, the Indian banks will gain greater recognition and higher rating.

De-merits:

➢ Immediate negative impact would be from pension liability provisions (due to different employee benefit structures) and harmonisation of accounting policies for bad loans recognition.

➢ The weaknesses of the small banks may get transferred to the bigger bank also.

FINANCIAL MARKETS

5. Concessional Financing Scheme (CFS)

➢ The Union Cabinet has approved the first extension of Concessional Financing Scheme (CFS) to support Indian Entities bidding for strategically important infrastructure projects abroad. Under the CFS, the Govt. of India has been supporting Indian Entities bidding for strategically important infrastructure projects abroad since 2015-16.

➢ Under the Scheme, MEA selects the specific projects keeping in view strategic interest of India and sends the same to Department of Economic Affairs (DEA).

➢ Once approved by the Committee, DEA issues a formal letter to EXIM Bank conveying approval for financing of the project under CFS.

➢ The Scheme is presently being operated through the Export-Import Bank of India, which raises resources from the market to provide concessional finance.

➢ Government of India (GoI) provides counter guarantee and interest equalization support of 2% to the EXIM Bank.

Importance of the scheme:

➢ Prior to the introduction of CFS, Indian entities were not able to bid for large projects abroad since the cost of financing was very high for them and bidders from other countries such as China, Japan, Europe and US were able to provide credit at superior terms, i.e., lower interest rate and longer tenures which works to the advantage of bidders from those countries.

6. Falling rupee

Indian rupee is weakening recently, going past ₹70 a dollar.

Reasons behind:

➤ Turkish currency turmoil

➤ The Spike in oil prices has pulled down the rupee, by pushing up dollar demand.

➤ Global Trade war fears triggered by the US and China's retaliatory import tariffs have also weakened the Rupee.

➤ The Chinese yuan has fallen sharply in the last few sessions. This also has triggered a dollar flight from many emerging economies.

➤ With rupee falling, country's imports become more expensive and exports cheaper. More expensive imports are likely to drive inflation upward.

➤ In addition, a depreciating rupee also impacts the oil import bill since it costs more rupees per barrel of oil, which plays its own part in pushing inflation up.

➤ On the one hand, costlier inputs and the subsequent increase in the prices of finished goods should have a positive impact on GDP. But the consequent decrease in demand due to higher prices could nullify this.

7. Top source of FDI

➤ As per the latest data by RBI, Mauritius was the top source of foreign direct investment (FDI) into India in 2017-18 followed by Singapore.

➤ The total FDI in FY 18 stood at $37.36 billion in financial year which was marginal rise over $36.31 billion recorded in the previous fiscal 2016-17.

AGRICULTURE AND INDUSTRY

8. IFFCO iMandi

➤ It is an e-commerce platform launched by IFFCO to address all needs of the farming community associated with it. For this initiative, IFFCO has partnered with Singapore-based technology firm iMandi.

➤ Through this e-commerce platform, IFFCO is targeting to reach GMV (gross merchandise value) of $5 billion in the next two years by catering needs of 5.5 crore farmers already associated with it.

Trivia:

➤ The e-commerce platform is one stop shop for agriculture inputs and produce, electronics, loans, insurance etc.

➤ It has features like buy-sell, communication, entertainment and information/advisory content to keep farmers engaged.

➤ Using it, farmers buy all inputs of IFFCO, including fertilisers, agro chemicals and seeds at discounted price and get free delivery at their doorstep.

Indian Farmers Fertiliser Cooperative Limited (IFFCO):

➤ IFFCO is large scale fertiliser cooperative federation in India which is registered as Multistate Cooperative Society. It is one of India's biggest cooperative societies which is wholly owned by Indian Cooperatives.

9. Niryat Mitra mobile app

➢ Ministry of Commerce & Industry has launched Niryat Mitra mobile App.

➢ The app has been developed by the Federation of Indian Export Organizations (FIEO).

➢ It provides wide range of information required to undertake international trade right from the policy provisions for export and import, applicable GST rate, available export incentives, tariff, preferential tariff, market access requirements.

Significance of the App:

➢ The exports are showing good sign and registering increase at the rate of 20%. The government plans to further increase the ease of doing business. Therefore, the app will provide big opportunity to everybody and help promote export interests in the country.

➢ The Human Resource tool of the app enables candidates with interest in the international trade sector to register and apply against the vacancies arising in the sector. Companies can also search the profiles of the candidates and engage them.

10. One District One Product (Ek Zila – Ek Ut padan) Scheme

➢ Uttar Pradesh government had recently organized 'One District One Product' (ODOP) Summit to promote traditional industries in every district of the state.

➢ The ODOP Summit is stated to be the first of its kind in the country and is expected to give a big boost to the micro, small and medium enterprises (MSME) and handicraft in the state.

➢ The objective of the ODOP is to optimise production, productivity and income, preservation and development of local crafts, promotion of art, improvement in product quality and skill development.

➢ Under this, one product indigenous to every district would be showcased at the three-day UP Diwas event. This will boost economic development of the state, and also help in generation of five lakh new jobs annually.

11. "Pradhan Mantri Annadata Aay SanraksHan Abhiyan" (PM-AASHA)

➢ Giving a major boost to the pro-farmer initiatives of the Government and in keeping with its commitment and dedication for the Annadata, the Union Cabinet has approved a new Umbrella Scheme "Pradhan Mantri Annadata Aay SanraksHan Abhiyan' (PM-AASHA). The Scheme is aimed at ensuring remunerative prices to the farmers for their produce as announced in the Union Budget for 2018.

➢ The umbrella scheme 'PM-AASHA' comprises three sub-schemes:

   ➢ Price Support Scheme (PSS).

   ➢ Price Deficiency Payment Scheme (PDPS).

➢ Pilot of Private Procurement & Stockist Scheme (PPPS).

Price Support Scheme (PSS):
➢ Under the scheme, the physical procurement of pulses, oilseeds and Copra will be done by Central Nodal Agencies with the proactive role of the state governments.
➢ The procurement expenditure and losses due to procurement will be borne by the Union Government as per norms.

Price Deficiency Payment Scheme this scheme (PDPS):
➢ Under the scheme, it is proposed to cover all oilseeds for which minimum support price (MSP) is notified.
➢ In this, direct payment of the difference between the MSP and the selling/modal price will be made to pre-registered farmers selling his produce in the notified market yard through a transparent auction process. All payments will be done directly into the registered bank account of the farmer.

Pilot of Private Procurement & Stockist Scheme (PPPS):
➢ For oilseeds, the states will have the option to roll out Private Procurement Stockist Scheme (PPSS) on pilot basis in selected districts.
➢ The pilot district and selected APMC(s) will cover one or more crop of oilseeds for which MSP is notified.

➢ Since this is similar to the PSS scheme (as it involves physical procurement of the notified commodity) the scheme shall substitute PSS/PDPS in the pilot districts.
➢ The selected private agency shall procure the commodity at MSP in the notified markets during the notified period from the registered farmers in accordance with the PPSS Guidelines, whenever the prices in the market fall below the notified MSP and whenever authorised by the state or UT government to enter the market. The maximum service charges up to 15% of the notified MSP will be payable.

INFRASTRUCTURE

12. Bansagar canal project
➢ Prime Minister Narendra Modi recently inaugurated the Bansagar canal project in Mirzapur in Uttar Pradesh.
➢ Bansagar Dam is a multipurpose river Valley Project on Sone River situated in the Ganges Basin in Madhya Pradesh.
➢ The project is a joint venture between Madhya Pradesh, Uttar Pradesh and Bihar.
➢ The project aims to provide a big boost to irrigation in the region. It promises to be greatly beneficial for the farmers of Mirzapur and Allahabad districts of Uttar Pradesh.
➢ As per the projections, the project will benefit 1 lakh 70 thousand farmers of Mirzapur and Allahabad districts.

13. Aspirational Districts

➤ Launched in January this year, the 'Transformation of Aspirational Districts' programme aims to quickly and effectively transform some of the most underdeveloped districts of the country.

➤ The broad contours of the programme are Convergence (of Central & State Schemes), Collaboration (of Central, State level 'Prabhari' Officers & District Collectors), and Competition among districts driven by a Mass Movement or a Jan Andolan.

➤ For this programme, the NITI Aayog and Lupin Foundation are collaborating to improve indicators in education, health & nutrition, financial inclusion and skill development, agriculture and water resources and basic infrastructure in Aspirational Districts of India.

Importance:

➤ If these districts are transformed, there would be tremendous improvement in the internal security environment of the country.

➤ Prabhari officer: In a significant step towards realisation of the Prime Minister's vision for creation of a New India by 2022, Government has identified 115 backward districts for rapid transformation by 2022. For each of the Districts, a senior official in the rank of Additional secretary and Joint secretary has been nominated as Prabhari officer.

14. DigiYatra initiative

➤ The Ministry of Civil Aviation is planning to launch DigiYatra service at airports in a few months.

➤ It is an industry-led initiative coordinated by the Ministry of Civil Aviation in line with Digital India programme.

➤ It aims to transform the flying experience for passengers and position Indian Aviation amongst the most innovative aviation networks in the world.

➤ The facility will use digital technology to enhance air passenger experience all the way from ticket booking to airport entry check, security check and aircraft boarding.

ENERGY

15. Urja Ganga Gas Pipeline Project

➤ Five public sector oil and natural gas companies have signed the joint venture agreement to implement the Rs 6000 Crore gas pipeline grid project in Northeast.

➤ The five companies are Indian Oil Corporation Limited (IOCL), ONGC, GAIL, Oil India Limited and Numaligarh Refinery Limited (NRL).

➤ The joint venture company will have equal equity contribution from all the partners for development of the natural gas pipeline project.

➤ The schedule for commissioning the project will be four years, including one year pre-project activities.

➤ With the signing of the agreement the joint venture company will develop, build, operate and maintain the natural gas pipeline grid.

Northeast gas pipeline grid project:

➤ The proposed gas pipeline grid will connect Guwahati to the major Northeast cities and major load centers. The project is being implemented under Prime Minister Narendra Modi's ambitious Urja Ganga Gas Pipeline Project.

➤ Besides connecting all the state capitals in the region, the pipeline will also connect with the National Gas Grid through Barauni-Guwahati Gas Pipeline, which is being laid by GAIL.

Pradhan Mantri Urja Ganga project:

➤ The gas pipeline project aims to provide piped cooking gas to residents of Varanasi and later to millions of people in states like Bihar, Jharkhand, West Bengal and Odisha.

➤ GAIL has built a network of trunk pipelines covering the length of around 11,000 km. With Urja Ganga project, this number will further increase by 2540 km.

16. **Definition of hydrocarbon altered**

➤ The Ministry of Petroleum and Natural Gas has liberalised the definition of petroleum to bring more hydrocarbons such as coal bed methane and shale gas under its fold. Petroleum and Natural Gas (Amendment) Rules, 2018 have been amended in this regard.

➤ Petroleum will now mean naturally occurring hydrocarbons, whether in the form of natural gas, in a liquid, viscous or solid form, or a mixture of these. It, however, does not include coal, lignite and helium occurring in association with petroleum or coal or shale.

➤ Prior to this, the definition excluded shale and therefore barred companies from exploiting it from fields that are producing conventional oil and gas or coal-bed methane.

➤ The amendment of the definition of petroleum is a welcome move as it would open up exploration of all hydrocarbons in existing fields which is line with the new Hydrocarbon Exploration Licensing Policy (HELP).

➤ It would help in enhancing domestic exploration and production of hydrocarbons and increasing India's energy security and reducing dependency on imports.

17. **Rajasthan first State to implement biofuel policy**

➤ Rajasthan has become the first State in the country to implement the national policy on biofuels unveiled by the Centre in May this year.

➤ The policy lays emphasis on increasing production of oilseeds and establish a Centre for Excellence in Udaipur to promote research in the fields of alternative fuels and energy resources.

18. 'State Energy Efficiency Preparedness Index'

➢ 'State Energy Efficiency Preparedness Index' has been released by Bureau of Energy Efficiency (BEE) and Alliance for an Energy Efficient Economy (AEEE).

➢ The nationwide Index is a joint effort of the NITI Aayog and BEE. The index assesses state policies and programmes.

➢ The Index will help in implementing national energy efficiency initiatives in states and meet both State as well as national goals on energy security, energy access and climate change.

➢ It has 63 indicators across Building, Industry, Municipality, Transport, Agriculture and DISCOM with 4 cross-cutting indicators.

➢ The Index examines states' policies and regulations, financing mechanisms, institutional capacity, adoption of energy efficiency measures and energy savings achieved.

Performance of states:

➢ States are categorised based on their efforts and achievements towards energy efficiency implementation, as 'Front Runner', 'Achiever', 'Contender' and 'Aspirant'.

➢ The 'Front Runner' states in the inaugural edition of the Index are: Andhra Pradesh, Kerala, Maharashtra, Punjab, and Rajasthan based on available data.

➢ Gujarat, Karnataka, Tamil Nadu and Haryana have been categorised in the second best category of 'achiever' states.

Significance of the Index:

➢ Such an index assumes significance in a country that is now the biggest emitter of greenhouse gases after the US and China, and which is among the countries most vulnerable to climate change. India plans to reduce its carbon footprint by 33-35% from its 2005 levels by 2030, as part of its commitments to the United Nations Framework Convention on Climate Change adopted by 195 countries in Paris in 2015.

19. World Biofuel day 2018

➢ World Biofuel Day is observed every year on 10th August to create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and to highlight the various efforts made by the Government in the biofuel sector.

➢ On this day in 1893, Sir Rudolph Diesel (inventor of the diesel engine) for the first time successfully ran mechanical engine with Peanut Oil. His research experiment had predicted that vegetable oil is going to replace the fossil fuels in the next century to fuel different mechanical engines. Thus to mark this extraordinary achievement, World Biofuel Day is observed every year on 10th August.

20. RUCO (Repurpose Used Cooking Oil) initiative

➢ The Food Safety and Standards Authority of India (FSSAI) has launched RUCO (Repurpose Used Cooking Oil), an initiative that will enable collection and conversion of used cooking oil to bio-diesel.

➢ Under this initiative, 64 companies at 101 locations have been identified to enable collection of used cooking oil. For instance, McDonald's has already started converting used cooking oil to biodiesel from 100 outlets in Mumbai and Pune.

➢ FSSAI wants businesses using more than 100 litres of oil for frying, to maintain a stock register and ensure that UCO is handed over to only registered collecting agencies.

Significance of the initiative:

➢ FSSAI believes India has the potential to recover 220 crore litres of used cooking oil for the production of biodiesel by 2022 through a co-ordinated action. While biodiesel produced from used cooking oil is currently very small, a robust ecosystem for conversion and collection is rapidly growing in India and will soon reach a sizable scale.

RANKINGS

21. India ranks 130 in UN's human development index

➢ India climbed one spot to 130 among 189 countries in the latest human development index released by the United Nations Development Programme. Within South Asia, India's human development index (HDI) value is above the average of 0.638 for the region, with Bangladesh and Pakistan, countries with similar population size, being ranked 136 and 150 respectively.

➢ Norway, Switzerland, Australia, Ireland and Germany led the ranking, while Niger, the Central African Republic, South Sudan, Chad and Burundi have the lowest scores in the HDI's measurement of national achievements in health, education and income.

➢ In 2016, India's HDI value of 0.624 put it at 131 rank.

➢ The HDI is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living.

2 *Issues on Social Development*

EDUCATION

1. Vidyalakshmi Portal

➢ As part of its digital initiative, Karnataka Bank has integrated its education loan scheme/s with Vidya Lakshmi Portal of Government of India.

➢ Vidya Lakshmi is a first of its kind portal for students seeking Education Loan.

➢ This portal has been developed under the guidance of Department of Financial Services, (Ministry of Finance), Department of Higher Education (Ministry of Human Resource Development) and Indian Banks Association (IBA).

➢ The portal has been developed and being maintained by NSDL e-Governance Infrastructure Limited.

➢ Students can view, apply and track the education loan applications to banks anytime, anywhere by accessing the portal. The portal also provides linkages to National Scholarship Portal.

2. National Sports University Bill, 2018

➢ Lok Sabha has passed National Sports University Bill, 2018 to set up the country's first National Sports University in Imphal, Manipur that will provide sports education, research and coaching.

The Bill replaces National Sports University Ordinance, 2018 promulgated by President in May 2018 to protect interests of students who already have been enrolled in National Sports University.

The key objectives of the University are:

(i) research, development and dissemination of knowledge in physical education and sports sciences,

(ii) strengthening physical education and sports training programmes,

(iii) generating knowledge capabilities, skills and competence at various levels, and

(iv) training talented athletes to help them to evolve into international level athletes.

HEALTH

3. Pradhan Mantri Jan Arogya Yojana (Ayushman Bharat or AB-NHPM)

➢ Prime Minister Narendra Modi on September 23, 2018 launched the flagship scheme 'Pradhan Mantri Jan Arogya Yojana' (PMJAY), also known as Ayushman Bharat or the National Health Protection Mission (AB-NHPM).

➢ While launching the healthcare scheme at Ranchi, Jharkhand, PM Modi said that "This is the world's largest health scheme which will serve a population that equals 27-28

European countries. The beneficiaries are almost equal to the population of Canada, Mexico and US put together."

➤ Ayushman Bharat, the government-sponsored health insurance scheme, will provide free coverage of up to Rs 5 lakh per family per year in any government or even empanelled private hospitals all over India.

World's largest healthcare programme Pradhan Mantri Jan Arogya Yojana (PMJAY) Ayushman Bharat

Govt health insurance - Rs. 5,00,000/ family per year.

Covers
-Secondary and tertiary care hospitalization.
-Pre and post-hospitalization expenses.
-1,350 medical packages covering
1 - Surgery
2- Medical and day care treatments
3- Cost of medicines/ diagnostics.

More than 10.74 poor & vulnerable families as per SECC. No cap on family size and age of members.

Priority to girl child, women & senior citizens.

Eligible beneificiares can avail services across India.

Free treatment available at all public and empaneled private hospitals.

Cashless and paperless access to quality health care services.

All pre-existing diseases covered.

AROGYA MITRA at empaneled hospitals to provide support.

➤ Launched with an aim to help the poor and the economically deprived, the scheme will be available for 10.74 crore beneficiary families and about 50 crore Indian citizens.

➤ This scheme will strengthen the healthcare services in India.

WOMEN AND CHILDREN

4. Central Adoption Resource Authority (CARA)

➢ Ministry of Women and Child Development directs state governments to ensure registration of all child care institutions and linking to CARA within the next one month in lieu of the recent cases of illegal adoptions,

➢ The mandatory registration of Child Care Institutes and linking to Central Adoption Resource Authority (CARA) has been provided in Juvenile Justice (Care and Protection of Children) Act, 2015.

➢ Central Adoption Resource Authority (CARA) is a statutory body of Ministry of Women & Child Development, Government of India.

➢ It functions as the nodal body for adoption of Indian children and is mandated to monitor and regulate in-country and inter-country adoptions.

➢ CARA primarily deals with adoption of orphan, abandoned and surrendered children through its associated /recognised adoption agencies.

5. Sukanya Samriddhi Yojana

➢ By amending Sukanya Samriddhi Account Rules, 2016, the Union Government has reduced minimum yearly deposit required under popular girl child savings scheme, Sukanya Samriddhi Yojana to Rs 250 from Rs 1,000 earlier. This has been lowered to enable more people to enjoy benefits of this scheme.

➢ Sukanya Samriddhi Yojana (SSY) is a small deposit scheme for the girl child launched as a part of the 'Beti Bachao Beti Padhao' campaign.

➢ A Sukanya Samriddhi Account can be opened any time after the birth of a girl till she turns 10, with a minimum deposit of Rs 250 (Earlier it was Rs 1,000). In subsequent years, a minimum of Rs 250 and a maximum of Rs 1.5 lakh can be deposited during the ongoing financial year.

➢ The account can be opened in any post office or authorised branches of commercial banks.

➢ The account will remain operative for 21 years from the date of its opening or till the marriage of the girl after she turns 18.

➢ To meet the requirement of her higher education expenses, partial withdrawal of 50% of the balance is allowed after she turns 18.

6. Kanyashree scheme

➢ West Bengal government has announced that there would not be any ceiling for a family's annual earnings to be a beneficiary under the UN award winning Kanyashree scheme. Currently, girls who belong to families with annual family income not more than Rs 1.20 lakh is entitled to get the benefits.

- The state government would also be coming up with a "Kanyashree University" for girls soon.
- Kanyashree is a conditional cash transfer scheme aiming at improving the status and well being of the girl child by incentivising schooling of teenage girls and delaying their marriages until the age of 18. It received the United Nations Public Service Award last year.
- Through the initiative, cash was deposited into the bank account of girls for every year they remained in school and were unmarried. This initiative led to a "drastic reduction in child marriage, increase in female education and female empowerment."

7. Poshan Maah (National Nutrition Month)

- The Ministry of Women and Child Development, Government of India had recently organized an orientation workshop for various stakeholders participating in the Poshan Maah (National Nutrition Month) being celebrated in the month of September.
- The primary objective of the celebration of Poshan Maah is to take the messages of POSHAN to the grass root level.
- It seeks to synergise all efforts by leveraging technology and intends to take nutrition awareness to the level of Jan Andolan or People's Movement.

- The programme focuses on 8 themes – Antenatal Care, Optimal Breastfeeding (Early & Exclusive), Complementary Feeding, Anemia, Growth Monitoring, Girls-education, diet, right age of Marriage, Hygiene & Sanitation, Food Fortification.

8. International Women Entrepreneurs Summit

- The International Women Entrepreneurs Summit 2018 is being held in Kathmandu, Nepal.
- It is organised by the South Asian Women Development Forum (SAWDF).
- Theme: "Equality begins with Economic Empowerment".
- The main objective of the summit is to bring together achievers, women business leaders, professionals, international service providers, resource organisations, experts, government representatives and other stakeholders with a focus on innovative economic transformation through discussions and collaborations.
- SAWDF is an autonomous, nonprofit organization based in Kathmandu, Nepal.

UNDER PRIVILIGED AND WEAKER SECTIONS

9. Commission for denotified, semi-nomadic, nomadic tribes

➤ The NITI Aayog has backed a proposal by a panel constituted by the Ministry of Social justice and Empowerment to set up a permanent commission for Denotified (DNT), Semi-Nomadic (SNT), and Nomadic Tribes (NT).

➤ Bhiku Ramji Idate Commission on DNT, SNT, and NT communities, in its report, had recommended setting up a permanent commission for the communities on the lines of similar commissions for Scheduled Castes, Scheduled Tribes, and Other Backward Classes.

➤ In its report submitted to the social justice ministry in January 2018, the Idate Commission said such a permanent commission should have a prominent community leader as its chairperson, and a senior Union government bureaucrat, an anthropologist, and a sociologist as members.

➤ Denotified tribes are those that were labelled as criminals through a legislation by British government and were denotified post-independence, the Nomadic tribes maintain constant geographical mobility while semi-nomads are those who are on the move but return to fixed habitations once a year, mainly for occupational reasons.

10. Atal Pension Yojana

➤ Union Cabinet decided to indefinitely extended Atal Pension Scheme, which had lapsed in August 2018. It also has broadened its scope by keeping it open-ended. The extension was given by taking into consideration of mass participation.

New changes:

➤ To further incentivize people's participation in the scheme, age criterion for participation has been revised. Earlier, people of age 18 to 60 years were entitled to enroll in this scheme. But now it has been relaxed further to 65 years, taking into consideration rise in average age-expectancy,

➤ Also, now the scheme will expand its focus to target individuals, instead of households. Besides, all accounts opened after August 2018 will have accident insurance limit of Rs 2 lakh, double than earlier Rs 1 lakh limit. The overdraft facility of the scheme has also been increased from Rs 5,000 to Rs 10,000.

SKILL DEVELOPMENT

11. Invest India

➤ Invest India and Business France will collaborate to promote business and startup ecosystem cooperation through joint activities and exchange experiences to strengthen institutional knowledge.

➤ The goal will be to facilitate direct foreign investment by providing practical investment

information to enterprises and support the companies pursuing those opportunities, which contribute positively to economic growth of the two countries.

➤ Invest India is the National Investment Promotion and Facilitation Agency of India and acts as the first point of reference for investors in India.

➤ Invest India is set up as a non profit venture under the Department of Industrial Policy and Promotion, Ministry of Commerce and Industries, Government of India.

➤ The core mandate of Invest India is investment promotion and facilitation. It provides sector-specific and state-specific information to a foreign investor, assists in expediting regulatory approvals, and offers hand-holding services. Its mandate also includes assisting Indian investors to make informed choices about investment opportunities overseas.

12. "Innovate India Platform"

➤ Atal Innovation Mission, NITI Aayog & MyGov (a citizen centric platform of the Government of India) have launched "Innovate India Platform".

➤ It aims to serve as the common point for all the innovation happening across the nation.

➤ It creates the much-needed innovations platform for registering both grassroots and deep-tech innovators at a national level. Those searching for a critical innovation can leverage the portal advantageously for the benefit of the economy as well as national social needs."

Key features:

• The platform is open to all Indian citizens.

• The users can view, comment, share, and rate the innovations crowdsourced on the #InnovateIndia platform.

• View the leaderboard which is calculated based on the votes on each innovation.

• Citizens can share their innovation on the platform by logging into the MyGov website.

• These innovations can also be shared on various social media platforms such as WhatsApp, Facebook, and Twitter.

Significance:

➤ The new initiative to capture and support innovation from ground up is aimed at creating a structured ecosystem to encourage, enhance and develop India's innovative character.

13. "Pitch to MOVE"

➤ NITI Aayog has launched "Pitch to MOVE", a mobility pitch competition that aims to provide budding entrepreneurs of India a unique opportunity to pitch their business ideas to a distinguished jury.

➤ "Pitch to MOVE" is organised by NITI Aayog in collaboration with Invest India and Society of Indian Automobile Manufacturers (SIAM).

> Aim: The competition aims to identify and reward the start-ups offering innovative solutions for shared, connected, and environment friendly mobility. The Startups can be from the domain of Public Mobility, Electric Vehicles, Shared Transport, Last Mile Connectivity, Passenger Transportation, Battery Technology, Automotive IoT, Freight & Logistics, Powertrain/Drivetrain, Travel, Mobility Infrastructure and Automotive Electronics etc.

Bills and Acts

14. Manipur People's Protection Bill

> Manipur People's Protection Bill, 2018, passed by the state assembly recently, has been welcomed with protests across various districts in the state.

> The Manipur People's Protection Bill, 2018 seeks to regulate the entry and exit of "outsiders" on the lines of the British-era inner-line permit system prevalent in three other north-eastern states — Arunachal Pradesh, Mizoram and Nagaland.

> The bill sets 1951 as the base year to identify locals and prevent an influx of outsiders.

> According to the bill, Manipur people include Meitis, the Pangal Muslims, scheduled tribes as listed under the Constitution in terms of Manipur and all those citizens of India who have been living in Manipur before 1951.

> The rest have been put in the category of non-Manipuris and will have to register themselves within one month of the notification of the law. They will be issued a pass extendable up to six months. While those who have trade licences can get a pass extendable up to five years, which will have to be renewed every year. Any outsider visiting Manipur would need a pass.

> If approved by the Governor and made an Act, people who came to Manipur after 1951 would be viewed as 'foreigners' and would have no voting or land rights.

15. Prevention of Corruption (Amendment) Bill, 2018

> The Lok Sabha has passed the Prevention of Corruption (Amendment) Bill, 2018. Punishment for both bribe givers and takers has been enhanced to make it a deterrent for the corrupt.

Facts:

• Punishment for bribe-taking: Minimum punishment of 3 yrs, extendable up to 7 yrs with fine; from the earlier 6 months, with extension up to 3 yrs.

• 'Undue Advantage' expanded: The earlier limited definition of "undue advantage" expanded to now include "anything other than legal remuneration".

• Gifts received for established undue advantage/mala-fide motive are now considered an act of corruption.

- For the first time, the giving of bribe has now been made a direct offence on par with taking of bribe. At the same time, protection has been built-in against coercive bribery, as long as the victim comes forward within 7 days.

- Superiors to be held if employee/agent has bribed with their approval, for advancement of the organisation's interests.

- Law enforcement empowered for immediate attachment & forfeiture of illegal property of a public servant, invoking provisions of the Prevention of Money Laundering Act (PMLA).

- Timely trial mandated: To conclude the investigation and trial within 2 yrs, extendable up to 4 yrs.

16. 123rd Constitutional Amendment Bill

➢ The Lok Sabha has passed the 123rd Constitutional Amendment Bill providing for a National Commission for Backward Classes as a constitutional body.

➢ The bill provides for the grant of constitutional status to the National Commission for Backward Classes (NCBC) on par with the National Commission for Scheduled Castes and the National Commission for Scheduled Tribes.

➢ It states that the President may specify the socially and educationally backward classes in the various states and union territories. He may do this in consultation with the Governor of the concerned state.

➢ The duties of the NCBC include investigating and monitoring how safeguards provided to the backward classes under the Constitution and other laws are being implemented and probe specific complaints regarding violation of rights.

➢ Powers of a civil court: Under the Constitution Amendment Bill, the NCBC will have the powers of a civil court while investigating or inquiring into any complaints.

These powers include:
(i) summoning people and examining them on oath,
(ii) requiring production of any document or public record, and
(iii) receiving evidence.

17. Criminal Law (Amendment) Bill, 2018

➢ Parliament has passed the Criminal Law (Amendment) Bill, 2018. The main highlight of the bill is that it seeks to amend the Indian Penal Code (IPC), the Evidence Act, the Code of Criminal Procedure (CrPC) and the Protection of Children from Sexual Offences (POCSO) Act to introduce a new provision to sentence convicts of such crimes punishment of death.

Facts:

➢ It provides for stringent punishment including death penalty for those convicted of raping girls below the age of 12 years.

➢ The minimum punishment in case of rape of women has been increased from rigorous imprisonment of seven years to 10 years, extendable to life imprisonment.

➢ In case of rape of a girl under 16 years, the minimum punishment has been increased from 10 years to 20 years, extendable to imprisonment for rest of life, which means jail term till the convicts' "natural life".

➢ The punishment for gang rape of a girl below 16 years will invariably be imprisonment for the rest of life of the convict.

18. Trafficking of Persons (Prevention, Protection and Rehabilitation) Bill 2018

➢ The Lok Sabha has passed the Trafficking of Persons (Prevention, Protection and Rehabilitation) Bill, 2018. The Bill provides for the prevention, rescue, and rehabilitation of trafficked persons.

Cabinet Decision February 28, 2018

Trafficking of Persons (Prevention, Protection and Rehabilitation) Bill, 2018

pib PRESS INFORMATION BUREAU

• Cabinet approves Trafficking of Persons (Prevention, Protection and Rehabilitation) Bill, 2018 for introduction in the Parliament

• Will make India a leader among South Asian countries to combat trafficking

• Salient Features-

  • Addresses the issue from the point of view of prevention, rescue and rehabilitation
  • Confidentiality of victims/ witnesses and complainants maintained by not disclosing their identity
  • Time bound trial and repatriation of the victims - within a period of one year from taking into cognizance
  • Immediate protection of rescued victims and their rehabilitation
  • Rehabilitation Fund created for the first time
  • Designated courts in each district for the speedy trial of the cases
  • Creates dedicated institutional mechanisms at District, State and Central Level responsible for prevention, protection, investigation and rehabilitation work related to trafficking
  • Punishment ranges from rigorous minimum 10 years to life and fine not less than Rs. 1 lakh
  • National Anti-Trafficking Bureau will perform the functions of international coordination with authorities in foreign countries and international organizations

Facts:

➤ The Bill provides for the establishment of a National Anti-Trafficking Bureau to investigate trafficking cases and implement provisions of the Bill.

➤ Key functions of the Bureau include:

(i) coordinating and monitoring surveillance along known routes,

(ii) facilitating surveillance, enforcement and preventive steps at source, transit and destination points,

(iii) maintaining coordination between law enforcement agencies and non-governmental organisations and other stakeholders, and

(iv) increasing international cooperation with authorities abroad for intelligence sharing, and mutual legal assistance.

➤ Under the Bill, the state government will appoint a State Nodal Officer. The state government will also appoint a Police Nodal Officer at the state and district levels.

➤ The Bill also provides for the setting up of Anti-Trafficking Units (ATUs) at the district level. ATUs will deal with the prevention, rescue, and protection of victims and witnesses, and for the investigation and prosecution of trafficking offences

➤ The Bill provides for the establishment of Anti-Trafficking Relief and Rehabilitation Committees (ATCs) at the national, state, and district levels. These Committees will be responsible for:

(i) providing compensation to victims,

(ii) repatriation of victims, and

(iii) re-integration of victims in society, among others.

➤ The Bill provides for setting up designated courts in each district, which will seek to complete trial within a year.

➤ The Bill specifies the penalties for various offences including for

(i) trafficking of persons,

(ii) promoting trafficking,

(iii) disclosing the identity of the victim, and

(iv) aggravated trafficking (such as trafficking for bonded labour and begging).

19. Assam NRC

➤ The draft National Register of Citizens (NRC), published recently, includes only those able to prove they were in Assam before 1971. It excludes D- voters.

D-voter:

➤ Short for 'dubious' or 'doubtful, this is a category of voters disenfranchised by the government for alleged lack of proper citizenship documents. Some 2.48 lakh people got the D-voter tag during NRC process.

➤ D-voters are tried by special tribunals under the Foreigners' Act and if they fail to defend their citizenship claim they are marked as declared foreigners and sent to any of six detention camps, which are within jails for criminals, for deportation. There were 91,206 declared foreigners as on December 31, 2017.

ALL YOU NEED TO KNOW

- **What is NRC? What is the cut-of data to included?**

  NRC or National Register of Citizens is a register containing names of Indian citizens, being updated in Assam. March 24 (midnight)1971 is the cut-off date to get one's name included

- **When was it last prepared?**

  In 1951, after 1951 census

- **Why is the exercise important for Assam?**

  It is hoped that an updated NRC will help detect foreigners

- **Why and when did the Supreme Court start monitoring the updated?**

  In a judgment dated December 17, 2014, the Supreme Court fixed a timeline to update and publish the "NRC and that it will monitor the process

- **Is the December 31 list final?**

  It is a part of the draft NRC. Later, (the date has not been fixed) the remaining portion of the draft NRC will be published

- **How many people have applied for inclusion in the NRC?**

- NRC co-ordinator Prateek Hajela told the Supreme Court that they have received 3.29 crore applications

- **What will happen to those who do not get enlisted in the draft NRC?**

  He/she will be given an opportunity to complain to the NRC authority

- **What will happen to those who do not get enlisted in final NRC?**

  It will mean that one is not a citizen to the country. Police can refer their names to foreigners tribunals where they will have to fight a legal battle to prove themselves to be Indian citizens

- **How to check your status**

- * Walk in to your NRC seva kendras from 8 am to 4 pm on Monday and 10 am to 4 pm from January 2 to 31 on all working days
- * Log in to any of these: www.nrcassam.nic.in, www.assam.mygov.in, www.assam.gov.in and www.homeandpolitical.assam.govi.in
- * Call toll-free numbers 15107 or 18003453762
- * SMS: ARN<space> 21-digit ARN to 9765556555/9108464438/9108464450 ARN is a 21 digit application receipt number mentioned on the fourth page (below the barcode) of the NRC form if you has submitted it offline. It is at the right corner of acknowledgment receipt if you have submitted the form online. If you have lost the ARN, visit you designated NRC seva kendra; the officials will help you out

➢ Officially, the NRC process will address the issue of illegal migrants, specifically from Bangladesh. The National Register of Citizens was first published in 1951 to record citizens, their houses and holdings. Updating the NRC to root out foreigners was a demand during the Assam Agitation (1979-1985).

➢ There have been several waves of migration to Assam from Bangladesh, but the biggest was in March 1971 when the Pakistan army crackdown forced many to flee to India. The Assam Accord of 1985 that ended the six-year anti-foreigners' agitation decided upon the midnight of March 24, 1971 as the cut-off date.

Citizen of Assam:

➢ The Citizenship Act of 1955 was amended after the Assam Accord for all Indian-origin people who came from Bangladesh before January 1, 1966 to be deemed as citizens. Those who came between January 1, 1966 and March 25, 1971 were eligible for citizenship after registering and living in the State for 10 years while those entering after March 25, 1971, were to be deported.

➢ Those who are excluded will have to file for claims and objections and submit relevant documents for re-verification. The NRC office will issue claim forms from August 7 to 30, and these applicants would have to submit the forms from August 30 to September 28. The documents will be verified and accepted or rejected for the final NRC to be published on an unspecified date. The cases of those left out of the final NRC will be heard in the Foreigners' Tribunals, after which applicants can approach the High Court.

20. **Uttarakhand high court as legal guardian of cows**

➢ The Uttarakhand high court would henceforth act as the legal guardian of cows in the state. It has also issued some directions to the state government in this regard.

➢ This is the first time in India that a court has had invoked the 'parens patriae' doctrine for cow protection.

➢ Parens patriae: Parens patriae in Latin means 'parent of the country' and is a doctrine that grants the court inherent power and authority to act as guardian for those who are unable to take care for themselves.

➢ The court can now act as the legal guardian of the cows in the state and keep a tab on all issues related to cows especially its directions with regard to their protection. If there are any violations in laws and rules regarding cows, the court can take suo moto cognisance and issue directions to the state.

➢ The judgment came as a response to a public interest litigation claiming that stray cattle were being slaughtered and waste from a slaughter house was flowing into water bodies , posing a health threat to the villagers.

➢ The court cited animal welfare law, national and international documents and Hindu religious texts to say that animal welfare was part of "moral development of humanity".

21. Article 35A

➢ The constitutional validity of Article 35 is being challenged before the Supreme Court.

➢ Article 35A is a provision incorporated in the Constitution giving the Jammu and Kashmir Legislature a carte blanche to decide who all are 'permanent residents' of the State and confer on them special rights and privileges in public sector jobs, acquisition of property in the State, scholarships and other public aid and welfare.

➢ The provision mandates that no act of the legislature coming under it can be challenged for violating the Constitution or any other law of the land.

➢ Article 35A was incorporated into the Constitution in 1954 by an order of the then President Rajendra Prasad on the advice of the Jawaharlal Nehru Cabinet.

➢ The controversial Constitution (Application to Jammu and Kashmir) Order of 1954 followed the 1952 Delhi Agreement entered into between Nehru and the then Prime Minister of Jammu and Kashmir Sheikh Abdullah, which extended Indian citizenship to the 'State subjects' of Jammu and Kashmir.

Need for review:

➢ The 'classification' created by Article 35A has to be tested on the principle of equality as it treats non-permanent residents of J&K as 'second-class' citizens. Such persons are not eligible for employment under the State government and are also debarred from contesting elections. Meritorious students are denied scholarships and they cannot even seek redress in any court of law.

➢ The major sufferers are women who marry outside J&K. Though they retain their Permanent Resident Certificate, their children cannot be permanent residents. This restricts their basic right of inheritance. Further, the issues of refugees who migrated to J&K during Partition are still not treated as 'State subjects' under the J&K Constitution.

22. Section 377

➢ The Supreme Court has pronounced its much-awaited verdict on a clutch of petitions challenging the constitutional validity of section 377 of the IPC which criminalises consensual gay sex.

➢ The Court said gay sex among consenting adults is not an offence. The verdict assumes significance as in the earlier round of litigation in 2013 the Supreme Court had reversed the Delhi high court ruling decriminalising homosexuality or same sex relationship.

➢ However, bestiality will continue as an offence. Any kind of sexual activity with animals shall remain penal offence under Section 377 of the IPC.

➢ The judgement is based on the interpretation of Article 14 (Right to Equality); Article 15 (prohibition of discrimination on grounds of religion, race, caste, sex or place of birth); Article 19 (Freedom of Speech and Expression); and Article 21 (Right to Life and Right to Privacy) of the Indian Constitution.

➢ Section 377 of IPC which came into force in 1862 defines unnatural offences. It says, "Whoever voluntarily has carnal inter-course against the order of nature with any man, woman or animal shall be punished with imprisonment for life, or with imprisonment of either description for a term which may extend to 10 years, and shall also be liable to fine."

23. Aadhar verdict

➢ The Supreme Court upheld the constitutional validity of Aadhaar, even as it struck down some of the contentious provisions on mandatory linking of the unique ID with various non-essential services.

➢ It said that sufficient security measures are taken to protect data and it is difficult to launch surveillance on citizens on the basis of Aadhaar. A five-judge bench led by CJI Dipak Misra asked the government to provide more security measures as well as reduce the period of storage of data.

The Aadhaar Verdict

Mandatory	Not Mandatory
■ Linking of Aadhaar with IT returns	■ Linking of Aadhaar with mobile numbers
■ Linking of Aadhaar with PAN card	■ Linking of Aadhaar with bank accounts
■ For availing government subsidies and welfare schemes	■ Providing Aadhaar details for school admissions
	■ Providing Aadhaar details for entrance exams and education schemes

Trivia:

➢ The Supreme Court said Aadhaar cannot be made mandatory for openings of a bank account and for getting mobile connections.

➢ The Supreme court Bench struck down section 57 of the Aadhaar Act, which allows private entities to use Aadhaar for verification purposes.

➢ The SC has made linking of Aadhaar and PAN mandatory. The apex court also made Aadhaar mandatory for filing of Income Tax Return (ITR).

➢ The SC directed the government to ensure that illegal migrants are not issued Aadhaar to get benefits of social welfare schemes.

➢ The apex court struck down the provision in Aadhaar law allowing sharing of data on the ground of national security.

➢ The SC said there is a fundamental difference between Aadhaar and other identity proof, as Aadhaar cannot be duplicated and it is a unique identification. It added that Aadhaar is to empower the marginalised sections of the society, and it gives them an identity.

➢ Aadhaar satisfies the doctrine of proportionality, said Justice A KSikri, adding, "It is better to be unique than to be best."

3 *International Issues*

1. World Customs Organisation (WCO)

➤ India has become the Vice-Chair (Regional Head) of the Asia Pacific Region of World Customs Organisation (WCO) for a period of two years, from July, 2018 to June, 2020.

➤ The World Customs Organization (WCO), established in 1952 as the Customs Co-operation Council (CCC) is an independent intergovernmental body whose mission is to enhance the effectiveness and efficiency of Customs administrations.

2. Global compact for migration

➤ United Nations for first time has finalized Global Compact for Safe, Orderly and Regular Migration to better manage international migration, address its challenges, strengthen migrant rights and contribute to sustainable development. The agreement will be formally adopted by world leaders in Morocco in December 2018.

➤ The compact is the first intergovernmental agreement to cover wide-ranging dimensions of international migration, agreed upon by all the UN member states minus the United States.

➤ It sets out 23 objectives to deal issues ranging from factors that compel people to move, legal channels for migration, combating trafficking and smuggling, harnessing the economic benefits of migration and return of the migrants.

➤ It is not legally binding.

➤ Over 250 million migrants worldwide account for 3% of the world's entire population, but contribute 10% of the global gross domestic production (GDP). Migrants' remittance is a huge contribution to their home countries' development.

3. Israel Adopts Jewish Nation-State Law

➤ Israel's parliament has adopted a law defining the country as the nation state of the Jewish people, provoking fears it could lead to blatant discrimination against Arab citizens.

➤ The law speaks of Israel as the historic homeland of the Jews and says they have a "unique" right to self-determination there.

➤ The legislation makes Hebrew the country's national language and defines the establishment of Jewish communities as being in the national interest.

➤ Arabic, previously considered an official language, was granted only special status.

➤ It also establishes the flag, the national symbol and anthem.

➤ The legislation becomes part of the country's basic laws, which serve as a de facto constitution.

4. **Girinka Programme**

➤ Prime Minister Narendra Modi gifted 200 cows to villagers from Rweru villages as part of Rwandan Government's Girinka Programme.

➤ The programme was initiated by President Paul Kagame in response to alarmingly high rate of childhood malnutrition and as a way to accelerate poverty reduction and integrate livestock and crop farming.

➤ The word Girinka can be translated as 'may you have a cow' and describes a centuries-old cultural practice in Rwanda whereby a cow was given by one person to another, as a sign of respect and gratitude.

➤ Under this programme, poorest residing in region gets cows from Government and they in return gift first female calf to neighbour to promote brotherhood.

➤ The programme is based on premise that providing dairy cow to poor, transforms livelihoods, reconciles communities improving agricultural productivity through use of manure as fertilizers.

➤ The program has contributed to increase in agricultural production in Rwanda – especially milk production and products and has reduced malnutrition and increased incomes.

5. **BRICS 2018 Summit**

➤ The 2018 BRICS summit, the tenth such annual summit, was held in South Africa.

➤ Theme: "BRICS in Africa: Collaboration for Inclusive Growth and Shared Prosperity in the 4th Industrial Revolution".

➤ The theme is intended to align and ensure strategic continuity with the approved themes for South Africa's Chairship of both the South African Development Community (SADC) and the Indian Ocean Rim Association (IORA).

➤ The new areas of BRICS cooperation as proposed by South Africa, are as follows:

• Establishment of a Working Group on Peacekeeping.

• Establishment of a Vaccine Research Centre for Collaboration with BRICS vaccine innovation and development partners – this is intended to be a physical research centre focused on research and development and vaccine innovation.

• Establishment of a BRICS Gender and Women's Forum – intended as a dedicated track for gender and women's issues, given the economic benefit to be derived from the socio-economic empowerment of women, particularly in developing countries.

➤ Establishment of a BRICS Tourism Track of Cooperation.

6. International Nitrogen Initiative

➢ Indian scientist Nandula Raghuram has been elected as the Chair of the International Nitrogen Initiative (INI), a global policy making initiative. He is the first Indian and Asian to be elected to the Chair of INI.

➢ The International Nitrogen Initiative (INI) is an international program, set up in 2003 under sponsorship of the Scientific Committee on Problems of the Environment (SCOPE) and from the International Geosphere-Biosphere Program (IGBP).

➢ The initiative aims to optimise nitrogen's beneficial role in sustainable food production and minimise nitrogen's negative effects on human health.

➢ INI is coordinated by a Steering Committee, led by a chair and six regional centre directors representing Africa, Europe, Latin America, North America, South Asia and East Asia.

➢ The INI holds a conference once in every three years, inviting members of the international nitrogen community to meet up and discuss ideas and exchange knowledge on nitrogen issues.

➢ The program is currently a sustained partner of Future Earth, an international organisation that works to accelerate transformations to global sustainability through research and innovation.

7. Quad grouping

A report on the policy recommendations on Indian Ocean security by four think tanks from the Quad countries has been unveiled.

Important recommendations:

➢ Maintain the momentum of high-level consultations among the Quad countries with the aim of "free and open Info-Pacific region" and progressively move it to a political level.

➢ Australia, Japan, India and the US should work with countries in the IOR (Indian Ocean Rim) to help maintain independent security and economic policies by supporting high-quality alternatives to unilateral Chinese investments and political alignment with Chinese regional objectives.

➢ The four countries should work to oppose the establishment of permanent Chinese military bases in the IOR.

The Quad:

➢ Regional coalition known as the 'Quad', the quadrilateral formation includes Japan, India, United States and Australia.

➢ All four nations find a common ground of being the democratic nations and common interests of unhindered maritime trade and security.

➢ The idea was first mooted by Japanese Prime Minister Shinzo Abe in 2007. However, the idea couldn't move ahead with Australia pulling out of it.

8. **SCO Peace Mission Exercise**

➢ The 2018 SCO (Shanghai Cooperation Organisation) Peace Mission Exercise is being held in Russia.

➢ As part of the SCO initiatives, the SCO Peace Mission Exercise is conducted biennially for the SCO member states.

➢ The exercise will involve tactical level operations in an international counter insurgency or counter-terrorism environment under the SCO Charter.

➢ At least 3,000 soldiers from China, Russia, Kazakhstan, Tajikistan, Kyrgyzstan, India and Pakistan are participating in the drill.

➢ The previous SCO counter-terrorism drills were mainly limited to the Central Asian nations. But due to the entry of India and Pakistan, the SCO's counter-terrorism mission has expanded to South Asia.

➢ The 2018 exercise will be the first for India and Pakistan since becoming full members of the SCO in 2017. It also will be the first time India and Pakistan take part in a military exercise together since their independence, though their militaries have previously worked on United Nations peacekeeping missions.

➢ New members: India and Pakistan joined SCO as full members in June 2017 in Astana, Kazakhstan

9. **Indian Ocean Conference**

➢ The third edition of Indian Ocean Conference is being held at Hanoi, the capital of Vietnam.

➢ This year, the Indian Ocean Conference will emphasise on better cooperation, strategic collaboration and governance architectures. This conference will serve a platform to the countries to come closer and exchange better views on the economic and strategic importance of the region and neighbour hood. Theme: "Building Regional Architectures".

➢ The Indian Ocean Conference initiated by India Foundation along with its partners from Singapore, Sri Lanka and Bangladesh is an annual effort to bring together Heads of States/Governments, Ministers, Thought Leaders, scholars, diplomats, bureaucrats and practitioners from across the region.

10. **Venezuela crisis**

➢ Venezuela, once a rich oil reserve country, is now battering an unprecedented economic crisis. Hyperinflation, mass migration, food shortage, increasing number of crimes and

grinding poverty has pushed the nation into a deep turmoil.

➤ Hyperinflation is the biggest problem faced by Venezuela. The inflation rate there is expected to reach a stunning one million per cent this year, putting it on par with the crises of Zimbabwe in the 2000s and Germany in the 1920s, according to the International Monetary Fund.

Reasons:

➤ Plummeting oil prices since 2014
➤ Reduced oil exports
➤ Import of basic essentials like food and medicines became difficult Angered by the economic crisis in the country, many Venezuelans have started leaving the country.

11. '**Horizon 2020**'

➤ The European Union and India are collaborating in a project for developing a next generation Influenza vaccine to protect people worldwide.

➤ The EU and the Indian government's Department of Biotechnology have committed 15 million Euros each to fund this joint project.

➤ The aim is to advance the efficacy, safety, duration of immunity, and reactivity against an increased breadth of influenza strains. The joint effort also aims to develop cost-effective

and affordable influenza vaccine rapidly without compromising quality.

➤ The projects are also 'Open to the World' and thus applicants from other countries can join the EU-India consortia.

➤ Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

12. **SAARC Agri Cooperative Business Forum**

➤ The first South Asian Association for Regional Cooperation (SAARC) Agri Cooperative Business Forum was held recently in Kathmandu, Nepal.

➤ *Theme:* 'Organizing and Strengthening Family Farmers' Cooperatives to attain the Sustainable Development Goals 1 and 2 in South Asia'.

➤ SAARC Agri Cooperative Business Forum is organized by Food and Agriculture Organization (FAO) of United Nations and Asian Farmers' Association with the support from International Fund for Agricultural Development.

➤ It aims to provide platform to bring together representatives both from government and non-governmental entities from member

states of SAARC as well as from regional and international organizations.

13. BIMSTEC summit

➢ Fourth BIMSTEC summit was recently held in Nepal. The member states have signed a Memorandum of Understanding (MoU) for the establishment of a Bimstec Grid Interconnection to enhance energy cooperation among the member states.

➢ The theme of the fourth BIMSTEC summit is 'Towards a peaceful, prosperous and sustainable Bay of Bengal region'.

➢ The Fourth BIMSTEC Summit concluded with an 18-point Kathmandu Declaration. The declaration is expected to enhance the effectiveness of BIMSTEC Secretariat by engaging it in various technical and economic activities in the region.

➢ The declaration also highlighted the importance of trade and investment as one of the major contributing factors for fostering economic and social development in the region.

➢ The declaration said the fight against terrorism should target not only terrorists, terror organisations and networks but also identify and hold accountable States and non-State entities that encourage, support or finance terrorism.

➢ The declaration also recognised that eradication of poverty is the greatest regional challenge in realising development objectives

and expressed firm commitment to work together for implementing the Agenda 2030 for sustainable development.

> The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organization comprising of seven member states in South Asia and Southeast Asia lying in littoral and adjacent areas of Bay of Bengal constituting a contiguous regional unity.
>
> It comprises of seven member countries: five deriving from South Asia — including Bangladesh, Bhutan, India, Nepal, Sri Lanka — and two from Southeast Asia, including Myanmar and Thailand.

14. East Asia Summit

➢ 6th East Asia Summit- Economic Ministers' Meeting (EAS-EMM) was recently held in Singapore.

➢ It was attended by Economic Ministers from 10 ASEAN countries and their eight dialogue partners- Australia, China, India, Japan, Republic of Korea, New Zealand, the Russian Federation and the United States of America.

➢ The Ministers agreed to the importance of keeping markets open and fair as well as improving transparency and predictability of the business environment.

➢ The meeting recognized the importance of ongoing work to maximize the opportunities of, and address the challenges presented by,

the digital economy and the rise of regional and global value chains, as part of their efforts to promote economic growth and integration in the region.

> The East Asia Summit (EAS) is a forum held annually by leaders of, 16 countries in the East Asian, Southeast Asian and South Asian regions. Membership expanded to 18 countries including the United States and Russia at the Sixth EAS in 2011.

15. Spain offers referendum on greater Catalan autonomy

➤ In a bid to dampen tensions between Madrid and Barcelona, Spain's prime minister has proposed a referendum on whether Catalonia should be given greater autonomy.

➤ While stopping short of offering the wealthy region a vote on full independence, this proposal will still be seen as an olive branch for many in Catalonia who simply want to see more devolved regional powers.

Trivia:

➤ Catalonia, which has its own distinct language, was granted autonomy under Spain's 1978 Constitution adopted three years after the death of longtime dictator Francisco Franco.

➤ In 2006, a statute granting even greater powers to the northwestern region, boosting its financial clout, was approved by the Spanish and Catalan parliaments. And in a referendum at the time, over 73% of voters in Catalonia approved it.

➢ But in 2010 Spain's Constitutional Court struck down several articles of the charter, among them attempts to place the distinctive Catalan language above Spanish in the region and a clause describing the region as a "nation". The ruling sparked a rise in support for independence in Catalonia, which is home to some 7.5 million people and accounts for about one-fifth of the Spanish economy.

➢ The Catalan region has long been the industrial heartland of Spain, with textile and shipbuilding, and more recently, finance, services, and technology. Barcelona has a thriving start-up culture, and plays host to the annual Mobile World Congress, where the bleeding edge of technology is on display.

16. COMCASA

➢ India and the U.S. have signed the foundational or enabling agreement COMCASA on the side-lines of the inaugural 2+2 dialogue.

➢ COMCASA stands for Communications Compatibility and Security Agreement and is one of the four foundational agreements that the U.S. signs with allies and close partners to facilitate interoperability between militaries and sale of high end technology.

➢ It comes into force immediately, and is valid for a period 10 years.

➢ COMCASA is a "technology enabler" to help transfer high-tech avionics, encrypted communication and electronic systems to India as well as ensure secrecy of its C4ISR (command, control, communications, computers, intelligence, surveillance and reconnaissance) systems from leaking to other countries like Russia. This agreement would allow the interoperability of India and United States equipments.

4. Environmental Issues

1. Pangolin smuggling racket

➤ A special unit of the Odisha Police has launched a drive to bust an international syndicate that peddles "endangered" pangolin, one of the world's most illegally traded mammals.

➤ A process has been initiated to crack the international pangolin smuggling racket, possibly with the help of the Mutual Legal Assistance Treaty (MLAT). MLAT is an agreement between nations to exchange information or provide legal assistance for enforcing laws.

➤ Pangolin is smuggled for its scales as it is believed that they possess magic or charms and have medicinal properties. The scales serve as base component for indigenous (traditional) psychotropic substances. China is main illicit hub (market) for smuggled scales of Pangolins, where they have huge demand for medicinal and magical purposes.

➤ Pangolin is only scaly mammal on the planet. According to Convention on International Trade in Endangered Species (CITES), it is also the most illegally traded vertebrate within its class (Mammalia).

➤ Of the eight species of pangolin worldwide, two are found in India. They are Chinese pangolin, mostly found in northeast India and Indian pangolin.

➢ Chinese pangolin has been listed as "critically endangered" by UN affiliated International Union for Conservation of Nature's (IUCN) Red List. Indian pangolin (Manis crassicaudata) has been listed as "endangered" in IUCN Red List. It is also a Schedule I category protected animal, under the Wildlife Protection Act (1972).

2. Earth Overshoot Day 2018

➢ Earth Overshoot Day for the year 2018 will fall on August 1, the earliest date since ecological overshoot began in early 1970s. This year the overshoot day falls two days earlier than the last year's.

➢ Earth overshoot day is the day when humanity annual demand on nature exceeds what Earth can regenerate over the entire year. It is calculated by Global Footprint Network and World Wide Fund for Nature (WWF).

➢ Currently, humankind is using 170% of the world's natural output. That means we are using up the equivalent of 1.7 Earths. And, according to the Global Footprint Network, we're on track to be using two Earths by the end of the 21st Century.

➢ The two greatest contributing factors to humanity's Ecological Footprint are carbon emissions, which accounts for 60%, and food, 26%.

➢ If we cut our carbon emissions by half, according to the Global Footprint Network,

Earth Overshoot Day would come 89 days later in the year.

➢ If we cut food waste in half worldwide, we could move the date back 11 days. By eating less protein-intensive food, we could move it back 31 days.

➢ Earth Overshoot Day is calculated by dividing the world biocapacity (the amount of natural resources generated by Earth that year), by the world ecological footprint (humanity's consumption of Earth's natural resources for that year), and multiplying by 365, the number of days in one Gregorian common calendar year.

3. "PARIVESH"

➢ It is an environmental single window hub for Environment, Forest, Wildlife and CRZ (Coastal Regulatory Zone) clearances launched recently. This Single-Window Integrated Environmental Management System has been developed in pursuance of the spirit of 'Digital India' initiated by the Prime Minister and capturing the essence of Minimum Government and Maximum Governance.

➢ PARIVESH: Pro-Active and Responsive facilitation by Interactive, Virtuous and Environmental Single-window Hub.

4. Green Mahanadi Mission

➤ Odisha government has launched Green Mahanadi Mission. Under the mission, a total of two crore saplings will be planted on the banks of the Mahanadi.

➤ The Green Mahanadi Mission envisages rejuvenating Mahanadi River and its tributaries Tel and Ib by increasing recharging capacity through massive plantation.

Mahanadi River Basin
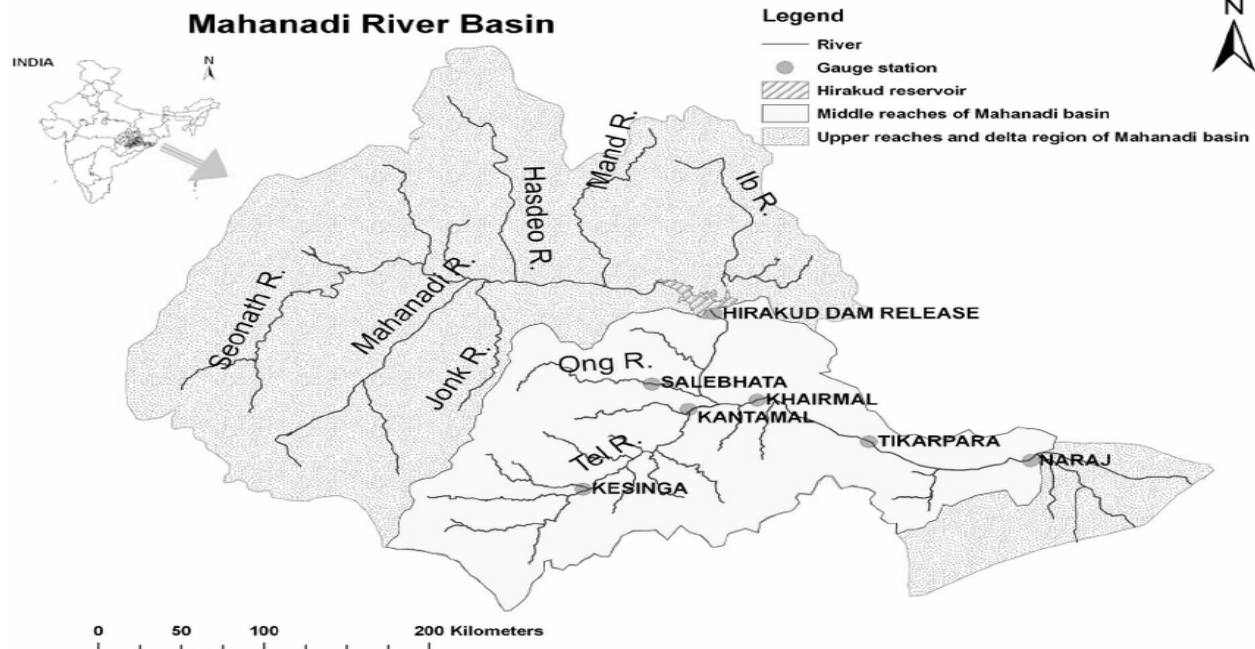
➤ Under the mission, a green belt with width of 1 km will be created on both sides of the river beginning from the place, where the river enters Odisha to Paradip, where it merges with the Bay of Bengal.

➤ The plantation will be undertaken over 75,760 hectares government land besides 47,470 hectares private land.

5. Naturalized species

➤ An international team including scientists from India has collated information on alien plant species from several sources, ranging from online plant lists to old compilations of India's national and regional flora. They found that as many as 471 plant species that are alien or exotic — not native to India — are 'naturalised,' for they can thrive in the country's wildernesses by forming stable populations.

➤ Natural species is an intentionally or unintentionally introduced species that has adapted to and reproduces successfully in its new environment.

➢ Naturalised species reproduce naturally in the environments they colonise. Invasive species do this so prolifically that they alter the workings of the natural ecosystems they colonise or invade.

➢ Scientists have developed the first lists of naturalised plants for each State; these lists reveal that 110 alien plants now naturally occur in more than 31 States in India.

➢ At 332, Tamil Nadu has the highest number of naturalised exotics, followed by Kerala (290), while Lakshadweep has the least (17).

➢ A majority of these naturalised plants are herbs such as the invasive Siam weed Chromolaena odorata, native to south and central America.

6. World Network of Biosphere Reserves

➢ The Khangchendzonga Biosphere Reserve has become the 11th Biosphere Reserve from India to be included in the UNESCO designated World Network of Biosphere Reserves (WNBR). India has 18 Biosphere Reserves.

➢ This decision was taken at the recently concluded 30th Session of International Coordinating Council (ICC) of Man and Biosphere (MAB) Programme of UNESCO held at Palembang, Indonesia.

Khangchendzonga Biosphere Reserve:

➢ Kanchenjunga Biosphere Reserve is a National Park and a Biosphere Reserve located in Sikkim, India. The park is named after the mountain Kangchenjunga, which with a height of 8,586 metres (28,169 ft), is the third-highest peak in the world.

➢ The Biosphere Reserve is one of the highest ecosystems in the world, reaching elevations of 1, 220 metres above sea-level. It includes a range of ecolines, varying from sub-tropic to Arctic, as well as natural forests in different biomes, which support an immensely rich diversity of forest types and habitats.

➢ The core zone – Khangchendzonga National Park was designated as a World Heritage Site in 2016 under the 'mixed' category.

7. Genetic bank for wildlife conservation

➢ India has got its first scientific and most modern national wildlife genetic resource bank in a step that would further the cause of conservation of endangered and protected animals.

➢ It is located in Hyderabad at the Laboratory for the Conservation of Endangered Species (LaCONES), a research wing of the Centre for Cellular and Molecular Biology (CCMB).

➢ The state-of-the-art bank is equipped with sophisticated equipment to preserve the genetic resources that could be utilised to virtually resurrect an animal species in case it goes extinct.

➢ The bank contains genetic resources of about 250 wildlife species.

➢ The Genetic Resource Bank will store genetic material of Indian species. It will also help in protecting India's biodiversity and environment.

8. 'IOWave18'

➤ Indian Ocean Wave Exercise 2018 (IOWave18) is being held in the Indian Ocean.

➤ India along with 23 other nations is participating in this major Indian ocean-wide tsunami mock drill which involves evacuation of thousands of people from coastal areas in over half a dozen coastal states.

➤ This tsunami warning exercise is being organised by the Intergovernmental Oceanographic Commission (IOC) of UNESCO. It was the IOC that coordinated the setting up of the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) in the aftermath of December 2004 tsunami.

➤ The purpose of exercise is to increase tsunami preparedness, evaluate response capabilities in each state and improve coordination throughout the region.

➤ IOWave18 will also provide an opportunity for Member States to test the indicators of Indian Ocean Tsunami Ready (IOTR) programme in pilot communities. IOTR is a community performance-based programme that facilitates a structural and systematic approach in building tsunami preparedness.

9. Eight Avian Species Declared "Extinct"

➤ Scientists have declared eight species of birds to be extinct in what are being seen as the first avian extinctions of the 21st century.

➤ The study was conducted by non-profit "BirdLife International". It assessed 51 species judged "critically endangered" on the International Union for the Conservation of Nature's (IUCN) "Red List" by using a new statistical method.

➤ The species gone extinct include Spix's macaw, the Alagoas foliage-gleaner, the cryptic treehunter, the Pernambuco pygmy-owl, the poo-uli, or black-faced honeycreeper and the glaucous macaw.

➤ Five of these new extinctions have occurred in South America and have been attributed by scientists to deforestation. Four out of the eight species declared extinct belong to Brazil.

BirdLife International (formerly the International Council for Bird Preservation) is a global partnership of conservation organisations that strives to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources. It is the world's largest partnership of conservation organisations, with over 120 partner organisations.

BirdLife International publishes a quarterly magazine, World Birdwatch, which contains recent news and authoritative articles about birds, their habitats, and their conservation around the world.

BirdLife International is the official Red List authority for birds, for the International Union for Conservation of Nature.

10. El Nino - this year

➢ The World Meteorological Organisation forecast "a 70% chance of an El Nino developing by the end of this year." The warming phase of ENSO is called El Nino.

➢ The organisation sees increased odds of higher surface temperatures in most of Asia-Pacific, Europe, North America, Africa and along much of South America's coastline. Interior parts of South America, Greenland, many south Pacific islands and some in the Caribbean were identified as possible exceptions.

➢ ENSO is nothing but El Nino Southern Oscillation. As the name suggests, it is an irregular periodic variation of wind and sea surface temperature that occurs over the tropical eastern Pacific Ocean. ENSO affects the tropics (the regions surrounding the equator) and the subtropics (the regions adjacent to or bordering the tropics). The warming phase of ENSO is called El Nino, while the cooling phase is known as La Nina.

Warm rising air causes thunderstorms and floods.

Atmosphere

Dry sinking air causes droughts.

Trade winds blow westwards.

South America

Australia

Warm surface water

Strong surface currents

Upwelling of cold deep water

NORMAL

Ocean

Dry sinking air causes droughts.

Atmosphere

Warm rising air causes thunderstorms and floods.

Trade winds reverse direction.

South America

Australia

Warm surface currents reverse.

Cold deep water

Ocean

Cold upwelling ceases.

EL NIÑO

➢ El Nino affects global weather. It favours eastern Pacific hurricanes and tropical storms. Unusual rainfall in Peru, Chile and Ecuador are linked to the climate pattern.

➢ El Nino reduces upwelling of cold water, decreasing the uplift of nutrients from the bottom of the ocean. This affects marine life and sea birds. The fishing industry is also affected.

➢ Drought caused by El Nino can be widespread, affecting southern Africa, India, Southeast Asia, Australia, and the Pacific Islands. Countries dependent on agriculture are affected.

11. Eco-sensitive area (ESA)

➢ The centre will soon issue a fresh draft notification declaring Western Ghats as an eco-sensitive area (ESA) with all but one of the six affected states on board.

DEFINITION:

Eco sensitive areas are **ecologically and economically important**, but vulnerable even to mild disturbances, and hence demand careful management. These areas are critical to the maintenance of productive and diverse plant and wildlife populations.

FEATURES OF ECO SENSITIVE AREAS:

- Biologically and ecologically rich, valuable or unique
- Largely irreplaceable if destroyed
- High value to human societies
- Maintain the ecological stability of the area
- Conserves biological diversity

CONTENTS OF ESA:

- **Sacred forests protecting origins of rivers** (e.g. Bhimashankar in Pune District)
- **Important breeding habitats** (e.g. Kokkre – Bellur Pelicanry in Mandya District, Karnataka)

➢ Karnataka is set to reject the notification as "it will adversely affect the state's economy." Karnataka is not in favour of declaring the Western Ghats as an ESA.

➢ The notice earmarked 60,000 square kilometres, or 37 per cent of the Ghats, as ecologically sensitive. However, it was protested by the states, especially Kerala, as ESAs restrict developmental activity. The Centre has since decided to accept recommendations from each state government.

5 *Science and Technology*

1. Word's first remotely operable LEAP microscope

➢ The Indian Institute of Technology (IIT)-Madras has commissioned remotely operable Local Electrode Atom Probe (LEAP) microscope. It is claimed to be world's first remotely operable LEAP microscope, as it can be remotely operated through special terminal by researchers divided geographically.

➢ LEAP is high-performance microscope that can provide a precise atom-by-atom view of materials. It provides atomic-scale insights into metals, which will influence wide spectrum of industries ranging from steel to automobiles and energy to transportation sector. It will also give major thrust to research in nanotechnology, among other fields.

2. Bombali: New strain of Ebola virus

➢ Researchers have recently discovered new strain of Ebola virus iIn bats in northern Bombali region of Sierra Leone.

➢ It has been named as Bombali virus strain, after district where it was found.

➢ The Bombali virus is overall sixth known virus strain Ebola virus. Others are Zaire, Sudan, Tai Forest, Bundibugyo and Reston.

➢ Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness in humans.

➢ The virus is transmitted to people from wild animals and spreads in the human population through human-to-human transmission.

➢ The average EVD case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks.

3. Mission Satyanishtha

➢ Indian Railways has launched "Mission Satyanishtha".

➢ This mission aims at sensitizing all railway employees about the need to adhere to good ethics and to maintain high standards of integrity at work.

Objectives of the Mission:

• To train every employee to understand the need and value of ethics in Personal and Public life.

• To deal with ethical dilemmas in life and Public Governance.

• To help understand the policies of Indian Railways on ethics and integrity and the employee's role in upholding the same.

• To develop inner governance through tapping inner resources.

4. **Scutoid**

➤ Scientists have identified a new shape called the scutoid while studying epithelial cells.

➤ A scutoid is a solid geometric shape, like a cube or a pyramid, which had not been described until now. The epithelial cells adopt this form when the tissue curves, giving it a more stable structure. It could be said that they look like 'twisted prisms'.
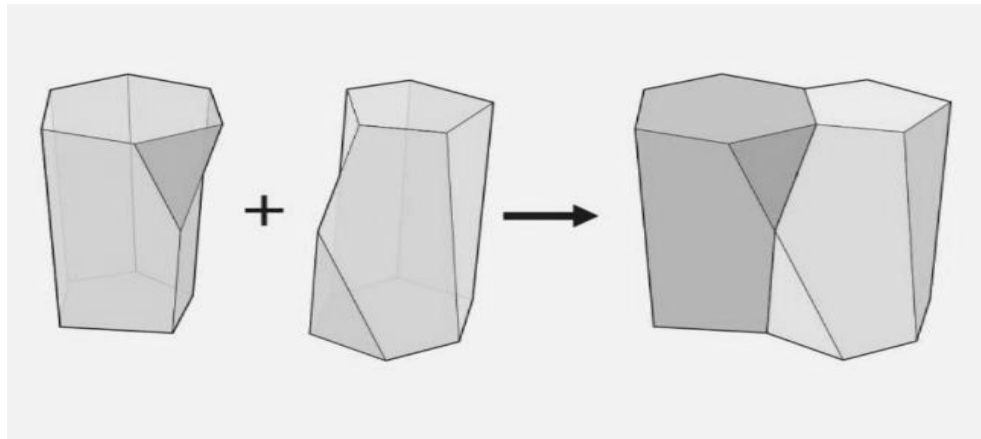
➤ These new and beautiful shapes are the solution that nature has found to fold and curve the epithelia, which lines the outer surfaces of organs.

➤ This study opens the door to understanding how organs are formed during their development and what might be missing in some diseases in which this process is altered.

5. **Space Odyssey**

➤ Prime Minister Narendra Modi as part of his 72nd Independence Day speech vowed to put Indian in space by 2022 under manned space mission on board 'Gaganyaan'.

➤ By 2022, India completes 75 years of Independence.

➤ If successful, India will become fourth nation in the world to send astronaut into space after US, Russia and China.

➤ Former Indian Air Force (IAF) pilot Rakesh Sharma was first Indian to travel to space. He was part of the Soviet Union's Soyuz T-11 expedition, launched on April 2, 1984.

➤ The mission will be completed at budget of Rs 10,000 crore and some of technology components required for it already have been developed.

➤ This includes heavy-lift launch vehicle (GLSV Mark-III), re-entry and recovery technology, crew module, Environmental Control and Life Support System (ECLSS) and Life Support System (ECLSS) and astronaut training.

6. Thermal battery

➢ India has become home to the world's first-ever thermal battery plant. The thermal battery facility, inaugurated in Andhra Pradesh, will be owned by Bharat Energy Storage Technology Private Limited (BEST).

➢ A thermal energy battery is used for storing and releasing thermal energy. It allows for available energy to be temporarily stored and be released for use whenever necessary. Standard battery technology is based on charging and discharging cycles mainly operated by electricity. The most commonly used Lithium-ion battery works on electrical energy. However, thermal batteries operate on thermal energy, which can be defined as energy created by temperature differences.

➢ This plant aims to create a new energy storage form that is expected to have commercial applications, while also maintaining a low carbon footprint, and being less dependent on external factors like weather. It could provide energy solutions for electrical grids, transport and telecom services.
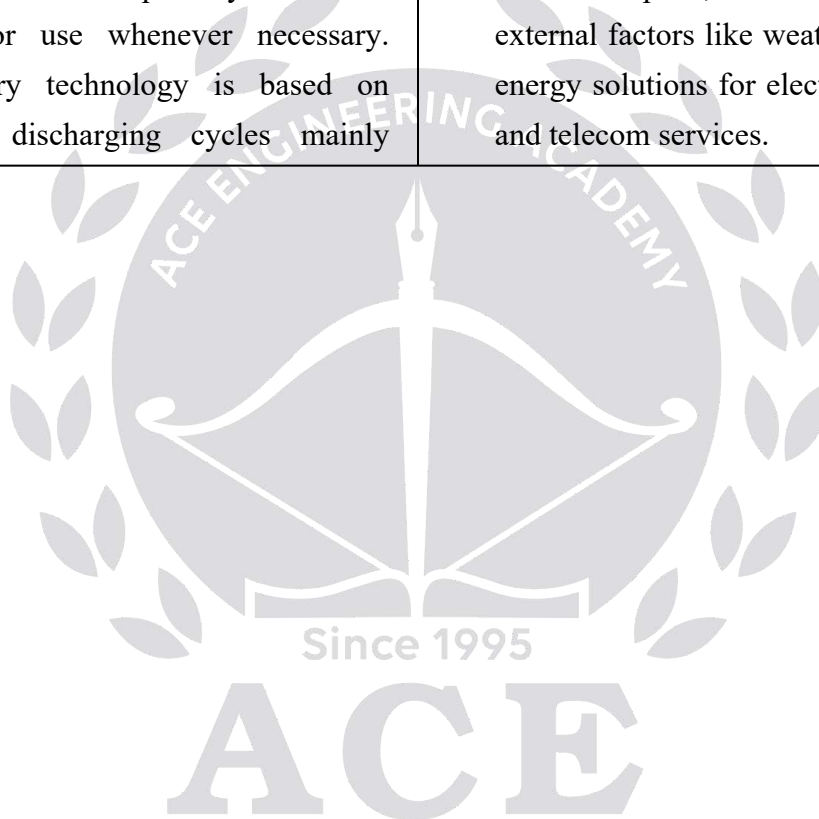
6 *Defence*

1. Ballistic Missile Interceptor AAD

➤ DRDO conducted the successful test of the Ballistic Missile Interceptor Advanced Area Defence (AAD) from Abdul Kalam Island, Odisha.

➤ It is an endo-atmospheric missile, capable of intercepting incoming targets at an altitude of 15 to 25 kms.

➤ It has been developed as part of indegenous efforts to have multi-layer ballistic missile defence system, capable of destroying incoming hostile ballistic missiles.

➤ It is 7.5 metres tall and weighs around 1.2 tonnes.
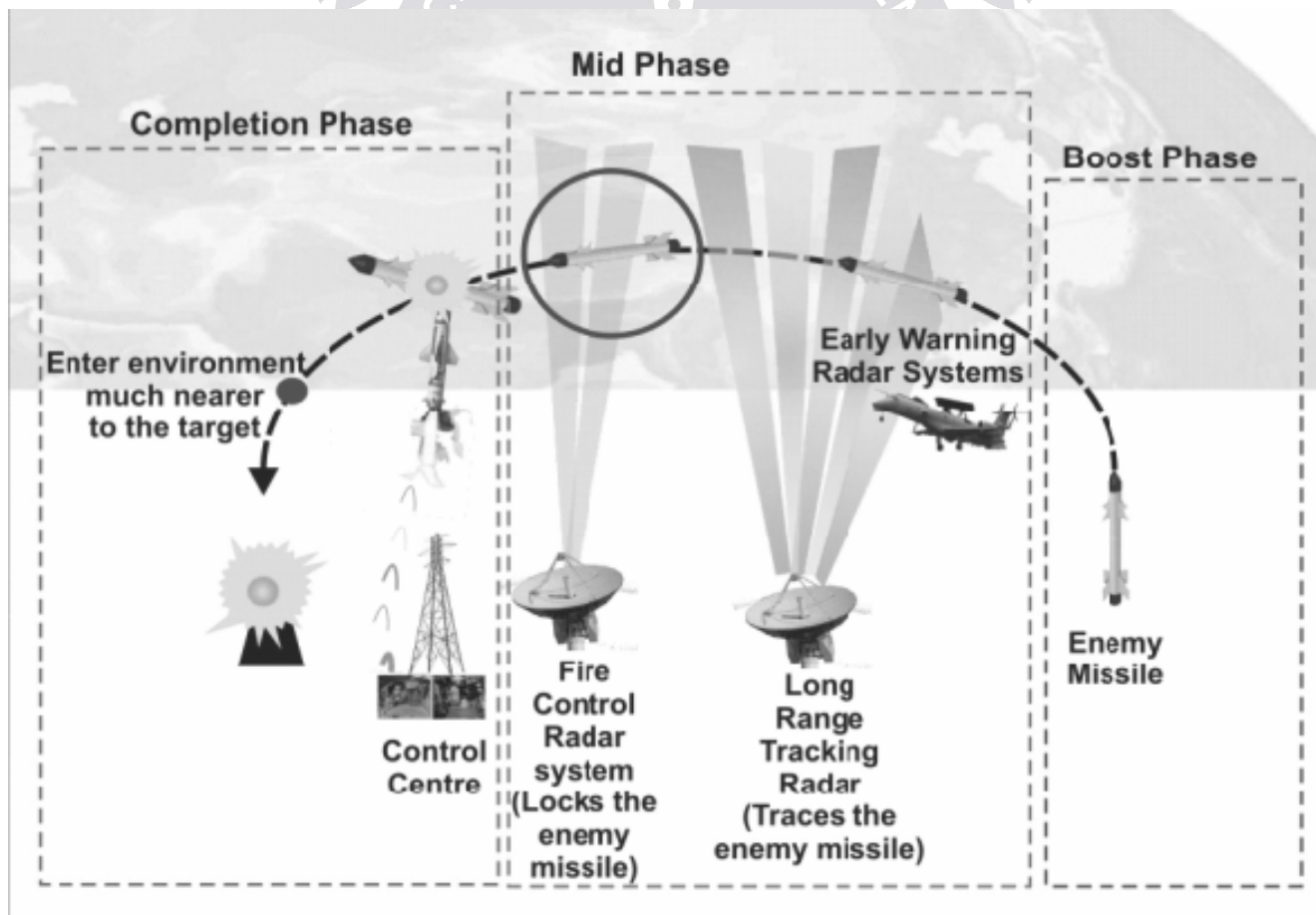
The interceptor missile has its own mobile launcher, secure data link for interception, independent tracking and homing capabilities and sophisticated radars.

Trivia:

➤ The Indian Ballistic Missile Defence (BMD) Programme is an attempt to develop and to use a multi-layered ballistic missile defence system to protect from ballistic missile attacks. The India's decision to develop Ballistic Missile Defense (BMD) was introduced in the light of the ballistic missile threat mainly from Pakistan, especially can be attributed to the Kargil War in 1999.

Need for BMD:

➤ India follows 'No First Use policy'. A robust BMD provides an opportunity to the nation to strike back if a nuclear projectile is launched by an enemy state.

➤ BMD reduces the incentive for the enemy state to launch a nuclear attack, thus enhancing strategic stability.

➤ An indigenous system would reduce the import bill of defence systems from other nations.

➤ Technology developed for BMD can be used in other sectors, especially in space technology.

7 Miscellaneous

1. Rani-ki-Vav

➤ The Reserve Bank of India (RBI) will soon be releasing a new lavender Rs 100 currency note. The banknote highlights the rich and diverse cultural heritage of India as it prominently displays a photograph of 'Rani-ki-vav' (The Queen's Stepwell), an 11th century architectural wonder.
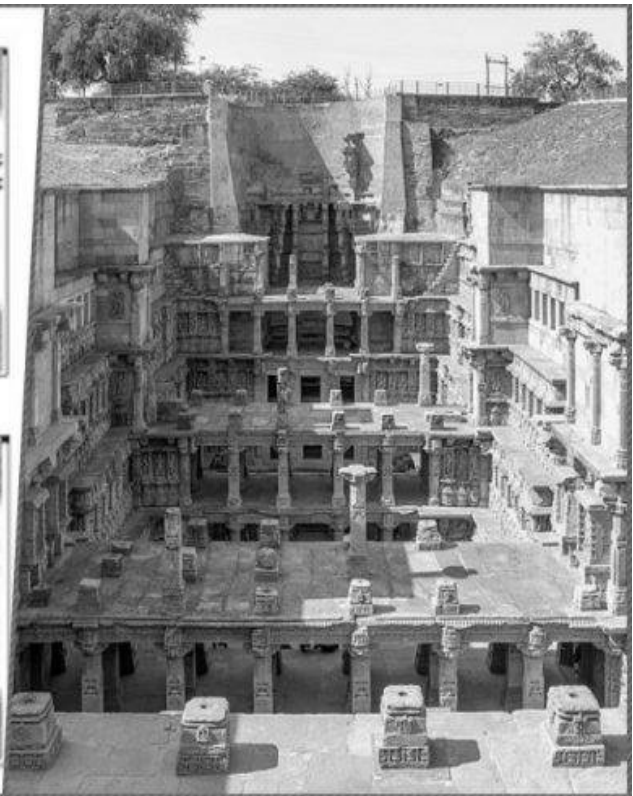
➤ Located in Gujarat's Patan, the 900-year-old structure is a major tourist attraction, a UNESCO World Heritage site, and was awarded as the cleanest iconic place in India in 2016. It is located on the banks of Saraswati River.

➤ Rani-ki-Vav highlights the sanctity of water as it is designed as an inverted temple under the earth's surface. The central theme is the Dasavataras, or ten incarnations of Vishnu, including Buddha. The avatars are accompanied by sadhus, brahmins, and apsaras (celestial dancers).

2. Shekatkar committee

- The government recently reviewed the implementation of ambitious reform initiative for the Indian Army based on recommendations of a committee headed by Lt Gen (retd) DB Shekatkar.

- Shekatkar Committee was tasked with suggesting steps to enhance combat capability of the armed forces.

3. West Bengal to be renamed as Bangla

- West Bengal state assembly has unanimously passed resolution to change state's name to 'Bangla' in all three languages – Bengali, Hindi and English.

Reason for the renaming:

- The state government first proposed the renaming in 2016. West Bengal parliamentary affairs minister Partha Chatterjee had then argued for the change saying bureaucrats and politicians from the state often complain that they are asked to speak at the end of every national-level meeting in Delhi. This was because the speakers' lists at such meeting are prepared according to alphabetical order of the states they represent. If West Bengal gets the new name, it will leapfrog from bottom of the list to the top of the pecking order.

- The renaming will help the state appear at the fourth spot after Arunachal Pradesh, Andhra Pradesh and Assam in the alphabetic order of the states.

- The name change will only become official when resolution gets approval from Union Home Ministry and Parliament passes Bill.

4. Deputy Chairman of Rajya Sabha

- Harivansh Narayan Singh has been elected as the new deputy Chairman of Rajya Sabha.

- The Deputy Chairman is a constitutional position created under Article 89 of the Constitution, which specifies that Rajya Sabha shall choose one of its MPs to be the Deputy Chairman as often as the position becomes vacant. The office becomes vacant either by resignation or removal from office or when the Rajya Sabha member's term gets over.

5. India unveils geographical indication logo, tagline

- India has unveiled a tagline and a tricolour logo for geographical indication (GI) certified products. From now on, the GI-registered goods will sport the logo and the tagline to make them more attractive.

- Tagline: "Invaluable Treasures of Incredible India".

Logo:

Facts:

➤ A total of 320 products have been conferred the GI status in India so far.

➤ Karnataka comes first with 38 GI products, followed by Maharashtra which has 32 products.

➤ Tamil Nadu comes third with 25 GI products.

6. 2018 Ramon Magsaysay Award:

➤ Two Indians Bharat Vatwani and Sonam Wangchuk are among six who have been declared winners of 2018 Ramon Magsaysay Award.

➤ Dr Vatwani's organisation has rescued, treated, fed and reunited thousands of mentally-ill citizens living on the streets with their families.

➤ Sonam Wangchuk, meanwhile, is an engineer-cum-social activist who has done extensive work in the field of education, environment, community development and environmental protection for the people Ladakh.

Ramon Magsaysay Award:

➤ It is Asia's highest honour and is often regarded as the region's equivalent of the Nobel Prize.

➤ It was established in 1957 by trustees of the New York City based Rockefeller Brothers Fund and Philippine government in the memory of Philippines' third President Ramon Magsaysay.

➤ It is awarded annually to individuals or organizations from Asia region for their altruistic and philanthropic service.

➤ It carries Medallion bearing the likeness of the late President Ramon Magsaysay, cash prize and a certificate.

7. NOTA in Rajya Sabha

➤ The Supreme Court has overruled an Election Commission notification, saying that NOTA (None Of The Above) option cannot be allowed in Rajya Sabha elections.

➤ As per the court, the NOTA option is meant only for universal adult suffrage and direct elections and not polls held by the system of

proportional representation by means of the single transferable vote as done in the Rajya Sabha.

➤ NOTA in indirect elections, such as in the Rajya Sabha, would lead to horse-trading, corruption and use of extra constitutional methods to defeat a party candidate.

➤ The option of NOTA for Lok Sabha and assembly elections was prescribed by the SC in 2013. The option of NOTA in RS polls was introduced by the EC in 2014. Thus, India became the 14th country to institute negative voting.

8. Heritage Circuit and North East Circuit

The Ministry of Tourism has sanctioned two new projects under Heritage and North East Circuits of Swadesh Dashan Scheme for Rs. 164.95 Crores in Punjab and Tripura.

Heritage Circuit:

➤ Under Heritage Circuit in the state of Punjab, the project covers sites of Anandpur Sahib – Fatehgarh Sahib – Chamkaur Sahib – Ferozpur – Amritsar – Khatkar Kalan – Kalanour – Patiala at the cost of Rs. 99.95 crores.

➤ The project includes development of Jallianwala Bagh in Amritsar for Rs. 8 Crores, development of Tourist Infrastructure and Heritage Path at Anandpur Sahib for Rs. 28.99 crores, development of Tourist

Infrastructure at Fatehgarh Sahib among others.

➤ The facilities being developed include Virtual Reality Shows (Jallianwala and Hussainiwala Border), beautification and landscaping, interpretation centres, façade development, wayside amenities, parking, CCTV and Wi-Fi facilities, Cafeterias, Open Air Theatre, drinking water facility etc.

North East Circuit:

➤ Under North East Circuit in Tripura, the sites of Surma Cherra- Unakoti- Jampui Hills- Gunabati-Bhunaneshwari-Matabari- Neermahal- Boxanagar- Chotta khola- Pilak- Avangchaarra are covered with total project cost of Rs. 65 Crores.

➤ The project envisaged infrastructural development of the sites with special emphasis on developing an Interpretation Centre, Tourist Visitor Centres, Cafeteria, Last Mile Connectivity, Illumination of sites and monuments, Wayside Amenities, Floating Jetties, Camping Grounds, Parking Facilities, Adventure Activities, Ghat Development at above sites.

9. Neelakurinji plants

➤ After 12 years, the Munnar Hills seems to be bathed in a dreamy shade of blue with the blooming of Neelakurinji (strobilanthes

kunthiana) as the flower, rarest of the rare, does not grow in any other part of the world.

➢ Kurinji or Neelakurinji (Strobilanthes kunthianus) is a shrub that is found in the

shola forests of the Western Ghats in South India.

➢ Nilgiri Hills, which literally means the blue mountains, got their name from the purplish blue flowers of Neelakurinji that blossoms only once in 12 years.

➢ Some Kurinji flowers bloom once every seven years, and then die. Their seeds subsequently sprout and continue the cycle of life and death.

➢ The Paliyan tribal people living in Tamil Nadu used it as a reference to calculate their age.

10. **Sikkim's first airport**

➢ Sikkim's first-ever airport was recently inaugurated by the Prime Minister Narendra at Pakyong. The airport was constructed by the Airports Authority of India.

➢ Until now, Sikkim was the only state in India remaining without a functional airport. The development not only eases connectivity to the Himalayan state but also brings it on the air-map of the world.

➢ The airport's location makes it strategically relevant from the country's security point of view. The Indian Air Force (IAF) will find this airport convenient for the landing and taking off of its aircrafts.

➢ The airport is not only India's 100th functional airport but also one of the country's five highest airports.

General Studies & Engineering Aptitude

100 Practice Questions

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01. The Nelson Mandela Decade of Peace declared by United Nations is:

    (a) 2019-2028   (b) 2020-2029   (c) 2021-2030   (d) 2022-2031

02. Financial Inclusion Index which has recently been launched to gather all data related to financial inclusion will measure the level of financial inclusion based on which of the following parameters:

    (i) Access to financial services.   (ii) Usage of financial services.

    (iii) Quality of deposits   (iv) Establishment of new banks

    (a) Only (i)   (b) (i), (ii) and (iii)

    (c) (i), (ii) and (iv)   (d) (ii), (iii) & (iv)

03. The Government has recently rolled out a centrally sponsored scheme called Pradhan Mantri Jan Arogya Abhiyaan. Which of the following statements is true with respect to the programme?

    (i) It is also known as Ayushman Bharat or the National Health Protection Mission (AB-NHPM).

    (ii) It will cover over 10 crore poor vulnerable families (around 50 crore beneficiaries) providing coverage of up to ₹5 lakh (per family per year) for secondary and tertiary care hospitalisation.

    (iii) It will provide basic health protection to all the poor vulnerable senior citizens in the country.

    (a) (i), (ii) and (iii)   (b) (i) and (iii)

    (c) Only (i) and (ii)   (d) (ii) and (iii)

04. To improve the quality of land records in the country through complete computerization of the property registration process and digitization of all land records, the government has announced which of the following programmes recently?

    (a) DILRMP   (b) NLRMP

    (c) SAUBHAGYA   (d) DIPAM

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05. On the eve of the 125th anniversary of Swami Vivekananda's historic address to the Parliament of World Religions in Chicago, The World Hindu Congress is being held in Chicago, Illinois, U.S. and the theme for the year 2018 is ?

    (a) Vasudhaiva Kutumbakam   (b) Yato Dharmas Tato Jaya

    (c) Sarvejana Sukhino Bhavantu   (d) Sumantrite Suvikrante

06. Which of the following statements is true?

    (i)   International Commission on Irrigation and Drainage (ICID), at Saskatoon in Canada has accepted the nomination of Sadarmat anicut across river Godavari in the ICID Register of Heritage Irrigation Structures.

    (ii) The ICID is a Technical and Voluntary Not-for-profit, International NGO, dedicated to enhance the world-wide supply of food and fibre for all people by improving water and land management, and the productivity of irrigated and drained lands.

    (iii) Pedda Cheruvu in Telangana has been nominated in the ICID Register of Heritage Irrigation Structures.

    (a) Only (ii)   (b) (i) and (ii)   (c) (i), (ii) and (iii)   (d) (ii) and (iii)

07. Swadhar Greh scheme is related to

    (i) Providing shelter, food, clothing and care to the marginalized women/girls who are in need.

    (ii) Widows deserted by their families and relatives

    (iii) Women prisoners released from jail and without family support

    (iv) Women survivors of natural disasters.

    (a) Only (i)   (b) (ii), (iii) and (iv)

    (c) (i) and (ii)   (d) (i), (ii), (iii) and (iv)

08. Initiative launched to tackle and reduce malnutrition among children in India through multi-modal interventions is

    (a) POSHAN Abhiyan   (b) PAUSHTIK Abhiyan

    (c) Swasthya Seva Yojana   (d) Mission Indradhanush

09. The high-level committee on restructuring stressed assets and creating more value for public sector banks (PSBs) is headed by

(a) Ratan Watal Committee

(b) Sunil Mehta Committee

(c) B.N Goldar Committee

(d) B.N SriKrishna Committee

10. Match the following committees and the purpose for which it has been set up

Committee Name	Purpose
1. Justice B.N.SriKrishna	i) To reform military financial management
2. D B Shekatkar	ii) 15th Finance Commission
3. N.K.Singh	iii) to study the various issues related to data protection
4. YH Malegam	iv) Economic Advisory Council
5. Dr. Bibek Debroy	v) To monitor bad loans, rising cases of frauds, audits

Codes:

(a) 1-iii 2-i 3-ii 4-v 5-iv

(b) 1-ii 2-i 3-iv 4-v 5-iv

(c) 1-iv 2- iii 3-ii 4-i 5-v

(d) 1- iii 2- iv 3-i 4-iv 5-v

Engineering Aptitude

11. A stone weighing 121 kg fell from a height of 10 m and broke into exactly 5 pieces all of different weights. Find the sum of the smallest and the largest piece if it is known that it is possible to weight any weight (using a common balance) in kg from 1 to 121 kg using the 5 pieces?

(a) 118   (b) 82   (c) 65   (d) Cannot be determined

12. A and B working by themselves can build a wall respectively in 8 days and 18 days more than what they would take when working together. In how many days can A alone build the wall?

(a) 20   (b) 24   (c) 30   (d) 18

13. There is a tower and there is a flagstaff on it. A man walking towards the tower observed that a point A 400 feet from the foot of the tower, the angle of elevation of the foot of the flagstaff if 30°. He walks a distance of 200 feet towards the tower and finds that the angle of elevation of the top of the flagstaff is 60°. What is the height of the flagstaff?

(a) $200\left(\sqrt{3}-1\right)$ (b) $100\sqrt{3}$ feet   (c) $200\sqrt{3}$ feet   (d) $\dfrac{200}{\sqrt{3}}$ feet

14. a * b = (a # b) # (b # a) and a # b = ab – a+ b, where a and b are integers. [–3 *(3 * 2)]

(a) 10721   (b) 10641   (c) 10801   (d) None of these

15. If $x^y = y^z = z^x$ and x, y, z > 0 then $\dfrac{1}{x}\log_z xyz + \dfrac{1}{y}\log_x xyz + \dfrac{1}{z}\log_y xyz = ?$

(a) $3\left(\dfrac{xy+yz+zx}{xyz}\right)$

(b) $\left(\dfrac{xy+yz+zx}{xyz}\right)$

(c) 1

(d) (x + y + z)

16. How many positive integral solutions (x, y, z) are there given that $x+ (-1)^z y = 2z$, and x, y, z ≤ 10?

(a) 3   (b) 37   (c) 38   (d) 35

17. The maximum number of regions into which a plane can be divided by five straight lines is

(a) 14   (b) 15   (c) 16   (d) 17

18. Find the minimum value of the expression $4x^2 + 2y^2 + 6x + 5y + 5$, given x, y ∈ R.

(a) $-\dfrac{33}{8}$ (b) $\dfrac{33}{8}$ (c) $-\dfrac{3}{8}$ (d) $\dfrac{15}{8}$

19. Ramana has some gold coins with him. His friend Vaman asks him how many gold coins he has Raman replied "The number of gold coins I have is a two-digit number which can be expressed as a sum of two perfect squares in two different ways". Which of the following could not be the gold coins with Raman?

(a) 64 + 1, 49 + 16   (b) 49 + 9   (c) 49 + 36, 81 + 4   (d) 49 + 1, 25 + 25

20. **Statement:** The first step in treating addicts is to re-establish their lost ties, for which a continuous personal attention should be paid to the addicts under treatment.

Assumptions:

I.   Addicts under treatment respond better when shown personal interest.

II. Addiction and strained relationships are intimately connected.

(a) Only assumption I is implicit   (b) Only assumption II is implicit

(c) Either I or II is implicit   (d) Both I and II are implicit

Engineering Mathematics

21. A bag has 6 red balls and 3 green balls. The probability that drawing a red ball on the second draw from the bag without replacing the marble from the first draw is

    (a) $\dfrac{2}{3}$ (b) $\dfrac{1}{3}$ (c) $\dfrac{1}{4}$ (d) $\dfrac{3}{4}$

22. If $u(x, y)=(x^2-y^2-3x)$ in an analytic function $f(z) = u(x, y)+ i\, v(x, y)$ then $v(x, y)$ is

    (a) $2y - 3xy$ (b) $2xy - 3y$ (c) $2y + 3xy$ (d) $2xy + 3y$

23. The complex function $f(z) = z^2$ is

    (a) analytic everywhere   (b) not analytic

    (c) analytic only at (0, 0)   (d) analytic except at (0, 0)

24. The particular integral of

    $$4\dfrac{d^2y}{dx^2} - 4\dfrac{dy}{dx} + y = e^{\frac{x}{2}} \quad \text{is} \ \underline{\quad}.$$

    (A) $\dfrac{x^2}{8}e^{\frac{x}{2}}$ (B) $x^2\, e^x$ (c) $\dfrac{x}{4}e^{\frac{x}{2}}$ (d) $\dfrac{1}{8}e^{\frac{x}{2}}$

25. The Euler – Cauchy's homogeneous linear differential equation, whose auxiliary equation has roots 1, –1 is given by

   (a) $x^2 \dfrac{d^2y}{dx^2} - x \dfrac{dy}{dx} + y = 0$

   (b) $x^2 \dfrac{d^2y}{dx^2} + x \dfrac{dy}{dx} - 2y = 0$

   (c) $\dfrac{d^2y}{dx^2} + \left(\dfrac{1}{x}\right)\dfrac{dy}{dx} + \left(\dfrac{y}{x^2}\right) = 0$

   (d) $\dfrac{d^2y}{dx^2} + \left(\dfrac{1}{x}\right)\dfrac{dy}{dx} - \left(\dfrac{y}{x^2}\right) = 0$

26. The Newton's iteration formula for finding $\sqrt{N}$ where N is a positive real number is

   (a) $x_{n+1} = 1/2 \, (x_n + N/x_n)$

   (b) $x_{n+1} = 1/2 \, (x_n - N/x_n)$

   (c) $x_{n+1} = x_n \, (2 - N.x_n)$

   (d) $x_{n+1} = x_n \, (2 + N.x_n)$

27. Which of the following functions is not entire function?

   (a) $\sin z$
   (b) $\cos z$
   (c) $az^2 + bz + c$
   (d) $\dfrac{1}{(z-1)}$

28. In the Taylor's series expansion of $(e^z + \sin z)$ about $z = \pi$, the co-efficient of $(z - \pi)^2$ is

   (a) e^π
   (b) $\dfrac{e^\pi}{2}$
   (c) $\dfrac{e^\pi}{3}$
   (d) $\dfrac{e^\pi}{6}$

29. For which one of the following functions is the Rolle's theorem applicable ?

   (a) $(x - 2)$ in $[1, 3]$

   (b) $1 - (1 - x)^{-1}$ in $[0, 2]$

   (c) $\sin x$ in $[0, \pi]$

   (d) $\tan x$ in $[0, 2\pi]$

30. The value of $\displaystyle\int_0^{\pi/2} \int_0^{2a\cos\theta} r \sin\theta \, dr \, d\theta$ is = _____.

   (a) $\dfrac{a^2}{2}$
   (b) $2a^2$
   (c) $\dfrac{2a^2}{3}$
   (d) $4a^2$

General Principles of Design, Drawing, Importance of Safety

31. Consider the following statements

    1. Modular architecture in design decreases product design cycle time.

    2. Application of Integral Architecture makes it difficult for competitors to copy design.

    3. Integral Architecture reduces the variety of devices that can be produced.

    4. Integral architecture improves serviceability of the product.

    The appropriate statements are

    (a) 1, 2, 3, 4   (b) 1 and 2 only

    (c) 1, 2, 4 only   (d) 1, 2, 3 only

32. **Statement (I):** Implementation of safety in design is a customer delighter.

    Statement (II): Safety is a vital requirement in the functioning of the product for users. This attracts users to purchase the product at a higher cost. (eg. airbags in cars)

    Codes:

    (a) Both Statement (I) and Statement (II) are individually true and Statement (II) is the correct explanation of Statement (I)

    (b) Both Statement (I) and Statement (II) are individually true, but Statement (II) is **not** the correct explanation of Statement (I)

    (c) Statement (I) is true, but Statement (II) is false

    (d) Statement (I) is false, but Statement (II) is true

33. **Statement (I):** Lifts, Escalators and internal staircases are not used in case of fire in a multi-storey block.

    Statement (II): In case of fire all lifts, exits, staircases etc should be well ventilated.

34. Of the following statements the incorrect ones with regard to special purpose design over mass production design is/are

    1. Uniqueness in product   2. Less time in maintenance and service

    3. Readily available spare parts   4. Low cost in producing product

    5. Less time in designing and building the product.

    The appropriate codes are

    (a) 1, 2, 3, 4, 5   (b) 2, 3, 4, 5 only

    (c) 1, 2, 4, 5 only   (d) 1, 2, 5 only

35. Match the following

    1. Integral Architecture   (i) Improve existing design

    2. Functional Decomposition   (ii) Decrease Assembly time

    3. Reverse Engineering   (iii) Solution Neutral

    4. Redesign   (iv) Product to sub functions

    Choose the appropriate codes below.

    Codes:

	1	2	3	4		1	2	3	4
(a)	(i)	(ii)	(iii)	(iv)	(b)	(ii)	(iii)	(i)	(iv)
(c)	(ii)	(iii)	(iv)	(i)	(d)	(iii)	(ii)	(i)	(iv)

36. Locus of the point P which is rotating about another point O with uniform angular velocity and the PO is increasing at constant rate is

    (a) An ellipse   (b) Archimedean spiral

    (c) Helix   (d) Logarithmic spiral

37. Consider the following statements

    i.   A tetrahedron is resting on its face on the H.P. with a side perpendicular to the VP. Its front view will be an isosceles triangle

    ii. When a pyramid suspended freely from one of its base corners, the line joining that corner and the CG will be inclined to reference line

    Which of the statements are correct?

    (a) Both i and ii   (b) i only   (c) ii only   (d) neither i nor ii

38. List-I(line position) with List-II (Traces) and choose the correct answer using the codes given below

List – I (Line position)

(P) Line parallel to both HP and VP

(Q) Line parallel to HP and inclined/perpendicular to VP

(R) Line parallel to VP and inclined/perpendicular to HP

(S) Line inclined to both HP and VP

List – II (Traces)

1. Only vertical trace, no horizontal trace

2. Both horizontal and vertical traces

3. No traces

4. Only horizontal trace, no vertical trace.

Codes:

	P	Q	R	S			P	Q	R	S
(a)	2	1	4	3		(b)	4	1	2	3
(c)	3	1	4	2		(d)	2	3	4	1

39. Select the correct view indicated by the arrow.

(a)

(b)

(c)

(d)
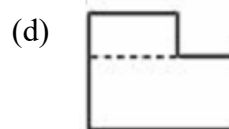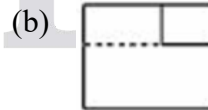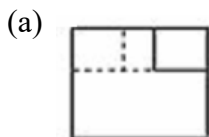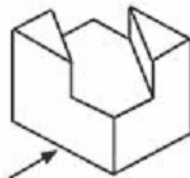
40. The area of the development profile of the lateral surface of a solid involves

   (a) One side of the base and the height of the solid

   (b) The perimeter of the base and the true length of the lateral edge or generator

   (c) The perimeter of the base and half the height of the solid

   (d) Half the perimeter of the base and the height of the solid

Standards and Quality practices in production, construction, maintenance and services

41. Which of the following is biggest obstacle for implementing process improvement?

   (a) Lack of commitment of top management

   (b) Inertia of people involved in process

   (c) Collecting data

   (d) Organization culture

42. Which of the following are important elements of TQM?

   I. Top management commitment   II. Customer driver

   III. Factual approach to decision making

   IV. Quality control

   (a) I, II and III   (b) I, II and IV

   (c) I, III and IV   (d) II, III and IV

43. Which of the following is highest level in evolution of quality management?

   (a) Inspection   (b) Quality control   (c) Quality assurance   (d) TQM

44. Which of the following is not a mechanism to prevent mistakes?

   (a) Prevent mistakes from occurring

   (b) If mistakes can't be prevented, detect them early

   (c) If mistakes recur, stop production until the process is corrected

   (d) Remove the person involved in process where mistake occurred which sends warning to other workers

45. **Statement I:** TQM reduces cost of quality

    Statement II: When TQM is implemented, prevention costs are almost doubled.

    Codes:

    (a) Both Statement (I) and Statement (II) are individually true and Statement (II) is the correct explanation of Statement (I)

    (b) Both Statement (I) and Statement (II) are individually true, but Statement (II) is **not** the correct explanation of Statement (I)

    (c) Statement (I) is true, but Statement (II) is false

    (d) Statement (I) is false, but Statement (II) is true

46. Which of the following are tools of quality used in TQM

    I. Fish bone diagram

    II. Pareto chart

    III. Control chart

    (a) I & II   (b) II & III   (c) I & III   (d) I, II & III

47. What are the advantages of employee involvement?

    I. Less negative turnover

    II. Skill bank enhancement

    III. Increase in accountability of employees

    (a) I & II   (b) I & III   (c)II & III   (d) I, II & III

48. Supplier quality evolution is part of which cost?

    (a) Internal failure cost   (b) External failure cost

    (c) Appraisal cost   (d) Prevention cost

49. **Statement (I):** According to Ishikawa, success of a firm is highly dependent on treating quality improvement as a never ending quest.

    Statement (II): A commitment to continuous improvement can ensure that people will never stop learning.

50. **Statement (I):** Firm should participate directly in supplier activities related to quality such as supplier improvement projects and supplier training.

   Statement (II): Evaluating supplies is an important activity to assure the dependable high quality of incoming materials in the firm.

Basics of Energy and Environment

51. A species the population of which is low enough for it to be at risk of becoming extinct, but not low enough that it is in imminent danger of extinction is called

   (a) Endangered species
   (b) Threatened species
   (c) Vulnerable species
   (d) Rare species

52. Taxonomic diversity of a region with several ecosystems is :

   (a) Alpha diversity
   (b) Beta diversity
   (c) Gamma diversity
   (d) Sigma diversity

53. The Global Warming Potential (GWP) of a substance depends on

   (1) the spectral band of its absorbing wavelengths.

   (2) its residence time in atmosphere.

   (3) its number of carbon molecules.

   (4) concentration of the substance.

   Choose the correct answer:

   (a) 1, 2 and 3 only
   (b) 2, 3 and 4 only
   (c) 1, 3 and 4 only
   (d) 2, 4 and 1 only

54. Coral bleaching observed in marine environment is caused by

   (a) Sea floor rise.

   (b) Decline in zooxanthellae due to climate change.

   (c) Addition of bleaching powder by ships.

   (d) Death of fishes due to toxic algal blooms.

55. Kanha Tiger reserve is the first ever reserve in India to officially introduce a mascot to create a better connect with the visitors. The mascot has been named 'Bhoorsingh'. Which animal does Bhoorsingh represent?

    (a) Tiger   (b) Stag   (c) Elephant   (d) Rhinoceros

56. Which of the following air pollution devices are suitable for removing dust particles from air?

    1. Cyclone separator

    2. Electrostatic precipitator

    3. Fabric filter

    4. Wet scrubber

    Select the code from below:

    (a) 1, 2 and 3   (b) 2, 3 and 4

    (c) 1, 3 and 4   (d) All of the above

57. Convention on Biological Diversity entered into force in December 1993. Which of the following were the objectives of CBD?

    1. Conservation of Biological Diversity

    2. Sustainable use of the components of Biological Diversity

    3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources

    Select the code from below:

    (a) 1 and 2   (b) 2 and 3

    (c) 1 only   (d) All of the above

58. With reference to food chains in ecosystems, consider the following statements:

    1. A food chain illustrates the order in which a chain of organisms feed upon each other.

    2. Food chains are found within the populations of a species.

    3. A food chain illustrates the numbers of each organism which are eaten by others.

    Which of the statements given above is / are correct?

    (a) 1 only   (b) 1 and 2 only

    (c) 1, 2 and 3   (d) None of the above

59. Environmental degradation means

    (a) Overall lowering of environmental quality.

    (b) Adverse change brought in by human activities.

    (c) Ecological imbalance

    (d) All the above

60. Consider the following protected areas:

    1. Bandipur   2. Bhitarkanika

    3. Manas   4. Sunderbans

    Which of the above are declared Tiger Reserves?

    (a) 1 and 2 only   (b) 1, 3 and 4 only

    (c) 2, 3 and 4 only   (d) 1, 2, 3 and 4

Basics of Project Management

61. Consider the following statements with reference to a project crashing.

    1. Indirect cost decreases due to project crashing.

    2. Total project cost is always minimum at crash duration.

    3. Direct or normal cost increases due to project crashing.

    Which of these statements are correct?

    (a) 1 and 2   (b) 2 and 3   (c) 1 and 3   (d) 1, 2 and 3

62. Consider the following project network

    Network:
    - 1 → 2 : 2, 9, 10
    - 2 → 4 : 3, 9, 15
    - 1 → 3 : 4, 8, 10
    - 3 → 4 : 4, 6, 8
    - 4 → 5 : 2, 8, 14
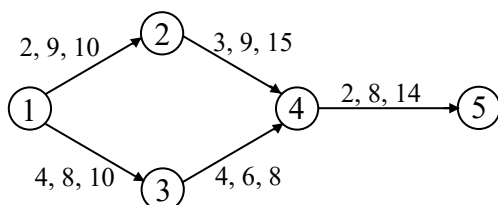
    What is the slack at 3rd event?

    (a) 0   (b) 3   (c) 8   (d) 11

63. Consider the following statements w.r.t a project network.

1. CPM network is a deterministic approach.

2. PERT is an activity oriented diagram.

3. In CPM, cost and time both are related and project cost can be reduced by reducing the project duration.

4. Network diagrams have been diverged based an fundamentals of charts.

Which of these statements are correct?

(a) 1, 2 and 3   (b) 2, 3 and 4   (c) 1, 3 and 4   (d) 1, 2, 3 and 4

64. Which one of the following statements is not correct

(a) Bar carts are so flexible and suitable for project scheduling.

(b) CPM is suitable for deterministic projects only.

(c) Dummy activity is not required in activity-on-node ((AON) diagram.

(d) PERT is well suited for R & D project.

65. The demand for a product is 100 units per month. Holding cost of each project is Rs 9.6 / year. Order cost is Rs. 40 per each order. The Economic order quantity to minimize total annual cost is

(a) 29 units   (b) 1200 units   (c) 1000 units   (d) 100 units

66. In an Activity-On-Arrow networks, which of the following rules are mandatory?

1. Any two events can be directly connected by not more than one activity.

2. Event numbers should not be duplicated.

3. No dangling is permitted in the network.

Select the correct answer using the code given below.

(a) 1 and 2   (b) 2 and 3   (c) 1 and 3   (d) 1, 2 and 3

67. Which one of the following is associated with a critical activity in an A-O-A diagram

(a) Maximum float   (b) Minimum float

(c) Zero float   (d) Free float

68. The probability distribution taken to represent the project completion time in a PERT analysis is

(a) Normal distribution   (b) Beta distribution

(c) Poisson distribution   (d) Exponential distribution

69. An activity takes 5 days for completion and budgeted cost is Rs. 10,000. Planned value is estimated based on proportionality rule. After 3 days, the earned value is Rs. 4000 and actual cost spent is Rs. 7,000. The cost variance and schedule variance respectively are

    (a) – 1000 & – 2000   (b) –3000, –2000

    (c) +1000 & – 2000   (d) (+3000, + 2000)

70. Consider the following project data

    Initial cost = Rs. 10,00,000

    Annual revenue uniform series = Rs. 2,00,000

    Life period = 10 years

    Salvage value = Rs. 3,00,000

    Rate of interest = 12%

    The net present value is

    Use the following …….

    (P/F, 12% , 10) = 0.3220

    (P/A, 12% , 10) = 5.650

    (A/P, 12%, 10) = 0.1770

    (F/P, 12%, 10) = 3.106

    (a) –32,800   (b) –2,26,000   (c) 2,26,000   (d) 3,28,000

Basics of Material Science

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71. The Copper has FCC structure and the atomic radius is R, the free volume in copper unit cell

    (a) 4.16 $\sqrt{2}$ R^3 (b) 5.12 $\sqrt{2}R^3$

    (c) 7.68 $\sqrt{2}R^3$ (d) 2.08 $\sqrt{2}R^3$

72.   The electrical resistivity of metal

1. Decrease with increase in crystallographic imperfections

2. Increases with increase in temperature

3. Increases with alloys

4. Decrease with cold working

Which of the above statements are correct

(a) 1 and 2 only   (b) 1 and 3 only

(c) 2 and 3 only   (d) 3 and 4 only

73.   The super conductivity of a material is destroyed by

1. Temperature   2. Magnetic field

3. Electric current   4. Alloying

Which of the above parameters are correct

(a) 1, 2, 3 are correct   (b) 2, 3, 4 are correct

(c) 1, 3, 4 are correct   (d) 1, 2, 3, 4 are correct

74.   Read the following statements regarding 'Relative Permittivity' of a dielectric material

1. It represent increase in charge storing capacity

2. Relative permittivity for space = 1

3. Relative permittivity for super conductor = –1

4. Relative permittivity for water is 81

Which of the above statements are correct

(a) 1, 2, 3 are correct   (b) 2, 3, 4 are correct

(c) 1, 2, 4 are correct   (d) 1, 2, 3, 4 are correct

75.   Consider the following statements relating to piezoelectric materials and their effects:

1.   Stress applied to the material produces electric polarization

2.   An electric field applied to the material produces strain

3.   All piezoelectric materials are also ferroelectric matrials

Which of the statements given above are correct

(a) 1 and 3   (b) 1 and 2   (c) 2 and 3   (d) 1, 2 and 3

76. The number of atoms per unit length in a direction of [110] in a copper material with atomic radius 'R'

(a) $\dfrac{1}{2R}$ (b) $\dfrac{2}{R}$ (c) $\dfrac{1}{\sqrt{2}R}$ (d) $\dfrac{\sqrt{2}}{R}$

77. Match the following

List-I (Magnetic Material)	List-II (Relative permeability (μ_R))
A. Dia magnetic material	1. $\mu_R >>> 1$
B. Para magnetic material	2. $\mu_R \simeq 1$
C. Ferromagnetic material	3. $\mu_R < 1$
D. AntiFerro magnetic material	4. $\mu_R > 1$

Codes:

	A	B	C	D		A	B	C	D
(a)	1	4	2	3	(b)	3	4	1	2
(c)	3	1	2	4	(d)	3	2	1	4

78. The electrical conductivity is directly proportional to
    1. Electron density
    2. Relavation time of electron
    3. Electric field
    4. Mobility of electron

    (a) 1, 2, 3, 4 are correct
    (b) 1, 2, & 4 are correct
    (c) 1, 2 & 3 are correct
    (d) 2, 3 & 4 are correct

79. **Statement I:** The maximum operating temperature of overhead line conductors made of Aluminium or Copper is restricted to $75^{\circ}C$

    Statement II: Conductors beyond this limit may shatter the insulator

80. **Statement I:** The cast iron materials have good castability

    Statement II: The cast iron materials have low melting point temperature and high flowability.

Information and Communication Technologies (ICT)

81. Consider the following statements regarding walkie talkie

    1. it uses line of sight communication

    2. it uses same frequency that out home router uses

    Which one of the following statements is / are true ?

    (a) 1 only   (b) 2 only   (c) Both 1 and 2   (d) neither 1 nor 2

82. Consider the following statements regarding UMANG app

    1 . it provides direct cash benefits to farmers by removing many intermediate brokers

    2. it consists of many apps like Digilocker , Aadhaar app etc

    Which one of the following statements is / are true ?

    (a) 1 only   (b) 2 only   (c) Both 1 and 2   (d) neither 1 nor 2

83. Which one of the Governances schemes provides Digital literacy to India?

    (a) Digilocker   (b) Digidhan   (c) Digishala   (d) Disha

84. Service point (port) addressing comes under

    (a) Presentation layer   (b) Session layer   (c) Transport layer   (d) Data link layer

85. Consider the following statements regarding operating systems

    1. it provides interface to user such that users can directly change the firmware

    2. it also provides interface such that users can communicate via commands

    Which one of the following statements is / are true ?

    (a) 1 only   (b) 2 only   (c) Both 1 and 2   (d) neither 1 nor 2

86. What are objectives of NMEICT

    1 . it aims to provide study resources to all the students with NPTEL

    2. it provides broadband connection to all the central universities

    3. it also provides low cost devices to students

    Which one of the following statements is are true ?

    (a) 1 and 2   (b) 2 and 3   (c) 1 and 3   (d) All of the above

87. Which of the following version of web provides web os

    (a) www1.0   (b) www2.0   (c) www3.0   (d) www4.0

88. Consider the Following statements about Botnet

    1. it provides method to interact with web services

    2. it provides protocol of different computers to communicate at same time

    Which one of the following statements is / are true ?

    (a) 1 only   (b) 2 only   (c) Both 1 and 2   (d) neither 1 nor 2

89._____ mission focuses to provides agricultural information to farmers in there native language

    (a) MOTHER   (b) M- kisan   (c) E- rakam   (d) e- BiZ

90. Consider the following statements about NEGP mission

    1 . it provides Broadband connection to all villages in India

    2 . it provides common service centre where common man can utilize e-governance services

    Which one of the following statements is / are true ?

    (a) 1 only   (b) 2 only   (c) Both 1 and 2   (d) neither 1 nor 2

Ethics and Values in Engineering Profession

91. Which of the following are said to be attributes of professional judgment?

    1. Service deal
    2. Extensive education
    3. High salaries
    4. Application of judgment

    (a) 1, 2, 3 and 4
    (b) 1, 2 and 4
    (c) 2, 3 and 4
    (d) 1, 3 and 4

92. Which of the following best describes profession?

    1. Substantial degree of independence and autonomy
    2. Strict regulation by professional bodies
    3. Serve the society
    4. Permission to demand high remuneration for the services

    (a) 1, 2 and 3 only
    (b) 2, 3 and 4 only
    (c) 1, 3 and 4 only
    (d) 1, 2 and 4 only

93. In conflict of interest situation to whom is the engineer's primary obligation?

    (a) the client
    (b) the public
    (c) to the self
    (d) the government

94. **Statement (I):** Fundamental principle of professional code of ethics is integrity

    Statement (I): Gifts can be accepted when they are made in the normal course of public relations

95. Which one of the following about utilitarianism is correct?

    (a) it is a deontological theory focused on consequences

    (b) the decision maker focuses on outcome or consequence to themselves

    (c) it is a form of ethical egoism and is focused on outcome but not intention

    (d) it aims to maximize benefits to greatest number of people in both short term and long term

96. **Statement (I):** Sustainability means making resources available to future while fulfilling current needs.

    Statement (II): Sustainability is possible only with the green philosophers view by engineers

    Codes:

    (a) Both Statement (I) and Statement (II) are individually true and Statement (II) is the correct explanation of Statement (I)

    (b) Both Statement (I) and Statement (II) are individually true, but Statement (II) is **not** the correct explanation of Statement (I)

    (c) Statement (I) is true, but Statement (II) is false

    (d) Statement (I) is false, but Statement (II) is true

97. Under what circumstances shall a professional engineer advise the client to engage the services of experts and specialists?

    (a) The professional engineer shall give the advice when in his opinion and judgment such services are in the interest of his client.

    (b) The professional engineer shall give the advice when he feels such services will pass the responsibility to others.

    (c) The professional engineer shall give the advice when he can indirectly benefit from the appointment of experts and specialists.

    (d) The professional engineer shall give the advice when he considers that in doing so the cost input of his company will be reduced.

98. A construction company engages the services of an architect to make a plan for a construction with all the specifications. The company submits the plan to the town planning officer for approval. But the company keeps pending the fees to be paid to the engineer. The officer rejects the plan for not complying with the standards. The company engages the services of another engineer for rectification of errors and resubmission. What course of actions is the best for the second engineer?

    (a) The second engineer should not undertake the work as he has an ethical obligation to recognize and give credit to the creative works of other engineers.

    (b) The second engineer shall undertake the work as long as the first Engineer does not complain.

    (c) Second engineer can undertake the work as Engineer first engineer does not know.

   (d) Second engineer undertake the project as he is employed by the Company.

99. What is the need for authority?

    (a) Authority is needed to control office

    (b) Authority gives scope to demand work from subordinates

    (c) Authority provides the framework in which learning can take place

    (d) Authority is needed to exercise professional discretion

100. Which of the following can be said to be involuntary risk?

    1. Act done in ignorance

    2. Act done based on assumptions

    3. Act done under compulsion

    4. Act done upon the advise of expert

    (a) 1 and 4 only   (b) 2 and 3 only

    (c) 3 and 4 only   (d) 1 and 3 only
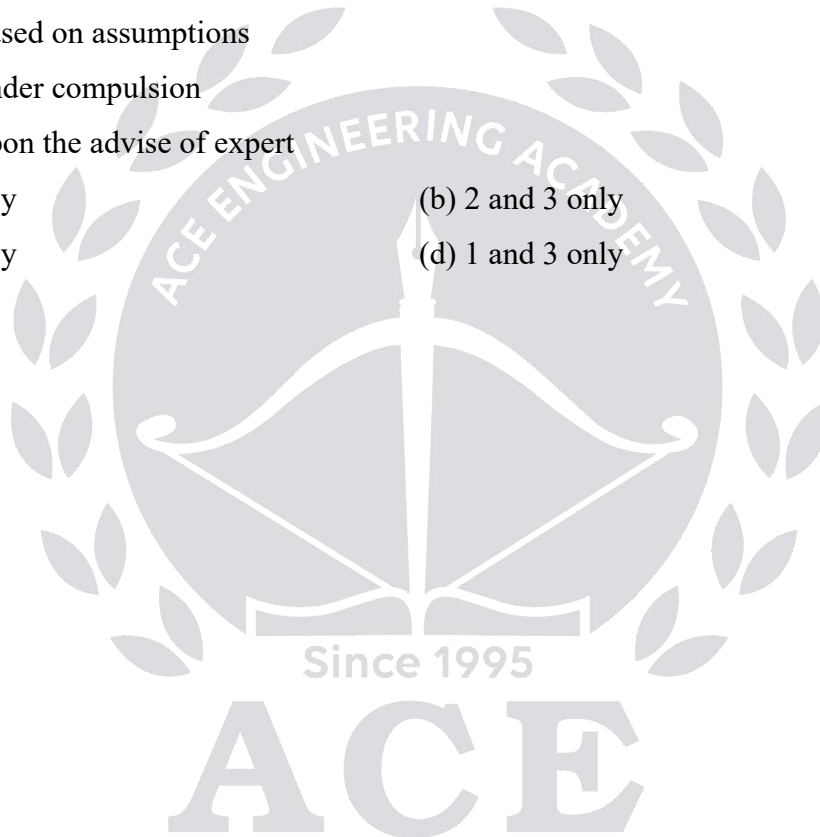
Solutions for Practice Questions

01. Ans: (a)   02. Ans: (b)   03. Ans: (c)

04. Ans: (a)

Sol: DILRMP - Digital India Land Records Modernisation Programme

05. Ans: (d)

Sol: Sumantrite Suvikrante or THINK COLLECTIVELY, ACHIEVE VALIANTLY

06. Ans: (c) 07. Ans: (d)   08. Ans: (a)

09. Ans: (b)

10. Ans: (a)

Sol: To study the various issues related to data protection – Justice B.N.SriKrishna

To reform military financial management – D B Shekatkar

15th Finance Commission - N.K.Singh

To monitor bad loans, rising cases of frauds, audits – YH Malegam

Economic Advisory Council - Dr. Bibek Debroy

11. Ans: (b)

Sol: The weight have to be successive powers of 3 starting from $3° = 1$.

∴ $121 = 3° + 3^1 + 3^2 + 3^3 + 3^4$

∴ $1 + 3^4 = 82$

12. Ans: (a)

Sol: Let A and B take X days when working together

∴ A takes x + 8 days and B takes x + 18 days

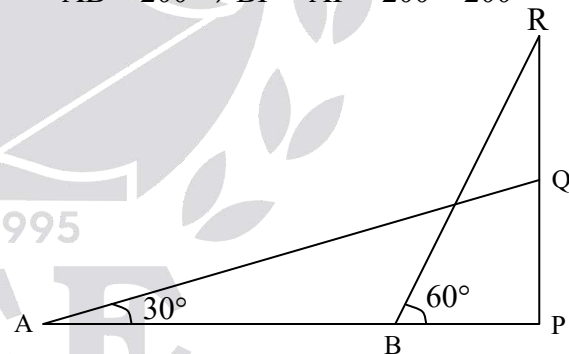∴ $\dfrac{1}{x+8} + \dfrac{1}{x+16} = \dfrac{1}{x}$

⇒ x = 12

∴ A takes 12 + 8 = 20 days

13. Ans: (d)

Sol: Let PQ be the tower and R be the top of the flag staff with Q as the bottom.

Let PQ = h_1 and QR = h_2 and BP = X

AB = 200 ⇒ BP = AP – 200 = 200

In Δ BRP, tan 60 = $\dfrac{PR}{BP}$ = $\sqrt{3}$

⇒ PR = $200\sqrt{3}$

In triangle AQP, tan 30 = $\dfrac{QP}{AP}$ = $\dfrac{1}{\sqrt{3}}$

⇒ QP = $\dfrac{400}{\sqrt{3}}$

$$\Rightarrow QP = PR - PQ = 200\sqrt{3} - \frac{400}{\sqrt{3}}$$

$$\Rightarrow \frac{200}{\sqrt{3}} \text{ feet}$$

14. Ans: (b)

Sol: $3 * 2 = (6 - 3 + 2) \# (6 - 2 + 3) = 35 - 5 + 7$

$= 37$

$-3 * 37 = (-111 + 3 + 37) \# (-111 - 37 - 3)$

$= (-71) \# (-151)$

$= 10721 + 71 - 151 = 10641$

15. Ans: (a)

Sol: Let $x^y = y^z = z^y = k$

$$\Rightarrow y = \log_x k$$

and $z = \log_y k$

and $x = \log_z k$

$$\Rightarrow \frac{1}{y} = \log_k x; \quad \frac{1}{z} = \log_k y \quad \text{and}$$

$$\frac{1}{x} = \log_k z$$

$$\Rightarrow \left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right) = \log_k xyz$$

if $k = x^y$ we get

$$\Rightarrow \left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right) = \frac{1}{x} \log_z xyz$$

and similarly, for $k = y^z$

$$\therefore \text{Ans} = 3\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right)$$

$$= 3\left(\frac{xy + yz + zx}{xyz}\right)$$

16. Ans: (b)

Sol: $\therefore$ for $x - y = 2(9)$;

$x - y = 2(7)$;

and $x - y = 2(5)$;

we have no solutions.

But for $x - y = 2(3)$ .... 4 solutions

and $x - y = 2(1)$ .... 8 solutions

Similarly for $x + y = 2(2)$ 3

solutions $x + y = 2(4)$ 7

solutions $x + y = 2(6)$ 9

solutions $x + y = 2(8)$ 5

solutions

$\therefore$ Total of $x + y = 20$ 1

solutions

$4 + 8 + 3 + 7 + 9 + 5 + 1 = 37$ solutions.

17. Ans: (c)

Sol: The maximum number of regions that a plane can be divided into using 'n' straight lines is $\frac{n(n+1)}{2} + 1$

$\therefore$ for $n = 5$, we get $15 + 1 = 16$

18. Ans: (c)

Sol: Given expression is

$$(4x^2 + 6x) + (2y^2 + 5y + 5).$$

The above two expressions individually have certain minima, the sum of which gives the minima of the total expression.

$$\text{maxima/minima} = \frac{4ac - b^2}{4a}$$

Required minima = $\dfrac{-18}{8} + \dfrac{15}{8} = -\dfrac{3}{8}$

19. Ans: (b)

Sol: The perfect squares below 100 are 1, 4, 9, 16, 25, 36, 49, 64, 81.

From the answer choices;

Choice (a) can be obtained as 49 + 16   or 1 + 64

Choice (c) can be obtained as 36 + 49   or 4 + 81

Choice (d) can be obtained as 1 + 49   or 25 + 25

∴ Choice (b) can be obtained as 49 + 9 and the sum of any other perfect squares will not give 58.

20. Ans: (d)

Sol: Clearly, treatment of addiction requires personal attention as the first step. So, I is implicit. Also, since intimacy and personal attention are required to treat addicts, it implies that addiction arises out of frustration due to strained relationships. So, II is also implicit.

21. Ans: (a)

Sol: P(Red in first draw) = 6/9

P(Green in first draw) = 3/9

E: Red ball in second draw.

P(E/R) = 5/8,   P(E/G) = 6/8

$P(E) = \dfrac{6}{9} \times \dfrac{5}{8} + \dfrac{3}{9} \times \dfrac{6}{8} = \dfrac{48}{72} = \dfrac{2}{3}$

22. Ans: (b)

Sol: Given $u^2 = x^2 - y^2 - 3x$

$\Rightarrow u_x = 2x - 3$ and $u_y = -2y$

consider $dv = V_x\,dx + V_y\,dy$

$\Rightarrow dv = (-u_y)\,dx + (u_x)\,dy$

(∵ $u_x = v_y$ & $v_x = -u_y$)

$\Rightarrow dv = (2y)\,dx + (2x - 3)\,dy$

which is exact differential equation

$\Rightarrow \int dv = \int 2y\,dx + \int(-3)\,dy + k$

∴ $v(x, y) = 2xy - 3y + k$

23. Ans: (a)

Sol: Let $u + iv = f(z) = z^2 = (x+iy)^2$

then $u + iv = f(z) = (x^2 - y^2) + i(2xy)$

$\Rightarrow u = x^2 - y^2$ and $v = 2xy$

$\Rightarrow u_x = 2x$ $v_x = 2y$

$\Rightarrow u_y = -2y$ $v_y = 2x$

Here $u_x = v_y$ and $v_x = -u_y$ at every point and also u, v, u_x, u_y, v_x, v_y are continuous at every point.

∴ f(z) is analytic at every point.

24. Ans: (a)

Sol: $P.I = \left(\dfrac{1}{4D^2 - 4D + 1}\right)e^{\frac{x}{2}}$

$= x.\left(\dfrac{1}{8D - 4}\right)e^{\frac{x}{2}}$

(By Case of failure formula)

$= \dfrac{x^2}{8}e^{\frac{x}{2}}$ (Replacing D with $\dfrac{1}{2}$)

25. Ans: (c)

Sol: The differential equation is

(D – 1) (D + 1) y = 0

where $D = \dfrac{d}{dz}$ and z = log x

$\Rightarrow (D^2 - 1)y = 0$

$\Rightarrow D(D-1)y + Dy - y = 0$

$\Rightarrow x^2 \dfrac{d^2y}{dx^2} + x\dfrac{dy}{dx} - y = 0$

$\Rightarrow \dfrac{d^2y}{dx^2} + \left(\dfrac{1}{x}\right)\dfrac{dy}{dx} - \left(\dfrac{y}{x^2}\right) = 0$

26. Ans: (a)

Sol: Let $x = \sqrt{N}$

$f(x) = x^2 - N = 0$

$x_{n+1} = x_n - \dfrac{x_n^2 - N}{2x_n}$

$= \dfrac{x_n^2 + N}{2x_n}$

$x_{n+1} = \dfrac{1}{2}\left(x_n + \dfrac{N}{x_n}\right)$

27. Ans: (d)

Sol: sin(z), cos(z) and polynomial $az^2 + bz+c$ are analytic everywhere.

∴ sin(z), cos(z) and az^2+bz+c are an entire functions.

$\dfrac{1}{z-1}$ is analytic at every point except at z = 1 because the function $\dfrac{1}{z-1}$ is not defined at z = 1.

$\Rightarrow \dfrac{1}{z-1}$ is not analytic at z = 1

∴ $\dfrac{1}{z-1}$ is not an entire function

28. Ans: (b)

Sol: Let $f(z) = e^z + \sin z$ and $z_0 = \pi$

Then Taylor's series expansion of f(z) about a point $z = z_0$ (or) in power of $(z - z_0)$ is given by $\qquad f(z) = \sum\limits_{n=0}^{\infty} a_n (z - z_0)^n$.

where $a_n = \dfrac{f^{(n)}(z_0)}{n!}$

Here, the coefficient of $(z - z_0)^n$ in the Taylor's series expansion of f(z) about $z = z_0$ is given by $\qquad a_n = \dfrac{f^{(n)}(z_0)}{n!}$.

∴ $a_2 = \dfrac{f''(z_0)}{2!} = \dfrac{f''(\pi)}{2!}$

$= \dfrac{(e^z - \sin z)_{z=\pi}}{2} = \dfrac{e^\pi}{2}$

29. Ans: (c)

Sol: (a) Let f(x) = (x–2) in [1, 3]

Here, f(1) ≠ f(3)

∴ Rolle's theorem is not applicable

(b) Let $f(x) = 1 - (1 - x)^{-1}$ in [0, 2]

Here, f(x) is not continuous in [0, 2]

∴ Rolle's theorem is not applicable

(c) Let f(x) = sin x in [0, π]

Here, f(x) is continuous in [0, π] and

differentiable in (0, π). Further,

f(0) = f(π)

∴ Rolle's theorem is applicable

(d) Let f(x) = Tan x in [0, 2π]

Here, f(x) is not continuous in [0, 2π]

∴ Rolle's theorem is not applicable

30. Ans: (c)

Sol: $\int_0^{\frac{\pi}{2}} \int_0^{2a\cos\theta} r \sin\theta \, dr \, d\theta$

$= \int_0^{\frac{\pi}{2}} \sin\theta \left(\frac{r^2}{2}\right)_0^{2a\cos\theta} d\theta$

$= \int_0^{\frac{\pi}{2}} \sin\theta \, 2a^2 \cos^2\theta \, d\theta$

$= -2a^2 \int_1^0 t^2 \, dt$ Put cos θ = t

$= 2a^2 \int_0^1 t^2 \, dt$

$= \frac{2a^2}{3}$

31. Ans: (d)

Sol: Statement 1 → Correct → Modular

Architecture decreases design time.

Statement 2 → Correct → Because the parts

and functions are integrated, the copying of

the design is difficult.

Statement 3 → Correct → Because of parts

integration the ability to generate a family

of products is decreased.

Statement 4 → Incorrect → Integral

Architecture generally makes it hard for

maintenance and service.

32. Ans: (a)   33. Ans: (b)

34. Ans: (b)   35. Ans: (c)

36. Ans: (b)

Sol: It is a curve traced out by a point moving in

such a way that it's movement towards or

away from the pole is uniform with the

increase of vectorial angle from the starting

line.

37. Ans: (b)

Sol: When a tetrahedron is resting on its face on

the HP with a side Perpendicular to the VP,

its front view shows a isosceles triangle.

Hence statement (i) is correct

When a pyramid suspended freely from one

of its base corners, the line joining that

corner and the CG will be perpendicular to

reference line. Hence statement (ii) is

wrong.

38. Ans: (c)   39. Ans: (a)

40. Ans: (b)

Sol: In development of surfaces we consider the

true dimensions of the objects which will be

equal to the perimeter of the base and the

true length of the lateral edge.

41. Ans: (b)

Sol: All are obstacles, but inertia is biggest hindrance. Since people are used to a process, so they resist change.

42. Ans: (a)

Sol: Quality control is an important aspect but not as important as the other 3 elements

43. Ans: (d)

Sol: Level 1: Inspection

Level 2: quality control

Level 3: Quality assurance

Level 4: TQM

TQM aims at customer satisfaction and improvement of company through participation of everybody.

44. Ans: (d)

Sol: Mistakes may be made by people, but most of them are caused or at least permitted by faults systems and processes.

45. Ans: (a)

Sol: Investing more on prevention costs will actually reduce total cost of quality in the long run.

46. Ans: (d)

Sol: All the tolls mentioned are used to implement Total Quality Management.

47. Ans: (d)

Sol: Accountability of employees is increased due to being engaged in problem solving. Employee involvement ensures that the solution derived has the accent of employees and any issue faced by the employees are addressed automatically.

48. Ans: (d)

Sol: Supplier quality evolution helps in keeping failure and appraisal costs to a minimum.

49. Ans: (a)

Sol: When organization is committed to continuous improvement, learning will be never ending which ensures success in long run.

50. Ans: (A)

Sol: The overall quality objective is to meet the needs of the firm with a minimum of incoming inspection or later corrective action.

51. Ans: (c)

52. Ans: (c)

Sol: Diversity may be measured at different scales. These are three indices used by ecologists:

- Alpha diversity refers to diversity within a particular area, community or ecosystem, and is measured by

counting the number of taxa within the ecosystem (usually species)

- Beta diversity is species diversity between ecosystems; this involves comparing the number of taxa that are unique to each of the ecosystems.

- Gamma diversity is a measurement of the overall diversity for different ecosystems within a region.

53. Ans: (d)

Sol: The key factors that determine the GWP value of a GHG:

- where along the electromagnetic spectrum (i.e., what wavelengths) the gas absorbs radiation, and

- the atmospheric lifetime of the gas

- conc. of a gas

54. Ans: (b)

Sol: When water is too warm, corals will expel the algae (zooxanthellae) living in their tissues causing the coral to turn completely white. This is called coral bleaching.

55. Ans: (b)   56. Ans: (d)

57. Ans: (d)

Sol: Objectives of CBD:

- Conservation of biological diversity

- Sustainable use of components of biological diversity

- Fair and equitable sharing of the benefits arising out of the use of genetic resources
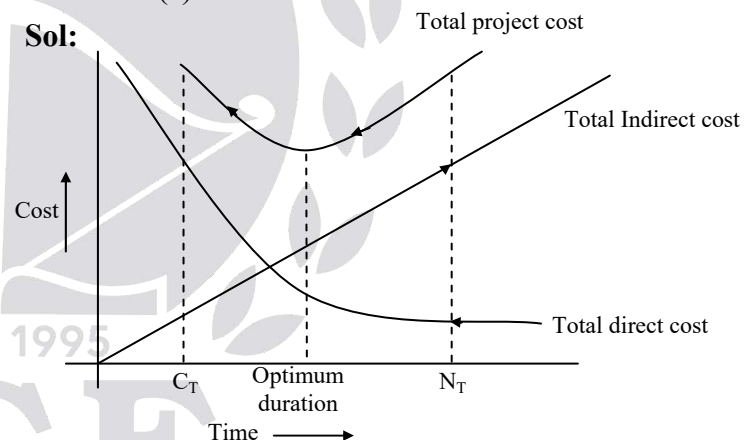
58. Ans: (a)

Sol: the chain of transformation and transfer of food energy in the ecosystem from one group of organism to another group through a series of steps or levels is called food chain. Food chain illustrates energy flow and not the numbers of each organism.

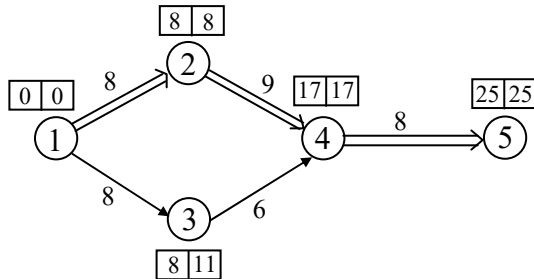59. Ans: (d)   60. Ans: (b)

61. Ans: (c)

Sol:

62. Ans: (B)

Sol:

Activity	$t_E = \dfrac{t_0 + 4t_m + r_p}{6}$
1-2	$\dfrac{2 + 4(9) + 10}{6} = 8$
1-3	8
2-4	9
3-4	6
4-5	8

Slack @ 3 = 11 – 8 = 3

63. Ans: (c)   64. Ans: (a)

65. Ans: (d)

Sol: Annual Demand = 100 × 12

@ = 1200 units

Order cost (C_0) = Rs. 40

Carrying (holding)

Cost (C_C) = 9.6 / unit/year

$$E_0Q = \sqrt{\frac{2DC_0}{C_C}}$$

$$= \sqrt{\frac{2 \times 1200 \times 40}{9.6}} = 100$$

66. Ans: (d)   67. Ans: (c)

68. Ans: (a)

69. Ans: (b)

Sol: Planned value (Proportionality rule)

Day	1	2	3	4	5
PV	2000	2000	2000	2000	2000
Cumulative PV	2000	4000	6000	8000	10000

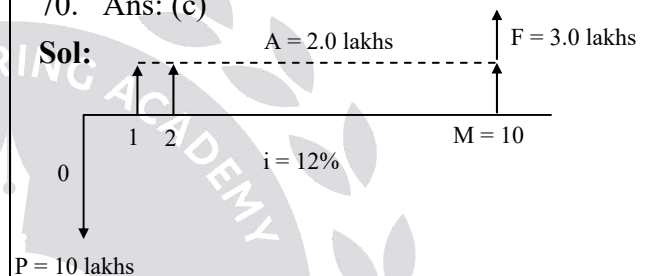Cost variance (CV) = Earned value – Achieved cost

= 4000 – 7000

= – 3000

Schedule variance (SV) = Earned value – Planed value

= 4000 – 6000

= – 2000

70. Ans: (c)

Sol:

NPV = –P + A.[P/A, 12%, 10] + f.[P/F, 12%, 10]

= –10 + 2 × 5.650 + 3 × 0.3220

= –10 + 11.3 + 0.966

= 2.26 lakhs

71. Ans: (a)

Sol: Copper is FCC structure

For FCC structure

$$4R = \sqrt{2}a$$

$$V_{UC} = \left(\frac{4R}{\sqrt{2}}\right)^3 = a^3 = 16\sqrt{2}R^3$$

Empty space in unit cell = 0.26 × V_{uc}

$$= 0.26 \times 16\sqrt{2}R^3$$

$$= 4.16\sqrt{2}R^3$$

72. Ans: (c)

Sol: The electrical resistivity of metal decreases with

   a. Increase in defects

   b. Increases in temperature

   c. Increase in alloy content

   d. Doing cold working

73. Ans: (a)

**Sol:** The super conductivity of material is destroyed by

  1. Increasing temperature above transition temperature

  2. Increasing magnetic field above critical magnetic field

  3. Increasing current above critical current

74. Ans: (c)

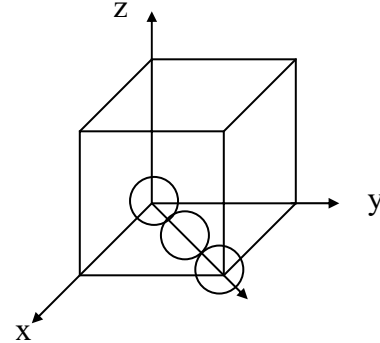**Sol:** Statement III is incorrect, relative permittivity of super conductor is zero.

75. Ans: (b)

Sol: Statement 3 is incorrect, only some of the piezoelectric materials are ferroelectric materials
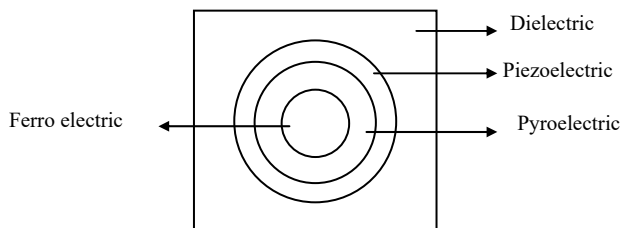
76. Ans: (a)

Sol: Copper is FCC structural material

$$\text{Linear Density} = \frac{\text{no. of atom}}{\text{Length of Direction}}$$

$$= \frac{2}{4R} = \frac{1}{2R}$$

77. Ans: (b)

Sol: Diamagnetic material $\Rightarrow \mu_R < 1$

   Paramagnetic material $\Rightarrow \mu_R > 1$

   Ferromagnetic material $\Rightarrow \mu_R >>> 1$

   AntiFerro magnetic material $\Rightarrow \mu_R \simeq 1$

78. Ans: (b)

Sol: $\sigma = ne\mu = \dfrac{ne^2 t}{m}$

   ne = electron density

   μ = Mobility of e⁻

   t = average collusion time

79. Ans: (a)

Sol: Conductor beyond 75°C shatter the insulator SD maximum operating temperature of over head line conductor of Al or Cu is restricted to 75°C.

80. Ans: (a)

Sol: The cast iron materials have low melting point temperature and high flowability and hence there are good castable because of low melting cost and more accurate casted product.

81. Ans : (b)

Sol: Walkie talkie uses radio waves which does not uses line of sight communication it uses frequency 2.4 Ghz

82. Ans : (b)

Sol: Unified Mobile App for New age Governance (UMANG) consists of many apps such that users doesn't have to download many governance app in future government will provide more than 170 services with this app

83. Ans: (d)

Sol: Disha (Digital sakhsarta abhiyan) or National Digital literacy Mission is focuses to provide Digital literacy to one member of each family.

84. Ans: (c)

85. Ans: (b)

Sol: Firmware is loaded by manufacturers while making the system and it also provides CLI (Command Line Interface) with the help of this, users can directly communicate with OS based on commands

86. Ans: (d)

Sol: NMEICT national mission on education through ICT is one of main mission in India with respect to education it provides low cost devices to students with the help of Akash tablet and it also provides resources to students with NPTEL

87. Ans: (d)

Sol: Web 4.0 is providing web OS that is middleware uses AI and high concurrency

88. Ans: (d)

Sol: Botnet is malicious software that affects many users at same time Hacker maintains large software which affects many computer and steal information at same time

89. Ans: (b)

Sol: Many farmers want information about agriculture but due to lack of digital literacy they can not have information Government has started this mission to help farmers

90. Ans: (b)

Sol: According to NEGP (National e- Governace Plan) govt wants to provide all e- services to all the citizens to fulfill this objective govt has many common service centre to many villages statements 1 is an objective of National optical fibre network or Bahartnet.

91.	Ans: (b)	92.	Ans: (a)
93.	Ans: (b)	94.	Ans (d)
95.	Ans: (d)	96.	Ans (b)
97.	Ans: (a)	98.	Ans: (a)
99.	Ans: (c)	100.	Ans: (d)