

MANAGEMENT APTITUDE TEST (MAT)

Held on : February 2022

Time : 2.5 hrs

(BASED ON MEMORY)

Maximum Marks : 200

SECTION-A : English Language

DIRECTIONS (Qs. 1 - 4) : Read the following passage carefully and answer the questions that follow.

The Reserve Bank of India's annual report for 2017-18 reveals that 99.3% of currency notes that were demonetised at midnight on November 8, 2016 have returned to the banking system. This is only marginally higher than its provisional estimate last year that over 99% — or Rs.15.28 lakh crore worth of the old Rs.500 and Rs.1,000 notes — out of the Rs.15.44 lakh crore that were in circulation at the time had been deposited by June 30, 2017. This makes a couple of things crystal clear. First, the hope that a large chunk of unaccounted money would not return to the system — arguably, the principal reason for the exercise — was almost wholly belied. As a result, the plan to transfer the arising surplus from the RBI to the Centre, which was not formally declared but strongly rumoured, was a non-starter. Second, given the sheer logistical difficulty in penalising all those who converted unaccounted money into legal tender, demonetisation worked as an unintended amnesty scheme. Despite the significant cost to the economy, demonetisation, to the disappointment of the Prime Minister's critics, had no political fallout. Narendra Modi succeeded in portraying the move as one that would knock out the corrupt rich — a harsh but necessary shock therapy. This was perhaps why the massive disruption caused by the overnight removal of 86% of the currency in value terms did not cause agitations. Nevertheless, the RBI report, which points to a spurt in counterfeiting of the new Rs.500 and Rs.2,000 notes, raises the old question all over again. Was it worth the slowdown in growth, the damage to informal sector supply chains, and job losses in sectors such as construction that were the bulwark of employment creation for the unskilled? True, there have been some benefits. For instance, the number of income tax returns filed has **surged** a little over the trend growth rate. But surely this could have been achieved by other policy measures. Cashless modes of payment have become more common, but financial savings in the form of currency have also risen, suggesting that people still value cash. Not all policy choices work out and accepting mistakes or planning flaws helps strengthen governance processes. For example, learning from the UPA's mistakes, a cleaner auction process for natural resources has been worked out. The government must not disown its biggest reform attempt or try to sidestep parliamentary scrutiny of the outcomes of demonetisation. Instead, it could focus on fixing the problems that people still face — transactions with Rs.2,000 notes in the absence of Rs.1,000 notes are difficult as it is a departure from the currency denomination principle (every note should be twice or two and

a half times its preceding denomination). Even as these issues are sorted out, the larger lesson must be heeded: sudden shocks to the economy don't always yield intended policy objectives.

1. Which among the following is the opinion of the author regarding the demonetization drive announced by the government?
 - (a) The author is very much hopeful that the demonetization drive will be able to divide the wealth among all the sections equally.
 - (b) The author has no opinion to give regarding demonetization.
 - (c) The author feels that the government should do proper homework before implementing any scheme such as demonetization.
 - (d) The author feels that the move to demonetize currencies did not yield the desired results though some positive sides can be appreciated.
2. Which among the following should be the course of action of the government now that the demonetization has failed?
 - (a) The government should understand that there can be error in judgment on its part and it can be corrected by first accepting it.
 - (b) The government should cancel the whole demonetization drive and give back the currency notes to the general public.
 - (c) The central government should approach the Supreme Court to ensure that there is no legal issue in the future.
 - (d) The Government of India is of the opinion that it has done the right thing but the public could not understand the importance of it.
3. Which among the following can be considered as an important takeaway from the incident described in the given passage?
 - (a) The economy of the country is not suffering at all and no policy can impact the economy.
 - (b) The economy of India is ready to accept any change since it is now mature enough to withstand any kind of problem.
 - (c) The Indian government is not receptive of any international shocks since there is no mechanism in India to accept the foreign risks.
 - (d) The economy has its own rhythm and it should not be taken for granted that any kind of sudden policy decision will be positive for the economy.
4. Which among the following is correct regarding the positive effects of demonetization as discussed in the passage?

L The number of income tax returns filed post demonetization has increased since now a lot of people are filing income tax returns

II. The cashless mode of transactions has become more popular post demonetization.

III. The RBI has become more proactive in its money laundering strategies.

- (a) Both II and III (b) Both I and II
(c) Both I and III (d) Only II

DIRECTIONS (Qs 5-8): Read the following passage carefully and answer the questions that follow.

In a recent discussion paper, NITI Aayog has chalked out an ambitious strategy for India to become an artificial intelligence (AI) powerhouse. AI is the use of computers to make decisions that are normally made by humans. Many forms of AI surround Indians already, including chatbots on retail websites and programs that flag fraudulent bank activity. But NITI Aayog envisions AI solutions for India on a scale not seen anywhere in the world today, especially in five key sectors — agriculture, healthcare, education, smart cities and infrastructure, and transport. In agriculture, for example, machines will provide information to farmers on the quality of soil, when to sow, where to spray herbicide, and when to expect pest infestations. It's an idea with great potential: India has 30 million farmers with smartphones, but poor extension services. If computers help agricultural universities advise farmers on best practices, India could see a farming revolution.

However, there are formidable obstacles. AI start-ups already offer some solutions, but the challenge lies in scaling these to cover the entire value chain, as NITI Aayog envisions. The first problem is data. Machine learning, the set of technologies used to create AI, is a data-guzzling monster. It takes reams of historical data as input, identifies the relationships among data elements, and makes predictions. More sophisticated forms of machine learning, like "deep learning", attempt to mimic the human brain. And even though they promise greater accuracy, they also need more data than what is required by traditional machine learning. Unfortunately, India has sparse data in sectors like agriculture, and this is already hampering AI-based businesses today.

In fact, the lack of data means that deep learning doesn't work for all companies in India. One example is Climate-Connect, a Delhi-based firm, which uses AI to predict the amount of power a solar plant will generate every 15 minutes. This is critical because solar electricity generation can change dramatically every hour depending on weather conditions and the position of the sun. When this happens, the plant must communicate expected changes to power distributors, which will then switch to alternative sources. With India planning to install 100 GW of solar power by 2022, such AI will play a central role in power planning.

But to generate such data, Climate-Connect needs historical inputs like the time of sunrise and sunset, and cloud cover where the plant is located. Unfortunately, since most Indian solar plants are recent, data are available only for a couple of years, whereas deep learning needs data over many years to predict generation. Today, the firm uses traditional machine learning technologies such as regression analysis that work with less data. These methods have an accuracy of around 95%. While deep learning can boost accuracy for operations such as Climate-Connect, it hasn't worked very well in the Indian scenario, says Nitin Tanwar, cofounder of the firm.

Another problem for AI firms today is finding the right people. NITI Aayog's report has bleak news: only about 50 Indian scientists carry out "serious research" and they are concentrated in elite institutions such as the Indian Institutes of Technology and the Indian Institutes of Science. Meanwhile, only about 4% of AI professionals have worked in emerging technologies like deep learning. A survey of LinkedIn found 386 out of the 22,000 people with PhDs in AI across the world to be Indians. How does this skill gap impact companies? To some extent, open libraries of machine learning code, which can be customised to solve Indian problems, help. This means that companies need not write code from scratch, and even computer science graduates can carry out the customisation.

5. What can be some steps that can be taken by India to improve its AI capabilities?

- I. The government must collect and digitize data it has access to due to running numerous schemes.
II. Set up institutes to churn out more skilled people in this field.

- (a) Only I (b) Only II
(c) Both I and II (d) None of the above

6. Which of the following strengthens the argument for using more of AI powered tools in the future in India?

- I. The AI sector uses a tremendous amount of electricity so as to process huge amounts of data which is not sustainable.
II. It will help to collect, validate, standardize, correlate, archive and distribute relevant data and make it accessible to organizations, people and systems.
III. Although AI will create more jobs than it would destroy.

- (a) Only I (b) Only II
(c) Only I and II (d) Only II and III

7. As per the passage, which of the following are reasons for AI to be full of 'formidable obstacles'?

- I. The need for a huge amount of data to make predictions.
II. The entire chain of operation faces bottlenecks pertaining to funding
III. A scarcity of adequately qualified people in India.

- (a) Only II (b) Only I and III
(c) Only II and III (d) Only III

8. As per your understanding of the passage, which of the following are not examples of AI usage in Industries?

- I. Data processing of students based on some parameters to find predictive patterns as to who would quit.
II. A Bank teller using computer to help solve customer queries with respect to their respective accounts.
III. Use of unmanned tanks, vessels, aerial vehicles and drones in the armed forces.

- (a) Only I (b) Only II
(c) Only I and III (d) Only II and III

DIRECTIONS (Qs. 9-12): Read the following passage carefully and answer the questions that follow:

The rapid industrial development in Malaysia has created significant industrial waste pollution problems that need immediate attention. Domestic waste and industrial waste are

discharged unto surface water through the sewage systems. In some cases, industrial waste is released directly unto surface water.

On land, the release of industrial waste is closely controlled. However, offshore oil and manganese extraction lead to direct discharge of pollutants into the seas. Radioactive waste is dumped at sea in large concrete barrels to decay. Often, the barrels will start to have defects after a while. Representatives of factories often ship waste onto sea to dump it illegally because it is very expensive to have their water purified. Oil is released into the sea through oil tankers and shipwrecks and pesticides are applied to water to control aquatic pests. Paints on boats will decay during long trips on the ocean and will eventually end up in the water.

The effects of pollutants are noticed mostly in small inland seas and lakes. This is because the oceans have a natural dilution system for incoming pollutants whereas lakes have no effective outlet. The pollutants can exist in water in different states. They can be dissolved or they can be in suspension, which means that they exist in the form of droplets or particles. These pollutants can travel farthest when they are in solution in a river that is fast flowing.

High-rate microbial processes have been studied in recent years in the attempt to develop cost-effective and yet, full-scale waste treatment technologies. Management of industrial waste is a growing concern in Malaysia. The waste if improperly **segregated** or disposed off can lead to dangerous results. Therefore, the proper management of such toxic and **hazardous** waste requires discipline, vigilance and at times, just common sense.

9. As per the passage, how has rapid industrialisation led to industrial waste pollution in Malaysia?
- Industrialisation has led to growing number of cars responsible for pollution.
 - Discharge of industrial waste into lakes, seas and other water bodies.
 - Rapid industrialisation has led to destruction of habitat for animals.
 - There is no policy for segregation and disposition of industrial waste by the Government.
10. Why is the effect of pollutants more noticeable in small inland seas and lakes rather than oceans?
- They can be dissolved or they can be in suspension, which means that they exist in the form of droplets or particles
 - The technologies for waste treatment cannot be applied on shallow water bodies.
 - This is because the surface area of oceans is very large compared to the amount of pollutants.
 - Because the oceans have a natural dilution system for incoming pollutants whereas lakes have no effective outlet.
11. Which of the following is synonym of the word 'segregated' given in the passage?
- Separated
 - Collected
 - Disinfected
 - Disposed
12. Which of the following is antonym of the word 'Hazardous' given in the passage?

- Perilous
- Precarious
- Risky
- Benign

DIRECTIONS (Qs. 13-16): Read the following passage carefully and answer the questions that follow.

E-pharmacies, which operate through websites or smartphone apps on the Internet, offer medicines for sale at a discount of at least 20% when compared to traditional pharmacists, with the added convenience of home delivery of medicines to one's doorstep. For scheduled drugs, patients can submit photographs of prescriptions while placing orders. Despite operating in India for at least four years now, the legal status of these e-pharmacies is not clear because the government is yet to notify into law draft rules that it published in 2018.

The fiercest opponents of e-pharmacies are trade associations of existing pharmacists and chemists. They argue that their livelihoods are threatened by venture capital backed e-pharmacies and that jobs of thousands are on the line. Apart from these obvious arguments, these trade associations also spin imaginary tales of how e-pharmacies will open the door to drug abuse and also the sale of sub-standard or counterfeit drugs, thereby threatening public health. There is enough evidence on record to demonstrate how existing pharmacies contribute generously to drug abuse and sale of sub-standard medicine. There is no reason to suspect that e-pharmacies are going to worsen the situation in anyway.

The more prudent way of looking at the entry of e-pharmacies is competition and the resultant effect it will have on lowering the price of medicine for Indian patients. Viewed from this perspective, there is virtually no doubt that e-pharmacies should be allowed to operate because the history of India's trade associations of pharmacists is one of rampant, **unabashed** cartelisation that has resulted in an artificial inflation of medicine prices.

This practice of two competitors colluding to fix the sale price and area of operation is called cartelisation, and is illegal under India's Competition Act. The premise of this law is that a free market is efficient only if all sellers are competing with each other to offer the lowest price to the customer.

13. Which of the following strengthen the claim that e-pharmacies benefit the consumers?
- There is cartelisation by pharmacist associations leading to rise in price of medicines.
 - Competition between e-pharmacies and trade associations of pharmacists will lead to reduction in prices of medicine.
 - E-pharmacies have added convenience of home delivery of medicines to one's doorstep
- Only III
 - Only I and III
 - All of the above
 - Only II and III
14. Which arguments are given by the trade associations of pharmacists against the use of e-pharmacies as per the passage?
- Selling of counterfeit drugs threatening public health.
 - E-pharmacies make drugs readily available, thereby can lead to drug abuse.
 - E-pharmacies stock up medicines leading to medicine shortage at pharmacist and chemist shops.
- Only I and II
 - Only II
 - Only I and III
 - All of the above

15. What is meant by the word 'unabashed' used in the passage?
 (a) not embarrassed, disconcerted, or ashamed.
 (b) Disguised emotions
 (c) reluctant to do something
 (d) unsettled or confused.
16. Which of the following is/are true as per the passage?
 I. E-pharmacies offer discounts of at least 20% in comparison to traditional pharmacists.
 II. India does not have any law declaring cartelisation illegal.
 III. Most e-pharmacies are bootstrapped and cannot compete with pharmacist trade associations.
 (a) Only II (b) Only I
 (c) Only III (d) Only II and III

DIRECTIONS (Qs. 17-20): Read the following passage carefully and answer the questions that follow.

Amid the sharp rise in NPA, talks of setting up a 'bad' bank have been gaining momentum. The government and the RBI are drawing up strategies on how to operationalise such a scheme. The economic survey of 2016-17 pointed out the twin balance sheet problem — stressed companies on one hand and NPA-laden banks on the other — and advocated a centralised Public Sector Asset Rehabilitation Agency (PARA) be established to deal with the bad loans problem.

"Private Asset Reconstruction Companies (ARCs) haven't proved any more successful than banks in resolving bad debts," the economic survey had said while proposing the 'bad' bank. "But international experience shows that a professionally-run central agency with government backing — while not without its own difficulties — can overcome the difficulties that have impeded progress," it added.

One challenge private sector ARCs face is that of capital. None of the entities till now has been allowed to tap the capital market for raising funds. Kotak Mahindra Bank, which recently took its board's approval to raise Rs. 5,300 crore equity said the bank also wanted to capitalise on opportunities in acquisition and resolution of stressed assets in the banking sector including participation in a 'bad' bank. Kotak Mahindra Prime and Kotak Mahindra Investments, companies in the Kotak Mahindra Group are sponsors of the asset reconstruction company Phoenix and together own 49% stake in it.

"The ARCs are badly capitalised. We see significant opportunity for Kotak in this," Mr. Kotak said adding the country would need 2-3 well-capitalised 'bad' banks. Some central bank as well as government officials also admitted capital was the biggest challenge in setting up a 'bad' bank. "At least Rs. 25,000 to Rs. 30,000 crore of capital will be required to set up a bad bank in the initial stages. Where will the money come from?" asked a senior central bank official.

17. Which of the following is/are true as per the passage?
 I. Kotak Mahindra Bank took its board's approval to raise Rs. 5,300 crore equity.
 II. Budget 2016-17 advocated a centralised Public Sector Asset Rehabilitation Agency (PARA) to deal with the bad loans problem.
 (a) Both are Correct (b) I only
 (c) II only (d) None is Correct

18. What is the biggest challenge in setting up of a 'bad' bank?
 (a) Approval of the Finance Ministry.
 (b) Approval of the RBI.
 (c) Capital
 (d) An efficient policy.
19. What does the phrase 'twin balance sheet' used in the passage refer to?
 (a) Stressed companies and NPA-laden banks
 (b) Higher Inflation and NPA-laden banks
 (c) High fiscal deficit and negative current account deficit
 (d) None of the Above
20. Choose the word which is similar in meaning to the word "Amid", in the passage?
 (a) During (b) Separate
 (c) Outside (d) Beyond

DIRECTIONS (Qs. 21-23): Arrange these five sentences in proper order to form a meaningful paragraph/ sentence.

21. A. The process of handing down implies not a passive transfer, but some contestation in defining what exactly is to be handed down.
 B. Wherever Western scholars have worked on the Indian past, the selection is even more apparent and the inventing of a tradition much more recognizable.
 C. Every generation selects what it requires from the past and makes its innovations, some more than others.
 D. It is now a truism to say that traditions are not handed down unchanged, but are invented.
 E. Just as life has death as its opposite, so is tradition by default the opposite of innovation.
 (a) ACDBE (b) EDACB
 (c) EDCAB (d) DCABE
22. A. Before plants can take life from atmosphere, nitrogen must undergo transformations similar to ones that food undergoes in our digestive machinery.
 B. In its aerial form nitrogen is insoluble, unusable and is in need of transformation.
 C. Lightning starts the series of chemical reactions that need to happen to nitrogen, ultimately helping it nourish our earth.
 D. Nitrogen — an essential food for plants — is an abundant resource, with about 22 million tons of it floating over each square mile of earth.
 E. One of the most dramatic examples in nature of ill wind that blows goodness is lightning.
 (a) ABCDE (b) BCDEA
 (c) ECDBA (d) DCEAB
23. A. The implications of retelling of Indian stories, hence, takes on new meaning in a modern India.
 B. The stories we tell reflect the world around us.
 C. We cannot help but retell the stories that we value — after all, they are never quite right for us — in our time.
 D. And even if we manage to get them quite right, they are only right for us — other people living around us will have different reasons for telling similar stories.

- E As soon as we capture a story, the world we were trying to capture has changed.
- (a) BECDA (b) BCAED
(c) DCABE (d) ADCEB

DIRECTIONS (Qs 24-25): Choose an option, which can be substituted for a given phrase out of given options.

24. Being of crucial importance
(a) Strategy (b) Confounded
(c) Inexplicable (d) Pivotal
25. Mass departure of people
(a) Exodus (b) Immigration
(c) Emigration (d) Recluse

DIRECTIONS (Qs. 26-28): In the following questions, out of the four alternatives, choose the one which best expresses the meaning of the given word.

26. INADVERTENT
(a) undisturbed (b) ignorant
(c) unexpected (d) unintentional
27. COY
(a) Sweet (b) Shy
(c) Talented (d) Beautiful
28. ALMS
(a) charity (b) worship
(c) blessings (d) prayers

DIRECTIONS (Qs. 29-31): In the following questions, out of the four alternatives, choose the one which is opposite in meaning to the given word.

29. Admonish
(a) Ridiculous (b) Chicane
(c) Approve (d) Approaching
30. Ecstasy
(a) Polite (b) Despair
(c) Disperse (d) Resemblance
31. Veneration
(a) Remorse (b) Fear
(c) Disrespect (d) Reverence

DIRECTIONS (Qs 32-34): In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase.

32. Cut the mustard
(a) To score average
(b) To perform upto the standard
(c) To underperform
(d) To get above and beyond expectations
33. Throw caution to the wind
(a) To warn others not to travel
(b) To behave recklessly
(c) To behave with care and caution
(d) To be fearful
34. Feather in one's cap
(a) A new achievement or distinction
(b) Hunting for a long time
(c) Bird watching in forest
(d) Discrimination against the poor

DIRECTIONS (Qs 35-37): In each of the following sentence, there are two blank spaces. Below the sentences, there are five options with a pair of words each. Fill up the sentences with the pair of words that make the sentence grammatically and contextually correct.

35. FCRA guidelines _____ that registered associations are required to submit an online annual report with _____ copies of income and expenditure statement, receipts and payment account, balance sheet among other documents for every financial year within nine months of the closure of the financial year.
(a) Presume, Hundreds (b) Allow, Mutilated
(c) Mandate, Scanned (d) Warned, Million
36. I am not easily _____ by pressure that would interfere with accomplishing the goals of my unit. I stick to my _____.
(a) pessimistic, views
(b) swayed, convictions
(c) discouraged, achievements
(d) empowered, organization
37. In a first-of-its-kind move aimed at _____ the burning of fossil fuel for power generation, Gujarat government announced that it will not give fresh permissions for _____ new thermal power stations in the state.
(a) Curbing, Setting up (b) Differentiating, Making
(c) Helping, Installing (d) Finishing, Arranging

DIRECTIONS (Qs. 38-40): In the following questions, a sentence/ part of the sentence is underlined. Below are given alternatives which may improve the underlined part. Choose the correct alternative.

38. If you want to complete this important assignment on time you must carefully planned.
(a) carefully planning (b) careful to plan
(c) plan carefully (d) planned carefully
39. In the 1970s banks required to submit their detailed plans of expansion to RBI.
(a) are required to submit
(b) were required to submit
(c) required for submission
(d) requirement of submitting
40. The organizers agreed to shift the conference at some place convenience to all participants.
(a) from a place of convenience
(b) any of the place convenient
(c) at places convenient
(d) to a place convenient

SECTION-B : Intelligence & Critical Reasoning

DIRECTIONS (Qs. 41-43): In each question below is given a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement.

41. **Statements:** Prime age school-going children in urban India have now become avid as well as more regular viewers of

television, even in households without a TV. As a result there has been an alarming decline in the extent of readership of newspapers.

Conclusions:

- I. Method of increasing the readership of newspapers should be devised.
 - II. A team of experts should be sent to other countries to study the impact of TV. on the readership of newspapers.
- (a) Only conclusion I follows
 - (b) Only conclusion II follows
 - (c) Either I or II follows
 - (d) Neither I nor II follows

42. **Statements:** A man must be wise to be a good wrangler. Good wranglers are talkative and boring.

Conclusions:

- I. All the wise persons are boring.
 - II. All the wise persons are good wranglers.
- (a) Only conclusion I follows
 - (b) Only conclusion II follows
 - (c) Either I or II follows
 - (d) Neither I nor II follows

43. **Statements:** "The Government will review the present policy of the diesel price in view of further spurt in the international oil prices". – A spokesman of the Government.

Conclusions:

- I. The Government will increase the price of the diesel after the imminent spurt in the international oil prices.
 - II. The Government will not increase the price of the diesel even after the imminent spurt in the international oil prices.
- (a) Only conclusion I follows
 - (b) Only conclusion II follows
 - (c) Either I or II follows
 - (d) Neither I nor II follows

DIRECTIONS (Qs. 44-46): Read the following information to answer these questions.

- I. P, Q, R, S, T and U are the six members of a family.
- II. There is one Doctor, one Advocate, one Engineer, one Teacher, one Student and one Housewife among them.
- III. There are two married couples in the family.
- IV. U, who is an Advocate, is father of P.
- V. Q is a Teacher and is mother of R.
- VI. S is grandmother of R and is a Housewife.
- VII. T is the father of U and is a Doctor.
- VIII. R is the brother of P.

44. Which of the following statements is definitely true?
- (a) U is father of the Engineer
 - (b) P is the Engineer
 - (c) T is father of the Teacher
 - (d) R is brother of the Student
45. How many female members are there in the family?
- (a) Three only
 - (b) Two or three
 - (c) Two only
 - (d) Three or four

46. How is P related to S?
- (a) Either grand daughter or grandson
 - (b) Grand mother
 - (c) Grand son
 - (d) Grand daughter

DIRECTIONS (Qs. 47-49): Read the following information to answer these questions.

In a family, there are 10 members, G and N are a married couple while K is the husband of X. In this family, there are housewives and four working husbands while other members are non-working. The husband in the last generation is a doctor and the husband of S is a teacher. L is a married woman but her husband is not P. Q and K are associated with profession of engineer and accountant but K is not an accountant. P is the brother of T and both have a sister O. N is daughter of L and X is the mother of P.

47. The family consists of how many generations?
- (a) 6
 - (b) 1
 - (c) 4
 - (d) 2
48. Who is the husband of S?
- (a) T
 - (b) K
 - (c) L
 - (d) P
49. Which of the following statements is not true?
- (a) Husband of X is an engineer.
 - (b) Second generation members are S, P, T and O.
 - (c) The number of female members in the family is 5.
 - (d) The accountant and his wife belong to the 4th generation.

DIRECTIONS (Qs. 50-52): Read the following information to answer these questions.

- I. 'P Ψ Q' means 'P is mother of Q'.
 - II. 'P \in Q' means 'P is sister of Q'.
 - III. 'P \$ Q' means 'P is father of Q'.
 - IV. 'P # Q' means 'P is brother of Q'.
50. Which of the following means 'D is definitely daughter of A'?
- (a) A \$ B # C # D
 - (b) C Ψ A \$ D \in B
 - (c) A Ψ C \$ B \in D
 - (d) B Ψ A \$ C # D
51. Which of the following means 'R is brother of T'?
- (a) R Ψ S # U \$ T
 - (b) U Ψ R # S # T
 - (c) U Ψ R \in S # T
 - (d) K # R \$ S # T
52. Which of the following means 'A is nephew of C'?
- (a) D # C \$ B # A \in E
 - (b) A # B \$ D \in E \$ C
 - (c) C # D \$ B # A \$ E
 - (d) B Ψ E # C \$ E \in A

DIRECTIONS (Qs. 53-55): Read the following information to answer these questions.

Six members of a family G, H, I, J, K and L are Accountant, Clerk, Lawyer, Jeweller, Doctor and Engineer, but not in the order.

- I. Doctor is the grandfather of L who is an Accountant.
 - II. Clerk J is married to G.
 - III. I, who is a Jeweller, is married to the Lawyer.
 - IV. H is the mother of L and K.
 - V. There are two married couples in the family.
53. What is the profession of K?
- (a) Doctor
 - (b) Clerk
 - (c) Engineer
 - (d) Account

54. How many male members are there in the family?
 (a) Two (b) Three
 (c) Four (d) Cannot be determined
55. How is G related to K?
 (a) Wife (b) Father
 (c) Grandmother (d) Grandfather

DIRECTIONS (Qs. 56-58): These questions are based on the statements given below.

Madhu and Shivani are good in Dramatics and Computer Science. Asha and Madhu are good in Computer Science and Physics. Asha, Pratibha and Namita are good in Physics and History. Namita and Asha are good in Physics and Mathematics. Pratibha and Shivani are good in History and Dramatics.

56. Who is good in Physics, History and Mathematics, but not in Computer Science?
 (a) Pratibha (b) Asha
 (c) Madhu (d) Namita
57. Who is good in Physics, Computer Science and Mathematics?
 (a) Namita (b) Asha
 (c) Madhu (d) Pratibha
58. Who is good only in Computer Science and Dramatics?
 (a) Pratibha (b) Madhu
 (c) Shivani (d) Asha

DIRECTIONS (Qs. 59- 61): Read the following information to answer these questions.

Four friends A, B, C and D are studying together in class 10+2. A and B are good in Hindi but poor in English. A and C are good in Sanskrit but poor in Maths. C and D are good in English, but poor in Geography. D and B are good in Maths as well as Sanskrit.

59. Who amongst the following friends is not good in Maths but good in Hindi ?
 (a) C (b) A (c) D (d) B
60. Which of the following pairs of friends is good both in English and Sanskrit?
 (a) A and D (b) A and C
 (c) C and D (d) D and B
61. Which one of the following friends is good in Sanskrit but poor in Geography?
 (a) Only A (b) Only D
 (c) Only C (d) Both C and D

DIRECTIONS (Qs. 62- 64): Read the given information to answer the following questions.

Mohan Dey is undecided which four movies to see this week. He is considering a spy thriller, a murder mystery, a comedy and a science fiction. The movies will be shown by TV channels STAR, SONY, B4U and HBO, not necessarily in that order and telecast on Tuesday, Wednesday, Saturday and Sunday, not necessarily in that order.

The movies by STAR will be shown on Sunday. The spy thriller will be shown on Tuesday. The science-fiction movies are shown by B4U and not telecast on Saturday. The comedy is shown by HBO channel.

62. On Wednesday Mohan Dey can watch
 (a) the science fiction movie
 (b) the murder mystery
 (c) the spy thriller
 (d) the comedy

63. The TV channel SONY will telecast
 (a) a comedy on Saturday
 (b) a science fiction movie on Saturday
 (c) a murder mystery on Tuesday
 (d) a spy thriller on Tuesday
64. Mohan Dey watched movies on two channels whose names come first and third in the alphabetical order he did not watch.
 (a) the movie shown on Wednesday
 (b) the murder mystery
 (c) the science fiction movie
 (d) the movie shown on Saturday

DIRECTIONS (Qs. 65- 67): Read the following information to answer these questions.

Six books are kept one on top of the other. The History books is just above Accounting. The Maths books is between Punjabi and Urdu. English is between History and Punjabi.

65. Which book is between the Maths and English books?
 (a) Accountancy (b) History
 (c) Urdu (d) None of these
66. Which book is at the bottom?
 (a) Accountancy (b) Punjabi
 (c) Urdu (d) Cannot be determined
67. Which book is at the top?
 (a) Punjabi (b) Urdu
 (c) Accountancy (d) Cannot be determined

DIRECTIONS (Qs. 68-70): In each of these questions, two statements A and B are given followed by two conclusions I and II. Consider both the statements to be true even if they seem to be at variance from commonly known facts. Decide which of the given conclusions is/are definitely drawn from the given statements.

Mark answer as

- (a) if only II follows.
 (b) if only I follows.
 (c) if neither I nor II follows.
 (d) if both I and II follow.

68. Statements:

- A. If there is shortage in the production of onions, the price of onions will go up.
 B. Price of onions has gone up.

Conclusions:

- I. There is shortage in the production of onions.
 II. Onions were exported.

69. Statements:

- A. If all players play to their full potential, we will win the match.
 B. We have won the match.

Conclusions:

- I. All players played to their full potential.
 II. Some players did not play to their full potential.

70. Statements:

- A. Some businessmen are rich.
 B. Soman is rich.

Conclusions:

- I. Soman is a businessman.
 II. Soman has big farm.

71. An application was received by inward clerk in the afternoon of a week day. Next day, he forwarded it to the table of the senior clerk, who was on leave that day. The senior clerk put up the application to the desk officer next day in the evening. The desk officer studied the application and disposed off the matter on the same day, i.e. Friday. The application was received by the inward clerk on.
(a) Monday (b) Wednesday
(c) Tuesday (d) Previous week's Saturday
72. In a queue of children, Kashish is fifth from the left and Mona is sixth from the right. When they interchange their places among themselves, Kashish becomes thirteenth from the left. Then, what will be Mona's position from the right?
(a) 4th (b) 14th (c) 8th (d) 15th
73. If the numbers from 1 to 45 which are exactly divisible by 3 are arranged in ascending order, minimum number be on the top, then which number would come at the ninth place from the top?
(a) 18 (b) 24 (c) 21 (d) 27
74. Which letter should be the ninth letter to the left of the ninth letter from the right, if the first half of the alphabet English are reversed?
(a) D (b) F
(c) E (d) I
75. In a family, a couple has a son and a daughter. The age of the father is three times that of his daughter and the age of the son is half of his mother. The wife is 9 years younger to her husband and the brother is seven years old his sister. What is the age of the mother?
(a) 40 years (b) 50 years
(c) 45 years (d) 60 year

DIRECTIONS (Qs. 76-80): In each of these questions, various terms of a series are given with one term missing as shown by (?). Choose the missing term.

76. QPO, SRQ, UTS, WVU, (?)
(a) XVZ (b) YXW
(c) ZYA (d) VWX
77. 19, 2, 38, 3, 114, 4, (?)
(a) 228 (b) 352 (c) 256 (d) 456
78. YES, WFD, UHG, SKI, (?)
(a) QOL (b) TOL (c) QGL (d) QNL
79. AZ, CX, FU, (?)
(a) IR (b) JQ (c) IV (d) KP
80. 225, 7Y7, 14X9, 23W11, 34V13, (?)
(a) 27U24 (b) 45U15
(c) 47U15 (d) 27V14

SECTION-C : Mathematical Skills

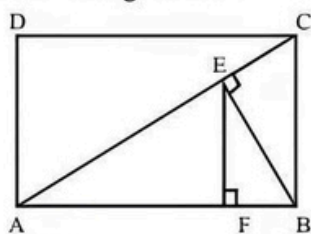
81. A bag contains 4 black, 6 yellow, and 8 red balls. Three balls are drawn at random from the bag. The probability that all of them are yellow is
(a) $\frac{7}{204}$ (b) $\frac{11}{408}$ (c) $\frac{3}{68}$ (d) $\frac{5}{204}$
82. In 25 days, 30 men complete 15 projects. In how many days can 14 men complete 7 project?
(a) 21 days (b) 25 days
(c) 50 days (d) 32 days
83. A car travelling with $\frac{2}{5}$ of its actual speed covers 400 km in 16 hours 40 min. Find the actual speed of the car.
(a) 60 kmph (b) 64 kmph
(c) 72 kmph (d) 68 kmph
84. Four years ago, ages of A and B were respectively thrice and twice that of the age of C if the total of their ages is 48, then the present age of B is
(a) 16 years (b) 22 years
(c) 10 years (d) 12 years
85. A certain amount earns simple interest of ₹ 2,550 after 8 years. Had the rate of interest been 3% more, how much interest would it have earned?
(a) ₹ 360 (b) ₹ 435
(c) ₹ 285 (d) Can't be determined
86. In a certain 25% of students are below 10 years of age. The number of students above 10 years of age is $\frac{3}{5}$ of the number of the student of 10 years of ages which is 75. What will be total number of students in the school?
(a) 120 (b) 135 (c) 160 (d) 180
87. The ratio of the number of boys and girls in a college is 5 : 4, if the percentage decrease in the number of boys is 30 and percentage increase in the of girls be 5. The new ratio will be
(a) 5 : 6 (b) 6 : 5 (c) 5 : 9 (d) 9 : 4
88. The ratio of diameter to its height of a cylindrical pillar 7 : 3. The volume of the pillar is 924 m^3 . Its curved surface area is
(a) 306 m^2 (b) 264 m^2 (c) 384 m^2 (d) 456 m^2
89. Find the smallest number that leaves a remainder of 4 on division by 5, 5 on division by 6, 6 on division by 7, 7 on division by 8 and 8 on division by 9?
(a) 2519 (b) 5039 (c) 1079 (d) 979
90. N^2 leaves a remainder of 1 when divided by 24. What are the possible remainders we can get if we divide N by 12?
(a) 1, 5, 7 and 11 (b) 1 and 5
(c) 5, 9 and 11 (d) 1 and 11
91. Three taps A, B and C can fill a tank in 12, 15 and 20 hours respectively. If tap A is open all the time and tap B and tap C are open for one hour each alternately, tank will be filled in
(a) 7 hours (b) 6 hours
(c) 5 hours (d) None of these
92. A sum was put at simple interest at a certain rate for 3 years. Had it been put at 1% higher rate, it would have fetched ₹ 5,100 more. the sum is
(a) ₹ 1,50,000 (b) ₹ 1,70,000
(c) ₹ 1,25,000 (d) ₹ 1,20,000
93. Two times a two-digit number is 9 times the number obtained by reversing the digits and sum of the digits is 9. The number is
(a) 54 (b) 72 (c) 63 (d) 81
94. In measuring the sides of a rectangular plot, one side is taken 5% in excess and the other 6% in deficit. The error percent in area calculated, of the plot, is
(a) 1.3% (b) 1% (c) 1.5% (d) 3%

95. Shiva invested a certain sum of money in a simple interest bond whose value grew to ₹ 300 at the end of 3 years and to ₹ 400 at the end of another 5 years. What was the rate of interest at which he invested his sum?
- (a) 12.5% (b) 12% (c) 6.67% (d) 8.33%

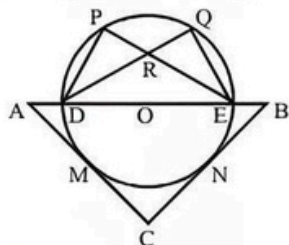
DIRECTION (Q. 96): Study the following information carefully to answer the question.

Ram sold 10 acres of land to Mani and Dinesh who paid him the total amount in the ratio of 2 : 3. Mani invested a further ₹ 3 lakh in the land for the purpose of planting coconut and lemon trees in the ratio of 4 : 1. These trees were planted on equal areas of land. There were a total of 200 lemon trees. The sale price of one coconut was ₹ 10 in 2019. The crop took 7 years to mature and when the crop was reaped in 2019, the total revenue generated was 50% of the total initial amount put in by Mani and Dinesh together. The revenue generated from the coconut and lemon trees was in the ratio of 5 : 4 and it was shared equally by Mani and Dinesh as the initial amount spent by them was equal.

96. How many coconuts were reaped?
- (a) 24000 (b) 50000
(c) 25000 (d) 19000
97. In an isosceles triangle PQR with $PQ = PR$, PT and PZ trisect QR such that $QT = TZ = ZR$. If angle TPZ is equal to angle PQR and the area of triangle PQR is equal to $\frac{27\sqrt{7}}{4}$, then find PR.
- (a) 3 (b) 8 (c) 9 (d) 6
98. ABCD is a rectangle as shown in the figure. $AB = 8$ cm and $BC = 6$ cm. BE is the perpendicular drawn from B to the diagonal AC. EF is the perpendicular drawn from E to AB. What is the length of BF?



- (a) 3.24 cm (b) 1.96 cm
(c) 2.56 cm (d) 2.88 cm
99. In the adjoining figure, $AC = BC$ and DE is the diameter of the circle. AC and BC touch the circle at M and N respectively. If $\angle ADP = \angle BEQ = 100^\circ$, find $\angle PRD$



- (a) 20° (b) 30° (c) 40° (d) 50°
100. The lengths of perpendiculars drawn from any point inside an equilateral triangle are a_1 , a_2 and a_3 respectively. Find the length of the side of the equilateral triangle?

- (a) $\frac{2}{\sqrt{3}}(a_1 + a_2 + a_3)$ (b) $\frac{1}{3}(a_1 + a_2 + a_3)$
(c) $\frac{1}{\sqrt{3}}(a_1 + a_2 + a_3)$ (d) $\frac{4}{\sqrt{3}}(a_1 + a_2 + a_3)$

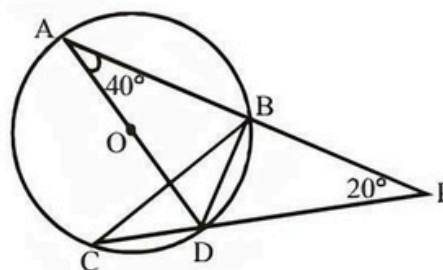
101. ABCD is a square of 20 m. What is the area of the least-sized square that can be inscribed in it with its vertices on the sides of ABCD?
- (a) 100 m^2 (b) 120 m^2
(c) 200 m^2 (d) 250 m^2
102. A square of perimeter 88 cm and a circle of perimeter 88 cm are given. Which figure has larger area and by how much?
- (a) 125 cm^2 (b) 128 cm^2
(c) 132 cm^2 (d) 125 cm^2
103. If each of the dimensions of a rectangle is increased by 100%, then the area is increased by
- (a) 100% (b) 200%
(c) 300% (d) 400%
104. A square pyramid with side 10 cm has a volume of 400 cm^3 . Find the total surface area of the pyramid.
- (a) 240 cm^2 (b) 300 cm^2
(c) 360 cm^2 (d) 420 cm^2
105. The base of a right pyramid is a square and the length of the side of square is 32 cm and height of the pyramid is 12 cm, then what is the total surface area of the square pyramid?
- (a) 2114 sq. cm (b) 2304 sq. cm
(c) 2204 sq. cm (d) 2314 sq. cm

106. A student walks from his house at $\frac{5}{2}$ km/h and reaches his school late by 6 min. Next day, he increases his speed by 1 km/h and reaches 6 min before school time. How far is the school from his house?

- (a) $\frac{5}{4}$ km (b) $\frac{7}{4}$ km (c) $\frac{9}{4}$ km (d) $\frac{11}{4}$ km

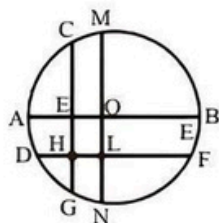
107. Two circular tracks T1 and T2 of radii 100 m and 20 m, respectively, touch at a point A. Starting from A at the same time, Ram and Rahim are walking on track T1 and track T2 at speeds 15 km/hr and 5 km/hr respectively. The number of full rounds that Ram will make before he meets Rahim again for the first time is
- (a) 4 (b) 3 (c) 2 (d) 5

108. PBA and PDC are two secants. AD is the diameter of the circle with centre at O. $\angle A = 40^\circ$, $\angle P = 20^\circ$. Find the measure of $\angle DBC$

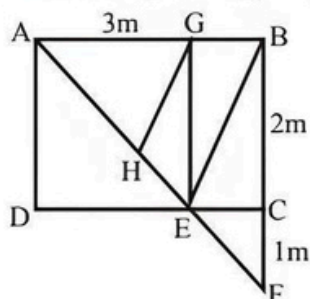


- (a) 30° (b) 45° (c) 50° (d) 40°

109. In the following figure, the diameter of the circle is 3 cm. AB and MN are two diameters such that MN is perpendicular to AB. In addition, CG is perpendicular to AB such that AE : EB = 1 : 2, and DF is perpendicular to MN such that NL : LM = 1 : 2. The length of DH in cm is



- (a) $2\sqrt{2} - 1$ (b) $\frac{(2\sqrt{2} - 1)}{2}$
 (c) $\frac{(3\sqrt{2} - 1)}{2}$ (d) $\frac{(2\sqrt{2} - 1)}{3}$
110. A man's petrol bill in July is Rs. 200. In August, the price of petrol increases by 10% and his consumption is reduced by 10%. Find his petrol bill in August.
 (a) Rs. 190 (b) Rs. 210
 (c) Rs. 200 (d) Rs. 198
111. Two cyclists start together to travel to a certain destination, one at the rate of 4 kmph and the other at the rate of 5 kmph. Find the distance if the former arrives half an hour after the latter.
 (a) 2km (b) 10m (c) 10000m (d) 1km
112. A motorcyclist covers 4 successive 4 km stretches at speeds of 20 kmph, 30 kmph, 40 kmph, and 50 kmph respectively. Find the average speed over the total distance.
 (a) 40.2 kmph (b) 31.2 kmph
 (c) 50.3 kmph (d) 36 kmph
113. Metal A costs Rs. 8.40 per gm and metal B Rs. 0.21 per gm. In what proportion must these metals be mixed so that gram of the mixture may be worth Rs. 5.67?
 (a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 2 : 3
114. In triangle ABC, two points P and Q are on AB and BC respectively such that AP : BP = 1 : 4 and BQ : CQ = 2 : 3. The ratio of areas of triangle BPQ and the quadrilateral PQCA is
 (a) $\frac{8}{25}$ (b) $\frac{17}{25}$ (c) $\frac{9}{17}$ (d) $\frac{8}{17}$
115. In the given figure ABCD is a rectangle. AB is 3m and BC is 2m. It is given that CF is 1m. AF intersects CD at E and it is known that BE is parallel to HG. GE is perpendicular to AB. Find the length of HG (in m).



- (a) $\frac{2\sqrt{5}}{3}$ (b) $\sqrt{2}$ (c) $\frac{4\sqrt{5}}{3}$ (d) $\frac{2\sqrt{5}}{5}$

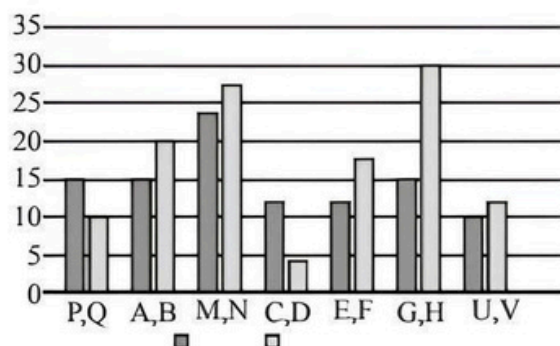
116. ABCD is an isosceles trapezium with angle A = 45° and the length of one of the non-parallel sides are $10\sqrt{2}$, and the area of ABD is 200 sq. Units. What is the sum of the lengths of the parallel sides.
 (a) 60 (b) 50 (c) 40 (d) 30
117. If a_1, a_2, \dots, a_n are in AP then

$\frac{1}{(\sqrt{a_1} + \sqrt{a_2})} + \frac{1}{(\sqrt{a_2} + \sqrt{a_3})} + \dots + \frac{1}{(\sqrt{a_n} + \sqrt{a_{n+1}})}$ is equal to

- (a) $\frac{(n-1)}{(\sqrt{a_1} + \sqrt{a_n})}$ (b) $\frac{n}{(\sqrt{a_1} + \sqrt{a_{n+1}})}$
 (c) $\frac{(n-1)}{(\sqrt{a_1} + \sqrt{a_{n-1}})}$ (d) $\frac{n}{(\sqrt{a_1} + \sqrt{a_{n+1}})}$
118. A household want to diversified his investment and invest Rs. 24,000 as a part of it at a bank at the rate of 10% per annum. But due to some pressing needs he has to withdraw the entire money after 3 years, for lower rate of interest. If he gets Rs. 6,640 less than what he would have got at the end of 5 years, the rate of interest allowed by the bank is:
 (a) 8.25% (b) 7.44% (c) 6.25% (d) 8.75%
119. The ratio of interest between the compound and simple interest after two years on a sum of money to that after three years on the same sum, at the same rate of interest, is 11 : 37. What will be the rate of interest?
 (a) 36.36% (b) 34.24%
 (c) 36.26% (d) 38.96%
120. A work was completed by three persons of equal ability, first one doing m hours for m days, second one doing n hours for n days (m and n being integers) and third one doing 16 hours for 16 days. The work could have been completed in 29 days by third person alone with his respective working hours. If all of them do the work together with their respective working hours, then they can complete it in about
 (a) 12 days (b) 13 days
 (c) 14 days (d) 15 days

SECTION-D : Data Analysis & Sufficiency

DIRECTIONS (Qs. 121-125): The graph show time (in minutes) taken by various pipes to fill a cistern.



121. Two pipes M and N can fill a tank. If both the pipes are opened simultaneously, after how much time should N be closed so that the tank is full in 8 minutes?
 (a) 14 minutes (b) 12 minutes
 (c) 15 minutes (d) 18 minutes
122. Two pipes C and D can fill a cistern. If they are opened on alternate minutes and if pipe C is opened first, in how many minutes will the tank be full?
 (a) 4 minutes (b) 5 minutes
 (c) 2 minutes (d) 6 minutes
123. Two pipes, A and B are opened simultaneously and it is found that due to the leakage in the bottom, $\frac{17}{7}$ minutes are taken extra to fill the tank. If the tank is full, in what approximate time would the leak empty it?
 (a) 27 minutes (b) 32 minutes
 (c) 36 minutes (d) 39 minutes
124. Three pipes E, F and R can fill a tank. If pipe R alone can fill a tank in 24 minutes then the pipe R is closed 12 minutes before the tank is filled. In what time the tank is full?
 (a) $8\frac{5}{13}$ (b) $8\frac{4}{13}$ (c) $7\frac{4}{13}$ (d) $8\frac{6}{13}$
125. A large cistern can be filled by two pipes P and Q. How many minutes will it take to fill the cistern from an empty state if Q is used for half the time and P and Q fill it together for the other half?
 (a) 6.5 minutes (b) 7.2 minutes
 (c) 8.5 minutes (d) 9.5 minutes

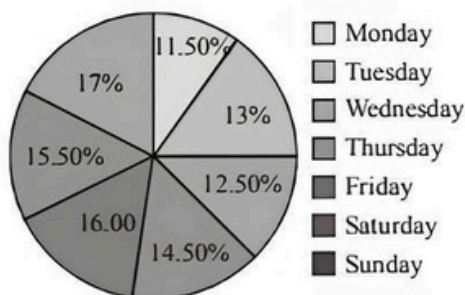
DIRECTIONS (Qs. 126-130): Study the Pie-chart and answer the following questions.

The following pie-chart show the percentage of cakes sold throughout the week.

Cake on everyday day

= No. of vanilla cake + No. of chocolate cakes

Total cake sold in the week = 8400

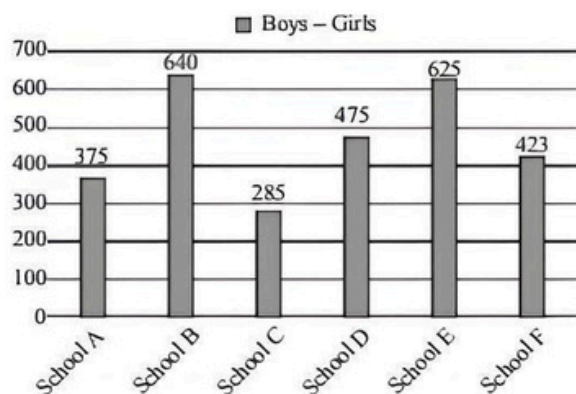
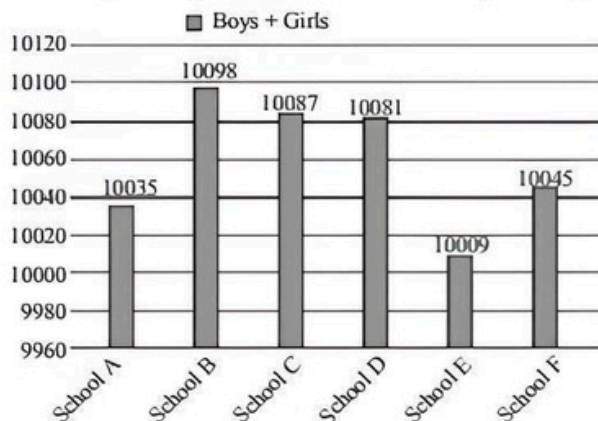


126. If the average number of Vanilla cakes sold on Friday and Sunday are 858 and number of Chocolate cake sold on Sunday are 72 more than number of Chocolate cakes sold on Friday then number of Chocolate cakes sold on Friday is?
 (a) 482 (b) 492 (c) 498 (d) 512
127. The ratio of number of Vanilla cakes sold to Chocolate cakes sold is 2 : 1 of the total cakes sold on Monday and the ratio of the number of Vanilla cakes sold to Chocolate cakes sold is 3 : 2 in the total cakes sold on Wednesday. Then difference of Vanilla cakes sold on Monday and Vanilla cakes sold on Wednesday is?
 (a) 13 (b) 14 (c) 15 (d) 16

128. If the ratio of Vanilla cakes sold to Chocolate cakes sold on Monday is 2 : 1 and the ratio of selling price of Vanilla cake to Chocolate cake is the 1 : 4, total amount earned by him on Monday is ₹ 9660, then what is the rate of one Vanilla cake?
 (a) ₹ 4 (b) ₹ 5 (c) ₹ 10 (d) ₹ 20
129. If the ratio of Vanilla cakes sold on Thursday to Vanilla cakes sold on Saturday is 3 : 4, number of Chocolate cakes sold on Thursday is equal to number Chocolate on Saturday, then number of Chocolate cakes sold on Saturday is equal to total number of cakes sold on which day?
 (a) Monday (b) Tuesday
 (c) Wednesday (d) Thursday
130. Ratio of Vanilla cakes sold to chocolate cakes sold is 46 : 45 on Tuesday then how many number of vanilla cakes are sold on that day?
 (a) 540 (b) 546 (c) 552 (d) 562

Direction (Qs. 131-135): Study the following graph carefully and answer the following question given below.

The two graph given below show the total and the difference of number of boys and girls in various school respectively.



131. What is the difference between number of girls in school A and number of girls in school B?
 (a) 100 (b) 101 (c) 102 (d) 103
132. How many number of boys are there school F?
 (a) 5134 (b) 5234 (c) 5334 (d) 5444
133. Girls in school C forms approximately what percent of the total number students in that school?
 (a) 45.5% (b) 47.5% (c) 48.5% (d) 49.5%
134. What is the ratio of sum of boys in school D and girls in school E together to the sum of girls in school D and boys in school E together is?
 (a) 997 : 1012 (b) 997 : 1012
 (c) 1000 : 1011 (d) 1000 : 1013

135. In which of the following school least number of girls are present?
 (a) School A (b) School B
 (c) School C (d) School E

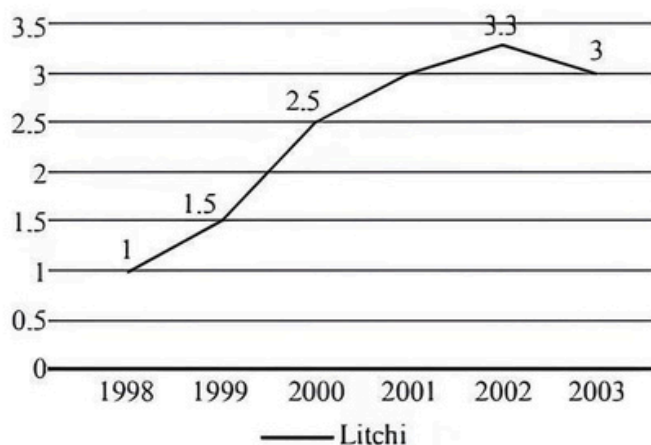
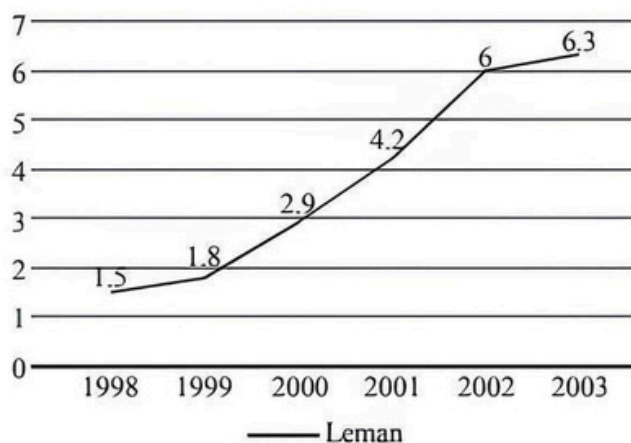
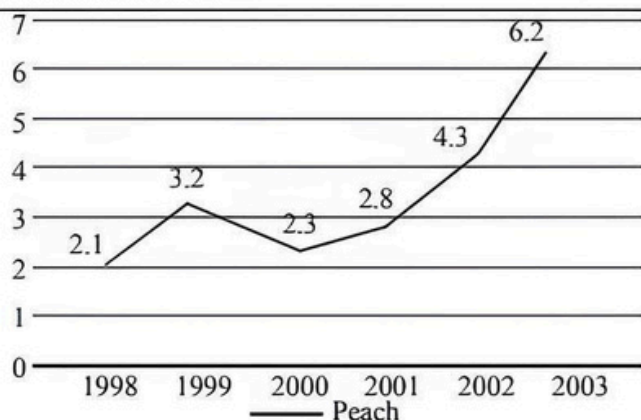
DIRECTIONS (Qs. 136-140): Study the following table chart carefully and answer the question given beside.

The tabel given below shows the percentage of appeared and qualified candidates in a competitive examination from different institutes.

Institutes	Appeared	Qualified
	candidates = 24000	candidate = 4000
	% of Appeared candidates	% of Qualified candidates
A	25%	18%
B	10%	12%
C	15%	18%
D	12%	16%
E	18%	20%
F	20%	16%

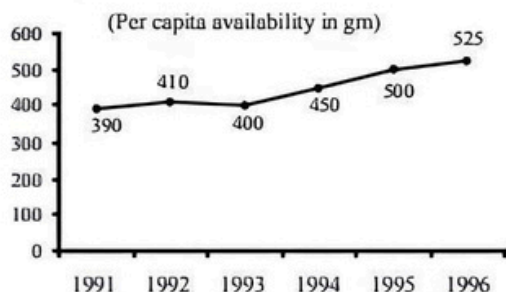
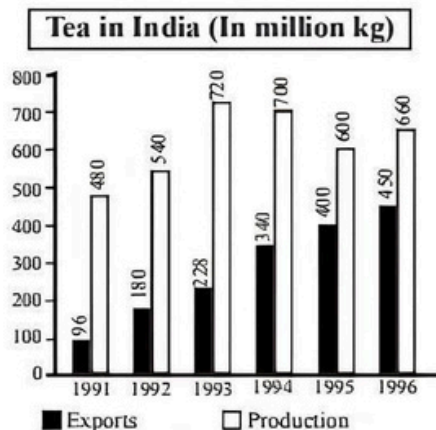
136. What percentage of the candidates from institute C has been decleard qualilfied out of the total candidates appeared from this institute?
 (a) 30% (b) 25% (c) 40% (d) 20%
137. Which institute has the highest percentage of candidate qualified with respect to those appeared?
 (a) A (b) D (c) C (d) E
138. What is the ratio of qualified candidates from institute B to the appeared candidate from institute F?
 (a) 1 : 10 (b) 2 : 11
 (c) 3 : 14 (d) 4 : 17
139. What is the precentage of student who qualified from the institute C and D together with respect to those who appeared from the institute C and D together?
 (a) 24.98% (b) 30.98%
 (c) 20.98% (d) 31.98%
140. What is the ratio of the qualified candidates from institutes D, E and F together to the appeared candidates from institute A, B and C together?
 (a) 11 : 17 (b) 12 : 67
 (c) 19 : 75 (d) 13 : 75

DIRECTIONS (Qs. 141-145): The line graphs given below shows the sale of three brands of soft drinks (bottles in millions) in the period 1998-2003. Refer to the graphs to answer the question that belows.



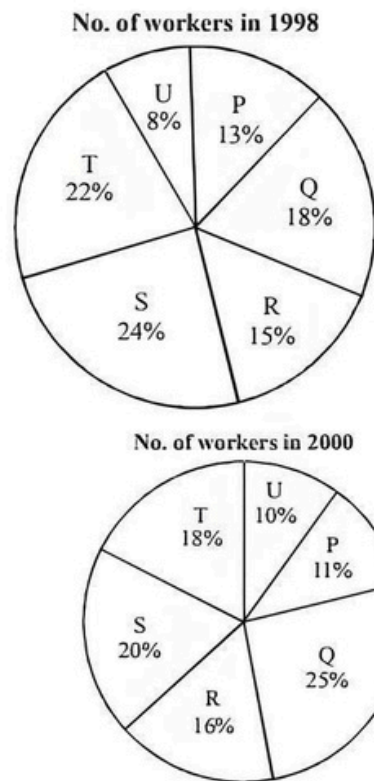
141. Each case contains 24 bottles and average selling price per bottle is ₹ 9. If there is an excise duty of ₹ 16 per case, what is the total excise duty collected in the year 2003 from the three products?
 (a) 2.8 crores (b) 1.03 crores
 (c) 2.32 crores (d) 2.7 crores
142. From the graph over the given period, which drink in which year has shown the highest percentage growth in sale over the previous year?
 (a) Peach, 1999 (b) Lemon, 2001
 (c) Peach, 2002 (d) Lemon, 2000
143. In the year 2004, the ratio of the sale of the three drinks happens to be same as that in 1998. What should be the approximate total sale of drinks of the three brands in the year 2004, if the sale of Litchi increased by 10% over the previous year?
 (a) 15 million (b) 8 million
 (c) 10 million (d) 5 million
144. Each case contain 24 bottles and average selling price per bottle is ₹ 9. If the three brands of drinks command a market share of 80%, then what was the total industry size in year 2003?
 (a) 17.5 crores (b) 20 crores
 (c) 420 crores (d) 560 crores
145. In the year 2004, Peach records 40% growth in sale while Lemon sale grows by over 2.5% over the previous year. What is the differnece in the sale of these brands in year 2004?
 (a) 2.1 million bottles (b) 0.8 million bottles
 (c) 1.6 million bottles (d) 2.4 million bottles

DIRECTIONS (Qs. 146-153): Study the following graph and answer the questions given below it.



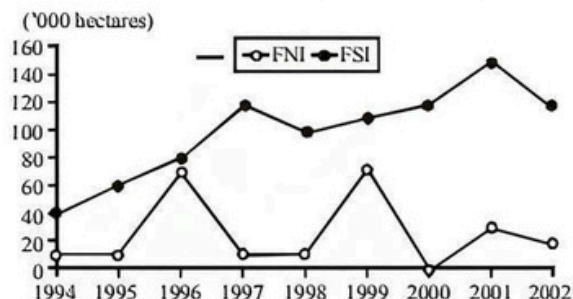
146. Which year shows the maximum percentage of export with respect to production ?
(a) 1992 (b) 1993 (c) 1996 (d) 1995
147. The population of India in 1993 was :
(a) 800 million (b) 1080 million
(c) 985 million (d) 900 million
148. If the area under tea production was less by 10% in 1994 than in 1993, then the approximate rate of increase in productivity of tea in 1994 was :
(a) 97.22 (b) 3
(c) 35 (d) can not be determined
149. The average proportion of tea exported to the tea produced over the period is :
(a) 0.87 (b) 0.47 (c) 0.48 (d) 0.66
150. What is the first half decade's average per capita availability of tea ?
(a) 475 g (b) 535 g (c) 446 g (d) 430 g
151. In which year was the per capita availability of tea minimum ?
(a) 1996 (b) 1994
(c) 1991 (d) none of these
152. In which year was there minimum percentage of export with respect to production ?
(a) 1991 (b) 1992 (c) 1993 (d) 1996
153. In which year we had maximum quantity of tea for domestic consumption ?
(a) 1994 (b) 1991 (c) 1993 (d) 1996

DIRECTIONS (Qs. 154-158): Study the following graphs which show the number of workers of different categories of a factory for two different years. The total number of workers in 1998 was 2000 and in 2000 was 2400



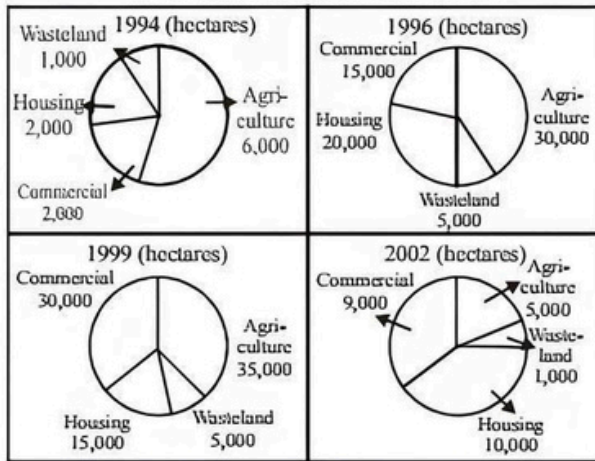
154. In which of the categories is the number of workers same in both the years?
(a) P (b) S (c) R (d) T
155. Find the percentage increase in the number of workers in category U in 2000 :
(a) 25% (b) $33\frac{1}{3}\%$
(c) 50% (d) $66\frac{2}{3}\%$
156. What is the total number of increased workers for the categories in which the number of workers has been increased?
(a) 468 (b) 382 (c) 408 (d) 168
157. Which categories have shown decrease in the number of workers from 1998 to 2000?
(a) P (b) Q (c) R (d) T
158. Find the maximum difference between the number of workers of any two categories taken together for any one year and that of any two for the other year.
(a) 660 (b) 416 (c) 636 (d) 502

DIRECTIONS (Qs. 159-160): Refer to the given line graph and the pie charts given below and answer the questions :



FNI-Distribution of forest land in North India
FSI-Distribution of forest land in South India

FOREST LAND IN NORTH INDIA



159. How many hectares of FSI has been distributed between 1994-2002 ?
 (a) 3,00,500 (b) 2,77,500
 (c) 6,57,000 (d) 9,00,000
160. How many years witnessed a decline in FNI and an increase in FSI ?
 (a) 2 (b) 3
 (c) 4 (d) 5

SECTION-E : Indian & Global Environment

161. Who among the following won the 2022 Ramon Magsaysay award in September 2022?
 (a) Moussa Bougma (b) Bernadette J. Madrid
 (c) Harini Amarasuriya (d) Sylvie Bodineau
162. Recently, the Smart Solutions Challenge & Inclusive Cities Awards 2022 was presented, the awards is an initiative of
 (a) NITI Aayog and the United Nations in India
 (b) National Institute of Urban Affairs and the United Nations in India
 (c) National Institute of Urban Affairs and NITI Aayog
 (d) NITI Aayog and UNESCO India
163. The All-India Council for Technical Education (AICTE) has signed an agreement with which company to accelerate digital creativity skills across India?
 (a) Microsoft (b) Apple
 (c) Adobe (d) Google
164. Which governing body has announced to launch its new centralized portal called 'e-Samadhan' for grievance redressal?
 (a) University Grants Commission
 (b) All India Council for Technical Education
 (c) Pharmacy Council of India
 (d) Central Board of Secondary Education
165. Which of the following government unveiled a scheme called Mahila Nidhi on Women's Equality Day to help them sustain their livelihoods?
 (a) Odisha (b) Rajasthan
 (c) Sikkim (d) Assam
166. In which state / UTs Atal Innovation Mission (AIM) & NITI Aayog have announced the establishment of more than 500 Atal Tinkering Labs (ATLs)?
 (a) Maharashtra (b) Delhi
 (c) Gujarat (d) Jammu and Kashmir
167. Denmark's Viktor Axelsen has clinched his second BWF World Championships men's singles title. This championship was held in which city?
 (a) Sofia (b) Berlin
 (c) Paris (d) Tokyo
168. The largest religious monument in the world, the Temple of Vedic Planetarium in which state of India?
 (a) West Bengal (b) Kerala
 (c) Maharashtra (d) Uttarakhand
169. Which district has been declared as the best aspirational district in India?
 (a) Ayodhya (b) Varanasi
 (c) Haridwar (d) Puri
170. Who inaugurated the 8th India International MSME Start-up Expo & Summit at New Delhi?
 (a) Narendra Modi
 (b) Amit Shah
 (c) Bhanu Pratap Singh Verma
 (d) Manoj Sinha
171. National Sports Day or Rashtriya Khel Divas which is celebrated on 29th August every year is celebrated as a tribute to legend _____.
 (a) Arjun Halappa (b) Gagan Ajit Singh
 (c) Major Dhyan Chand (d) Viren Rasquinha
172. Women's Equality Day 2022 was celebrated all over the world to celebrate women's empowerment and equality. When was it celebrated?
 (a) 22nd August (b) 23rd August
 (c) 26th August (d) 25th August
173. Who among the following won the 2022 UNESCO Peace Prize For 'Efforts To Welcome Refugees'?
 (a) Narendra Modi (b) Emmanuel Macron
 (c) Angela Merkel (d) Olaf Scholz
174. Who has been appointed as the Secretary to President Droupadi Murmu?
 (a) Rajesh Verma (b) Rajiv Kumar
 (c) Nalin Negi (d) R K Gupta
175. Punjab and Haryana governments have agreed to name the Chandigarh International Airport in Mohali after which revolutionary?
 (a) Sukhdev Thapar
 (b) Chandra Shekhar Azad
 (c) Shivaram Rajguru
 (d) Shaheed Bhagat Singh
176. The book, "Bibi: My Story" is the autobiography of who among the following?
 (a) Naftali Bennett
 (b) Yair Lapid
 (c) Benjamin Netanyahu
 (d) Ehud Olmert
177. World Water Week 2022 is observed on which week in the month of August 2022?

- (a) 23 August to 1 September
(b) 20 August to 29 August
(c) 21 August to 30 August
(d) 22 August to 31 August
178. Mandla district has become the first fully “functionally literate” district in the country. Mandla is the district of which state?
(a) Maharashtra (b) Madhya Pradesh
(c) Gujarat (d) Andhra Pradesh
179. The Border Road Organization (BRO) will construct a pilot road using steel slag in which state?
(a) Tripura (b) Jammu and Kashmir
(c) Assam (d) Arunachal Pradesh
180. Who launched India’s first electric double-decker bus in Mumbai recently?
(a) Narendra Modi (b) Nitin Gadkari
(c) Bhupender Yadav (d) Raj Kumar Singh
181. Paytm has partnered with which company to deploy smart PoS (Point-of-Sale) devices?
(a) LG (b) Panasonic
(c) One Plus (d) Samsung
182. Who among the following has unveils start-up Goodfellows dedicated to senior citizens?
(a) Gautam Adani (b) Mukesh Ambani
(c) Ratan Tata (d) Nita Ambani
183. Which of the following state becomes the 1st ‘Har Ghar Jal’ certified state in India?
(a) Goa (b) Uttarakhand
(c) Uttar Pradesh (d) Kerala
184. Who has been appointed as Managing Director (MD) of NaBFID?
(a) K V Kamath (b) Sumita Dawra
(c) Rajkiran Rai G (d) Nalin Negi
185. Which of the following bank has announced the launch of a new campaign titled ‘Vigil Aunty’?
(a) HDFC Bank (b) ICICI Bank
(c) Yes Bank (d) IDBI Bank
186. Who among the following has been appointed as the CEO of the national intelligence grid (NATGRID)?
(a) Rakesh Mishra (b) Piyush Goyal
(c) Adarsh Chauhan (d) Anurag Thakur
187. Dr. Virendra Kumar launched the “SMILE-75 Initiative” to mark 75 years of Independence. Which of the following ministry has launched the SMILE-75 initiative?
(a) Ministry of Micro, Small and Medium Enterprises
(b) Ministry of Home Affairs
(c) Ministry of Skill Development and Entrepreneurship
(d) Ministry of Social Justice & Empowerment
188. Who has been appointed as the 49th Chief Justice of India (CJI) to succeed incumbent CJI?
(a) Justice DY Chandrachud
(b) Justice Vineet Saran
(c) N V Ramana
(d) Justice Uday Umesh Lalit
189. Recently RBI cancelled the license of Rupee Co-operative Bank Ltd. Where is the headquarters of the bank located?
(a) Mumbai (b) Jodhpur
(c) Jaipur (d) Pune
190. Which tennis legend from the United States has recently announced their retirement?
(a) Frank Parker (b) Bill Johnston
(c) Serena Williams (d) Jim Courier
191. 2022 International Telecommunication Union (ITU) Regional Standardization Forum (RSF) for Asia and Oceania region was held in New Delhi. Where is the headquarters of ITU?
(a) Hague (b) Brussels
(c) Geneva (d) New York
192. Bhavani Devi won a gold medal at the Commonwealth Games 2022. She plays which sport?
(a) Fencing (b) Wrestling
(c) Shooting (d) Athletics
193. PV Sindhu bagged a gold medal in the at the Commonwealth Games 2022 women’s single badminton final. Who did she beat in the finals?
(a) Carolina Marin (b) Wang Yihan
(c) Li Xuerui (d) Michelle Li
194. Indian Railways conducted a test run of the Super Vasuki, a 3.5-km-long freight train on Independence Day. The train is operated by?
(a) South East Central Railway
(b) Southern Railway
(c) Eastern Railway
(d) Western Railway
195. Who became the first woman to be awarded the Vayu Sena Medal on Independence Day?
(a) Shivangi Singh (b) Avani Chaturvedi
(c) Deepika Misra (d) Bhawana Kanth
196. 2022 Liberty Medal was awarded to Ukrainian President Volodymyr Zelenskyy. The award is presented by which country?
(a) UK (b) US
(c) France (d) Germany
197. PM Jan Dhan Yojana completes 8 years in 2022. It was launched on which date?
(a) 25 August 2014 (b) 25 August 2015
(c) 28 August 2014 (d) 30 August 2014
198. India is set to host s Senior Officials Meeting (SOM) of QUAD in September 2022. Which of the following is not a member of QUAD?
(a) Indonesia (b) US
(c) Australia (d) Japan
199. Human Development Index 2022 was released recently. The Index is published by which of the following?
(a) World Bank
(b) United Nations Development Program
(c) World Economic Forum
(d) UNESCO
200. Fahida Azim who has been selected for the Pulitzer Prize 2022 under the category of Illustrated Reporting and Commentary. She was born in which country?
(a) India (b) Pakistan
(c) Afghanistan (d) Bangladesh

HINTS & EXPLANATIONS

1. (d) Among the given options, option (a) is not correct since it is not something that follows from the passage whereas the same can be said regarding option (b). Coming to option (c), it may sound true but there is no such reference in the passage that the author feels proper homework should be done by the government before launching any scheme of the magnitude of demonetization program. This makes option (d) the correct choice among the given options.
2. (a) In the last second sentence of the second paragraph, it is stated, "The government must not disown its biggest reform attempt or try to sidestep parliamentary scrutiny of the outcomes of demonetisation. Instead, it could focus on fixing the problems that people still face". Among the given options, only option A can be considered as the correct since it correctly explains the correct course of action that should be followed by the government. Other options are out of context as per the information given in the passage and hence they can be eliminated.
3. (d) In the last line of the passage, it is given, "Even as these issues are sorted out, the larger lesson must be heeded: sudden shocks to the economy don't always yield intended policy objectives." Among the given options, option (d) is the correct choice since it perfectly captures the essence of the passage and other options are not relevant as per the information given in the passage.
4. (b) In the third sentence of the second paragraph it is given, "True, there have been some benefits. For instance, the number of income tax returns filed has surged a little over the trend growth rate. But surely this could have been achieved by other policy measures. Cashless modes of payment have become more common, but financial savings in the form of currency have also risen, suggesting that people still value cash." Statement III is not correct since there is no reference in the passage. Thus option (b) is the correct answer.
5. (c) Both of the statements are correct as they both state valid ways of improving India's AI capabilities. Hence, option (c) is correct.
6. (d) Statement II is correct as AI has these capabilities. Statement III is correct as it strengthens the argument for AI. Statement I is incorrect. It weakens the argument as using a huge amount of electricity is not sustainable in the long run. Hence, option (d) is correct.
7. (b) Statement II has not been mentioned in the passage and is incorrect. In second paragraph, statement I is supported: "The first problem is data. Machine learning, the set of technologies used to create AI, is a data guzzling monster." Statement II is supported in first line of last paragraph, "Another problem for AI firms today is finding the right people." Hence, option (b) is correct.
8. (b) Statement II is correct. There is no AI involved as the teller simply uses the computer to give out details of the customers' accounts. Statements I and III are both incorrect. Both cases use data and robotics application. Hence, option (b) is correct.
9. (b) In first paragraph, it is stated, "Domestic waste and industrial waste are discharged unto surface water through the sewage systems. In some cases, industrial waste is released directly unto surface water". Also, the second paragraph also gives many examples of dumping industrial waste in water bodies. Hence option (b) is correct.
10. (d) The first two lines of third paragraph state that, "The effects of pollutants are noticed mostly in small inland seas and lakes. This is because the oceans have a natural dilution system for incoming pollutants whereas lakes have no effective outlet."
11. (a) 'Segregated' means "separated or divided".
12. (d) 'Hazardous' means dangerous or harmful. Its opposite will be 'benign' which means "not harmful".
13. (d) Statement I has no relevance to e-pharmacies. Statement II and Statement III are supportive of e-pharmacies benefitting customers. Hence option (d) is correct.
14. (a) In third sentence of second paragraph, it is given "Apart from these obvious arguments, these trade associations also spin imaginary tales of how e-pharmacies will open the door to drug abuse and also the sale of sub-standard or counterfeit drugs, thereby threatening public health". This makes statement I and statement II correct. Statement III is not mentioned in the passage. Hence option (a) is the correct answer.
15. (a) 'Unabashed' means "not embarrassed, disconcerted, or ashamed".
16. (b) Statement I is given in first line of passage, "E-pharmacies, which operate through websites or smartphone apps on the Internet, offer medicines for sale at a discount of at least 20% when compared to traditional pharmacists". Statement II and II are incorrect as given in last and second paragraph respectively.
17. (b) Statement II is incorrect as it is given in the passage that Economic Survey 2016-17 advocated a centralised Public Sector Asset Rehabilitation Agency (PARA) be established to deal with the bad loans problem. Hence option (b) is correct.
18. (c) In the second sentence of last paragraph, it is stated, "Some central bank as well as government officials also admitted capital was the biggest challenge in setting up a 'bad' bank." Thus, option (c) is correct.
19. (a) In first paragraph it is given, "The economic survey of 2016-17 pointed out the twin balance sheet problem — stressed companies on one hand and NPA-laden banks on the other". Hence option (a) is correct.

20. (a) 'Amid' means "in the middle of or during something". Its synonym will be 'during'.
21. (b) 22. (c) 23. (a)
24. (d) 'Pivotal' means "of crucial importance in relation to the development or success of something".
25. (a) 'Exodus' means "a mass departure of people".
26. (d) 'Inadvertent' means "not resulting from or achieved through deliberate planning; unintentional".
27. (b) 'Coy' means "making a pretence of shyness or modesty which is intended to be alluring".
28. (a) 'Alms' means "**something** (such as money or food) given freely to relieve the poor; charity".
29. (c) 'Admonish' means "reprimand someone firmly". Its opposite will be to approve someone. Hence option (c) is the answer.
30. (b) 'Ecstasy' means "an overwhelming feeling of great happiness or joyful excitement". Its opposite will be to feel despair.
31. (c) 'Veneration' means "to revere or respect". Its opposite will be to disrespect.
32. (b) 'Cut the mustard' means "come up to expectations; reach the required standard".
33. (b) 'Throw caution to the wind' means "to act in a completely reckless manner".
34. (a) 'Feather in one's cap' means "an achievement or honor that one can be proud of".
35. (c) 'Mandate' and 'scanned' are most appropriate respectively.
36. (b) 'swayed' and 'conviction' are the most suitable as per the context of the sentence respectively.
37. (a) 'curbing' and 'setting up' are the most appropriate as per the context of the sentence respectively.
38. (c) When **manner**, **place** and **time** are given in a sentence, '**manner**' comes first thereafter '**place**' followed by '**time**'. But, when only one of them is given, it must come in the end of the sentence. Since '**carefully**' is a manner, it should come in the end of the sentence. Therefore only options (c) and (d) are to be considered for their validity. Now, as the given sentence is in the present tense '**planned**' should be replaced with '**plan**'. Thus, it is clear that only (c) is the correct option.
39. (b) To express the events which got completed in past we use past indefinite tense. For this, we use the auxiliary verb '**was/were**'. Since the subject word '**banks**' is plural, '**were**' should be used. Hence, only option (b) is the correct option.
40. (d) A place might be '**convenient**' or '**inconvenient**'. '**Convenience**' is not a proper word for a place. Hence option (a) is ruled out. In option (b) the use of '**any of the place**' in place of '**at some place**' makes the sentence grammatically incorrect and meaningless. Hence this option is also ruled out. In option (c) '**places**' has been used. We cannot use plural in place of singular, hence (b) cannot be a correct option. Option (d) is the only correct option here.
41. (d) The statement concentrates on the increasing viewership of TV and does not stress either on increasing the readership of newspapers or making studies regarding the same. So, neither I nor II follows.

42. (d) According to the statement, good wranglers are wise men. But it doesn't mean that all wise men are good wranglers. So, neither I nor II follows.
43. (c) The Government seeks to review the policy so as to determine whether the diesel price needs to be increased or it can be kept stable by adjusting certain other factors. So, either decision may be taken. Thus, either I or II follows.

Sol. (44 - 46) :

U – Advocate – (Father of P)
 Q – Teacher – (Mother of R)
 S – House wife – (Grandmother of R)
 T – Doctor – (Father of U)
 R – Brother of P
 T (+) = S (–)
 |
 U (+) = Q (–)
 |
 R (+) – P

44. (a) U is father of the Engineer. Among R and P, one is an Engineer.
45. (b) Two or three females members are there. As, the gender of P is unknown.
46. (a) Gender of P is unknown. So, P can be either 'granddaughter' or 'grandson'.

Sol. (47 - 49) :

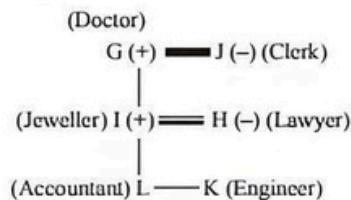
(Housewife)
 (–) X — K (+)
 (Engineer)
 (–) (+) |
 O — T — P (+) = S (–)
 (Teacher) (Housewife)
 |
 Q (+) = L (–) (Housewife)
 (Accountant)
 |
 N (–) = G (+)
 (Housewife) (Doctor)

47. (c) There are 4 generations in the family.
48. (d) P is the husband of S.
49. (d) The accountant and his wife belong to 3rd generation.

Sol. (50 - 52) :

50. (b) C (–)
 |
 A (+)
 |
 D (–) — B
51. (b) U (–)
 |
 R (+) — S (+) — T
52. (c) C (+) — D (+)
 |
 B (+) — A (+)
 |
 E

Sol. (53 - 55) :



53. (c) K is an engineer.
54. (d) The gender of L and K are not known.
55. (d) G is grandfather of K.

Sol. (56 - 58) :

Persons	Subjects
Madhu	Dramatics, Computer Science
Shivani	Dramatics, Computer Science, History
Asha	Computer Science, Physics, Mathematics
Pratibha	Physics, History, Mathematics, Dramatics
Namita	Physics, Mathematics

56. (a) Pratibha is good in Physics, History and Mathematics.
57. (b)
58. (b)

Solutions (59 - 61) :

	A	B	C	D
Hindi	Good	Good		
English	Poor	Poor	Good	Good
Sanskrit	Good	Good	Good	Good
Maths	Poor	Good	Poor	Good
Geography			Poor	Poor

59. (b) A is not good in Maths but good in Hindi.
60. (c) C and D is good in both English and Sanskrit.
61. (d) Both C and D are good in Sanskrit, but poor in Geography.

Sol. (62 - 64) :

Channel	Weekday	Movie category	Alphabetical order
Star	Sunday	Murder Mystery	2
Sony	Tuesday	Spy Thriller	4
B4U	Wednesday	Science fiction	3
HBO	Saturday	Comedy	1

62. (a) Mohan Dey can watch the Science fiction movie.
63. (d) The T.V. channel SONY will telecast a spy thriller on Tuesday
64. (b) The murder mystery.

Sol. (65 - 67) :

Urdu
Maths
Punjabi
English
History
Accounting

65. (d) Punjabi book is between Math and English book.

66. (a) According book is at the bottom.

67. (b) Urdu book is at the top.

68. (b) Only I follows.

There is shortage in the production of onions. So, the price of onion has gone up.

69. (b) Only I follows.

The statement asserts that match can be won only if all the players play to their full potential.

70. (c) Neither I or II follows.

Even though some businessman are rich and Soman is also rich, it does not necessarily mean that Soman is also a businessman. Also, there is no evidence of having a big firm.

71. (b) Desk officer received the application on Friday. Clearly, the application was forwarded to the table of the senior clerk on Thursday. So, the application was received by the inward clerk on Wednesday.

72. (b) Total no. of children in the queue = $(5 + 13) = 18$

Mona's new position is same as Kashish's earlier position i.e., fifth from left.

So, Mona's position from right = $(18 - 5) + 1 = 13 + 1 = 14^{\text{th}}$

73. (d) Number from 1 to 45 which are exactly divisible by 3 arranged in ascending order;

3, 6, 9, 12, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45

74. (c) The new alphabet series is, MLKJIHFEDCBANOPQRSTUVWXYZ
∴ The ninth letter from the right is R. The ninth letter to the left of R is E.

75. (d) Let the daughter's age be x years.

Let the father's age be $3x$ years.

Mother's age = $(3x - 9)$ years.

Son's age = $(x + 7)$ years.

$$\text{Thus, } x + 7 = \frac{3x - 9}{2} \Rightarrow 2x + 14 = 3x - 9$$

$$\Rightarrow 14 + 9 = 3x - 2x$$

$$\therefore x = 23$$

Thus, mother's age = $3x - 9$

$$\Rightarrow 3 \times 23 - 9 \Rightarrow 69 - 9 = 60 \text{ years.}$$

76. (b)
- | | | | | | | | | | | | | | | |
|---|----|----|----|---|----|----|----|----|----|---|----|----|---|---|
| | +2 | | +2 | | +2 | | +2 | | | | | | | |
| Q | P | O | S | R | Q | U | T | S | W | V | U | Y | X | W |
| | +2 | | | | +2 | | | +2 | | | +2 | | | |
| | | +2 | | | | +2 | | | +2 | | | +2 | | |

77. (d) 19, 2, 38, 3, 114, 4, 456

$$(19 \times 2) \quad (38 \times 3) \quad (114 \times 4)$$

78. (a)
- | | | | | | | | | | | | | | | |
|---|----|----|----|----|----|---|----|----|---|----|---|----|---|---|
| | +2 | | +3 | | +2 | | +3 | | | | | | | |
| Y | E | B | W | F | D | U | H | G | S | K | I | Q | O | L |
| | -2 | | | -2 | | | -2 | | | -2 | | | | |
| | | +1 | | | +2 | | | +3 | | | | +4 | | |

79. (b)
$$\begin{array}{ccccccc} & A & Z & , & C & X & , & F & U & , & J & Q \\ & | & | & | & | & | & | & | & | & | & | & | \\ & | & +2 & | & | & +3 & | & | & +4 & | & | & | \\ & | & | & | & | & | & | & | & | & | & | & | \\ & | & -2 & | & | & -3 & | & | & -4 & | & | & | \end{array}$$

80. (c)
$$\begin{array}{ccccccccccc} & (-1) & & (-1) & & (-1) & & (-1) & & (-1) & & \\ & | & | & | & | & | & | & | & | & | & | & | \\ 2 & Z & 5, 7 & Y & 7, 14 & X & 9, 23 & W & 11, 34 & V & 13, 17 & U & 15 \\ & | & | & | & | & | & | & | & | & | & | & | & | \\ & | & +5 & | & | & +7 & | & | & +9 & | & | & +11 & | & | & +13 & | & | & +2 & | \end{array}$$

81. (d) Total number of balls in bag = $4 + 6 + 8 = 18$.

P (selecting three balls) = ${}^{18}C_3$

P (selecting three yellow balls) = 6C_3 .

P (selected balls are yellow) = $\frac{{}^6C_3}{{}^{18}C_3}$

$$= \frac{\frac{6 \times 5 \times 4 \times 3!}{3 \times 2 \times 1!}}{\frac{18 \times 17 \times 16 \times 15!}{3! \times 15!}} = \frac{20}{816} = \frac{5}{204}$$

82. (b)
$$\frac{M_1 \times H_1 \times D_1}{\omega_1} = \frac{M_2 \times H_2 \times D_2}{\omega_2}$$

$$= \frac{30 \times 25}{15} = \frac{14 \times D}{7}$$

$$D = \frac{7 \times 30 \times 25}{15 \times 14} \Rightarrow D = 25 \text{ days.}$$

83. (a) Let the actual speed = x km/hr

According to the question,

Time taken to cover 400 km with $\frac{2}{5}x$

$$= 16 \frac{40}{60} \text{ hr} = \frac{50}{3} \text{ hr.}$$

Time \times Speed = Distance

$$\frac{50}{3} \times \frac{2x}{5} = 400 \Rightarrow x = \frac{40 \times 3}{2} \Rightarrow x = 60 \text{ km/hr.}$$

84. (a) Let the present age of A, B and C are a, b, c respectively.

A's age 4 years ago = $a - 4$.

B's age 4 years ago = $b - 4$.

C's age 4 years ago = $c - 4$.

According to the question,

$$(a - 4) = 3(c - 4)$$

$$(b - 4) = 2(c - 4)$$

$$a - 4 = 3c - 12$$

$$a - 3c = -8 \quad \dots(i)$$

$$b - 2c = -4 \quad \dots(ii)$$

$$a + b + c = 48 \quad \dots(iii)$$

From (i), (ii), (iii)

$$b = 16 \text{ years.}$$

85. (d)
$$\text{S.I.} = \frac{PRT}{100}$$

$$2550 = \frac{8PR}{100}$$

$$PR = \frac{2550 \times 100}{8}$$

$$\text{Now, S.I.} = \frac{P \times T \times (R + 3)}{100}$$

$$\text{S.I.} = \frac{PT(R + 3)}{100}$$

2 variables are there so we can't determine.

86. (c) Let the total number of students = $100x$.

No. of students of 10 or above 10 years of age = $100x - 25x = 75x$

According to the question,

$$75x = 75 + \frac{3}{5} \times 75 \Rightarrow 75x = 120$$

$$\Rightarrow x = \frac{120}{75} \Rightarrow 100x = \frac{120}{75} \times 100 = 160$$

87. (a) Let the total no. of boys and girls = 90.

$$\text{No. of boys} = 90 \times \frac{5}{9} = 50$$

$$\text{No. of girls} = 90 \times \frac{4}{9} = 40.$$

$$30\% \text{ decrease in no. of boys} = 50 \times \frac{70}{100}$$

$$\text{No. of boys after decrease} = 35.$$

$$5\% \text{ increase in no. of girls} = 40 \times \frac{105}{100}$$

$$\text{No. of girls increase} = 42.$$

$$\text{New ratio} = \text{boys} : \text{girls} = 35 : 42 = 5 : 6$$

88. (b) Let the ratio be x .

Then, Diameter = $7x$.

Height = $3x$.

According to the question,

Volume of cylinder = 924

$$\pi \left(\frac{7x}{2} \right)^2 \times 3x = 924 \Rightarrow x^3 = \frac{924 \times 4 \times 7}{22 \times 49 \times 3} \Rightarrow x = \sqrt[3]{8}$$

$$\Rightarrow x = 2.$$

$$\text{Radius} = \frac{7 \times 2}{2} = 7 \text{ m}$$

$$\text{Height} = 3 \times 2 = 6 \text{ m}$$

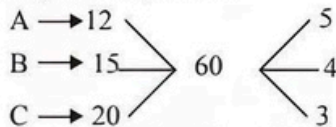
$$\text{C.S.A. of cylinder} = 2\pi rh$$

$$= 2 \times \frac{22}{7} \times 7 \times 6 = 264 \text{ m}^2.$$

89. (a) L.C.M of (5, 6, 7, 8, 9) = 2520
In all cases, the remainder is 1.
Desired number = 2520 - 1 = 2519.
90. (a) $N^2 = 24Q + 1$
 N^2 is giving remainder 1, clearly N is odd no.
i.e. $N^2 = 25, 49, 121, \dots$ on.
i.e. $N = 5, 7, 11, \dots$ so on.
 N when divided by 12 gives remainder 1 or 5 or 7 or 11
so option (a) is our answer.

91. (a) Total capacity of tank = L.C.M (12, 15, 20) = 60.

According to the question,



A is opened all the time, B and C opened alternatively with A.

So, A + B in 1st hr = 9.

A + C in 2nd hr = 8

Total work A + B + C in 2 hr = 17

Work done in 6 hr = 51

Now, A + B will fill the tank in next hour.

So, in 7 hrs tank will be filled.

92. (b) $SI_1 = \frac{P \times R \times 3}{100}$

$$SI_2 = \frac{P \times (R+1) \times 3}{100}$$

According to the question,

$$\frac{3PR + 3P}{100} - \frac{3PR}{100} = 5100$$

$$3P = 5100 \times 100$$

$$P = ₹ 1,70,000$$

93. (d) Using option method,
from option (d)

According to the question,

$$2(81) = 9(18)$$

$$162 = 162.$$

94. (a) Area of rectangle = L × B.

	Old	New
Length	100	105
Breadth	100	94

Area 10000 9870.

$$\text{Error \% in area calculated} = \frac{130}{10000} \times 100 = 1.3\%$$

95. (d) S.I. for 5 years = 400 - 300 = 100
S.I. for 1 year = 20
S.I. for 3 years = 60
Principal = Amt. - int. = 300 - 60 = 240

$$\text{Rate of Int.} = \frac{20}{240} \times 100 = 8.33\%$$

96. (b) Let the amount paid by both Mani and Dinesh = $2x, 3x$
Both invested equally and Mani invested 3 lakh.
i.e. $2x + 3 = 3x$
 $x = 3$

Hence, initial amount paid by Mani and Dinesh.

Mani = 6 lakh

Dinesh = 9 Lakh.

Mani and Dinesh paid equally = 9 + 9

= 18 Lakh initially.

Total revenue generated 50% of 18 lakh = 9 lakhs.

Revenue from coconut and Lemon in ratio = 5 : 4.

Hence, 9 lakhs are divided in 5 : 4 i.e. 5,00,000 and 4,00,000 for coconut and Lemon respectively.

Since, each cost ₹ 10.

The total output of coconut will be

$$\frac{5,00,000}{10} = 50,000.$$

97. (d) $QT = TZ = ZR = n$

$$\therefore QR = 3n$$

$$\Delta PQT \cong \Delta PRZ \text{ (SAS)}$$

$$\therefore PT = PZ$$

In ΔPQT

$$\angle PTZ = \angle PQT + \angle QPT$$

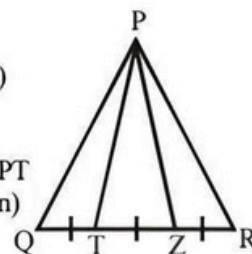
$$\angle PQT = \angle TPZ \text{ (Given)}$$

$$\therefore \angle PZT = \angle PTZ$$

$$\angle PZT = \angle QPZ$$

$$\therefore PQ = QZ = 2n.$$

$$PQ = PR = 2n.$$



$$\text{height of isosceles} = \frac{1}{4} \sqrt{4a^2 - b^2}$$

$$= \frac{1}{4} \sqrt{16n^2 - 9n^2} = \frac{\sqrt{7}n}{2}$$

Area of $\Delta PQR = \frac{1}{2} \times \text{base} \times \text{height}$

$$\frac{27\sqrt{7}}{4} = \frac{1}{2} \times 3n \times \frac{\sqrt{7}n}{2}$$

$$n = 3$$

$$AC = 2n = 2(3) = 6.$$

98. (d) In ΔABC

$$\frac{1}{BE^2} = \frac{1}{AB^2} + \frac{1}{BC^2}$$

$$\frac{1}{BE^2} = \frac{36 + 64}{36.64}$$

$$BE = \frac{(8)(6)}{10}$$

$$BE = 4.8$$

$$\Delta BFE \sim \Delta BEA$$

$$\frac{BF}{BE} = \frac{BE}{AB}$$

$$BF = \frac{(4.8)^2}{8}$$

$$BF = 2.88 \text{ cm}$$

99. (a) $\angle ADP = 100^\circ$
 $\angle ADP + \angle PDE = 180^\circ$
 $\angle PDE = 80^\circ$
In $\triangle POE$
 $90^\circ + 80^\circ + \angle PED = 180^\circ$
 $\angle PED = 10^\circ$
 $\angle QER = 80^\circ - 10^\circ = 70^\circ$
In $\triangle QRE$
 $90^\circ + 70^\circ + \angle QRE = 180^\circ$
 $\angle QRE = 20^\circ$
 $\angle QRE = \angle PRD = 20^\circ$ [Vertically opposite angle]

100. (a) If from inside of an equilateral triangle, perpendiculars are drawn. Then side of the triangle will be

$$\rightarrow \frac{2}{\sqrt{3}} (P_1 + P_2 + P_3)$$

Where P_1, P_2, P_3 are perpendiculars

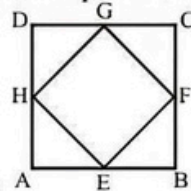
$$\text{So, side of triangle} = \frac{2}{\sqrt{3}} (a_1 + a_2 + a_3)$$

101. (c) Least sized square can be inscribed in Big square ABCD will have its vertices on the mid points of Big square ABCD.

$$EF^2 = (EB)^2 + (BF)^2$$

$$EF = \sqrt{200}$$

$$EF = 10\sqrt{2}$$



$$\text{Area of square EFGH} = (10\sqrt{2})^2 = 200\text{m}^2$$

102. (c) Perimeter of square = 88
 $4(\text{side}) = 88$
side = 22
Circumference of Circle = 88
 $2\pi r = 88$

$$r = \frac{88 \times 7}{2 \times 22}$$

$$r = 14$$

$$\text{Area of square} = (22)^2 = 484$$

$$\text{Area of Circle} = \pi r^2 = \frac{22}{7} \times 14 \times 14 = 616$$

$$\therefore \text{Req. Area of larger figure} = 616 - 484 = 132 \text{ cm}^2$$

103. (c)

Sides of Rectangle	Old	New
Length	100	200
Breadth	100	200
Area (L × B)	10,000	40,000

$$\text{area increased by} = \frac{40,000 - 10,000}{10,000} \times 100 = 300\%$$

104. (c) Vol. of pyramid with square base = 400

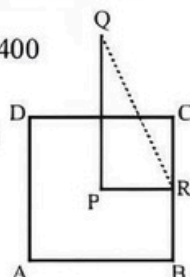
$$\frac{1}{3} \times \text{Base Area} \times \text{height} = 400$$

$$\frac{1}{3} \times (10 \times 10) \times \text{height} = 400$$

$$\therefore \text{height} = 12$$

In $\triangle PQR$

$$(QR)^2 = (PR)^2 + (QP)^2$$



$$QR = \sqrt{(12)^2 + (5)^2}$$

$$QR = 13$$

$$\text{C.S.A of Pyramid} = \frac{1}{2} \times \text{Base Perimeter} \times \text{Slant Height}$$

$$= \frac{1}{2} \times 40 \times 13 = 260$$

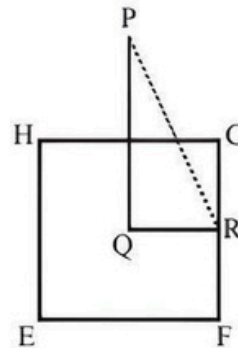
$$\text{T.S.A of Pyramid} = \text{C.S.A} + \text{Base Area}$$

$$= 260 + 100 = 360 \text{ cm}^2$$

105. (b) $(PR)^2 = (QR)^2 + (PQ)^2$

$$PR = \sqrt{(16)^2 + (12)^2}$$

$$PR = 20$$



$$\text{C.S.A of Pyramid} = \frac{1}{2} \times \text{Base Perimeter} \times \text{Slant Height}$$

$$= \frac{1}{2} \times 128 \times 20 = 1280$$

$$\text{T.S.A of Pyramid} = \text{Base Area} + \text{C.S.A of Pyramid}$$

$$= 1024 + 1280 = 2304 \text{ cm}^2$$

106. (b)

	Old	New
Speed	$\frac{5}{2}$	$\frac{7}{2}$
Time	$\frac{7}{2}$	$\frac{5}{2}$

A.T.Q

$$\frac{7}{2} - \frac{5}{2} = \frac{12}{60}$$

$$1 = \frac{1}{5}$$

$$\frac{7}{2} = \frac{7}{10}$$

$$\text{Distance} = \text{Speed} \times \text{time} = \frac{7}{2} \times \frac{7}{10} = \frac{49}{20} \text{ km}$$

107. (b) Circumference of $T_1 = 2 \times 3.14 \times 100 = 614$
Circumference of $T_2 = 2 \times 3.14 \times 100 = 122.8$
Ratio of Length = $614 : 122.8 = 5 : 1$
Speed ratio = $15 : 5 = 3 : 1$

$$\text{Ratio of time + O cover the tracks} = \left(\frac{5}{3}\right) : 1 = 5 : 3$$

Ram will make 3 rounds when Rahim make 5 round

108. (a) AD is diameter then
 $\angle ABD = 90^\circ$
 $\therefore \angle DBP + \angle ABD = 180^\circ$
 $\angle DBP = 90^\circ$
 In $\triangle BDP$,
 $\angle BDP = 180^\circ - (90^\circ + 20^\circ) = 70^\circ$
 $\angle BDP = \angle DCB + \angle DBC$
 $\angle DCB = \angle DAB$ (Angle in the same segment)
 $\therefore \angle DBC = 70^\circ - 40 = 30^\circ$

109. (b) $AB = MN = 3$
 $AE : EB = 1 : 2$
 Let ratio be n
 Then
 $AE + EB = AB$
 $n + 2n = 3$
 $n = 1$

$$OB = \frac{AB}{2} = \frac{3}{2} = 1.5$$

$$OA = AE + EO$$

$$1.5 - 1 = EO$$

$$EO = 0.5$$

Similarly

$$OL = 0.5$$

EOLH is a square

Join OD

$\triangle OLD$

$$(OD)^2 = OL^2 + DL^2$$

$$DL^2 = 2$$

$$DL = \sqrt{2}$$

$$DH = DL - HL = \sqrt{2} - \frac{1}{2} = \frac{2\sqrt{2} - 1}{2}$$

110. (d)
- | | Old | New |
|-------------|-------|------|
| Price | 100 | 110 |
| Consumption | 100 | 90 |
| Expenditure | 10000 | 9900 |
- 100 : 99
 $100 \rightarrow 200$
 $1 \rightarrow 2$
 $99 = 99 \times 2 = 198$.

111. (c) Time = $\frac{\text{Distance}}{\text{Speed}}$

Former arrives half an hour later after the latter.

$$\frac{D}{4} = \frac{D}{5} + \frac{1}{2}$$

$$\frac{D}{20} = \frac{1}{2}$$

$$D = 10 \text{ km} = 10,000 \text{ m}$$

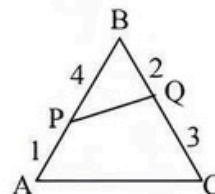
112. (b) Avg. Speed = $\frac{\text{Total Distance}}{\text{Total time taken}} = \frac{16}{\frac{4}{20} + \frac{4}{30} + \frac{4}{40} + \frac{4}{50}}$
 $= \frac{16 \times 600}{3.8} = 31.2 \text{ kmph}$

113. (c) By using allegation method

$$\begin{array}{ccc} 8.40 & & 0.21 \\ & \searrow \quad \swarrow & \\ & 5.67 & \\ & \swarrow \quad \searrow & \\ 5.46 & & 2.73 \end{array}$$

= 2 : 1

114. (d)



$$\text{ar. of } \triangle ABC = \frac{1}{2} BA \times BC \times \sin \theta = n \text{ (assume)}$$

$$\text{ar. of } \triangle BPQ = \frac{1}{2} BP \times BQ \times \sin \theta$$

$$\frac{1}{2} \left(\frac{4}{5} BA \right) \times \left(\frac{2}{5} BC \right) = \sin \theta$$

$$= \frac{8}{25} n$$

$$\text{Now } \frac{\text{ar BPQ}}{\text{ar PQCA}} = \frac{\text{ar } \triangle BPQ}{\text{ar } \triangle ABC - \text{ar } \triangle BPQ}$$

$$\frac{\frac{8}{25} n}{n - \frac{8}{25} n} = \frac{8}{17}$$

115. (a) In $\triangle ABF$, $AB \parallel EC$

$$\frac{EC}{AB} = \frac{CF}{BF}$$

$$EC = 1 \text{ m}$$

$$GB = EC$$

$$GB = 1 \text{ m}$$

$$BE = \sqrt{GB^2 + GE^2} = -\sqrt{5}$$

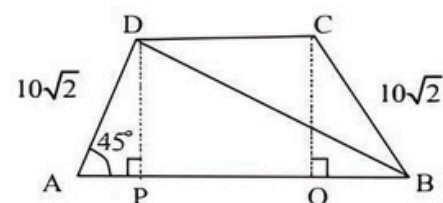
$$\triangle AHG \sim \triangle AEB$$

$$\frac{AG}{AB} = \frac{HG}{BE}$$

$$\frac{2}{3} = \frac{HG}{\sqrt{3}}$$

$$HG = \frac{2\sqrt{3}}{3}$$

116. (a)



In $\triangle ABD$

Ar. of $\triangle ABD = 200$

$$\frac{1}{2} \times AD \times AB \cdot \sin \angle A^\circ = 200$$

$$AD \times AB \cdot \sin 45^\circ = 400$$

$$AB = 40$$

$DP \perp AB$ and $CQ \perp AB$

In $\triangle ADP$

$$AP^2 + PD^2 = 200$$

$$AP = DP$$

$$AP = 10$$

AP and BQ should be same

$$BQ = 10$$

$$CQ = 10$$

$$CD = 40 - 20 = 20$$

$$\text{Sum of the length of parallel sides} = 40 + 20 = 60$$

$$117. (a) \frac{1}{(\sqrt{a_1} + \sqrt{a_2})} + \frac{1}{(\sqrt{a_2} + \sqrt{a_3})} + \dots + \frac{1}{(\sqrt{a_{n-1}} + \sqrt{a_n})}$$

rationalising.

$$\frac{\sqrt{a_1} - \sqrt{a_2}}{a_1 - a_2} + \frac{\sqrt{a_2} - \sqrt{a_3}}{a_2 - a_3} + \dots + \frac{\sqrt{a_{n-1}} - \sqrt{a_n}}{a_{n-1} - a_n}$$

$$\text{Since } a_r - a_{r-1} = -d$$

So,

$$\frac{(\sqrt{a_1} - \sqrt{a_2})}{d} + \frac{(\sqrt{a_2} - \sqrt{a_3})}{d} + \dots + \frac{(\sqrt{a_{n-1}} - \sqrt{a_n})}{d}$$

$$\frac{\sqrt{a_1} + \sqrt{a_2} - \sqrt{a_2} + \sqrt{a_3} + \dots - \sqrt{a_{n-1}} + \sqrt{a_n}}{d}$$

$$= \frac{\sqrt{a_n} - \sqrt{a_1}}{d}$$

$$a_n - a_1 = (n-1)d$$

$$d = \frac{(a_n - a_1)}{n-1} \quad \dots (i)$$

Using (1)

$$\Rightarrow (\sqrt{a_n} - \sqrt{a_1}) \times \frac{(n-1)}{a_n - a_1}$$

$$\Rightarrow (\sqrt{a_n} - \sqrt{a_1}) \times \frac{n-1}{[(\sqrt{a_n} - \sqrt{a_1}) \times \sqrt{a_n} + \sqrt{a_1}]}$$

$$= \frac{(n-1)}{(\sqrt{a_n} + \sqrt{a_1})}$$

$$118. (b) \text{Intt. received after 5 years} = \frac{24,000 \times 5 \times 10}{100} = 12,000$$

$$\text{Intt. earned} = 12,000 - 6640 = 5360$$

Actual rate of Intt allowed by bank:-

$$5360 = \frac{2000 \times R \times 3}{100}$$

$$R = 7.4\%$$

$$119. (a) \frac{(CI - SI) \text{ for 3 yrs}}{(CI - SI) \text{ for 2 yrs}} = \frac{37}{11}$$

$$3 + \frac{R}{100} = \frac{37}{11}$$

$$R = 36.36\%$$

$$120. (b) \text{Total work} = 16 \times 29 = 464$$

A.T.Q

$$(m \times m + n \times n + 16 \times 16) = 464$$

$$m^2 + n^2 = 208$$

we have to assume two number. whose sum of square is 208 i.e (12, 8)

$$\text{They can complete the work in about} = \frac{464}{12+8+16} = 12.88 \sim 13$$

$$121. (d) \text{L.C.M of (24, 27)} = 216.$$

$$\begin{array}{ccc} M - 24 & & 9 \\ & \searrow & \\ & 216 & \\ & \swarrow & \\ N - 27 & & 8 \end{array}$$

Tank is full in 8 min, which means M is opened from start till end i.e., $9 \times 8 = 72$

$$\text{Remaining work} = 216 - 72 = 144.$$

$$N \text{ can fill remaining in } \frac{144}{8} = 18 \text{ min.}$$

N should be closed after 18 minutes.

$$122. (d) \text{Tank capacity} = \text{L.C.M of (12, 4)} = 12.$$

$$\begin{array}{ccc} C - 12 & & 1 \\ & \searrow & \\ & 12 & \\ & \swarrow & \\ D - 4 & & 3 \end{array}$$

$$C + D \text{ work alternatively for } 2 \times 2 \text{ min} = 4 \times 2$$

$$C + D \text{ work alternatively for 4 min} = 8 \text{ units.}$$

Then C came and do 1 min work = 9 units.

Then D came and finish the work = 9 + 3 units.

$$(4 + 1 + 1) = 12$$

$$6 \text{ min} = 12 \text{ units.}$$

$$123. (d) \text{Pipe A can fill in 15 min.}$$

Pipe B can fill in 20 min.

$$\text{Work done by A in 1 min} = \frac{1}{15}$$

$$\text{Work done by B in 1 min} = \frac{1}{20}$$

$$\text{Work done by A + B in 1 min} = \frac{1}{15} + \frac{1}{20} = \frac{7}{60}$$

So, the tank total time taken by both pipes before the

$$\text{leak was developed} = \frac{60}{7} \text{ min}$$

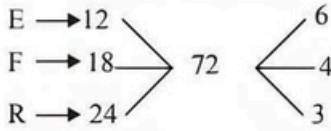
Now leak is developed which will take T time to empty the tank

$$\text{So, } \left(\frac{1}{15} + \frac{1}{20} - \frac{1}{T} \right) = \frac{1}{11}$$

Solve for T ,

$$T = \frac{660}{17} \text{ min.} = 39 \text{ min. (approx)}$$

124. (b) Total capacity of tank = L.C.M. of (12, 18, 24) = 72.



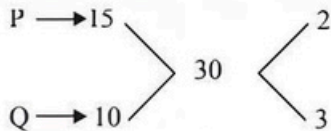
If R is closed 12 min. before tank is filled, then calculate 12 min work of R = $12 \times 3 = 36$.

Adds 36 into 72 i.e. 108 is total capacity.

E + F + R work in 1 min = 13 unit.

$$\text{Time to fill the tank} = \frac{108}{13} = 8 \frac{4}{13} \text{ min.}$$

125. (b) Total capacity of tank = L.C.M (15, 10) = 30



P + Q = work in 1 min = 5

$$\text{Total time taken by P + Q to fill the tank} = \frac{30}{5} = 6 \text{ min.}$$

Q is spend for half time i.e. 3 min,

Then work done by Q in 3 min = $3 \times 3 = 9$.

Remaining work = $30 - 9 = 21$

Work done by P + Q = 21

$$\text{Time taken by P + Q} = \frac{21}{5} = 4.2$$

Total time = $3 + 4.2 = 7.2 \text{ min.}$

126. (b) 100% = 8400

$$\text{Cakes on Monday} = \frac{8400 \times 11.50}{100} = 966$$

$$\text{Cakes on Tuesday} = \frac{8400}{100} \times 13 = 1092$$

$$\text{Cakes on Wednesday} = \frac{8400}{100} \times 12.50 = 1050$$

$$\text{Cakes on Thursday} = \frac{8400}{100} \times 14.50 = 1218.$$

$$\text{Cakes on Friday} = \frac{8400}{100} \times 16 = 1344$$

$$\text{Cakes on Saturday} = \frac{8400}{100} \times 15.50 = 1302$$

$$\text{Cakes on Sunday} = \frac{8400}{100} \times 17 = 1428.$$

Let the vanilla cakes sold on Friday = V_1

Vanilla cakes sold on Sunday = V_2

Chocolate cake sold on Friday = C_1

Chocolate cake sold on Sunday = C_2

According to the question,

$$\frac{V_1 + V_2}{2} = 858. \Rightarrow V_1 + V_2 = 1716$$

Total cakes on Friday and Saturday

$$V_1 + V_2 + C_1 + C_2 = 2772.$$

$$C_1 + C_2 = 2772 - 1716.$$

$$C_1 + C_2 = 1056.$$

$$C_2 - C_1 = 72. \Rightarrow C_1 = 492.$$

127. (b) Let, Vanilla cakes sold on Monday and Chocolate cakes sold on Monday are $2x$ and x respectively.

$$3x = 966$$

$$2x = 644.$$

Let the vanilla cakes and chocolate cakes sold on Wednesday are $3y$ and $2y$ respectively.

$$5y = 1050$$

$$3y = 630.$$

Req. difference = $644 - 630 = 14$.

128. (b) Let ratio of vanilla cakes sold to chocolate cakes sold on Monday = x .

Then req. ratio = $2x$ and x .

Total cakes sold = $3x$.

Total no. of vanilla cakes sold on Monday

$$= \frac{2}{3} \times 966 = 644$$

Total no. of chocolate cakes sold on Monday

$$= \frac{1}{3} \times 966 = 322$$

Let the selling price ratio by y .

SP of vanilla cakes : SP of chocolate cakes = $y : 4y$.

Total cost of 644 vanilla cakes = $644y$

Total cost of 322 chocolate cakes = $32 \times 4y = 1288y$

According to the question,

$$664y + 1288y = 9660 \Rightarrow y = 5.$$

Hence the rate of are vanilla cake is ₹5.

129. (a) Total cakes sold on Thursday = 1218.

Total cakes sold on Saturday = 1302.

Let the no. of vanilla cakes on Thursday be n_1 .

and the no. of vanilla cakes on Saturday be n_2 .

So, diff. of no. of vanilla cakes on Thursday and Saturday

$$V_1 - V_2 = 1302 - 1218$$

$$V_1 - V_2 = 84 \quad \dots(1)$$

Given ratio of vanilla on Thursday and Saturday

$$n_1 : n_2 = 3 : 4 \quad \dots(2)$$

From (1) and (2),

$$n_1 = 252$$

$$n_2 = 336.$$

Chocolate cake on Saturday = $1302 - 336 = 966$.

No. of cakes on Monday = 966.

Hence option (a) is correct.

130. (c) Let the ratio of vanilla cake to chocolate cake sold on Tuesday be n .

\therefore Req. ratio = $46x : 45x$

Total cakes sold on Tuesday = 1092

According to the question,

$$91x = 1092$$

$$46x = \frac{1092}{91} \times 46x = 552$$

131. (c) Boys + Girls in school A = 10035.

Boys - Girls in school A = 373

$$\begin{array}{r} - \quad + \quad - \\ \hline 2 \text{ girls on school A} = 9662 \end{array}$$

Girls in school A = 4831.

Boys + Girls in school B = 10098

Boys - Girls in school B = 640

$$\begin{array}{r} - \quad + \quad - \\ \hline 2 \text{ Girls in school B} = 9458 \end{array}$$

Girls in school B = 4729.

Req. difference b/w girls = 102.

132. (b) Boys + Girls in school F = 10045.

Boys - Girls in school F = 473.

$$\begin{array}{r} + \quad + \quad + \\ \hline 2 \text{ Boys in school F} = 10468 \end{array}$$

Boys in school F = 5234.

133. (c) Boys + Girls in school C = 10087.

Boys - Girls in school C = 285.

$$\begin{array}{r} - \quad + \quad - \\ \hline 2 \text{ Girls in school C} = 9802 \end{array}$$

Girls in school C = 4901.

Req % of Girls in school

$$= \frac{4901}{10087} \times 100 = 48.5\%$$

134. (a) Boys + Girls in school D = 10081

Boys - Girls in school D = 475

$$\begin{array}{r} - \quad + \quad - \\ \hline 2 \text{ Girls in school D} = 9606 \end{array}$$

Girls in school D = 4803

Boys in school D = 5278.

Boys + Girls in school E = 10009

Boys - Girls in school E = 625

$$\begin{array}{r} - \quad + \quad - \\ \hline 2 \text{ Girls in school E} = 9384 \end{array}$$

Girls in school E = 4692

Boys in school E = 5317

Boys in school D + Girls in school E = 9970.

Boys in school E + Girls in school D = 10120.

Required ratio = 997 : 1012

135. (d) **In school A:**

B + G = 10035

B - G = 375

$$\begin{array}{r} - \quad + \quad - \\ \hline \end{array}$$

G = 4831

In school B:

B + G = 10098

$$B - G = 640$$

$$\begin{array}{r} - \quad + \quad - \\ \hline \end{array}$$

G = 4729.

In school C:

B + G = 10087.

B - G = 285

$$\begin{array}{r} - \quad + \quad - \\ \hline \end{array}$$

G = 4901

In school D:

B + G = 10081

B - G = 475

$$\begin{array}{r} - \quad + \quad - \\ \hline \end{array}$$

G = 4803

In school E:

B + G = 10009

B - G = 625

$$\begin{array}{r} - \quad + \quad - \\ \hline \end{array}$$

G = 4692

From above option (d) is correct.

Sol. (137-140):

Institute	Appeared	Qualified
A.	6000	720
B.	2400	480
C.	3600	720
D.	2880	640
E.	4320	800
F.	4800	640

Institute	% of qualified students
A.	$\frac{720}{6000} \times 100 = 12\%$
B.	$\frac{480}{2400} \times 100 = 20\%$
C.	$\frac{720}{3600} \times 100 = 20\%$
D.	$\frac{640}{2880} \times 100 = 22.2\%$
E.	$\frac{800}{4320} \times 100 = 18.51\%$
F.	$\frac{640}{4800} \times 100 = 13.33\%$

136. (d) % of candidates from C has been declared

$$= \frac{720}{3600} \times 100 = 20\%$$

137. (b) D is having highest percentage.
 138. (a) Ratio of qualified student of B and appeared candidates from institute F.

$$\text{Req. ratio} = 480 : 4800 = 1 : 10$$

139. (c) Student qualified from C + D = 1360
 Appeared students from C + D = 6480

$$\text{Req. \%} = \frac{1360}{6480} \times 100 = 20.98\%$$

140. (d) Ratio of qualified students from D, E, F to ratio appeared candidates from A, B, C
 Req. ratio = 2080 : 12000 = 13 : 75.

141. (b) Total no. of cases = $\left(\frac{6.2 + 6.3 + 3.0}{24} \right) \times 10^5 = 64583.34$

Excise duty on 1 case = 16

Excise duty on 64,583.34 crores.

$$= 64,583.34 \times 16 = 1.033 \text{ crores.}$$

142. (d) Using option method,

$$(a) \text{ Peach } 1999 = \frac{1.2}{2.1} \times 100 = 57.14\%$$

$$(b) \text{ Lemon } 2001 = \frac{1.2}{2.9} \times 100 = 41.37\%$$

$$(c) \text{ Peach } 2002 = \frac{1.5}{2.8} \times 100 = 53.57\%$$

$$(d) \text{ Lemon } 2000 = \frac{1.1}{1.8} \times 100 = 61.11\%$$

Option (d) has highest % of growth in sale.

143. (a) Ratio of 3 drinks in 2004

Peach : Lemon : Litchi

$$2.1 : 1.5 : 1.0$$

$$10\% \text{ increase in Litchi} = \frac{3 \times 110}{100} = 3.3\%$$

$$10\% = 3.3$$

$$\therefore 1\% = 1 \times \frac{3.3}{10}$$

$$\therefore 4.6\% = \frac{3.3}{10} \times 4.6 = 15.18 \text{ (approx).}$$

144. (a) Total bottles in 2003 = 15.5

$$\text{Total cost} = 15.5 \times 9$$

According to the question,

$$= \frac{15.5 \times 9}{80} \times 100 = 17.5 \text{ crore.}$$

145. (b) 40% growth in sale & peach in 2004

$$= 6.2 \times \frac{140}{100} = 8.68$$

25% growth in sale & Lemon in 2004

$$= 6.3 \times \frac{125}{100} = 7.875$$

Diff. in sale of these brands = 8.68 - 7.875

$$= 0.8 \text{ million bottles.}$$

146. (c) In the year 1992, % of export of production

$$= \frac{180}{540} \times 100 = 33.33\%$$

In the year 1993, % of export over production

$$= \frac{288}{720} \times 100 = 40\%$$

In the year 1996 % of export over production

$$= \frac{450}{660} \times 100 = 68.18\%$$

In the year 1995, % of export over production

$$= \frac{400}{600} \times 100 = 66.66\%$$

147. (b) The population of India in 1993

$$= \frac{720 - 288}{0.4} = \frac{432}{0.4} = 1080 \text{ million}$$

148. (d) Can not be determined

149. (b) Average quantity tea exported during 1991-1996

$$= 96 + 180 + 288 + 340 + 400 + 450 = 1754 \text{ million kg}$$

Average tea produced during 1991-1996

$$= 480 + 540 + 720 + 700 + 600 + 660 = 3700 \text{ million kg}$$

$$\text{Required ratio} = \frac{1754}{3700} = 0.47$$

150. (d) Average per capita availability

$$= \frac{390 + 410 + 400 + 450 + 500}{5} = \frac{2150}{5} = 430 \text{ g}$$

151. (c) It is obvious from the graph that in the year 1991 it was the least 390 g

152. (a) Minimum percentage of export with respect to production was in the year 1991.

153. (c) Availability of tea for domestic consumption in 1991

$$= 480 - 96 = 384 \text{ million kg}$$

Availability of tea for domestic consumption in 1992

$$= 540 - 180 = 360 \text{ million kg}$$

Availability of tea for domestic consumption in 1993

$$= 720 - 288 = 432 \text{ million kg}$$

Availability of tea for domestic consumption in 1994

$$= 700 - 340 = 360 \text{ million kg}$$

Availability of tea for domestic consumption 1996

$$= 660 - 450 = 210 \text{ million kg}$$

Hence, maximum quantity of tea is available in the year 1993.

Sol. (154-158):

The data given in the two pie charts can be summarized as follows :

	1998	2000
P	260	264
Q	360	600
R	300	384
S	480	480
T	440	432
U	160	240
Total	2000	2400

154. (b) From the above table, it is obvious that in category S, the number of workers is same for both the years.
155. (c) % increase in number of workers in category U in 2000

$$= \frac{240 - 160}{160} \times 100 = 50\%.$$
156. (c) Increase in P = 4
 Increase in Q = 240
 Increase in R = 84
 Increase in S = 0
 Increase in U = 80
 Total Increase = 408.
157. (d) From the above table, it is obvious that there is a decrease only in category T.
158. (a) The required difference
 $= (600 + 480) - (160 + 260) = 660.$
159. (d) No. of hectares of FSI
 $= 40 + 60 + 80 + 120 + 100 + 110 + 120 + 150 + 120$
 $= 900$ thousand hectares
160. (a) The years which have witnessed a decline in FNI are 1997, 1998 and 2002.
 The years which have witnessed a increase in FSI are 1995, 1996, 1997, 1999, 2000, and 2001.
 Clearly, the years which are common to both are 1997 and 2000 i.e. two years have shown a decline in FNI and increase in FSI.
161. (b) In 2022, four people that have won the award are psychiatrist Sotheara Chhim (Cambodia), paediatrician Bernadette Madrid (Philippines), activist-filmmaker Gary Benchehib (Indonesia) and ophthalmologist Tadashi Hattori (Vietnam).
162. (b) These awards are an initiative of the National Institute of Urban Affairs and the United Nations in India to address city-level accessibility and inclusion challenges faced by persons with disability women and girls, and the elderly.
163. (c) The All-India Council for Technical Education (AICTE) has signed an agreement with US-based Adobe to accelerate digital creativity skills across India.
164. (a) Higher education sector regulator University Grants Commission (UGC) will now monitor and resolve all

grievances of students and staff in varsities through a centralized portal called 'e-Samadhan.

165. (b) Rajasthan Chief Minister Ashok Gehlot unveiled a scheme called Mahila Nidhi on Women's Equality Day to help them sustain their livelihoods as well as start some small business ventures for their economic betterment.
166. (d) Atal Innovation Mission (AIM) & NITI Aayog will establish more than 500 Atal Tinkering Labs (ATLs) in Jammu and Kashmir to nurture an innovative mindset among high school students.
167. (d) Denmark's Viktor Axelsen has clinched his second BWF World Championships men's singles title after beating Kunlavut Vitidsarn from Thailand in Tokyo.
168. (a) The largest religious monument in the world, the Temple of Vedic Planetarium in West Bengal, which will serve as the headquarters of the International Society of Krishna Consciousness (ISKCON), will also have the world's biggest dome.
169. (c) The NITI Aayog has declared the holy city of Haridwar in Uttarakhand as the best aspirational district.
170. (d) Jammu and Kashmir Lieutenant Governor Manoj Sinha inaugurated the 8th India International MSME Start-up Expo & Summit at New Delhi.
171. (c) The National Sports Day or Rashtriya Khel Divas is celebrated in India as a tribute to hockey legend Major Dhyan Chand who was born on this date in 1905.
172. (c) Women's Equality Day 2022 is celebrated all over the world to celebrate women's empowerment and equality on 26th August every year. Women's Equality Day 2022 theme is "Gender Equality Today for a Sustainable Tomorrow".
173. (c) Former German Chancellor Angela Merkel received the 2022 Peace Prize "in recognition of her efforts to welcome refugees," according to UNESCO.
174. (a) Odisha cadre 1987-batch IAS officer Rajesh Verma has been appointed as the Secretary to President Droupadi Murmu.
175. (d) The Punjab and Haryana governments have agreed to name the Chandigarh International Airport in Mohali after Shaheed Bhagat Singh.
176. (c) Likud leader Benjamin Netanyahu will publish his new autobiography on November 22. The former prime minister's book is named "Bibi: My Story".
177. (a) **World Water Week 2022** takes place from **23 August to 1 September**. The World Water Week is an annual event organized by **Stockholm International Water Institute (SIWI)** since 1991. The theme of the 2022 World Water Week is: "**Seeing the unseen: The value of water**", which helps us view water in new and fascinating ways.
178. (b) Madhya Pradesh's tribal-dominated 'Mandla' region has become the first fully "functionally literate" district in the country.

179. (d) The Border Road Organization (BRO) will construct a pilot road using steel slag in Arunachal Pradesh, which can withstand heavy rains and adverse climatic conditions.
180. (b) Union Minister of Road, Transport & Highway Nitin Gadkari has launched India's first electric double-decker bus in Mumbai.
181. (d) Paytm has partnered with Samsung stores across India to provide smart payments as well as its loan service Paytm Postpaid through deployment of point-of-sale devices.
182. (c) Industry leader Ratan Tata, launched Goodfellows, a senior companionship startup that provides companionship services to senior citizens.
183. (a) Goa has become the first 'Har Ghar Jal' certified State and Dadra and Nagar Haveli and Daman and Diu the first Union Territory in the country.
184. (c) The Centre and the board of the **National Bank for Financing Infrastructure and Development (NaBFID)** has appointed **Rajkiran Rai G** as its **managing director (MD)** for the next five years.
185. (a) HDFC Bank has announced the launch of a new campaign titled 'Vigil Aunty'. It aims to encourage people across the country to practise safe banking habits.
186. (b) IAS officer of the Nagaland cadre, **Piyush Goyal** has been appointed by the Central Government as the new **CEO of NATGRID (National Intelligence Grid)**.
187. (d) The Ministry of Social Justice & Empowerment, Government of India, has identified 75 Municipal Corporations to implement comprehensive rehabilitation of persons engaged in the act of begging under "SMILE: Support for Marginalised Individuals for Livelihood and Enterprise" named as "SMILE-75 Initiative".
188. (d) Justice Uday Umesh Lalit has been appointed as the 49th Chief Justice of India (CJI) replacing Justice NV Ramana.
189. (d) **Reserve Bank of India (RBI)**, vide order dated **August 08, 2022**, has cancelled the licence of "Rupee Co-operative Bank Ltd, Pune" for a period of six weeks.
190. (c) Tennis legend from the United States, Serena Williams has announced her retirement.
191. (c) The International Telecommunication Union (ITU) Regional Standardization Forum (RSF) for Asia and Oceania region was hosted by the Ministry of Communication, Government of India on 08 August 2022 in New Delhi. The headquarters of ITU are in Geneva, Switzerland.
192. (a) Bhavani Devi is an Indian sabre fencer. She is the first Indian fencer to ever qualify for the Olympics after qualifying for the 2020 Summer Olympics. She won a gold medal in fencing at the commonwealth Games 2022.
193. (d) India's shuttler P V Sindhu has clinched a gold medal in the final of women's single at the Commonwealth Games 2022. The double Olympic medalist beat Michelle Li of Canada to win the Gold.
194. (a) The test run of the 3.5-km-long freight train carrying more than 27,000 tonnes of coal was conducted by South East Central Railway between Korba in Chhattisgarh and Rajnandgaon near Nagpur on August 15.
195. (c) Indian Air Force Wing Commander **Deepika Misra** Becomes The First Woman To Bag Vayu Sena Medal. Draupadi Murmu - Indian President and Supreme Commander of the armed forces, presented gallantry awards to deserving individuals on India's 75th anniversary of independence.
196. (b) **The Liberty Medal 2022** will be awarded this fall to Ukrainian President Volodymyr Zelenskyy. The Liberty Medal, established in 1988 to mark the U.S. Constitution's bicentennial, is presented to individuals who strive to secure the blessings of liberty for people around the globe.
197. (c) **Pradhan Mantri Jan Dhan Yojana** has completed **8 years** and has achieved its major goals during this period. PM Jan Dhan Yojana is a flagship financial inclusion program that was started by Prime Minister Narendra Modi and was launched on **28th August 2014**.
198. (a) The Quadrilateral Security Dialogue (QSD), is a strategic security dialogue between Australia, India, Japan, and the United States that is maintained by talks between member countries.
199. (b) Human Development Index is published annually by the United Nations Development Program (UNDP). The theme for Human Development Report 2021-22 is **Uncertain Times, Unsettled Lives: Shaping our Future in a World in Transformation**. India's rank on the Human Development Index (HDI) has slipped from 130 in 2020 to 132 in 2022.
200. (d) Bangladesh-born **Fahmida Azim** working for the Insider online magazine of the US has been selected for the **Pulitzer Prize 2022**. She will be awarded under the category of Illustrated Reporting and Commentary. She is among the four journalists including **Anthony Del Col, Josh Adams and Walt Hickey** of Insider being published from New York, selected for their work on the Chinese oppression of the Uyghurs. The work 'I escaped a Chinese internment Camp' has illustrations by Fahmida Azim.