

# NDA/NA SOLVED PAPER 2023-I

## PAPER-II: GENERAL ABILITY TEST

### PART-A: ENGLISH

#### Spotting Errors

Directions: Each item in this section has a sentence with three underlined parts labelled (a), (b) and (c).

Read each sentence to find out whether there is any error in any underlined part. Indicate your response in the Answer Sheet against the corresponding letter i.e., (a) or (b) or (c). If you find no error, your response should be indicated as (d).

- Over long periods of time, layers of sediments build up to a height of a few kilometers. No Error  
(a) (b) (c) (d)
  - When a gas is cooled down it turns into a liquid from a process called condensation. No Error  
(a) (b) (c) (d)
  - If you want to know the news you can read a newspaper. No Error  
(a) (b) (c) (d)
  - Columbus made his first voyage from Europe to America on 1492. No Error  
(a) (b) (c) (d)
  - Whenever the sky is clear, you can see the stars in the night. No Error  
(a) (b) (c) (d)
  - I'm not working tomorrow, so I don't had to get up early. No Error  
(a) (b) (c) (d)
  - She didn't tell anybody about her plans. No Error  
(a) (b) (c) (d)
  - She wouldn't have has an accident, if she had driven carefully. No Error  
(a) (b) (c) (d)
  - I will watch film if I finish the work in time. No Error  
(a) (b) (c) (d)
  - In 1989, the government did an about-face and Iran restored it's family planning program. No Error  
(a) (b) (c) (d)
- #### Synonyms
- Directions: Each item in this section consists of a sentence with an underlined word followed by four options, (a), (b), (c) and (d). Select the option that is nearest in meaning to the underlined word and mark your response in your Answer Sheet accordingly.
- During the pandemic the indigent people had to suffer a lot.  
(a) very poor  
(b) opulent  
(c) solvent  
(d) prosperous
  - She had no idea what made him angry in one minute and joyful the next.  
(a) aggrieved  
(b) melancholic  
(c) doleful  
(d) mirthful
  - It is sheer lunacy to drive a car in this frosty weather.  
(a) prudence  
(b) normalcy  
(c) insanity  
(d) sanity
  - Operating on a child with cancer needs meticulous planning and teamwork.  
(a) strong  
(b) long  
(c) playful  
(d) scrupulous
- The thrill of over-speeding the vehicle can be exhilarating, but it is important not to take the consequences lightly.  
(a) humdrum  
(b) dreary  
(c) exciting  
(d) agitating
  - The redemption will now depend on his new strategy of inclusiveness.  
(a) retrieval  
(b) forfeiture  
(c) corporation  
(d) desecration
  - Only three candidates are now in contention for the title.  
(a) involved in dispute  
(b) in agreement with each other  
(c) chance of winning  
(d) amiable to each other
  - All my fishing paraphernalia is in the car.  
(a) boxes  
(b) accessories  
(c) fuel  
(d) food
  - The public watched in astonishment as he took a sudden jump from the bridge.  
(a) anticipation  
(b) hurriedly  
(c) wonderment  
(d) calmness
  - Drinking inordinate amount of liquor is not good for health.  
(a) temperate  
(b) exorbitant  
(c) moderate  
(d) regular

#### Ordering of words in a sentence

Directions: Each of the following items in this section consists of a sentence, the parts of which have been jumbled. These parts have been labelled P, Q, R and S. Given below each sentence are four sequences namely (a), (b), (c) and

(d). You are required to re-arrange the jumbled parts of the sentence correctly and mark your response accordingly.

21. because I feel you remember it better

P Q  
when you write something,  
R

I make at least three drafts of a song  
S

The correct sequence should be:

- (a) SPRQ (b) RQPS  
(c) QRSP (d) PRSQ

22. for hours in the shop a gunman who

P Q  
held a hostage demanded ransom of  
R S

10 lakh

The correct sequence should be:

- (a) SPRQ (b) RQPS  
(c) QRPS (d) PRSQ

23. living in Russia country immediately

P Q  
Ukraine has urged its citizens to  
R

leave the  
S

The correct sequence should be:

- (a) SPRQ (b) RPSQ  
(c) RSQP (d) PRSQ

24. ripping roofs off houses and raising fears of

P  
coast of Madagascar in the early  
hours,

Q  
cyclone Emnati crashed into the  
southeastern

R  
flooding and food shortages in the  
region.

S  
The correct sequence should be:

- (a) SPRQ (b) RPSQ  
(c) RQPS (d) PRSQ

25. ecology is protected and aquatic

P  
life thrives we need to utilize the  
Q

resources of water for different  
R

purposes while ensuring that its

S

natural

The correct sequence should be:

- (a) SPRQ (b) RQPS  
(c) QRSP (d) PRSQ

26. very difficult the poor visibility made

P Q  
the movement of traffic due to fog  
R S

The correct sequence should be:

- (a) SPRQ (b) RQPS  
(c) QRPS (d) QSRP

27. avenues for the patients to indict

P  
but rarely is it the other way round  
there are multiple legal the doctors

Q R S

The correct sequence should be:

- (a) SPRQ (b) RPSQ  
(c) QRPS (d) QSRP

28. flight, and each person her own

P Q  
journey life is a solo makes his or  
R S

The correct sequence should be:

- (a) SPRQ (b) RPQS  
(c) RPSQ (d) PQRS

29. made it evolve technologies and

R Q  
equipment has into a rare centre of  
R

excellence adoption of the latest

S

The correct sequence should be:

- (a) PQRS (c) RPQS  
(b) SQPR (d) QSRP

30. please mark the same be made in

P Q  
response to this notice if you have  
any R

complaint to the concerned authority

S

The correct sequence should be:

- (a) PQRS (b) RPQS  
(c) SQPR (d) RQPS

## Antonyms

Directions: Each item in this section consists of a sentence with an underlined word followed by four options, (a), (b), (c) and (d). Select the option that is opposite in meaning to the underlined word and mark your response in your Answer Sheet accordingly.

31. The parental support can fortify a child's learning.

- (a) weaken (b) encourage  
(c) brace (d) strengthen

32. Now we can have another dazzling thought, as an outcome of my brilliant research!

- (a) splendid (b) murky  
(c) dazing (d) fulgent

33. The group held some clandestine meetings to resolve the matter.

- (a) secret (b) covert  
(c) sneaky (d) public

34. In the winters, the countryside view is bleak and the house is drafty.

- (a) cheerless (b) verdant  
(c) desolate (d) bare

35. Amid commotion the leader and his supporters remained passive.

- (a) quietude (b) uproar  
(c) tempest (d) stir

36. He had the audacity to blame him.

- (a) boldness (b) vigour  
(c) temerity (d) politeness

37. They are making plans for the abatement of the nuisance within a specified time.

- (a) subsidence  
(b) ebbing  
(c) accumulation  
(d) mitigation

38. There is exponential growth in the development of the scientific researches in the recent few decades.

- (a) aggressive  
(b) rampant  
(c) meager  
(d) augmented

39. He was known for his sagacity.

- (a) prudence (b) wisdom  
(c) ignorance (d) sapience

40. The river Ganges culminates in the Bay of Bengal.
- (a) concludes (b) flows  
(c) originates (d) merges

#### Idioms and Phrases

Directions: Given below are some idioms/phrases followed by four alternative meanings for each. Choose the most appropriate answer from among the options (a), (b), (c) or (d).

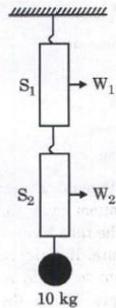
41. **The lion's share**
- (a) A portion of something  
(b) The largest and the best part of something  
(c) An important decision  
(d) An aggressive statement
42. **Spill the beans**
- (a) Reveal a secret  
(b) Forced to leave belongings  
(c) Share the news  
(d) Take offence at someone's rude behaviour
43. **Cook someone's goose**
- (a) To assist others  
(b) Hypnotize other's mind  
(c) To spoil other's plans  
(d) Inviting misfortune
44. **Disappear into thin air**
- (a) Lost forever  
(b) Become forgetful  
(c) Become uncaring  
(d) Disappear suddenly
45. **Put the screws on**
- (a) Forcing someone to do what you want  
(b) Never letting go of things  
(c) Keep the past alive  
(d) Using someone's trick for own benefit
46. **Sit on the fence**
- (a) Avoid meeting someone  
(b) Waiting patiently  
(c) Avoid taking sides  
(d) Hiding from someone
47. **Be as sharp as a tack**
- (a) A talkative person  
(b) A shrewd person  
(c) A clumsy person  
(d) A clever person

48. **From pillar to post**
- (a) Upside down  
(b) Keep moving from one place to another  
(c) Constructing a huge building  
(d) Jumping from the top of the mountain

49. **Heath Robinson**
- (a) Very complicated system or machine for doing a simple task  
(b) Treating everyone as enemy, when they are not  
(c) Sleeping all day, doing nothing  
(d) Very lazy person, slow in action

50. **As thick as thieves**
- (a) Dumb person  
(b) Good for nothing  
(c) Someone who uses everyone for personal gain  
(d) Very close friends who are looked upon with suspicion

51. Two identical spring balances  $S_1$  and  $S_2$  are connected one after the other and are held vertically as shown in the figure. A mass of 10 kg is hanging from  $S_2$ . If the readings on  $S_1$  and  $S_2$  are  $W_1$  and  $W_2$  respectively, then:

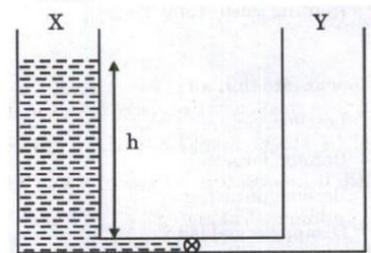


- (a)  $W_1 = 5 \text{ kg}$  and  $W_2 = 10 \text{ kg}$   
(b)  $W_1 = 10 \text{ kg}$  and  $W_2 = 5 \text{ kg}$   
(c)  $W_1 = 5 \text{ kg}$  and  $W_2 = 5 \text{ kg}$   
(d)  $W_1 = 10 \text{ kg}$  and  $W_2 = 10 \text{ kg}$
52. A stone is thrown horizontally from the top of a 20 m high building with a speed of 12 m/s. It hits the ground at a distance R from the building. Taking  $g = 10 \text{ m/s}^2$  and neglecting air resistance will give:
- (a)  $R = 12 \text{ m}$  (b)  $R = 18 \text{ m}$   
(c)  $R = 24 \text{ m}$  (d)  $R = 30 \text{ m}$

53. A sphere of volume V is made of a material with lower density than water. While on Earth, it floats on water with its volume  $f_1V$  ( $f_1 < 1$ ) submerged. On the other hand, on a spaceship accelerating with acceleration  $a < g$  ( $g$  is the acceleration due to gravity on Earth) in outer space, its submerged volume in water is  $f_2V$ . Then:

- (a)  $f_2 = f_1$   
(b)  $f_2 = (1 - \frac{a}{g})f_1$   
(c)  $f_2 > f_1$   
(d)  $f_2 = \frac{a}{g}f_1$

54. Two identical containers X and Y are connected at the bottom by a thin tube of negligible volume. The tube has a valve in it, as shown in the figure. Initially container X has a liquid filled up to height h in it and container Y is empty. When the valve is opened, both containers have equal amount of liquid in equilibrium. If the initial (before the valve is opened) potential energy of the liquid is  $P_1$  and the final potential energy is  $P_2$  then:



- (a)  $P_1 = P_2$   
(b)  $P_1 = 4P_2$   
(c)  $P_1 = 2P_2$   
(d)  $P_1 = 8P_2$
55. A particle is moving in a circle of radius R with a constant speed v. Its average acceleration over the time when it moves over half the circle is:
- (a)  $\frac{v^2}{R}$  (b)  $\frac{\pi v^2}{2R}$   
(c)  $\frac{2v^2}{\pi R}$  (d) 0

56. Two forces of 5.0 N each are acting on a point mass. If the angle between the forces is  $60^\circ$ , then the net force acting on the point mass has magnitude close to:  
 (a) 8.6 N (b) 4.3 N  
 (c) 5.0 N (d) 6.7 N
57. Which one of the following is not an igneous rock?  
 (a) Granite (b) Slate  
 (c) Basalt (d) Gabbro
58. Which of the following statements is/are correct?  
 1. Hypocenter is the point on the surface of the Earth, nearest to the focus.  
 2. Velocity of earthquake waves is higher in denser materials.  
 3. P waves move faster and are the first to arrive at the surface of the Earth.  
 Select the correct answer using the code given below:  
 (a) 1 and 2 (b) 2 and 3  
 (c) 1 and 3 (d) 3 only
59. In terms of geological time scale, the quaternary period consists of two epochs. They are:  
 (a) Pleistocene and Pliocene  
 (b) Holocene and Pleistocene  
 (c) Pleistocene and Miocene  
 (d) Holocene and Eocene
60. Which one of the following is the correct sequence of arrangement of the given planets in descending order of their density (in  $\text{gm/cm}^3$ )?  
 (a) Earth > Jupiter > Venus > Saturn  
 (b) Jupiter > Earth > Saturn > Venus  
 (c) Earth > Venus > Jupiter > Saturn  
 (d) Earth > Venus > Saturn > Jupiter
61. Which one of the following is *not* a cold current ?  
 (a) Western Australian Current  
 (b) Eastern Australian Current  
 (c) Benguela Current  
 (d) Peru Current
62. The process of Podsolization is predominantly found in:  
 (a) Equatorial forest  
 (b) Monsoon forest  
 (c) Taiga forest  
 (d) Mediterranean forest
63. Joint Military exercise 'Keen Sword 23' was conducted between:  
 (a) India and Japan  
 (b) India and USA  
 (c) USA and Japan  
 (d) Japan and Taiwan
64. The Battle of Rezang La, an epic battle in hostile conditions, was fought by the Indian Army in:  
 (a) 1948 (b) 1956  
 (c) 1962 (d) 1972
65. Consider the following statements about 'Exercise Sea Vigil-22':  
 1. Its aim is to assess India's preparedness in the domain of Maritime security and coastal defence.  
 2. Naval forces of USA and Japan also took part in the exercise.  
 Which of the statements given above is/are correct?  
 (a) 1 only  
 (b) 2 only  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2
66. Consider the following statements:  
 1. England is the only country that won the ICC T20 World Cup twice.  
 2. Virat Kohli is the only player to be adjudged as the Player of the Series in the ICC T20 World Cup twice.  
 Which of the statements given above is/are correct?  
 (a) 1 only  
 (b) 2 only  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2
67. Who among the following is not a recipient of Nobel Prize in Chemistry in 2022?  
 (a) Carolyn R. Bertozzi  
 (b) Benjamin List  
 (c) Morten Meldal  
 (d) K. Barry Sharpless
68. Consider the following statements regarding cell wall composition:  
 1. Bacterial cell wall is made of peptidoglycan.  
 2. Fungal cell wall is made of cellulose.  
 3. Animals lack cell wall and have extracellular matrix made up of sugar and proteins.  
 Select the correct answer using the code given below:  
 (a) 2 only  
 (b) 1 and 2 only  
 (c) 1 and 3 only  
 (d) 1, 2 and 3
69. Which one of the following structures is not present in a prokaryotic cell?  
 (a) Cell wall  
 (b) Ribosomes  
 (c) Nucleus  
 (d) Plasma membrane
70. In a plant cell, which one of the following contains their own DNA?  
 (a) Nucleus and Endoplasmic Reticulum  
 (b) Ribosome and Golgi apparatus  
 (c) Mitochondria and Chloroplast  
 (d) Chloroplast and Vacuoles
71. One advantage of sexual reproduction over asexual reproduction is that it helps species to survive over long evolutionary time. This is because sexual reproduction produces:  
 (a) more offspring in each reproductive cycle.  
 (b) robust and healthy offspring.  
 (c) genetically similar offspring.  
 (d) more variation in offspring.
72. Which one of the following structures or components is *not* always present in living cells?  
 (a) Cell wall  
 (b) Plasma membrane  
 (c) Cytoplasm  
 (d) Genetic material
73. Browning of the chopped apple can be minimized by:  
 (a) using table sugar.  
 (b) preserving in a container.  
 (c) using lemon juice.  
 (d) using milk of magnesia.

74. Which of the hydrocarbons are arranged as per the increasing order of their boiling points?

- (a) Methane, Butane, Propane, Heptane
- (b) Propane, Butane, Pentane, Octane
- (c) Propane, Butane, Heptane, Methane
- (d) Octane, Ethane, Methane, Propane

75. Which one of the following apparatus is used for separating benzene and water mixture?

- (a) Round bottom flask
- (b) Conical flask
- (c) Separating funnel
- (d) Dean and Stark apparatus

76. An iron nail dipped in copper sulphate solution turns brown. This is due to which one of the following types of reactions?

- (a) Addition reaction
- (b) Decomposition reaction
- (c) Substitution reaction
- (d) Displacement reaction

77. Among the following, which is *not* the correct method for keeping the curd?

- (a) Keeping in stainless steel vessel
- (b) Keeping in copper vessel
- (c) Keeping in plastic vessel
- (d) Keeping in glass vessel

78. Toothpaste prevents tooth decay by:

- (a) neutralizing the excess acidity.
- (b) means of emulsification.
- (c) the action of fluoride.
- (d) making a coat of calcium over the teeth surface.

79. Freedom fighter Kanaklata Barua martyred in:

- (a) Sepoy Mutiny
- (b) Quit India Movement
- (c) Non-Cooperation Movement
- (d) Peasant Uprising of 1893–1894

80. Which one among the following statements about the Mansabdari system is correct?

- (a) All army troopers were allotted mansabs.

(b) Mansabs were usually assigned on the basis of ancestry.

(c) Position and salary of mansabdars were indicated by a numerical designation called zat.

(d) Mansabdars were never paid in cash.

81. Which Governor General of Bengal underwent impeachment proceedings in the British Parliament?

- (a) Robert Clive
- (b) Henry Vansittart
- (c) Warren Hastings
- (d) Lord Cornwallis

82. Who among the following composed the 'Prayag Prashasti' of Samudragupta?

- (a) Harishena
- (b) Chand Bardai
- (c) Vishakhadatta
- (d) Kalidasa

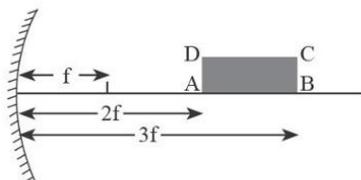
83. Which one of the following kingdoms was founded by the two brothers Harihar and Bukka?

- (a) Bahmani
- (b) Vijayanagara
- (c) Malwa
- (d) Maratha

84. At which one of the following places did the Danes establish their settlement in India?

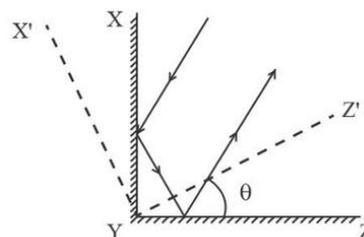
- (a) Chinsura
- (b) Karaikal
- (c) Mahe
- (d) Tranquebar

85. A rectangle ABCD is kept in front of a concave mirror of focal length  $f$  with its corners A and B being, respectively, at distances  $2f$  and  $3f$  from the mirror with AB along the principal axis as shown in the figure. It forms an image A'B'C'D' in front of the mirror. What is the ratio of B'C' to A'D'?



- (a) 1
- (b) 2
- (c)  $\frac{1}{2}$
- (d)  $\frac{2}{3}$

86. Shown in the figure are two plane mirrors XY and YZ ( $XY \perp YZ$ ) joined at their edge. Also shown is a light ray falling on one of the mirrors and reflected back parallel to its original path as a result of this arrangement. The two mirrors are now rotated by an angle  $\theta$  to their new position X'YZ', as shown. As a result the new reflected ray is at an angle  $\alpha$  from the original reflected ray. Then:



- (a)  $\alpha = 0$
- (b)  $\alpha = \theta$
- (c)  $\alpha = 2\theta$
- (d)  $\alpha = 4\theta$

87. A railway wagon (open at the top) of mass  $M_1$  is moving with speed  $v_1$  along a straight track. As a result of rain, after some time it gets partially filled with water so that the mass of the wagon becomes  $M_2$  and speed becomes  $v_2$ . Taking the rain to be falling vertically and water stationary inside the wagon, the relation between the two speeds  $v_1$  and  $v_2$  is:

- (a)  $v_1 = v_2$
- (b)  $\frac{1}{2}M_1v_1^2 < \frac{1}{2}M_2v_2^2$
- (c)  $M_1v_1 = M_2v_2$
- (d)  $M_1v_1 < M_2v_2$

88. Which one of the following statements is *not* true for a flute, a musical instrument?

- (a) Momentum of waves on the blowing jet determines the loudness of the produced note.
- (b) Arrival time of the waves the waves on the blowing jet

determines the pitch of the produced note.

- (c) Sound comes from a vibrating column of air inside the flute.
- (d) Sound comes from a vibrating column of air inside as well as outside the flute.
- 89. A positive charge is moving towards south in a space where magnetic field is pointing in the north direction. The moving charge will experience:**
- (a) a deflecting force towards north direction.
- (b) a deflecting force towards east direction.
- (c) a deflecting force towards west direction.
- (d) no deflecting force.
- 90. Which one of the following is *not* a main greenhouse gas?**
- (a) Water vapour
- (b) Oxygen
- (c) Carbon dioxide
- (d) Methane
- 91. Which one of the following statements about X-rays is not true?**
- (a) They have wavelengths of about  $1\text{\AA}$ .
- (b) These can be generated by bombarding a metal target by high energy electrons.
- (c) Due to their wavelengths being shorter, these can be used for radar systems.
- (d) These are also used for the treatment of certain forms of cancer.
- 92. Which one among the following is the northernmost geographical location?**
- (a) New Delhi
- (b) Kathmandu
- (c) Thimphu
- (d) Dhaka
- 93. Consider the following statements:**
1. Distance between the longitudes becomes zero on North Pole and South Pole.
  2. Distance between the longitudes is maximum on the Equator.
3. Number of longitudes is more than number of latitudes.
- Which of the statements given above is/are correct?**
- (a) 1 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3
- 94. Which one among the following states is the leading producer of Manganese in India?**
- (a) Madhya Pradesh
- (b) Jharkhand
- (c) Rajasthan
- (d) Karnataka
- 95. Mica is mainly used in:**
- (a) food and beverage industry.
- (b) iron and steel industry.
- (c) aluminium industry.
- (d) electrical and electronic industries.
- 96. According to Koppen's climatic classifications, the Great Northern Plains of India have which one of the following climates?**
- (a) Aw climate
- (b) Cwg climate
- (c) Amw climate
- (d) Dfc climate
- 97. Which of the following statements about Lachit Borphukan is/are correct?**
1. He was a General of the Ahom Force.
  2. He is known for his leadership in the Battle of Saraighat.
  3. Lachit Borphukan Gold Medal is given to the best cadet at the National Defence Academy.
- Select the correct answer using the code given below:
- (a) 1, 2 and 3
- (b) 2 and 3 only
- (c) 1 only
- (d) 2 only
- 98. The 4th edition of joint military exercise 'DUSTLIK' between the Indian Army and the Uzbekistan Army was held in:**
- (a) Ranikhet
- (b) Gangtok
- (c) Pithoragarh
- (d) Leh
- 99. Which of the following is India's first privately developed rocket launched by ISRO recently?**
- (a) Skyroot
- (b) Prarambh
- (c) Bazoomq
- (d) Vikram-S
- 100. Which one among the following villages was recently declared as India's first  $24 \times 7$  solar-powered village?**
- (a) Mawlynnong, Meghalaya
- (b) Modhera, Gujarat
- (c) Ziro village, Arunachal Pradesh
- (d) Malana, Himachal Pradesh
- 101. Tableaux of which one of the following States was adjudged the best in the Republic Day Parade, 2023?**
- (a) Uttarakhand
- (b) Punjab
- (c) Gujarat
- (d) Uttar Pradesh
- 102. Organisms capable of using  $\text{CO}_2$  as principal carbon source are called:**
- (a) Autotrophs
- (b) Heterotrophs
- (c) Parasites
- (d) Decomposers
- 103. When yeast cells are  $\text{O}_2$  starved, fermentation serves as the source of energy. This results in the production of:**
- (a)  $\text{ATP} + \text{CO}_2 + \text{Ethanol}$
- (b)  $\text{ATP} + \text{O}_2 + \text{Pyruvate}$
- (c)  $\text{ATP} + \text{CO}_2 + \text{Lactic acid}$
- (d)  $\text{ATP} + \text{O}_2 + \text{Acetaldehyde}$
- 104. During a laboratory experiment, a student immerses epidermal leaf peel in a hypertonic solution. After some time, the student examined the cells under a microscope and observed that:**
- (a) the cells swelled.
- (b) the cells were plasmolysed.
- (c) the cells built up turgor pressure.
- (d) the cells size was unaffected.
- 105. Which one of the of the following is *not* characteristic feature of fungi?**

- (a) Cell wall is made of chitin  
 (b) Filamentous mycelium is present  
 (c) Can carry out photosynthesis  
 (d) Asexual spores are produced
- 106. Which one of the following statements about bryophytes is *not* correct?**
- (a) The plant body is a gametophyte.  
 (b) They are also called the amphibians of plant kingdom.  
 (c) The plant body is attached to the substratum by rhizoids.  
 (d) Specialized water-conducting tissues are present.
- 107. What is the specific purpose of using potassium hydroxide during the saponification process?**
- (a) To obtain soaps which are hard on the skin  
 (b) To obtain soaps which are soft on the skin  
 (c) To obtain natural fragrance  
 (d) To make the saponification very economical
- 108. Which one of the following is the correct arrangement of metals in the decreasing order of their reactivity?**
- (a) Iron, Sodium, Silver, Copper  
 (b) Silver, Copper, Iron, Sodium  
 (c) Sodium, Copper, Silver, Iron  
 (d) Sodium, Iron, Copper, Silver
- 109. Which among the following statements is *not* correct with respect to allotropes of Carbon?**
- (a) Graphite is a good conductor of electricity.  
 (b) Diamond is the hardest substance known.  
 (c) Fullerene is one of the allotropes of carbon.  
 (d) Next to diamond, graphite is the second hardest known substance.
- 110. Which among the following is the popular method for manufacture of ammonia?**
- (a) Ostwald's process  
 (b) Haber-Bosch process  
 (c) Electric furnace process  
 (d) Electrolysis process.
- 111. For manufacturing of glass, which among the following is used as a source of silica?**
- (a) Fine clay soil  
 (b) Wood powder  
 (c) Coconut shell  
 (d) Sand
- 112. Which among the following is the correct arrangement of halogens in the increasing order of their oxidizing nature?**
- (a) F, Cl, Br, I  
 (b) Cl, Br, F, I  
 (c) Br, I, Cl, F  
 (d) I, Br, Cl, F
- 113. Copper sulphate crystals available in the market are blue coloured crystals. By careful heating, they turn to white colour. Which one of the following is responsible for the blue colour?**
- (a) Oxygen  
 (b) Nitrogen  
 (c) Water  
 (d) Hydrogen
- 114. Equal volume of all gases, when measured at the same temperature and pressure, contain an equal number of particles. Who proposed the above law?**
- (a) Charles  
 (b) Boyle  
 (c) Avogadro  
 (d) Lussac
- 115. Airbags work on the principle of a chemical reaction triggered by the impact producing a gaseous product that causes a sudden volume change. Which one among the following chemical conversions is responsible for this?**
- (a) Sodium azide into nitrogen gas  
 (b) Solid carbon dioxide into gaseous carbon dioxide  
 (c) Carbon dioxide into carbon monoxide  
 (d) Sudden conversion of gaseous carbon dioxide into carbon monoxide
- 116. Which one among the following districts of Eastern India held a referendum in 1947 to decide whether or not to join Pakistan?**
- (a) Sylhet  
 (b) Goalpara  
 (c) Cachar  
 (d) Jalpaiguri
- 117. Which one of the following statements about Rabatak inscription is *not* correct?**
- (a) It throws important light on Kushana genealogy.  
 (b) It refers to Kanishka as 'a king of kings and a son of God'.  
 (c) The 23-line inscription is written in Gandhari language.  
 (d) It mentions names of States which were part of Kanishka's empire.
- 118. Who among the following was the author of the famous Sanskrit work 'Mrichchhakatika'?**
- (a) Kalidasa  
 (b) Bhasa  
 (c) Valmiki  
 (d) Shudraka
- 119. Yashovarman was ruler of which one of the following kingdoms?**
- (a) Kannauj  
 (b) Mewar  
 (c) Marwar  
 (d) Kalinga
- 120. Which one among the following rulers established Pataliputra as the capital of the Magadhan Empire?**
- (a) Bimbisara  
 (b) Bindusara  
 (c) Ajatashatru  
 (d) Ashoka
- 121. Which one of the following astronomers proved that the Earth and other planets revolve around the Sun?**
- (a) Copernicus  
 (b) Kepler  
 (c) Galileo  
 (d) Newton
- 122. Sand falls vertically on a conveyor belt at a rate of 0.1 kg/s. In order to keep the belt moving at a uniform speed of 2 m/s, the force required to be applied on the belt is:**
- (a) 0 N  
 (b) 0.2 N  
 (c) 1.0 N  
 (d) 2.0 N

123. The power required to lift a mass of 8.0 kg up a vertical distance of 4 m in 2 s is (taking acceleration due to gravity as  $10 \text{ m/s}^2$ ):

- (a) 80 W      (b) 160 W  
(c) 320 W      (d) 640 W

124. One block of 2.0 kg mass is placed on top of another block of 3.0 kg mass. The coefficient of static friction between the two blocks is 0.2. The bottom block is pulled with a horizontal force  $F$  such that both the blocks move together without slipping. Taking acceleration due to gravity as  $10 \text{ m/s}^2$ , the maximum value of the frictional force is:

- (a) 50 N      (b) 30 N  
(c) 4 N      (d) 10 N

125. A mass is attached to a spring that hangs vertically. The extension produced in the spring is 6 cm on Earth. The acceleration due to gravity on the surface of the Moon is one-sixth of its value on the surface of the Earth. The extension of the spring on the Moon would be:

- (a) 6 cm      (b) 1 cm  
(c) 0 cm      (d) 36 cm

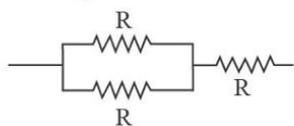
126. Which one of the following is an example of Second Class Lever?

- (a) A pair of scissors  
(b) A bottle opener  
(c) A cricket bat  
(d) A bow and arrow

127. In an electric circuit, a wire of resistance  $10 \Omega$  is used. If this wire is stretched to a length double of its original value, the current in the circuit would become:

- (a) half of its original value.  
(b) double of its original value.  
(c) one-fourth of its original value.  
(d) four times of its original value.

128. What is the total resistance in the following circuit element?



- (a)  $R/2$       (b)  $3R$   
(c)  $3R/2$       (d)  $2R/3$

129. Which of the following scheme(s) is/are included under *Bharatmala Pariyojana*?

1. Develop the road connectivity to border areas
2. Development of coastal roads
3. Improvement in the efficiency of National Corridors

Select the correct answer using the code given below:

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

130. Deendayal Port was earlier known as:

- (a) Paradip Port  
(b) Tuticorin Port  
(c) Kandla Port  
(d) Visakhapatnam Port

131. The Counter Insurgency and Jungle Warfare School of Indian Army is situated at:

- (a) Dehradun  
(b) Vairengte  
(c) Gulmarg  
(d) Mhow

132. In the soil-forming regime, which one of the following occurs in a region where evapotranspiration exceeds precipitation significantly?

- (a) Calcification  
(b) Laterization  
(c) Podsolization  
(d) Gleization

133. Which one of the following is found in the innermost part of the Earth?

- (a) Conrad discontinuity  
(b) Moho discontinuity  
(c) Guttenberg discontinuity  
(d) Lehmann discontinuity

134. Which of the following tree species is/are found on Himalayas ?

1. Oak
2. Rhododendron
3. Rosewood

Select the correct answer using the code given below:

- (a) 1 only      (b) 2 and 3  
(c) 1 and 3      (d) 1 and 2

135. Which one of the the following is the lowermost/innermost intrusive igneous rock?

- (a) Laccolith  
(b) Batholith  
(c) Lopolith  
(d) Phacolith

136. If it is 12 noon in New Delhi, what will be the time in London, UK?

- (a) 6:30 A.M.  
(b) 6:30 P.M.  
(c) 5:30 A.M.  
(d) 5:30 P.M.

137. Which of the following positions of Sun, Earth and Moon is/are suitable for Spring Tide?

1. SYZYG Y Conjunction
2. SYZYG Y Opposition
3. Quadrature

Select the correct answer using the code given below:

- (a) 1 only  
(b) 2 only  
(c) 1 and 2  
(d) 1 and 3

138. Which Renaissance artist painted "The Last Supper"?

- (a) Michelangelo  
(b) Donatello  
(c) Botticelli  
(d) Leonardo da Vinci

139. Which one of the following European explorer conquered Mexico?

- (a) Vasco da Gama  
(b) Bartholomew Diaz  
(c) Magellan  
(d) Hernán Cortés

140. Near which one of the following cities in India have large statues of Kushana rulers been discovered?

- (a) Karnal  
(b) Ropar  
(c) Hisar  
(d) Mathura

141. The Treaty of Yandabo was concluded as part of which one of the following wars?

- (a) First Anglo-Burmese War  
(b) Second Anglo-Burmese War  
(c) Anglo-Kuki War  
(d) Anglo-Maratha War

142. **Plan allocation in agriculture and irrigation as percentage of total plan outlay was highest in:**  
 (a) Seventh Five-Year Plan  
 (b) Third Five-Year Plan  
 (c) First Five-Year Plan  
 (d) Second Five-Year Plan
143. **The UN COP-27 Summit relates to:**  
 (a) Russia-Ukraine war  
 (b) Terrorism and counter-terrorism  
 (c) Climate change  
 (d) Interpol
144. **Which one of the following tribes from India's North-East had the earliest known association with cultivation and production of tea?**  
 (a) Khasis  
 (b) Garos  
 (c) Singphos  
 (d) Jaintias
145. **By which one of the following amendments, was Article 51A, relating to the Fundamental Duties, inserted into the Constitution of India?**  
 (a) The Constitution (42nd Amendment) Act  
 (b) The Constitution (44th Amendment) Act  
 (c) The Constitution (85th Amendment) Act  
 (d) The Constitution (92nd Amendment) Act
146. **Which one of the following statements is true?**  
 (a) The force of gravity of the Earth on the Moon is greater than the force of gravity of the Moon on the Earth.  
 (b) The force of gravity of the Moon on the Earth is greater than the force of gravity of the Earth on the Moon.  
 (c) The force of gravity of the Earth on the Moon and of the Moon on the Earth are equal in magnitude and are in the same direction.  
 (d) The force of gravity of the Earth on the Moon and of the Moon on the Earth are equal in magnitude but are in opposite directions.
147. **An electric bulb is rated as 220 V and 80 W. When it is operated on 110 V, the power rating would be:**  
 (a) 80 W (b) 60 W  
 (c) 40 W (d) 20 W
148. **In the dispersion of white light by a common glass prism, which one among the following is correct?**  
 (a) Red light deviates the most because red light has highest speed in prism  
 (b) Blue light deviates the most because blue light has highest speed in prism  
 (c) Red light deviates the most because red light has lowest speed in prism  
 (d) Blue light deviates the most because blue light has lowest speed in prism
149. **Which one among the following is true for the speed of sound in a given medium?**  
 (a) Speed of sound remains same at all frequencies  
 (b) Speed of sound is faster at higher frequencies  
 (c) Speed of sound is slower at higher frequencies  
 (d) Speed of sound is slower at higher wavelengths
150. **Which one of the following telescopes contains only mirrors?**  
 (a) Galilean telescope  
 (b) Keplerian telescope  
 (c) Newtonian telescope  
 (d) Schmidt telescope

## Answers with Explanations

### PAPER-II:

### GENERAL ABILITY TEST

#### PART-A: ENGLISH

1. (b) The error is in part (b). The correct verb form is "build" instead of "builds" because "layers" is a plural noun. The correct sentence should be:

Over long periods of time, layers of sediments build up to a height of a few kilometers.

Therefore, the correct answer is (b).

2. (d) The sentence is grammatically correct with no errors. Therefore, the correct answer is (d).

3. (d) The sentence is grammatically correct with no errors. Therefore, the correct answer is (d).

4. (c) The error is in part (c). The correct preposition to use with "on" is "in" because "1492" refers to a year. The correct sentence should be: Columbus made his first voyage from Europe to America in 1492.

5. (d) The sentence is grammatically correct with no errors.

6. (b) The error is in part (b). The correct verb form is "have" instead of "had" because "don't" is a contraction of "do not", which is present tense. The correct sentence should be:

I'm not working tomorrow, so I don't have to get up early.

Therefore, the correct answer is (b).

7. (d) The sentence is grammatically correct with no errors.

8. (b) The error is in part (b). The correct verb form is "have" instead of "has" because "wouldn't have" is a conditional perfect construction, which requires the past participle form of the verb "have". The correct sentence should be:

She wouldn't have had an accident, if she had driven carefully.

Therefore, the correct answer is (b).

9. (a) The error is in part (a). The correct article to use with "film" is "a"

because "film" is a countable noun. The correct sentence should be:

I will watch a film if I finish the work in time.

Therefore, the correct answer is (a).

10. (c) The error is in part (c). The correct possessive pronoun to use with "it" is "its" without an apostrophe. The correct sentence should be:

In 1989, the government did an about-face and Iran restored its family planning program.

Therefore, the correct answer is (c).

11. (a) The word "indigent" means very poor or impoverished. Therefore, the correct answer is very poor.

12. (d) The word "jovial" means cheerful and friendly, so the sentence implies that the person's mood changed from angry to cheerful. Therefore, the correct answer is (d) mirthful, which means full of mirth or humor.

13. (c) The word "lunacy" means insanity or madness. Therefore, the correct answer is (c) insanity.

14. (d) The word "meticulous" means very careful and precise, and suggests a great attention to detail. Therefore, the correct answer is (d) scrupulous, which means very careful and thorough in carrying out one's work or duties.

15. (c) The word "exhilarating" means making one feel very happy, animated, or elated.

16. (a) The word "redemption" means the act of saving or regaining something or someone. Therefore, the correct answer is (a) retrieval, which means the act of getting or bringing something back.

17. (c) The word "contention" means competing or vying for something. Therefore, the correct answer is (c) chance of winning.

18. (b) The word "paraphernalia" means equipment or tools that are necessary for a particular activity. Therefore, the correct answer is (b) accessories, which refers to additional items added to something to make it more useful or attractive.

19. (c) The word "astonishment" means a feeling of great surprise or wonder. Therefore, the correct answer is (c) wonderment.

20. (b) The word "inordinate" means exceeding reasonable limits, excessive. Therefore, the correct answer is (b) exorbitant.

21. (a) S : I make at least three drafts of a song, P : because I feel, R : when you write something, Q : you remember it better

The correct sequence should be: SPRQ

22. (c) The sentence talks about a hostage situation where a gunman is holding someone captive and demanding ransom. The first part of the sentence is Q, which introduces the gunman and the hostage next, R provides additional information about the hostage, P the sentence by adding more details about the location of the situation. Then, S conclude, which explains what the gunman is demanding a ransom of ₹10 lakh. Therefore, the correct sequence is QRPS.

23. (b) The sentence talks about the situation in Ukraine and how the government is urging its citizens to leave the country. The first part of the sentence is R, which introduces the topic and explains what Ukraine is doing, Next, P provides more information about the situation by stating where people are living, and Then, S follows, which states the reason for the urge - living in Russia finally, Q concludes the sentence by adding more details about the urgency of the situation. Therefore, the correct sequence is RPSQ.

24. (c) The sentence talks about a cyclone hitting the southeastern coast of Madagascar and the potential consequences of it. The first part of the sentence is R, which introduces the cyclone and where it hit. Then, Q follows, which provides more information about the impact of the cyclone by describing the destruction it caused. Next, P talks about the potential consequences of the cyclone - flooding and food shortages. Finally, S concludes the sentence by stating what the impact of these consequences could be. Therefore, the correct sequence is RQPS.

25. (c) The sentence talks about the importance of utilizing water resources while also ensuring the protection of the ecology and aquatic life. The first part of the sentence is Q, which introduces the topic and talks about the need to use water resources. Then, R follows, which explains that these resources are used for different purposes. Next, S provides additional information about the importance of protecting the natural ecology, and finally, P concludes the sentence by stating the goal of utilizing these resources while also protecting the environment. Therefore, the correct sequence is QRSP.

26. (d) Q : the poor visibility, S : due to fog The correct sequence should be R : made the movement of traffic P : very difficult. Therefore, the correct sequence is QSRP.

27. (b) The sentence talks about the legal avenues available to patients to indict doctors. The first part of the sentence is R, which introduces the topic and states that there are multiple legal avenues available, Next, P explains the purpose of these legal avenues - to provide avenues for patients to indict doctors. Then, S follows, which specifies who is being indicted - the doctors. Finally, Q concludes the sentence by pointing out that this happens rarely the other way round. Therefore, the correct sequence is RPSQ.

28. (c) The sentence talks about life being a solo journey and how each person makes their own way through it. The first part of the sentence is R, which introduces the topic and states that life is a solo journey. Then, P follows, which provides a specific example of a solo journey - a flight. Next, S explains that each person makes their own journey. Finally, Q concludes the sentence by restating the idea that each person makes their own way through life. Therefore, the correct sequence is RPSQ.

29. (c) The sentence talks about how the adoption of the latest technologies and equipment has made a centre of excellence rare. The first part of the sentence is S, which introduces the idea that the adoption of the latest technologies and equipment

has played a role. Then, Q follows, which specifies what has been adopted - the latest technologies and equipment. P comes next, which explains how this adoption has made the centre evolve. Finally, R concludes the sentence by stating that the centre is now a rare centre of excellence. Therefore, the correct sequence is SQPR.

30. (d) The sentence talks about making a complaint in response to a notice. The first part of the sentence is R, which introduces the idea of having a complaint. Then, Q follows, which specifies that the complaint should be made in response to a notice. P comes next, which tells the reader to mark the complaint as important. Finally, S concludes the sentence by instructing the reader to send the complaint to the concerned authority. Therefore, the correct sequence is RQPS.

31. (a) The option that is opposite in meaning to the underlined word "fortify" is weaken.

32. (b) The answer is (b) murky. "Dazzling" means shining brightly or impressively, and "brilliant" means very intelligent or skillful. Therefore, the sentence suggests that the research was successful and produced an impressive outcome. "Murky," on the other hand, means unclear or confusing, which is the opposite of what the sentence is trying to convey. "Dazing" means causing someone to feel confused or bewildered, which is also not the intended meaning. "Fulgent" means shining brightly or dazzlingly, which is close in meaning to "dazzling," but it is not the opposite of it.

33. (d) The option that is opposite in meaning to the underlined word "clandestine" is public.

34. (b) The option that is opposite in meaning to the underlined word "bleak" is verdant.

35. (a) "Quietude" means calmness, tranquility, or peacefulness.

36. (d) The opposite of "audacity" which means boldness, daring or courage is politeness.

37. (c) The opposite of "abatement" which means the act of reducing or lessening something, is accumulation.

38. (c) The opposite of "exponential growth" is "meager," .

39. (c) The answer is ignorance, which is the opposite of sagacity (meaning wisdom, good judgement, or intelligence).

40. (c) The opposite of "culminates" is "originates".

41. (b) Explanation: The idiom "lion's share" refers to the largest and best part of something, just like a lion would take the largest and best part of a kill.

42. (a) The correct answer is (a) Reveal a secret. "Spill the beans" means to accidentally or intentionally disclose confidential or secret information to someone who is not supposed to know about it.

43. (d) The correct answer is (d) Inviting misfortune.

The idiom "cook someone's goose" means to ruin someone's chances of success or to cause them to fail. It can also refer to bringing about someone's downfall or destruction.

44. (d) The most appropriate answer is (a) Lost forever. The phrase "disappear into thin air" means to vanish suddenly and completely without leaving any trace, so the correct option is (a) Lost forever, as it conveys the idea of something being gone without any possibility of finding it again.

45. (a) The idiom "put the screws on" means to put pressure on someone in order to force them to do something. The correct answer is (a) "Forcing someone to do what you want." The expression comes from the idea of using screws to tighten or apply pressure to something, and is often used to describe a situation where someone is being coerced or threatened in order to get them to comply with someone else's wishes.

46. (c) The correct answer is (c) Avoid taking sides. "Sit on the fence" is an idiom which means to remain neutral or undecided in a dispute or conflict, and not to take any side.

47. (d) The most appropriate answer is (d) A clever person.

48. (b) Keep moving from one place to another. The phrase "from pillar to post" is often used to describe someone who is being sent from one place to another, usually without making any real progress.

49. (a) Very complicated system or machine for doing a simple task. The phrase "Heath Robinson" comes from the name of a British cartoonist and illustrator, William Heath Robinson, known for his drawings of absurdly complex contraptions made from everyday objects to achieve simple tasks.

50. (d) The correct answer is (d) Very close friends who are looked upon with suspicion. "As thick as thieves" means to have a very close friendship that is often viewed with suspicion by others because of their secretive or conspiratorial behavior.

51. (d) The correct answer is  $W_1=10\text{kg}$  and  $W_2=10\text{kg}$ . both are equal in manner.

52. (b)  $R = 18\text{m}$

53. (b) In this case

$$f_2 = \left(1 - \frac{a}{g}\right) f_1$$

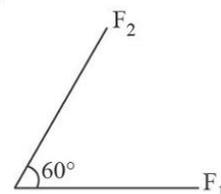
54. (c) When the valve is opened both containers have equal amount of liquid in equilibrium. If the initial potential energy of liquid is  $P_1$  and the final potential energy is  $P_2$  then

$$P_1 = 2P_2.$$

55. (a) If a particle is moving in a circle of radius  $R$  with a constant speed  $v$ . Its average acceleration over the time when it moves half the circle

$$= \frac{v_2}{R}$$

56. (a)



We know that the resultant forces of two vectors can be given as:

$$\begin{aligned}
 R &= \sqrt{F_1^2 + F_2^2 + 2F_1F_2 \cos \theta} \\
 &= \sqrt{5^2 + 5^2 + 2 \times 5 \times 5 \cos \theta} \\
 &= \sqrt{25 + 25 + 2 \times 5 \times 5 \times \frac{1}{2}} \\
 &= \sqrt{25 + 25 + 5^2} \\
 &= \sqrt{25 + 25 + 25} \\
 &= \sqrt{75} \\
 &= 8.6N
 \end{aligned}$$

57. (b) Igneous rock or magmatic rock are formed through the cooling and solidification of magma or lava. Solidification into rock occurs either below the surface as intrusive rocks or on the surface as extrusive rocks. Example of Igneous rocks are Basalt, Dunite, Gabbro, Granite, Pegmatite etc. Hence slate is not an igneous rock.

58. (b) The correct answer is options (b), i.e. velocity of earthquake waves is higher in denser materials. P waves move faster and are the first to arrive at the surface of the earth.

59. (b) In terms of geological time scale, the quaternary period consists of two epochs : they are Holocene and Pleistocene.

60. (c) The correct sequence of arrangement of the given planets in descending order in their density in gm/cm<sup>3</sup> are Earth > Venus > Jupiter > Saturn. Hence option (c) is the correct answer.

61. (b) According to the given option Eastern Australian current is not a Cold Current. It is a warm current which is formed from South Equatorial Current and reaching the Coast of Australia. Hence option (b) is the correct answer.

62. (a) Podsolization is a dominant soil forming process with leaching iron from soil layers. It usually occurs under forest or health vegetation. There soil is acidic with low humid humus and it is mainly found in Assam, Darjeeling, Uttarakhand, Himachal Pradesh in India.

63. (c) 'Keen Sword 23' is conducted between USA and Japan. It is a joint and bi-lateral fields training exercise. It is a combined capabilities and developed between III Marine Expeditionary force and The Japan self-defence force. Hence the correct option is (c).

64. (c) The Battle of Rezang La, an epic battle in hostile conditions was fought by the Indian Army in 1962, the Charlie Company of 13 Kumaon battalion. Kumaon Regiment fought Chinese attack at Rezang la Pass in Ladakh, hence the correct option is (c).

65. (a) Exercise Sea Vigil-22 took place along 7,516 km coastline of the country and Exclusive Economic Zone of the country. Its aim is to assess India's preparedness in the domain of maritime security and coastal defence.

66. (b) The correct answer is option (b). Virat Kohli is the only player to be adjudged as a player of the series in the ICC T-20 World Cup. England won ICC T-20 World Cup once.

67. (b) According to given option the correct answer is Benjamin List. Carolyn R. Bertozzi won nobel prize for Chemistry in 2022. Also Morten Meldal, K. Barry won nobel prize for Chemistry or in the field of Chemistry.

68. (c) Cell wall surrounds the plasma membrane of plant cells and it lacks in animals. It is the outermost covering of plant cell; provides tensile strength and protection against mechanical and osmotic stress.

69. (c) Prokaryotic cell are single celled microorganisms which includes bacteria and Archaeas. It is single membrane encased by cell wall. Hence nucleus is absent in Prokaryotic Cell.

70. (c) In plant Cell, Mitochondria and Chloroplast contains their own DNA. Plant Cell are eukaryotic cells that vary in several fundamental factors. They have a membrane bound nucleus and organelles. Plants cell walls composed of Cellulose Chloroplasts contain the Pigment Chlorophyll to absorb light energy.

71. (d) The correct answer is more variation in offspring. It helps species to survive over long evolutionary time. Hence they are less likely to be affected by various diseases.

72. (a) The correct answer is cell wall. It is composed of a network of cellulose microfibrils. Its surrounds the plasma membrane of plant cell. Cell wall is outermost covering of a plant cell. It

provides structural support, protection against infections.

73. (c) Browning of the chopped apple can be minimized by using lemon juice, orange and pineapple juice.

74. (b) The correct answer is option (b). Hydrocarbon is arranged as per the increasing order of their boiling points by Propene, Butane, Pentane, Octane.

75. (c) Separating funnel apparatus is used for separating benzene and water mixture. Separation funnel is made of glass which is used to separate two liquids.

76. (d) An iron nail dipped in copper sulphate solution turns brown. This is due to displacement reaction. A chemical reaction in which a more reactive element displaces a less reactive element from its compounds is called a displacement reaction.

77. (c) According to given options, keeping in plastic vessel is not the correct method for keeping the curd. Rest options are correct.

78. (a) Toothpaste prevents tooth decay by neutralizing the excess acidity. Toothpaste are basic in nature. Fluoride is the most effective caries inhabiting agent, it helps to prevent cavity.

79. (b) Quit India Movement is the correct answer. Kanaklata Barua, also called Birbala and Shaheed was an Indian Independence activist. She was shot dead by the Britishers while leading a procession bearing the National Flag during Quit Indian Movements in 1942.

80. (c) Positions and Salary of Mansabdari were indicated by a numerical designation Called Zat. Mansabdari systems was the administrative system introduced by Akbar during 1571. It is the system of ranking the government officials which determines their civil and military duties.

81. (c) The correct answer is Warren Hastings, the first Governor General of Bengal presidency. He was impeached in the year 1787 on the charge of administrative excess.

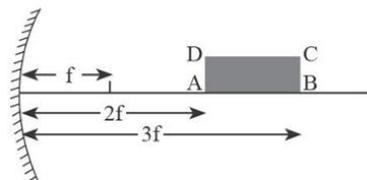
82. (a) Harishena composed the 'Prayag Prashasti' of Samudragupta. It is the pillar inscription found at Allahabad

which is written in sanskrit. Harishena was a Court poet of King Samudragupta. Prayag Prashasti also known as Allahabad Prashasti. It is the source to know about the Political History of Guptas.

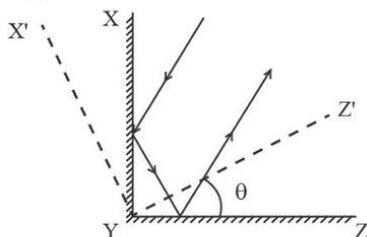
83. (b) Vijayanagara Kingdom was founded by two brothers Harihar and Bukka. It is named after its Capital City of Vijayanagara. The first dynasty of Vijayanagar is known as Sangama. The most famous King of empire was Krishnadeva Raya.

84. (d) Tranquebar is the correct answer. This was the place where Danes establish their settlement in India. Hence the correct option is (d).

85. (c) The ratio between B'C' and A'D' is  $1/2$



86. (c) The new reflected ray is at an angle  $\alpha$  from the original reflected ray is  $\alpha = 20$



87. (c) The correct answer is  $M_1 V_1 = M_2 V_2$ .

88. (d) The correct answer is sound comes from a vibrating column of air inside as well as outside the flute. Sounds is one of the form of energy. Sound is mechanical wave so it travels through material medium.

89. (d) A positive charge is moving towards south in a space where magnetic field is pointing in north direction. The moving charge will experience no deflecting force. The charge particle experienced force when it is moving through magnetic field.  $F = q(\vec{v} \times \vec{B})$ , here  $q$  is charge particle,

$B$  is the magnetic field,  $V$  is perpendicular velocity.

90. (b) Oxygen and Nitrogen is not a greenhouse gas. Greenhouse gases are carbon dioxide, methane, CFCs, ozone, water vapour. Hence according to the given option oxygen is not a greenhouse gas.

91. (c) X-ray have shorter wavelength of the electromagnetic spectrum. It can travel in vacuum. So, according to given options, due to their wavelengths being shorter, these can be used for radar systems is not true. X-rays was discovered by Wilhelm Conrad Roentgen.

92. (a) According to the given options in following questions the northernmost geographical location is New Delhi. However India's Northernmost point is Indira Col in J&K and Southernmost point is Indira Point at Great Nicobar.

93. (d) All three options are correct according to given statements. Hence lines of longitude also called meridian Hipparchus, a greek astronomer was the first to specify location using longitude and latitude as co-ordinates.

94. (a) The correct answer is Madhya Pradesh. It is a leading producer of manganese in India. Manganese is used to produce bleaching powder, paints, insecticides. Odisha has the highest reserve of manganese ore.

95. (d) Micas is mainly used in electrical and electronic industries. Mica deposits are found in the northern edge of the Chota Nagpur Plateau. Nellore in Andhra Pradesh is also an important mica producer in the country.

96. (b) According to Koppen's climate classifications the Northern plains of India have CWG climate. This type of climate is found in Northern Ganga plains. In this summer temperature rises to  $40^\circ\text{C}$  and in winter it falls to  $27^\circ\text{C}$ . Hence option (b) is the correct answer.

97. (a) According to the given statement all there options are correct about Lachit Borphukan. He was an Ahom commander known for his Leadership in the Battle Saraighat. On 24 November each year Lachit Day is celebrated in Assam to

commemorate the heroism of Borphukan and the victory of Assamese army at the Battle of Saraighat.

98. (c) The 4th edition of Joint military exercise "DUSTLIK" between Indian Army and Uzbekistan Army was held in Pithoragarh from Feb 20, 2023 to March 5, 2023. It is a part of military-to-military exchange programme. Yangiariq district of Uzbekistan hosted the 3rd edition of DUSTLIK on 2022.

99. (d) ISRO launched Vikram-S Rocket at Sriharikota. It is India's first privately developed rocket by ISRO. Vikram-S is developed by Hyderabad based start-up Skyroot Aerospace Private Limited.

100. (b) Modhera village of Gujarat recently declared as India's first 24x7 solar powered village. Hence option (b) is the correct answer.

101. (a) Uttarakhand state was adjudged the best in the Republic Day Parade 2023. The tableau was based on the theme "Manaskhand". In 2023, Republic Day, Abdel Fattah El-sisi was the chief guest. This year theme of Republic Day was Jan Bhagidari i.e. Participation of the Common People.

102. (a) Organisms that convert inorganic carbon dioxide into organic carbon compounds are Autotrophs. Example are Plants and Cyanobacteria. These organisms are able to produce their own source of foods and energy.

103. (a) The correct answer is  $\text{ATP} + \text{CO}_2 + \text{Ethanol}$ . Fermentation is the breaking down of sugar molecules into simpler compounds to produce substances that can be used in making chemical energy.

104. (b) After leaf peeling in a hypertonic solution the students examined the cells under a microscope and observed that the cells were plasmolysed. A stained epidermal leaf appeared pinkish red under microscope.

105. (c) The characteristic of fungi are they may be unicellular or filamentous. Fungi are eukaryotic, non-vascular, non-motile, heterotrophic organisms. Fungi lack chlorophyll and cannot perform photosynthesis. Hence according to the

given option, can carry out photosynthesis is not a characteristics of fungi.

106. (b) The plant body is attached to the substratum by rhizoids. Statements are correct about Bryophytes. The characteristics of Bryophytes are plants occurs in damp and shaded area. They lack true vegetative structure and have root like, stem-like structure.

107. (b) The specific purpose of using Potassium Hydroxide (KOH) during the saponification process is to obtain soaps which are soft on the skin.

108. (d) The current arrangement of the given metals in the decreasing order of their reactivity is

Sodium > Iron > Copper > Silver.

109. (d) The given statement is incorrect

110. (a) Ostwald's process is the popular method for manufacture of ammonia.

111. (d) For the manufacturing of glass, sand is widely used as a source of silica.

112. (d) The correct arrangement of halogens in the increasing order of their oxidising nature is

Br, I, Cr, F

113. (c) Water is responsible for the blue colour. Hence Copper sulphate pentahydrate turns white colour due to loss of water from blue copper sulphate. It has water which forms water vapour on heating, leaving white copper sulphate.

114. (c) Avogadro states that the equal volume of gases, when measured at the same temperature and pressure, contain an equal number of particles. Hence, option (c) is the correct answer.

115. (a) Sodium Azide into nitrogen is responsible for the given statements. Sodium azide is a fast acting chemical that appears as an odorless white solid. When mixed with acid it quickly changes to a toxic gas. Hence the electrical triggered which is charged by the car impact causes Sodium Azide to explode and convert to nitrogen gas inside the bag. So option (a) is the correct answer.

116. (a) Sylhet district of Eastern India held a referendum in 1947 to decide whether or not to join Pakistan. The Sylhet referendum was held on 6 July 1947. It is the district of Assam province of British India to decide whether the district would remain in undivided Assam and join the dominion of India or to join the dominion of Pakistan.

117. (c) Rabatak inscription written on Rock in the Bactrian language. In this inscription we got information about Kaniska, the King of Kushana empire, also refers to Kaniska as a King of Kings and as son of god. He was the grandson of Kadphises, the founder of Kushan empire. This inscription throws the important light on Kushana Genealogy.

118. (d) *Mrichchhakatika* is a Sanskrit drama written by Shudraka in 2nd century BC: This drama is a love story of a worthy Charudatta and Vasantasena. Bhasa was a Sanskrit author known for his work Swapnavasavadatta. Kalidasa was also a Sanskrit author known for his work Abhigyan Shankuntalam, Meghaduta etc.

119. (a) Yashovarman was a ruler of Kannauj who founded the Varman dynasty of Kannauj. The information about Yashovarman is derived from Gaudavaho, a Prakrit language poem written by Vakpati. Hence, the correct answer is option (a).

120. (--) Option not given, correct answer will be Udayabhadrta.

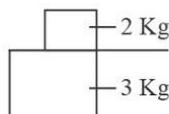
121. (a) M. Copernicus proved that the Earth and other planets revolve around the Sun. Earth revolves in an elliptical orbit and not circular, so when the earth moves far from Sun then winter season occurs and when it moves close to Sun it gives summer season. hence this proves earth revolve around the Sun.

122. (d) In the given case,

The force required =  $0.1 \times 10 \times 2 = 2\text{N}$   
= 2 Newton

123.(b) The correct answer is 160W.

124.(d)



∴ Maximum value of the frictional force  
=  $0.2 \times (2 + 3) \times 10$   
=  $0.2 \times 50$   
= 10 N

125. (b) Extension due to (mg) weight  
= 6cm on earth

∴ Extension due to weight  $\frac{mg}{6}$   
=  $\frac{6}{0} = 1\text{ cm}$   
∴ 1 cm

126. (a) A pair of scissors is an example of second class lever.

127. (a)  $R \propto \frac{l}{A} \propto \frac{\text{Length}}{\text{Area}}$

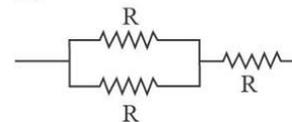
(Current)  $I = \frac{V}{R}$   
(R : Resistance, V = volt)

∴ If length = double

$R = 2R$

and  $I = \frac{I}{2}$

128. (c)



=  $\frac{1}{\frac{1}{2}R + R}$

=  $\frac{1}{2}R + R = \frac{3R}{2}$

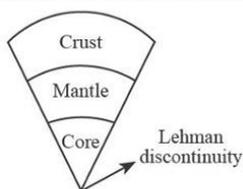
129.(c) Bharatmala Pariyojana includes the development of Coastal Roads and improvement in the efficiency of National Corridors.

130. (c) Deendayal Port was earlier known as Kandla Port. It was renamed in 2017 under the Indian Port Act, 1908. This port was constructed in the 1950s. Deendayal Port is given the name of Pandit Deendayal Upadhaya who stood for poor section of society.

131. (b) The Counter Insurgency and Jungle Warfare School of Indian Army is situated at Vairengte, Mizoram. It was established in 1967. It is a centre of quality training for conduct of counter insurgency and counter terrorist operations.

132. (a) The correct answer is calcification. A soil process in which the surface soil is supplied with calcium in such a way that the soil collides are always close to saturation. Hence, it is the process of precipitation and accumulation of calcium carbonate. Core is about 3500 km in radius.

133. (d) Core is the innermost part of the earth. A solid inner core surrounded by a liquid outer core, separated by what has come to be known as Lehmann continuity.



134. (d) Oak and Rhododendron found in Himalaya, according to given option. Himalayan tree has medicinal use. The current tree which came in endangered by IUCN is Himalayan yew. Other trees found in this region are Barch tree, Chir tree, etc.

135. (-) Intrusive Igneous rock are called plutonic. Examples of intrusive igneous rocks are diorite, gabbro, granite, peridotites, etc. These rocks are those rocks that are formed from the magma beneath the surface of the earth, also formed with the cooling of molten rock to a solid state. It leads to formation of various features such as sills, dikes, etc.

136. (a) 6.30 AM is the correct answer, if it is 12 noon in Delhi, then in London time will be 6.30 AM at the same time due to Indian Standard Time is ahead of GMT by 5.30 hours.

137. (c) Both one and two option is correct i.e., SYZYGY Conjunction, SYZYGY Opposition. Conjunction is a time during new moon when the sun and the moon lie on the same side of the earth. While SYZYGY opposition occurs during full moon when sun and moon are on opposite sides.

138. (d) The correct answer is Leonardo da Vinci. He is best known as an artist, scientist which make him true Renaissance man. The two best work of his was 'The Monalisa' and 'The Last Supper' work Leonardo's painting, drawing of the vitruvian man is also iconic. Hence, option (d) is the correct answer.

139. (d) The correct answer is Hernán Cortés, a Spanish hero known for conquering the Aztecs and claiming Mexico on behalf of Spain. Full name Hernán Cortés de Monroy y Pizarro Altamirano, Marquis of valley of Oaxaca. Hence, the correct option is (d).

140. (d) Mathura is the correct answer, Kushanas are considered one of the Yuezhi tribe, they were known as Guishuang in Chinese sources. 'Kujula Kadphises was the first who lay the foundation of Kushanas empire in India. Kaniska was the great Kushana King, son of Vim Kadpasis. His main capital was Peshawar (Pushupurao). Kanishka convened the fourth Buddhist council at Kundalvana in Kashmir.

141. (a) The treaty of Yandabo ended the First Anglo-Burmese war. Treaty was signed on 24 February 1826. By this treaty Burmese agreed to cede to the Britishers – Assam, Manipur, Aratan, Tenasserim, coast south of Salween river. This treaty was formed in favour of Britishers and it came an end to "Maanar Din" in Assam.

142. (a) Plan allocations in agriculture and irrigation as percentage of total plan outlay was highest in Seventh Five Year Plan. This plan led stress on improving the production level of industries by upgrading technology. This plan was the first plan with the motto: food, work and productivity. Main moto to establish growth in areas of increasing economic productivity, food grains, generating employment.

143. (c) The UN COP-27 Summit relates to climate change. United Nations Framework Convention Climate Change (COP-27) took place in Egyptian coastal city of Sharm el-Sheikh, concluded with to establish and operationalize a loss and

damage fund. The main objective is to stabilize greenhouse gas concentration.

144. (c) The correct answer is Singphos. This tribe is famous for tea cultivation in Assam. Assam State is the largest tea-growing region in India. Here variety of black tea which is grown in Brahmaputra Valley in north-east region. Assam tea is specially rich in amber colour, indigenous. The most famous variety is Camillia Sinensis Assamica.

145. (a) The correct answer is The Constitution (42nd Amendment, Act). Fundamental duties inserted in 42nd Amendment Act 1976 also this amendment added 51A in the Constitution. Fundamental Duties inspired by USSR constitutions and added IVA as a separate part in Constitution. Also 42nd Amendment Act also added words "Preamble" in Constitution.

146. (a) The correct answer is the force of gravity of the earth on the moon is greater than the force of gravity of the moon on earth. Hence option (a) is the correct one.

147. (c)  $220 \text{ V} - 80 \text{ W}$

$$\therefore 1 \text{ V} = \frac{80}{220} \text{ W}$$

$$\therefore 110 \text{ V} = \frac{80}{220} \times 110 = 40 \text{ W.}$$

148. (a) The correct is Red light deviates the most because red light has highest speed in Prism. Violet colour has shortest wavelength and less speed whereas red colour has longest wavelength and more speed, due to this red colour has least deviate.

149. (a) The speed of sound remain same for all frequencies in a given medium under the same physical conditions. Hence, the correct answer is option (a).

150. (c) Newtonian telescope is the correct answer. It is composed of primary mirror, which is mostly parabolic in shape and a smaller flat secondary mirror. Telescope using mirrors is called reflecting telescope. It helps astronomers to see more clearly far away objects in space.