

## **NDA I 2017 PYSP: Solution**

1. Ans. D.

Significant features of the Quit India Movement were:

- From the very start, it was a rural revolt.
- It was essentially a moderate movement.
- It was marked by the unprecedented use of violence.
- It was marked by acute state repression

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Impact and significance of Quit India Movement were:

- The most important effect of the Quit India Movement was that it made the British realise that in the context of the crippling effects of the II-World War on Britain's resources and the bitter opposition to its rule India, it would be very difficult to continue ruling the Indians.

2. Ans. B.

- The Chittagong armoury raid was also known as Chittagong uprising. It was an attempt on 18<sup>th</sup> April 1930 to raid the armoury of police and auxiliary forces from the Chittagong armoury in the Bengal Presidency of British India (now in Bangladesh) by armed Indian independence fighters led by Surya Sen.

- Result of the Chittagong armoury raid was:

o Failed to locate ammunition.

o Succeeded to cut telephone & telegraph wires and even disrupt train movements.

3. Ans. D.

- "Philosophy of the Bomb" was a strong rebuttal to an article written by Mr Gandhi titled 'Cult of the Bomb' that criticised revolutionary activities.
- In December 1929, a bomb was exploded beneath the Viceroy Irwin's special train, from which he, however, escaped. Gandhiji thanked God for the Viceroy's narrow escape and condemned in his article "The Cult of the Bomb" the revolutionaries for the act. It was in response to Gandhiji's

article that this outstanding document was written by Bhagawati Charan in consultation with Chandra Shekhar Azad. It was drafted in the room located above the Soloman Company, Aminabad, Lucknow, which was used as exclusively by Azad, Bhagawati Charan and Yashpal.

4. Ans. C.

- The pencil contains a form of solid carbon known as Graphite.
- Graphite is used in pencils because of its ability to leave grey marks on paper. It was originally thought to be a form of Lead. Eventually, a mixture of graphite and clay was developed that eliminated the need for string and produced a harder substance that could easily be inserted into hollow rods.

5. Ans. B.

- The chemical name of Baking Soda is  $\text{NaHCO}_3$ , and as the name suggests, it is made up of Sodium and bicarbonate ions.
- Some uses of Baking Soda:
  - o Treat Heartburn. Share on Pinterest.
  - o Mouthwash. Mouthwash is a great addition to a good oral hygiene routine.
  - o Soothe Canker Sores.
  - o Whiten Your Teeth.
  - o Deodorant.
  - o May Improve Exercise Performance.
  - o Relieve Itchy Skin and Sunburns.
  - o May Treat Calluses.

6. Ans. A.

- Radon (Rn), chemical element, is a heavy radioactive gas of Group 18 (Noble Gases) of the Periodic Table, generated by the radioactive decay of Radium.

7. Ans. D.

Whenever any liquid is heated it expands and its container also expands so it is more complicated to measure the coefficient due to expansion of both liquid and the container.

8. Ans. D.

We know that,

$$F = G \frac{m_1 m_2}{r^2}$$

Here:

G is universal Gravitational Constant and independent to other factors,  $G = 6.67 \times 10^{-11}$

F is directly proportional to  $m_1 m_2$

F is indirectly proportional to  $r^2$

The Gravitational Acceleration 'g' is maximum at the surface of the earth.

9. Ans. C.

Cut off wavelength is given by -

$$E = \frac{hc}{\lambda}$$

$$\lambda = \frac{hc}{E} = \frac{hc}{eV}$$

$$\lambda \text{ proportional to } \frac{1}{V}$$

Cut off wavelength doesn't depend on the separation between the filament & the target.

Thus, the cut off wavelength will be halved if the potential difference applied to the tube is doubled.

10. Ans. B.

$$(K-273)/5 = (F - 32)/9.$$

As it is given that  $K = F$ , we have

$$9k - 2457 = 5K - 160 \text{ or}$$

$$4k = 2297 \text{ or}$$

$$K = 574 \text{ or } 574 - 273 = 301$$

Hence option, "B" is correct.

11. Ans. B.

In physics, angular frequency, i.e.  $\omega$  (also considered by the terms angular speed, circular frequency, radial frequency, radian frequency, orbital frequency & pulsance) is a scalar calculating quantity of rotation rate.

It is even known as to the angular displacement per unit time (for e.g. in rotation) or we can say that the rate of change of the phase of a sinusoidal waveform (for e.g. in oscillations and waves) or we can also say that as the changing rate of the argument of the sine function.

Angular Frequency / Angular Speed is the magnitude of the vector quantity angular velocity.

1 revolution is equal to  $2\pi$  radians, hence

$$\omega = \frac{2\pi}{T}$$

T

$$\omega = 2\pi f$$

where:

$\omega$  is the angular frequency or angular speed (calculated in radians per second),

T is the period (calculated in seconds),

f is the ordinary frequency (calculated in hertz) (sometimes symbolised with  $\nu$ ).

12. Ans. D.

When a rod is rubbed by wool, the rod becomes negatively charged while the wool becomes positively charged. This is because the electron in wool are less tightly bounded than electron in rod. So the friction between during rubbing makes the rod to gain electron from wool to rod.

13. Ans. A.

Zone	Headquarters	Divisions
1. Central	Mumbai	Mumbai(CST), Bhusawal, Nagpur, Pune
2. Western	Mumbai	Mumbai(Central), Vadodara, Ratlam, Ahmedabad, Rajkot, Bhavnagar
3. Northern	Delhi	Ambala, Delhi, Lucknow, Moradabad, Ferozpur
4. Eastern	Kolkata	Asansol, Howrah, Malda, Sealdah
5. Southern	Chennai	Chennai, Madurai, Palghat, Trichy, Trivandrum, Salem
6. East Central	Hajipur	Danapur, Dhanbad, Mughalsarai, Samastipur, Sonpur
7. East Coast	Bhubaneshwar	Khurda Road, Sambalpur, Waltair
8. North Central	Allahabad	Allahabad, Agra, Jhansi
9. North Eastern	Gorakhpur	Lucknow, Izzatnager, Varanasi
10. North East Frontier	Guwahati	Katihar, Alipurduar, Rangiya, Lumding, Tinsukia
11. North Western	Jaipur	Ajmer, Bikaner, Jaipur, Jodhpur
12. South Central	Secunderabad	Hyderabad, Nanded, Secunderabad
13. South East Central	Bilaspur	Bilaspur, Nagpur, Raipur
14. South Eastern	Kolkata	Adra, Chakradharpur, Kharagpur, Ranchi
15. South Western	Hubli	Bangalore, Hubli, Mysore
16. South Coastal	Visakhapatnam	Guntakal, Guntur, Vijayawada
17. West Central	Jabalpur	Bhopal, Jabalpur, Kota
18. Kolkata Metro	Kolkata	Not applicable

14. Ans. D.

Geographical Distribution of the Cotton Textile Industry in India are:

- Maharashtra

'It is the leading producer of cotton textile in India. Mumbai is even known as as 'Cottonpolis of India'. 'The textile industry has also spread to Sholapur, Kolhapur, Pune, Jalgaon, Akola, Sangali, Nagpur, Satara, Wardha, Aurangabad and Amravati'.

- Gujarat

It is the second-largest producer of cotton textiles after Maharashtra. Ahmedabad is even known as 'Manchester of India & Boston of East', & it is also the second-largest centre of cotton textile industry after Mumbai. The other important centres are- Surat, Vadodara, Bharuch, Bhavnagar, Nadiad, Porbandar, Rajkot, Navsari, mauri and Viramgam.

- Tamil Nadu

'Chennai, Tirunelveli, Madurai, Tuticorin, Salem, Virudhnagar and Polachi are the major cotton textile centres'. Coimbatore is even known as

'Manchester of South India' because it is the most important cotton textile centre.

- Uttar Pradesh

'Kanpur, Etawah, Modinagar, Moradabad, Bareilly, Hathras, Agra, Meerut and Varanasi are the major cotton textile producing centres in the state'. Kanpur is even known as 'Manchester of Uttar Pradesh'.

- Karnataka

'Bangalore, Belgaum, Mangalore, Chitradurga, Galbarga and Mysore are the major cotton textile producing centres in the state'.

- Madhya Pradesh

'Indore, Gwalior, Mandasaur, Dewas, Ujjain, Bhopal, Nagda, Jabalpur and Ratlam are the major cotton textile producing centres in the state.

- Rajasthan

Kota, Jaipur, Bhilwara, Bhavanimandi, Sriganganagar, Udaipur and Kishanganj are the major cotton textile producing centres in the state.

- West Bengal

'The major cotton textile producing centres in the state are Kolkata, Howrah, Serampore, Shyamanagar, Saikia, Murshidabad, Hugli and Panihar'.

15. Ans. D.

The four major coral reefs areas identified for intensive conservation and management in India are:

- Gulf of Mannar,
  - Gulf of Kutch,
  - Lakshwadeep Islands and
  - Andaman and Nicobar Island.
- Andaman & Nicobar Islands: located in the Bay of Bengal, exclusively fringing reefs of about 572 islands, most of these islands have healthy biodiversity.

- Gulf of Kutch: Exclusively comprises of fringing reefs. The reefs are also relatively less developed due to a wide range of temperature & high salinity. The harbours even have less biodiversity. The entire Gulf of Kutch is also considered as a marine national park.
- Gulf of Mannar: Fringing reefs with a string of twenty-one islands from Rameswaram in the north to Thoothukudi (Tuticorin) in the south. This area of the gulf forms part of the Gulf of Mannar biosphere reserve.
- Lakshadweep: Exclusively coral atolls with thirty-six islands, of which ten are not considering for habitation. The islands differ from less than 1 km (0.62 mi) to about 9 km (5.6 mi) in length, and do not exceed 2 km (1.2 mi) in width.

16. Ans. C.

- Petroleum is found in India in Guwahati, Barauni, Koyali, Haldia, Mathura, Digboi, Lakwa, Panipat, Chennai, Narimanam, Bongaigaon, Mumbai (HPCL), Vishakhapatnam, Mumbai (BPCL), Kochi, Numaligarh, Tatipaka (ONGC) and Bina (M.P.)
- Copper is found in India in Singhbhum district (Jharkhand), Balghat district (Madhya Pradesh), Malanjkhand (Madhya Pradesh), Jhunjhunu and Alwar districts (Rajasthan). In addition, there are little deposits in Gujarat, Andhra Pradesh, Karnataka, Uttar Pradesh, Sikkim, Meghalaya, Maharashtra and West Bengal.
- Zinc is found in India in, most of the resources are found in Rajasthan. A lesser amount of resources are available in Andhra Pradesh, Madhya Pradesh, Bihar and Maharashtra states. Some deposits containing zinc are even found in Udhampur district of Jammu & Kashmir, Zawar (Distt. In Udaipur, Rajasthan) and South Arcot Vallalar district of Tamil Nadu.
- Coal is found in India in Raniganj (Oldest coalfield in India) in West Bengal, Jharia (Largest), Bokaro, Dhanbad, Giridih, Karanpura, Ramgarh, Daltonganj in Jharkhand, Singrauli, Suhagpur, Johila, Umaria, Satpura coalfield in Madhya Pradesh, Kalakot (a village in Jammu & Kashmir), Talcher, Himgiri, Rampur in Odisha, Korba, Bistrampur, Sonhat, Jhilmil, Hasdo-Arand in Chattisgarh, Makum, Najira, Janji, Jaipur in Assam etc.

17. Ans. B.

The main principles of a Subsidiary Alliance were:

- Any Indian ruler getting entered into a subsidiary alliance with the British had to agreed with British forces in his territory and also accepted to pay for their maintenance.



- Such a ruler wouldn't form an alliance with any other power, even wouldn't he declared war against any Indian power without the consultation of the British government.
- The ruler wouldn't employ any Europeans apart from that of the British, and if he were previously doing so, he would even dismiss them.
- In case of a disagreement with any other state, the British would decide what to do, and he would agree on their solution.
- The ruler would accept the East India Company as the controller in India.
- In return for the ruler in agreeing its conditions, the Company undertook to secure the state from external dangers & internal disarray.
- If the Indian rulers were unable to make the payments which were asked by the alliance, then part of their territory was to be taken away as a penalty.

In this doctrine, Indian rulers under British protection gave up control of their foreign affairs to the British. Most disbanded their native armies, in place of maintaining British troops within their states to secure them from attack. As British power grew, this became increasingly in most parts of India unlikely. The system also permitted the British to maintain their army at the expense of local rulers.

18. Ans. D.

Other reasons for the Revolt of 1857 –

- Pathetic Socio-Economic Condition.
- Problems of Land Revenue.
- Destruction of Economy.
- Low position of Indians in Administration.
- Doctrine of Lapse.
- Ill-treatment with Bahadur Shah Zafar.
- Annexation of Oudh.
- Biased Police and Judiciary.

19. Ans. B.



- The 73rd Amendment Act, 1992 added a new part, i.e. Part-IX to the Constitution. The act provides the powers of Panchayats with respect to the implementation of development schemes, raising taxes and social responsibilities. Further, it provides for regular elections and reservation to women and socially backward classes.
- The Anti-Defection Law was proceeded by Parliament in 1985 by the 52nd Amendment to the Constitution. It added the Tenth Schedule which laid down the process by which legislators can be disqualified on the grounds of defection.
- The 61st Amendment of the Constitution of India, officially known as The Constitution (Sixty-first Amendment) Act, 1988, lowered the voting age of elections to the Lok Sabha and the Legislative Assemblies of States from 21 years to 18 years.
- The 86th Amendment to the Constitution of India in 2002, provided '*Right to Education*' as a Fundamental Right in Part-III of the Constitution. A new Article-21 A was inserted, which made the '*Right to Education*' a Fundamental Right for children between 6-14 years. No child is responsible for paying any kind of fee/ / Charges/ Capitation fee.

20. Ans. D.

- Krishnadevaraya was one of the significant emperor of the Vijayanagara Empire who had reigned from 1509–1529. He was the 3<sup>rd</sup> ruler of the *Tuluva Dynasty* and was widely considered to be one of the greatest rulers of the empire. He was even known for employing Turkic archers. When presiding over the empire (at its zenith), he was regarded as an icon by many Indians. Krishna Deva Raya always respected all sects of Hinduism.
- The reign of Krishna Deva Raya was an age of prolific literature in several languages, although it is even known as a *golden age of Kannada literature*'. Many Telugu, Kannada, Sanskrit, and Tamil poets enjoyed the patronage of the emperor. Emperor Krishna Deva Raya himself was fluent in many languages.
- He himself wrote his magnum opus Amuktamalyada in Telugu.
- During his reign, Portuguese travellers, Domingo Paes and Durate Barbosa visited his court.

21. Ans. C.

The noun "student" can be connected to R and S both in isolation but here minute detail should come before a major detail so "class X" should come

before "government school". It means that PRS should come together. It is only present in option C. Hence option C is correct.

22. Ans. B.

The subject is given in part Q only/ There is a common structure related to implant and that is "to implant something somewhere". Q, S and R respectively fit in the structure. It is only present in option B. Hence option B is correct.

23. Ans. D.

The sentence seems perfect as it is. There is no need to alter anything. Therefore the sequence is PQRS. Hence option D is correct.

24. Ans. B.

Out of the given parts of the sentence the subject of the sentence can be P as it has the pronoun. It should be followed by a verb phrase and R is the one so PR is a pair. It is only present in option B. Hence option B is correct.

25. Ans. B.

The verb "appeal" needs an object and only part R can be the object as it can be connected to the verb with "to" so QR is a pair. It is only present in option B. Hence option B is correct.

26. Ans. C.

The reflexive pronoun (themselves) is usually comes after a verb and here it only makes sense with "surrender" so QS is a pair. The verb "advised" requires an object and only "the hijackers" can go with it so PQ is a pair. Both pairs are only present in option C. Hence option C is correct.

27. Ans. B.

The verb 'will' should come before "shrink woolen clothes" as it is followed by a bare infinitive and "shrink" is a bare infinitive so QS is a pair. It is only present in option B. Hence option B is correct.

28. Ans. A.

P is a pronoun and Q is a verb phrase. Both of them go together so PQ is a pair that should come at the initial position. "Together" is related to "the

papers" so it should come with Q so QS is also a pair. Therefore, the sequence should be PQSR which is in option A. Hence option A is correct.

29. Ans. C.

The verb "spend" in Q has its argument in a phrase related to time which should come immediately after it. S is the phrase related to time so QS is a pair. Only "farm workers" can be the subject as it goes with combined QS and it should come in the front. PQS is at the initial position in option C. Therefore, the sequence should be PQSR which is in option C. Hence option C is correct

30. Ans. A.

The first two lines of the passage make it clear that the process of cutting steps in the snow was difficult and tiring. This what makes the author exhausted and weak which made the further journey hard for the him. That is why A is the correct choice.

31. Ans. B.

This statement hints at the process of climbing a snow covered peak where the climbers have to make place to put their feet in the snow and it is a slow and tiring process. Therefore option B is the right answer.

32. Ans. C.

The last few lines of the passage with phrases like "snowy summit", "Rongbuk glacier" and "ice-axe in the firm snow" suggest that it was a snow covered peak. That is why C is the correct answer.

33. Ans. C.

The last line of the passage "seems incapable of making the smallest effort to struggle on to its legs again" suggests that the engine was not in a position to be fine again. Therefore C is the right answer.

34. Ans. B.

The sentence in the passage which begins with "The engine with one wheel broken" gives the answer to this question that one wheel of the engine was broken. That is why B is the right choice.

35. Ans. C.

The first line has the answer to this question – "where I roused myself in order to hear the name of the station". It suggests that the person

wanted to know the name of the station. That is why C is the correct answer.

36. Ans. C.

The verb "commented" comes with the preposition "on" which is missing in part C. Therefore the preposition should be added in part C. Hence option C is correct.

37. Ans. D.

The given sentence is totally grammatical. There is no error in it. Hence option D is correct.

38. Ans. B.

In formal styles, when we use an adverb with negative meaning (e.g. never, seldom, rarely, scarcely, hardly) in front position to emphasis, we invert the subject (s) and auxiliary (aux)/modal verb. Here in the sentence "have" should come before "I". Therefore the structure is incorrect in part B. Hence option B is correct.

39. Ans. D.

The given sentence is grammatically correct. There is no error in it. Hence option D is correct.

40. Ans. B.

An **if- or when**-clause (often used to form conditional sentences) generally does not contain "will," which is the simple future tense of the verb "to be." Therefore the use of "will" is incorrect in part B so the error is in part B. Hence option B is correct.

41. Ans. B.

When used transitively, the object of avail is usually the reflexive form of the subject. Here 'avail' requires an object therefore it is transitive. The underlined part do not have reflexive pronoun so it is incorrect. Therefore the underlined part should be replaced with option B as it has the reflexive pronoun and correct preposition also. Hence option B is correct.

42. Ans. C.

Spectacles is a plural noun. We don't talk about 'a spectacles' or 'spectacles' alone. Instead say a pair of spectacles. Therefore the underlined part should be replaced with option C. Hence option C is correct.

43. Ans. C.

The underlined part uses the idiom "to cut a sorry figure" wrongly. It means "to appear in a way or make an impression that causes oneself to be regarded unfavorably by others." Therefore the underlined part should be replaced with option C as it is the correct form of the idiom. Hence option C is correct.

44. Ans. C.

The past continuous (also called past progressive) is a verb tense which is used to show that an ongoing past action was happening at a specific moment of interruption. Here part 1 of the sentence is a specific moment of interruption in the past so the second part should follow past continuous (also called past progressive) tense. Therefore the underlined part should be replaced with option C as it is in past continuous (also called past progressive) tense. Hence option C is correct.

45. Ans. A.

The verb "stay" takes "at" as a preposition with it and also "their" is implied in the word home so there is no need to mention it. Therefore the underlined part should be replaced with option A. Hence option A is correct.

46. Ans. C.

"Look after" means "take care of" which is not appropriate in this context of words and searching in the dictionary. "Look up" means "to try to find a particular piece of information by looking in a book or on a list, or by using a computer" and it fits into the context. Therefore the underlined part must be replaced with option C. Hence option C is correct.

47. Ans. B.

The sentence is of past tense as we can see in the later part of the sentence ("did"). In this context we use "have" after the modal verb (ought to is a modal verb). Therefore the underlined part should be replaced with "have told". Hence option B is correct.

48. Ans. B.

The underlined word should qualify the noun "idea" and only an adjective can qualify a noun. "Secretly" is an adverb which is wrong here. It should be replaced with the adjective form "secret". Hence option B is correct.

49. Ans. B.

The preposition "to" is used with the verb "prefer" not "than". Hence option B is correct.

50. Ans. A.

"But" is used to introduce an added statement, usually something that is different from what you have said before. In the given sentence, the parts before "but" and after "but" are not contrasting so the use of but here is wrong. Therefore, only "as for" left to improve the underline part and it also gives the sentence its perfect meaning. Hence option A is correct.

51. Ans. D.

"Candid" means truthful and straightforward; frank.

Option A "kind" means helpful

Option B "courteous" means polite, respectful, or considerate in manner.

Option C "generous" means showing a readiness to give more of something

Option D "frank" means open, honest, and direct in speech or writing

The meaning of "frank" is similar to "candid" which makes option D the right answer.

52. Ans. B.

Let us look at the meanings of these words.

Acumen: the ability to make good judgements and take quick decisions.

Fairness: impartial and just treatment or behaviour without favouritism or discrimination.

Sharpness: the quality or state of being sharp.

Boldness: willingness to take risks and act innovatively; confidence or courage.

Righteousness: the quality of being morally right or justifiable

The meaning of "sharpness" is closest to "acumen" which makes option B the right answer.



53. Ans. B.

The meaning of the word "indiscriminately" is in a random manner; unsystematically or in a way that does not show care or judgement. Option B "without distinguishing" means without characteristic of one thing or person, so serving to identify it; distinctive. This meaning is closest to the meaning of "indiscriminately". Therefore B is the right answer.

54. Ans. A.

Let us look at the meanings of these words.

Countered: speak or act in opposition to.

Opposed: anxious to prevent or put an end to; disagreeing with.

Balanced: keeping or showing a balance; in good proportions.

Reduced: make smaller or less in amount, degree, or size.

Bypassed: go past or round.

The meaning of option A is similar to the word "countered" which makes it the correct choice.

55. Ans. C.

Let us look at the meanings of these words.

Sever: divide by cutting or slicing, especially suddenly and forcibly.

Engage: occupy or attract

Estrange: cause (someone) to be no longer on friendly terms with someone.

Cut off: a point or level which is a designated limit of something.

Twist: form into a bent, curling, or distorted shape.

The meaning of Option C is similar to that of "sever" which makes it the correct answer.

56. Ans. C.

The meaning of the word "corroborated" is confirmed or given support to (a statement, theory, or finding). Options A and C have meanings similar



to it. Option D means done or occurring again several times in the same way. Option C means the opposite of "corroborated". Therefore C is the right choice.

57. Ans. B.

Let us look at the meanings of these words:

Auspicious: conducive to success; favourable.

Precious: Of great value; not to be wasted or treated carelessly.

Ominous: giving the worrying impression that something bad is going to happen; threateningly inauspicious.

Useless: not fulfilling or not expected to achieve the intended purpose or desired outcome.

Unforgettable: impossible to forget; very memorable.

The meaning of option B is opposite to that of "auspicious". Therefore A is the right answer.

58. Ans. A.

Let us look at the meanings of these words.

Affable: friendly, good-natured, or easy to talk to.

Reserved: slow to reveal emotion or opinions.

Gullible: easily persuaded to believe something; credulous.

Irritable:  
having or showing a tendency to be easily annoyed.

Lovable: inspiring or deserving love or affection.

The meaning of option A is opposite to that of "affable". Therefore A is the right answer.

59. Ans. B.

The word "arduous" means involving or requiring strenuous effort; difficult and tiring. Option B "effortless" means requiring no physical or mental exertion. This meaning is opposite to that of "arduous". That is why B is the right answer.

60. Ans. A.

The words "fiasco" means a complete failure, especially a ludicrous or humiliating one. Options B and C have meanings related to happiness and option D has meaning similar to that of "fiasco". Options A "success" means opposite to "fiasco". Therefore D is the right answer.

61. Ans. D.

The sentence indicates that the person does not want the thing anymore because he has had it as much as it required and in this case only "enough" is appropriate from the given options as it indicates toward the stoppage. Therefore, only "enough" makes sense here. Hence option C is correct.

62. Ans. C.

The blank is a link between a wicked dictator and his desires. In this context only "lust" can be used out of the give options as it means passionate desires. Therefore, only "lust" makes sense here. Hence option C is correct.

63. Ans. C.

The word "aspired" is related to ambitious as it means "direct one's ambitions towards achieving something". An ambitious person always "aspires" to do something. Therefore, only "aspired" makes sense here. Hence option C is correct.

64. Ans. C.

It is obvious that "the accidents" can only be "avoided". Therefore, only "avoid" makes sense here. Hence option C is correct.

65. Ans. C.

The second part of the passage refers to a point of time. From the given options, only "as soon as" refers to time. Therefore, only "as soon as" makes sense here. Hence option C is correct.

66. Ans. B.

Out of the given options only "told" and "explained" can be followed by an immediate objective pronoun but "explained" does not go with "experiences". Therefore, only "told" makes sense here. Hence option B is correct.

67. Ans. C.

The sentence is about blood flow and only "profuse" goes well in this context as it means "very plentiful" and it is mostly used in the context of something that discharges. Therefore option C is correct.

68. Ans. D.

"Denied" and "prevented" are generally used in passive voice and "disliked" is usually followed by pronoun or a gerund not by an infinitive. Therefore, only "refused" makes sense here. Hence option D is correct.

69. Ans. A.

We use past simple with finished actions, states or habits in the past that we have introduced with the present perfect or another tense. This is sometimes called 'details of news'. Here the sentence is the "details of news" so past simple tense should be used in the blank. Only option A is in past simple tense. Hence option A is correct.

70. Ans. C.

The blank fits in the structure "to expect someone to do something". The pronoun "you" is a hint that "expect" should come in the blank. Hence option C is correct.

71. Ans. C.

The Government of India approved 12<sup>th</sup> five-year plan on October 4. It aims to achieve an annual average of the economic growth rate of 8.2 percent, which was down from 9 percent.

The aim for the plan is to achieve faster, sustainable and more inclusive growth.

This plan was focusing on life and longevity, education and skill development but not the delivery of Public Services.

72. Ans. C.

For any political party to be eligible for recognition as National Party, it has to fulfil any of the three conditions as follows:

- It has to secure 6% of valid votes in an assembly or a Lok Sabha General election in any four or more states and also won at least 4 seats in a Lok Sabha General election from any state or states.
- Win at least 2% of total Lok Sabha seats in General election, and they have to win these seats from at least 3 states.

- The party has to recognize as a State Party in at least four states.

73. Ans. A.

*Surge Price* usually occurs when any company raises the price of its products and services when there is an increase in demand but the supply to fulfil the demand is not enough to deal with.

For example, when Uber or Ola Cab Service providers charges more during peak hours. It is to give incentives to the drivers.

74. Ans. B.

World Humanitarian Day is being observed every year on August 19. This day is for honouring all humanitarians who have worked in the line of promotion of humanitarian cause and also have lost their lives for the cause of duty.

This day is celebrated to increase the public awareness about humanitarian assistance activities worldwide and the importance of international cooperation the United Nations (UN).

75. Ans. A.

The Home Ministry of Maharashtra has proposed to enact a stringent law under the name Maharashtra protection of Internal Security Act.

This is to deal with the problem of terrorism, insurgency, communalism and caste violence.

76. Ans. D.

The second BRICS Youth Summit was held in Guwahati, Assam. It was held during 1<sup>st</sup> July 2016, to 3<sup>rd</sup> July, 2016.

The theme for this summit was as "Youth as Bridge for inter-BRICS exchange."

This summit was basically focusing on people to people contacts in BRICS member and shifting of power from the west to member countries to maintain the balance of power. This summit also called for Guwahati BRICS youth summit 2016 call to action and requested the youth to come together for this goal.

77. Ans. C.

Pakistan team was defeated by India and lifted the Women's Twenty 20 Asia Cup 2016. India was undefeated during the tournament and beat Pakistan by 17 runs in the final.

78. Ans. D.

Najma Akbar Ali Heptulla is an Indian politician and governor of Manipur. She was also the Vice-Chancellor of Jamia Millia Islamia.

Ram Nath Kovind is an Indian politician, and he is currently serving as 14<sup>th</sup> President of India. From 2015 to 2017 he had served as Governor of Bihar.

Acharya Dev Vrat is an Indian politician, and he is currently serving as Governor of Bihar. Previously he had also served as Arya Samaj Pracharak and principal of Gurukul in Kurukshetra.

Arvind Subramaniam was an economic advisor and former Chief Economic Advisor to the Government of India.

79. Ans. B.

Dr. Urjit Patel was appointed as Deputy Governor of Reserve Bank of India in 2013 for the period of three years. Before that, he was the advisor with the Boston Consulting Group and also worked with the Reliance industries in the past.

80. Ans. D.

Coffee plantation in India needs a hot and humid climate having a temperature between 15<sup>o</sup>c to 28<sup>o</sup> C. It requires rainfall between 150 to 250 cm.

The ideal soil for coffee plantation is rolling surface and which is easily workable.

Karnataka is a leading producer for coffee plantation in India. The state almost contributes 70% of Coffee plantation in India.

81. Ans. A.

Bongaigaon is a major city of Assam. It is one of the biggest commercial and industrial hubs of Assam. It has a petrochemical refinery.

Aircraft industry, first set up in India at Bangalore in 1940. It was named as Hindustan Aircraft Limited. In 1942, it was taken over by the government and named as Aeronautics India Limited and later named as Hindustan Aeronautics Limited in 1964.

Pinjore is famous for Hindustan machine tools factory.

Coimbatore is housed by 25000 small, medium and large industries. Primarily, it consists of cotton textile industry.

82. Ans. B.

The World Meteorological Organization is an intergovernmental organization. It has its headquarters in Geneva, Switzerland. It is a member of the United Nations developmental group. It is having membership of 193 states and territories.

83. Ans. D.

Density of population is defined as the number of population in per square kilometre of area. It is one of the important indices for population concentration.

According to the 2011 Census:

Nagaland is having 119 persons per square kilometer

Manipur is having 115 persons per square kilometer

Sikkim is having 86 persons per square kilometer

Mizoram is having 52 persons per square kilometer

84. Ans. A.

Red Blood Cells are for circulating blood and carry oxygen throughout the body. It is also named as Erythrocytes. Basically, Red Blood Cells are having no nucleus, no mitochondria and also no endoplasmic reticulum. Red Blood Cells consist of a protein called Haemoglobin which carries oxygen.

Red Blood Cell also works for removing carbon-di-oxide from the human body. We can maintain healthy Red Blood Cells count in the body by having iron-rich food. Vitamins are also needed to maintain it.

85. Ans. A.

Rennin is an aspartic protease protein and enzyme secreted by the kidneys. Rennin is a proteolytic enzyme. It cleaves to the circulating substrate angiotensinogen to form *Angiotensin I*. it has a little intrinsic pharmacologic activity.

86. Ans. B.



Dengue fever caused by Dengue virus. It belongs to the family of Flaviviridae from genus Flavivirus.

Dengue is a mosquito-borne single positive-stranded RNA virus. This virus usually causes suppression bone marrow which leads to a reduction in the number of platelets. A normal person is having platelets count 150,000 and 250,000 per microlitre of blood. The patients who are having Dengue will have the platelets count below 100,000 while other people will see critically below 20000 or less.

87. Ans. C.

FSSAI is the sole agency in India for enforcing the laws on food security.

The food safety and standards authority of India has been established under the 'Food Safety and Standards Act, 2006' by the parliamentary provision. It was a statute in the country for food safety and regulation in India.

It is basically responsible for protecting and promoting public health. It was through the regulation and supervision of food safety.

88. Ans. B.

Sleeping Sickness is caused by Trypanosoma. It is a genus from kinetoplastids. It is a monophyletic group of unicellular parasitic flagellate protozoa. It will infect a variety of hosts and cause fatal human diseases such as Sleeping Sickness.

Sleeping Sickness is an insect-born parasitic disease of human and other animals.

89. Ans. B.

The Cell Wall is made up of three parts called Chitin, Glucans and Proteins in fungus. The main difference between the Fungi and Plant is that fungi have 'Chitin' in their Cell Wall and plants are having 'Cellulose' in their cell wall.

Both Chitin and Cellulose are made up of chains of polysaccharides.

90. Ans. C.

Glass is non crystalline product. It is basically transparent and amorphous solid. It is having variety of practical, technological and decorative uses. It is made up of natural and abundant raw material such as soda ash, limestone and sand. All raw materials melted at very high temperature to make a new solid called glass.



91. Ans. C.

Rutherford's alpha-particle Scattering Experiment was done for the discovery of Nucleus.

Inside the atom most of the part is having empty space. Nucleus is having most of the mass of atom.

The *electron* is a subatomic particle. It is having negative elementary charge. It carries charge of  $1.602 \times 10^{-19}$  C.

The *proton* is also a subatomic particle having positive elementary charge. The value of charge is same as electron but opposite in nature.

*Helium* is a chemical element having symbol He and atomic number of 2. It is odorless, colorless, non-toxic and inert gas. It is monoatomic gas and first in the noble gas group in periodic table.

92. Ans. A.

Alkali Metal reacts vigorously with water and will form hydroxide and dihydrogen. When we go down to the group, the reactivity increases.

Lithium density is almost half of the density of the water. Because of this, it floats on the surface, forming Lithium Hydroxide and giving highly flammable hydrogen. It forms a colorless solution of lithium hydroxide. This reaction creates heat too slowly, and lithium's melting point is too high for it to melt.

93. Ans. B.

The accidental touch of hairs of nettle leaves causes burning pain. The burning sensation can be treated by rubbing Baking Soda on the skin. This happens because of the injection of Methanoic Acid.

Methanoic Acid is the simplest Carboxylic Acid. The molecular formula of acid is HCOOH, and it is also called as Formic Acid.

It usually occurs naturally in a variety of sources such as Stinging ants, Nettles, Pine needles, and Sweat.

94. Ans. A.

Temporary Hardness is due to the presence of some compound in water. Presence of Calcium Hydrogen Carbonate ( $\text{Ca}(\text{HCO}_3)_2$  aq) and Magnesium Hydrogen Carbonate ( $\text{Mg}(\text{HCO}_3)_2$  aq) will create temporary hardness in water.

Both of these compound gets decompose when providing heat.

95. Ans. D.

Fullerenes are molecule of Carbon atoms. It is having cylindrical shape are called *Carbon Nanotubes*, because of their tubular shape and hollow centre core. Their structures are usually based on hexagonal rings of carbon atoms which is joined by covalent bonds.

Some Fullerenes also include rings with five or seven carbon atoms.

96. Ans. A.

*Mach Number* is defined as the ratio of the speed of body with the speed of the sound in the surrounding medium.

When the speed of the body is greater than speed of the sound than Mach Number is greater than 1.

For Sonic:  $M = 1$

For Subsonic:  $M < 1$

For Supersonic:  $M > 1$

For Hypersonic:  $M > 5$

97. Ans. A.

We know that,

Initial speed of car is:  $u = 0$

Final speed of the car is:  $v = 8 \text{ m/s}$

Total time:  $t = 4 \text{ s}$

We know that,

Acceleration = Change in Velocity / Time

$$a = \frac{v - u}{t}$$

$$a = \frac{8 - 0}{4}$$

$$a = 2 \text{ m / s}^2$$

Now, we know that:  $v^2 - u^2 = 2as$

$$8^2 - 0^2 = 2 \times 2 \times s$$

$$64 = 4s$$

$$s = 16 \text{ m}$$

Again,

Average Speed = Distance Travelled / Time Taken

$$\text{Average Speed} = 16 / 4$$

$$= 4 \text{ m / s}$$

98. Ans. A.

Earth's place field becomes horizontal at the Magnetic meridian.

It is an imaginary line which is connecting the magnetic north and south poles, and also it is taken as the horizontal component of magnetic force lines along the surface of Earth.

*Magnetic Equator* is an imaginary line which is passing around the Earth near the equator. Here, magnetic needle is having no dip angle.

A '*Geographical Pole*' is two points on the surface of rotating planet where the axis of rotation will meet the surface of Earth. The north geographical pole of a body is  $90^0$  north of the Equator, and geographical south is  $90^0$  south of equator.

Tropic of cancer is also named as northern tropics. Here, sun can be directly overhead during June solstice.

99. Ans. D.

Optical Illusion in deserts during hot summers is based on the principle of '*Total Internal Reflection.*'

Total Internal Reflection means a complete reflection of a ray of light. It is within a medium such as water or glass from the surrounding surface come back into the medium. In this, the ray of light without being refracted, will continuous to be reflected within the medium.

Total Internal Reflection will occur in electromagnetic induction as well as other waves such as sound waves and water waves.

100. Ans. C.

A transformer is an electrical device which works on the principle of electromagnetic induction. It transfers electrical energy from one circuit to another circuit without changing the frequency. It works on '**Faraday's Law of Electromagnetic Induction**' that is the principle of mutual induction.

Transformers are using for increasing or decreasing current in alternating voltages in power applications. It is also used for coupling the stages of signal processing units.

101. Ans. A.

$$R = \rho \frac{l}{A}$$

Different factors which affect resistance are:

- $\rho$  = The type of material of which the resistor is made.
- L= The length of the material.
- A= The cross-section of the material.
- The temperature of the conductor.

102. Ans. B.

- Electrically the insulating materials must have high resistivity to decrease the leakage current and high dielectric strength to enable this too withstand higher voltage without being broken down or punctured.
- Plastic, rubber, wood, and ceramics are good insulators. These are often used to make kitchen utensils, such as saucepan handles, to stop heat from flowing up to burn the cook's hand. The plastic coating is also used to cover most electrical wires in appliances. Air is also a good insulator of heat.

103. Ans. B.

The stress equation is  $\sigma = F/A$ . F denotes the force acting on a body, and A denotes the area. Units of stress are the same as units of pressure

It is the property of a rotating body given by the product of the moment of inertia and the angular velocity of the rotating object. It is a vector quantity, which implies that here along with magnitude, the direction is also considered Symbol. The angular momentum is a vector quantity. Appropriate MKS or SI units for angular momentum are kilogram metres

squared per second (kg-m<sup>2</sup>/sec). For a given object/system isolated from external forces, the total angular momentum is a constant, a fact that is even known as the law of conservation of angular momentum.

104. Ans. A.

$$T_0 = 2\pi\sqrt{\frac{l_0}{g}}$$

$$T = 2\pi\sqrt{\frac{l_0(1 + \alpha\Delta t)}{g}}$$

$$T = 2\pi\sqrt{\frac{l_0}{g}} \left(1 + \frac{\alpha}{2}\Delta t\right)$$

(by using Binomial expansion)

$$T = T_0\left(1 + \frac{\alpha}{2}\Delta t\right)$$

$$\Rightarrow T - T_0 = T_0 \frac{\alpha}{2}\Delta t$$

$$\frac{\Delta T}{T_0} = \frac{1}{2}(\alpha\Delta t)$$

Where,  $\Delta T$  = increase in time period

In a simple pendulum, which can be recognized as the mass of a point at the end of a string of

Insignificant given length & a mass, the amplitude is normally only a few degrees. When

the amplitude is this small, it does not affect the period of the pendulum. As the amplitude of

the pendulum increases, the period progressively increases.

105. Ans. A.

The power of double Convex Lens is given by-

$$P = \frac{1}{f} = (n-1) \left[ \frac{1}{R_1} + \frac{1}{R_2} \right]$$
$$= (1.5 - 1) \left( \frac{1}{.1} + \frac{1}{.2} \right)$$
$$= .5(15) = +7.5D$$

106. Ans. D.

India's largest trade partners with their total trade (sum of imports and exports) in billions of US dollars for the financial year 2017–18 were as follows:

Rank	Country	Exports	Imports	Total Trade	Trade Balance
1	 China	16.34	68.06	84.4	-51.72
2	 United States	48.6	25.7	74.3	22.9
3	 United Arab Emirates	30.29	19.45	49.74	10.84
4	 Saudi Arabia	6.39	20.32	26.72	-13.93
5	 Switzerland	0.98	19.30	20.28	-18.32
6	 Germany	7.09	12.09	20.33	-5.25
7	 Hong Kong	13.7	20.34	34.04	-6.64

107. Ans. B.

The headquarters of the Eastern Railway Zone of Indian Railways is located at Kolkata. It comprises

Of four divisions- Howrah, Malda, Sealdah and Asansol.

Zone	Headquarters	Divisions
1. Central	Mumbai	Mumbai(CST), Bhusawal, Nagpur, Pune
2. Western	Mumbai	Mumbai(Central), Vadodara, Ratlam, Ahmedabad, Rajkot, Bhavnagar
3. Northern	Delhi	Ambala, Delhi, Lucknow, Moradabad, Ferozpur
4. Eastern	Kolkata	Asansol, Howrah, Malda, Sealdah
5. Southern	Chennai	Chennai, Madurai, Palghat, Trichy, Trivandrum, Salem
6. East Central	Hajipur	Danapur, Dhanbad, Mughalsarai, Samastipur, Sonpur
7. East Coast	Bhubaneshwar	Khurda Road, Sambalpur, Waltair
8. North Central	Allahabad	Allahabad, Agra, Jhansi
9. North Eastern	Gorakhpur	Lucknow, Izzatnager, Varanasi
10. North East Frontier	Guwahati	Katihar, Alipurduar, Rangiya, Lumding, Tinsukia

10. North East Frontier	Guwahati	Katihar, Alipurduar, Rangiya, Lumding, Tinsukia
11. North Western	Jaipur	Ajmer, Bikaner, Jaipur, Jodhpur
12. South Central	Secunderabad	Hyderabad, Nanded, Secunderabad
13. South East Central	Bilaspur	Bilaspur, Nagpur, Raipur
14. South Eastern	Kolkata	Adra, Chakradharpur, Kharagpur, Ranchi
15. South Western	Hubli	Bangalore, Hubli, Mysore
16. South Coastal	Visakhapatnam	Guntakal, Guntur, Vijayawada
17. West Central	Jabalpur	Bhopal, Jabalpur, Kota
18. Kolkata Metro	Kolkata	Not applicable

108. Ans. B.

The Himalayan Rivers are the rivers that originate from the Himalayan mountain ranges.

These rivers are snow-fed; they receive water from the melting ice of the glaciers as well as from



the rains. The three main Himalayan Rivers are the Ganga, the Indus & the Brahmaputra.

109. Ans. A.

- Amw- monsoon with short dry season covers the west coast of India upto south of Goa
- Cwg- monsoon with dry winters covers Ganga plain, eastern Rajasthan, northern Madhya Pradesh, most of North-east India.
- As- monsoon with dry summer covers Coromandel Coast of Tamil Nadu.
- Dfc- monsoon with cold, humid winter with short summer covers Arunachal Pradesh and nearby areas.

110. Ans. B.

- Monsoon rains usually thrive on the southern tip of Kerala state around June 1 and retreat from Rajasthan by September. But the past year (2019), it arrived on June 8. Thus, the beginning and end of Monsoon are neither regular nor on time.

111. Ans. C.

The given National Parks Corbett, Sariska, Simlipal and Periyar, are located at Uttarakhand,

Rajasthan, Odisha and Kerala, respectively.

- Some of the major animal species found in Corbett are tigers, elephants, crocodile, Deer, Para or Hog Deer, Sambar, Kakar or Barking Deer, Leopards, Langurs, Wild boars, Gharials, etc.
- Sariska Park is home to numerous carnivores including Leopard, Wild Dog, Jungle Cat, Hyena, Jackal, and Tiger. These feed on an abundance of prey species such as Sambar, Chital, Nilgai, Chausingha, Wild Boar and Langur.
- Simlipal is home to Tiger, Elephant, Indian bison, Chausingha etc. This Reserve is part of the UNESCO World Network of Biosphere Reserve since 2009. Simlipal Tiger Reserve is famous for best care of tigers in India.
- Apart from Elephants, the other animals can be found in the Periyar Sanctuary are Wild Pigs, Sambar, Gaur, Mouse Deer, Dole or Barking Deer, Indian Wild Dog and Tiger. There are, now estimated counts of 40 tigers in the Periyar National Park.

112. Ans. D.

- Manganese: Odisha is the largest producer and produces approx. 44% of manganese ore of India. Some other states where manganese found in India are: Karnataka (22%), Madhya Pradesh (13%), Maharashtra (8%), Andhra Pradesh (4%), Jharkhand and Goa (3% each), Rajasthan, Gujarat and West Bengal (remaining 3 per cent).
- Gypsum: Rajasthan is by far the largest producer of Gypsum in India, and it produces almost 99% of total gypsum production in India. Some other states where gypsum found in India are: Tamil Nadu, Gujarat and Jammu & Kashmir. Total known reserves of gypsum in India have been estimated at 1,248 million tonnes out of which about 1971 million tonnes of deposits are located in Rajasthan alone.
- Limestone: Madhya Pradesh is the largest producer of limestone and accounts for over 16 percent of the total limestone production of India. Some other states where limestone found in India are: Rajasthan, Andhra Pradesh, Gujarat, Chhattisgarh, Tamil Nadu, Karnataka.
- Magnesite: Tamil Nadu is the largest producer with 3/4 of magnesite in India. It has one of the largest deposits of magnesite in the world, and the largest in India are found at Chalk Hills near Salem town. Some other states where limestone found in India are: Uttaranchal and Rajasthan.

113. Ans. B.

- Marigolds are hardy, annual plants and are great plants for cheering up any garden. Broadly, there are two genres which are referred to by the common name, Marigolds viz. Tagetes and Celandula. The colourful part of Marigold is inflorescences.
- These are clusters of flowers on a branch or a system of branches. They are categorized generally on the basis of timing of their flowering and by their arrangement on an axis.

114. Ans. D.

- Sugarcane is generally grown to obtain sucrose.
- Conditions for growing sugarcane: The plant thrives best in tropical hot sunny areas. The

'ideal' climate for the production of maximum sugar from sugarcane is categorized as a long, warm growing season with a high incidence of solar radiation and adequate moisture

(rainfall) - the plant uses from 148-300g of water to produce 1.0g of dry substance.

- Uses of sugarcane: Sugarcane gives a juice, which helps for making white sugar & jiggery ,i.e. gur and several by-products like bagasse & molasses. Bagasse is helpful as a fuel, for production of fiber board, papers, plastics and furfural.

115. Ans. A.

- Proteins are biological macromolecules that are diverse in shape, size and function. Proteins are the broader set of molecules to which enzymes belong as subsets. Therefore, all proteins are not enzymes, but most enzymes are proteins.

- Your body uses protein to build and repair tissues. You also use protein to make enzymes, hormones, and other body chemicals. Protein is an essential building block of bones, muscles, cartilage, skin, and blood.

116. Ans. B.

- Cone Cells (or Cones) are photoreceptor cells in the retinas of vertebrate eyes (for instance, the human eye). They acknowledge differently to light of different wavelengths, and are thus responsible for colour vision and functions best in relatively bright light, as opposed to rod cells, which works better in dim light.

117. Ans. D.

Uses of some Noble gases:

- Argon is used in some types of arc welding such as gas metal arc welding and gas tungsten arc welding, as well as in the processing of titanium and other reactive elements'. An argon atmosphere is also helpful for growing crystals of silicon & germanium.
- Neon is used in vacuum tubes, lightning arresters, wavemeter tubes, high-voltage indicators, helium-neon lasers & television tubes. 'Liquefied neon is commercially used as a cryogenic refrigerant in applications not requiring the lower temperature range attainable with more extreme liquid helium refrigeration'.
- Krypton is used commercially as a filling gas for energy-saving fluorescent lights. It is also used in some flash lamps used for high-speed photography. Unlike the lighter gases in its group, it is reactive enough to form some chemical compounds. For example, krypton will react with fluorine to form krypton fluoride.

- Xenon is used in photographic flashes, in high-pressure arc lamps for motion picture projection, and in high-pressure arc lamps to produce ultraviolet light. It is used in instruments for radiation detection, e.g., neutron and X-ray counters and bubble chambers.

118. Ans. D.

- Valency is the measure of combining capacity of atoms or molecules. Therefore, it is the capacity of an atom of a single element to react and combine with particular number of atoms of another element.

- The electrons present in the outermost shell/orbit of an atom are called valence electrons.

- The valence electrons take part in any chemical reaction because of the outermost orbit usually contains more energy than electrons present in other orbits. The element valency depends on the total number of electrons in the outermost shell of an atom.

119. Ans. C.

Mass of Solute (Salt)= 20g

Mass of Solvent (Water)= 180g

Mass of Solution= 20g+180g= 200g

Concentration = Mass of Solute/Mass of Solution\*100

= 20/200\*100

= 10%

120. Ans. B.

- Iron corrodes rapidly because of its non-stable corrosion products on the surface. Rust occurs when metals containing iron get react with the oxygen in the air/water and form a compound called iron (III) oxide ,i.e. ferric oxide.

- This compound contains water molecules, that is why we say it as a hydrated compound. Both oxygen gas & water must be there for the iron to get rust fully.

- In simple word we can say that chemically, iron atoms lose a few electrons to oxygen atoms. This is the process by which electrons are withdraw from atoms is known as oxidation.

- When oxidation takes place, it produces a chemical reaction that creates iron (III) oxide or rust.

121. Ans. D.

- Carbon is the element which forms the highest number of compounds, especially organic compound due to its Catenation, i.e. long-chain formation ability.
- Carbon, with four valence atoms and by virtue of being the 1st row of the periodic table is most suited to form the highest number of compounds.

122. Ans. C.

- The Homogenous Mixtures that are represented by a single uniform phase, throughout the entire mixture, can be separated using the properties of the components that participate in the mixture.
- The method of separation of homogenous mixture is called Distillation, and it is based on the various boiling points of the components of the mixture.
- By heating the mixture, the component that has the lowest boiling point will get evaporate, and the separation can be done.

123. Ans. D.

- A Telescope operates with an object at infinity (or close to it), and the angular magnification is given by the ratio between objective and eyepiece focal lengths. So increasing the objective focal length increases the magnification- but it also makes the telescope tube longer, which can be awkward. So, normally, you increase magnification by switching to a shorter focal length eyepiece, not a longer focal length objective and Vice versa.

124. Ans. B.

- A long solenoid is one which has a larger length in comparison to the radius. It consists of a long wire wound in the form of a helix where the neighbouring turns are closely spaced. So each turn can be regarded as a circular loop. The net magnetic field is the vector sum of the fields due to all the turns. Enamelled wires are used for winding so that turns are insulated from each other.
- The magnetic field of a inside long solenoid is:  $B = \mu_0 nI$  or

Where,

$n$  = number of turns per unit length

$I$  = current flowing through a solenoid

$B$  proportional per unit length, so if we doubled the per unit length, then the magnetic field will be doubled.

125. Ans. A.

Each of the two semicircles between the two ends of the diameter has a resistance of  $20/2=10$ .

These two resistors are in parallel between the two ends of the diameter. Thus the effective

resistance is

$$R = \frac{R_1 \cdot R_2}{R_1 + R_2}$$

$$= \frac{10 \cdot 10}{10 + 10}$$

$$= 5$$

126. Ans. A.

- A person with Hypermetropia/Hyperopia or long sight can see clearly objects far away from them, but not close to them. This is caused by the shape of the eye - the eyeball is slightly too short. It is corrected by spectacles or contact lenses with lenses which are 'plus' or convex in shape.
- Nearsightedness, i.e. Myopia is a common vision condition in which one can view objects nearby clearly, but farther objects look blurry. It happens when the shape of your eye makes the light rays to bend (refract) incorrectly, focusing images in front of your retina instead of on your retina. Myopia takes place when the eyeball is too long, relative to the focusing power of the cornea & lens of the eye. This makes the light rays to focus at a point in front of the retina, rather than directly on its surface. Presently, there is no cure for nearsightedness. But there are proven methods that can be prescribed by an eye doctor to slow the progression of myopia during childhood. But corrective lenses only work while a person is wearing them and they are not a cure.
- As people age, the lens becomes harder & less elastic, which makes it more for the eye to focus on nearby objects. For over centuries presbyopia was sorted with the use of bifocal eyeglasses. At present, there are several ways to correct presbyopia with eyeglasses, contact lenses and surgery.



- A Cataract is a clouding of the lens of the eye, which leads to a decrease in vision. Cataracts often develop slowly and can affect one or both eyes. Symptoms may include faded colours, blurry or double vision, halos around light, trouble with bright lights, and trouble seeing at night. Medical treatments for cataracts are well recognised, including monitoring, recommended lifestyle changes & ultimately, surgery to displace the diseased lens. Cataracts are not remediable, but they are very treatable with appropriate medical oversight.

127. Ans. C.

- Phase of oscillating particle at any instant is a physical quantity which completely expresses the position and direction of motion of particle at that instant with respect to its mean position. Phase of the oscillating particle is equal at  $t=3s$  and  $t=7s$ .

- By the figure, we can see that the time period of the oscillation is 4 sec. its mean after 4 sec. the position and the phase of the particle will be same.

128. Ans. C.

- The amount of energy needed to change one gram of a liquid substance to gas at constant temperature is called 'Latent Heat Vaporization.'

- For instance, when a pot of water is kept boiling, the temperature remains at  $100\text{ }^{\circ}\text{C}$  ( $212\text{ }^{\circ}\text{F}$ ) until the last drop evaporates because all the heat being added to the liquid is absorbed as latent heat of vaporization and carried away by the escaping vapour molecules.

- Latent heat of vaporization is a physical property of a substance.

- It is expressed as  $\text{kg/mol}$  or  $\text{kJ/kg}$ . The heat of vaporization of water is approx.  $2,260\text{ kJ/kg}$ , which equals to  $40.8\text{ kJ/mol}$ .

129. Ans. B.

The '*Specific Heat*' is the quantity of heat required to raise the temperature of 1 gm of the substance by one-degree Celcius or one kelvin.

The relationship between heat & temperature change is usually expressed in the form shown below, where  $c$  is the specific heat -

The specific heat capacity units are  $\text{J}/(\text{kg }^{\circ}\text{C})$  or  $\text{J}/(\text{kg K})$ .

The Heat Capacity & the Specific Heat are related by " $C = c m$ ", from this equation we can write,  $c=C/m$ .



The mass ( $m$ ), specific heat ( $c$ ), change in temperature ( $\Delta T$ ), and heat added (or subtracted)  $Q$  are related by the equation:  $Q=mc\Delta T$ .

130. Ans. B.

Main targets of the 12<sup>th</sup> five-year plan were:

- This five-year plan aims to achieve 8.2 percent growth.
- Achieve 4 percent (not 5 percent) growth in agriculture.
- Reduce poverty by 10 percent points, by 2017
- Health, education and skill development, environment, natural resources and infrastructure development are the main focus area of this plan.

131. Ans. C.

The National Civil Aviation Policy was released in 2016 by the Union Ministry of Civil Aviation.

Its main aim was to establish an integrated ecosystem that will lead to significant growth in the civil aviation sector. It also aimed at the promotion of tourism, increased employment, and leading to balanced regional growth. It also enhanced regional connectivity through fiscal support and infrastructure development.

Apart from the above, it also aimed at the following :

- a. To increase internal ticketing to 20 crores by 2027.
- b. To increase cargo volume to 10 million tonnes by 2027.
- c. To enable 30crorese domestic ticketing by 2022 and 50 crore by 2027.
- d. To improve regional connectivity through fiscal support.
- e. To ensure the safety and security in the aviation department.

132. Ans. C.

The Summer Olympics of 2016 was held in Rio de Janeiro from 5 August 2016 to 21 August 2016. The total medal earned by different countries in Rio Olympics 2016 are:

Russia - 56 Medals

Great Britain - 67 Medals

China - 70

United States - 121

133. Ans. B.

India's Act East policy is a policy to improve the economic, political and cultural relations with the countries in the Asia Pacific region. It was launched by Prime Minister Narendra Modi.

India had earlier adopted a Look East policy in 1991. However, the global profile of India in 2014 was much better than that of 1991. Its emphasis on India-ASEAN cooperation in India's domestic agenda. It also improved connectivity to the Northeast of India, which is considered to be a gateway to Southeast Asia.

134. Ans. A.

The 1st and 2nd Congress was held in Frankfurt and Rio De Janeiro.

The 3rd World Trauma Congress was inaugurated in New Delhi by the Health Minister Mr. J.P. Nadda in 2016. It was held in JPN Apex Trauma Centre, AIIMS, New Delhi.

Its main aim was to exchange ideas, experiences and lessons learned about the role of internationally accepted systems and protocols in the field of health care, disasters and mass casualty incidents.

It was organized by the Indian Society for Trauma, ISTAC and WCTC-The World Coalition for Trauma Care.

135. Ans. D.

Fatehpur Sikri is a town in Agra, Uttar Pradesh. It was founded by Mughal Emperor Akbar in 1571.

Akbar was heirless until 1569 when his son Jahangir was born. He decided to build a religious compound here in the honour of Salim Chishti who had predicted the birth of his son.

Buland Darwaza was built after the victory in Gujarat. It was then that the city was named as Fatehpur Sikri, meaning 'The City of Victory'. It was also located on the direct road to the city of Ajmer.

However, the city was abandoned in 1585, when Akbar went to a fight in Punjab. It was completely abandoned in 1610.

136. Ans. A.

Abdul Hamid Lahori was a historian during the reign of Mughal emperor Shahjahan.

He was the author of the book Badshah Nama in which he explains the life of the emperor as well as his activities during the first 21 years of his reign with great details. He completed his book in 1648 AD.

Shahjahan wanted a writer who could reciprocate the style of writing of Akbarnama, the book written by Abul Fazl.

Mohammad Sahih in his book Amai-i-Sahih mentioned the date of death of Abdul Hamid Lahori as 1659 AD.

137. Ans. C.

The correct ascending order of the above States based on the percentage of State's population to a total population of India (based on Census 2011) –

- Jammu and Kashmir - 1.04%
- Haryana - 2.09%
- Rajasthan - 5.66%
- Bihar - 8.60%

The total population of the country was 1,210,854,977.

138. Ans. B.

The electrical field due to sphere

$$E = \frac{Q}{4\pi\epsilon_0 r^2} \quad r > b$$
$$= 0 \quad r < a$$

139. Ans. D.

Let the speed of light in a medium of refractive index ( n )is v.

Then  $n = c/v$  or

$$n = \frac{c}{v}$$
$$v \propto \frac{1}{n}$$

Now the ratio of the velocity of light in glass and water:

$$\frac{v_1}{v_2} = \frac{n_2}{n_1} = \frac{\frac{4}{3}}{\frac{3}{2}} = \frac{8}{9}$$

140. Ans. A.

A. Tharu:

Tharu tribe lives in Bihar, Uttarakhand and Uttar Pradesh. They belong to the ethnic group of Terai, south of Nepal and are recognized as an official nationality by the Government of Nepal. Their spiritual beliefs are closely linked to nature. They believe they are the people of the forest. They are either landholders or cultivate land on a sharing basis.

B. Adi:

Adi tribe is the tribal group residing in Arunachal Pradesh. They have migrated from Southern China and are a part of the 56 Chinese ethnic groups. There are further sub-tribes within them, and all of them are different from each other in various aspects. Most of them live in a tribal village called Adi Pasi. They practice the Donyi-Polo religion. The festivals celebrated by them are Aran and Etor. Dance is an important part of their custom.

C. Irula :

Irula is the second-largest tribe in Kerala. They occupy a significant place in the total population of Pallakad. Both men and women of their tribe take active participation in various activities such as hunting, rearing, and fishing. Agriculture is the primary occupation of most of them.

D. Shaharia:

Shaharia is a tribe mainly residing in the Baran district of Rajasthan. They live in areas called 'Saharana' outside the villages in a cluster of houses. The houses are based on prehistoric standards made of stones. Bricks and cement are hardly used.

141. Ans. C.

A. Gypsum -

Gypsum is a non-metallic mineral found in Rajasthan. The total deposit of gypsum in Rajasthan accounts for 82% as a proportion to the total deposits found in India. It is the leading producer of 99% of the total output. It is found in Bikaner, Nagaur, Barmer, Jaisalmer, Hanumangarh, and Jalore.

B. Graphite -

Arunachal Pradesh has a total of 43% of the country's total graphite deposit. It is a pure form of carbon and is vastly used due to its diversifying properties. The Abhinna Group has 5 graphite mines in this state.

C. Fluorspar -

Fluorspar is a combination of calcium and fluorine. It is widely found in different areas of Gujarat. It is mainly used in the manufacturing of welding flux, and electrodes for shielded arc welding. It is also used in the production of aluminium and steel.

D. Nickel -

Odisha has a total of 92% of the country's total Nickel deposit. This equates to 175 million tonnes of deposits. It is found in Sikunda valley and Simlipal Complex.

142. Ans. A.

A. Basic Inexhaustible Resource -

An inexhaustible resource is a resource that never runs out or gets depleted. They are naturally recurring for example - Solar Energy and Tidal Energy.

B. Conventional Non - Renewable Resource -

A conventional non-renewable resource is a resource that is present only for a limited time. Once they are depleted, they take a very long time to be generated. The rate of consumption is much higher as compared to the rate of generation.

For example - Coal.

B. Non - Conventional Renewable Resource -

A non-conventional renewable resource is a resource that is available in nature and can be renewed. They cannot be completely exhausted and are environmentally friendly.

For example - Hydel Power and Crude oil.

C. Non - Conventional Non - Renewable Resource -

A non-conventional renewable resource is a resource that is available in nature and cannot be renewed. For example- Natural Gas.

143. Ans. B.

The Golden Quadrilateral highway is the largest express highway in India. It is managed by the National Highway Authority of India. The foundation of this project was laid by the then Prime minister Atal Bihari Vajpayee on 6 January 1999.

It connects the four metropolitan cities of Delhi, Mumbai, Kolkatta, and Chennai. It helps to ease out the issue of transportation among the major cities and to boost the trading activities in India. It also helps to pace up the economic development in the country by connecting the smaller towns with the markets.

The longest in terms of route distance:

- Kolkatta - Chennai highway covering a total distance of 1684 km.
- Delhi - Kolkata highway covers a total of 1453 km.
- Mumbai - \Delhi highway covers a total of 1419 km.
- Chennai - Mumbai covers a total of 1290 km.

144. Ans. C.

Mohammed Hussain was a calligraphist of Kashmir who had impressed the Mughal Emperor Akbar by the beauty and symmetry of his work. He was given the title of 'Zarin Kalam' or 'Golden Pen.'

Abul Fazal was the Grand Wazir of Akbar and the writer of the book Akbarnama or the book of Akbar. It was divided into two parts -

- The first part is a complete history of Akbar's reign and
- Second Part - called 'Ain -I-Akbari' or Institute of Akbar. It highlights the administration of his empire.

Mohammad Qasim was a writer who wrote Ibratnama.

Tansen was a prominent figure in the field of Indian Classical music. Akbar had sent Raja Ramchandra Singh to request Tansen to join his court as a musician. Akbar called him Navratna or one of the nine jewels of his court.

145. Ans. B.

Kandukuri Viresalingam was born on 16 April 1848. He belonged to an orthodox Brahmin family. He studied in local schools and was a student of brilliant academic excellence. After matriculation, he started to teach in schools and colleges. He was a master of three languages- Telugu, Sanskrit and English. Yet, he said that language had no role in inculcating morality in students.

He worked extensively for the reformation of the Telugu society in Andhra Pradesh. He wished to improve the status of women through his works of satire, stating the hypocrisy and double standards which they have to face in their everyday life.

He was ridiculed for his radical thoughts. He said that India could only progress if the status of women is improved in the country. He set schools for women and even propagated widow remarriage. He had helped 40 widows to start a new life.

His philosophy was based on rational and logical thinking. He believed that science and morality were unconnected to the truth. He did not attempt to build a national consciousness on a cultural base.

He is known as the '*Father of the Renaissance Movement*' in Telugu society and literature.

146. Ans. B.

Mysore did not support Congress during the course of the Civil Disobedience Movement.

A *Princely State* referred to a state that was in the Indian sub-continent, ruled by an Indian ruler in a subsidiary alliance with the British government. Mysore was also one such Princely state situated in the state of Karnataka.

The Civil Disobedience Movement was dominated by Congress and gained widespread support under the leadership of Gandhiji. The main aim of this movement was to refuse to obey certain laws and regulations imposed by the British government on Indian citizens. This was mainly done by



organizing peaceful protests, boycotting British related goods and services, and using only nonviolent methods.

147. Ans. B.

Bardoli Satyagraha was launched by Vallabhai Patel on 4th February 1928.

*In 1925*, Bardoli in Gujarat was hit by floods and famines. It adversely affected the crops of the farmer and created financial distress. With complete ignorance of this, Bombay Presidency increased taxes.

*In 1927*, Congress Party published a report showing that the farmers will not be able to carry the burden of the increased taxes, but it did not have any effect on the Britishers.

*In 1928*, the farmers in Bardoli asked Vallabhbai Patel to launch the protest stating that they will not pay any tax. They assured Gandhiji that they would not resort to violent methods.

Bardoli was divided into small camps, and every camp had hundreds of men and women. The movement was widespread with News Bulletin, door to door campaign, motivational speeches, oath-taking ceremony, and large scale participation by women.

Although it was a local movement, it received nationwide support. The government decided to set up Maxwell Broomfield Commission to look into this matter.

The tax was reduced to 6.04%, and the farmers were returned their confiscated land. Gandhiji also extended support to this movement by his writings in Young India magazine.

148. Ans. B.

The decision of the partition of Bengal was given by the then Viceroy of India, Lord Curzon in 1905. It was due to many reasons.

One major reason was that it was a very large area. The eastern region was completely overlooked and neglected. With the partition, all the regions could be administered effectively. It was basically a plan of divide and rule.

However, his proposal wasn't well received in the community. The protests were mainly led by the Hindus.

"Bengal united is a power. Bengal divided will pull in different ways. That is perfectly true, and one of the merits of the scheme" - H.H.Risley gave this statement.

He was a colonial administrator and a member of the Indian Civil Services. The reason behind the statement made by Risley was manifold.

- Firstly, the Bengalis would become a linguistic minority in their own state.
- Secondly, although they were the first to receive English education, they were not adequately represented in the civil services.
- Thirdly, it would give dominance to Muslims in the east, and their power would be undermined. Lord Minto was a British politician who served as the Governor-General of Canada and Viceroy of India. Sir Lancelot Hare was a British civil servant and served as the former Lieutenant Governor of the Bengal province during the British period.

149. Ans. B.

The first railway introduced in India was on 16 April 1853, from Mumbai to Thane.

The main purpose of the setting up of railways in India was to serve the interest of the British empire.

India was a 'Golden Bird' having a variety of minerals, spices, textiles, gold, etc. Britishers wanted to develop railways to export this raw material to Britain and make India a market for their finished goods.

The construction work disturbed ecology as it led to a large scale displacement of many farmers and peasants. It also disrupted the forest life and created a negative effect on the environment.

The construction of the railways was planned in such a way that it connected the internal markets with the ports but provided no interconnection between internal market cities.

British capital investments were invited with 5% guaranteed interest to be paid if necessary from Indian revenues.

150. Ans. B.

Khilafat Movement, also called the Indian Muslim Movement, was started by two eminent leaders Shaukat Ali and Muhammad Ali Jauhar. It started in 1919 and continued for the next few years.

It demanded that the Turkish leader must retain his control over Muslim sacred places in the Ottoman Empire.

Ottoman Empire was under the leadership of Abdul Hamid who wanted to protect his Empire from Western domination. He had sent his representatives to India. The Muslims in India were sympathetic towards him. Many Muslim leaders worked for his cause and spread awareness in India.

An *All India Khilafat Committee* was formed with many Muslim leaders from all over the country. It had its headquarters in Lucknow. The main objective of this committee was to unite the Muslims and show solidarity with the Ottoman Empire.

In 1920, an Alliance was made between the Khilafat Committee and the Indian National Congress. The leader of Congress was Gandhiji and both the parties decided to fight for Khilafat and Swaraj mutually. The Khilafat Movement became an essential part of the Non - Cooperation Movement. They helped to promote the concept of mutual understanding among the people.

The movement led to the shutdown of many schools and colleges, as well as the boycott of many governments organized functions. Both Hindus and Muslims together participated in it.

With the victory of Mustafa Kemal Pasha in Turkey and the consequent establishment of his empire and overthrow of the Ottoman empire, the Khilafat Movement ended in India.