NDA/NA
National Defence Academy / Naval Academy

GENERAL ABILITY TEST
I

QUESTION PAPER
2021

Time : 1hr 40min **Total Marks : 400**

Important Instructions :

1. *This Test contains 100 items (questions). Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case, you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose* ***ONLY ONE*** *response for each item.*
2. *You have to mark all your responses* ***ONLY*** *on the separate Answer Sheet provided.*
3. **All** *items carry equal marks.*
4. *Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions.*
5. *Penalty for wrong answers :*
   THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.
   - **(i)** *There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to that question will be deducted as penalty.*
   - **(ii)** *If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to that question.*
   - **(iii)** *If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.*

1. Consider the following statements about Light year :
- **(1)** Light year is a unit for measurement of very large distances.
- **(2)** Light year is a unit for measurement of very large time intervals.
- **(3)** Light year is a unit for measurement of intensity of light.

Which of the statements given above is/are correct?
- **(a)** 1, 2 and 3
- **(b)** 2 and 3 only
- **(c)** 1 and 2 only
- **(d)** 1 only

2. Which one of the following regarding density of water at atmospheric pressure is correct?
- **(a)** Density of water at 4°C is 1000 kg/m^3.
- **(b)** Density of water at 0°C is 1000 kg/m^3.
- **(c)** Density of water at 0°C is 100 kg/m^3.
- **(d)** Density of water at 4°C is 10 kg/m^3.

3. Which of the following pairs of physical phenomenon and the discoverer is/are correctly matched?
- **(1)** James Chadwick : Photoelectric effect
- **(2)** Albert Einstein : Neutron
- **(3)** Marie Curie : Radium

Select the correct answer using the code given below :
- **(a)** 1, 2 and 3
- **(b)** 1 and 2 only
- **(c)** 2 and 3 only
- **(d)** 3 only

4. LED (a semi-conductor device) is an abbreviation that stands for
- **(a)** Licence for Energy Detector.
- **(b)** Light Energy Device.
- **(c)** Light Emitting Diode.
- **(d)** Lost Energy Detector.

5. The statement "friction force is a contact force while magnetic force is a non-contact force" is
- **(a)** always true.
- **(b)** true only at 0°C.
- **(c)** a false statement.
- **(d)** either true or false depending upon the temperature of the surroundings.

6. Which one of the following is the chemical formula of Hypobromous acid?
- **(a)** $HBrO_4$
- **(b)** HOBr
- **(c)** HBr
- **(d)** $HBrO_3$

7. The composition of gases in exosphere is
- **(a)** Helium and Hydrogen.
- **(b)** Neon and Oxygen.
- **(c)** Neon and Hydrogen.
- **(d)** Helium and Neon.

8. Which one of the following is **not** used raw material in the manufacture of glass
(a) Soda **(b)** Alumina
(c) Borax **(d)** Gypsum

9. In electrolytic refining of copper, the electrolyte is a solution of
(a) acidified copper chloride.
(b) acidified copper sulphate.
(c) potassium chloride.
(d) sodium sulphate.

10. Solder is an alloy of
(a) Cu and Sn. **(b)** Fe and Zn.
(c) Pb and Sn. **(d)** Ag and Zn.

11. Which one of the following statements about dihydrogen (H_2) is **not** correct?
(a) H_2 is lighter than air and insoluble in water.
(b) H_2 is inert at room temperature due to high H - H bond dissociation enthalpy.
(c) H_2 reacts with alkali metals at high temperature to yield metal hydrides.
(d) A mixture of NO_2 and H_2 is known as Syngas.

12. Which of the following sets of elements has the same valency?
(a) Na, Mg, Ca **(b)** Na, Mg, Al
(c) Mg, Ca, K **(d)** Mg, Ca, Ba

13. Which one of the following is the lowest possible temperature?
(a) 0° Celsius **(b)** – 073° Celsius
(c) – 173° Celsius **(d)** – 273° Celsius

14. Numerically two thermometers, one in Fahrenheit scale and another in Celsius scale shall read same at
(a) – 40° **(b)** 0°
(c) – 273° **(d)** 100°

15. The image we see in plane mirror is
(a) real and thus can be photographed.
(b) virtual and nearer than the object.
(c) virtual and is laterally inverted.
(d) real but cannot be photographed.

16. Which one of the following colours may be obtained by combining green and red colours?
(a) Blue **(b)** Magenta
(c) Pink **(d)** Yellow

17. Which of the following are the primary colours of light?
(a) Yellow, Red and Green
(b) Blue, Red and Green
(c) Violet, Red and Yellow
(d) Indigo, Violet and Green

18. According to the New Cartesian Sign Convention, which one of the following is correct in respect of the formula $\frac{1}{f}=\frac{1}{v}+\frac{1}{u}$, where symbols have their usual meanings?
(a) It applies only to spherical mirrors.
(b) It applies only to spherical lenses.
(c) It applies to spherical mirrors as well as spherical lenses.
(d) It is an invalid formula.

19. Movement of materials to different parts of cytoplasm and nucleus is generally carried out by
(a) Ribosomes
(b) Mitochondria
(c) Lysosomes
(d) Endoplasmic reticulum

20. In mitochondria, ATP synthesizing chemical reactions take place in the
(a) Outer membrane
(b) Matrix
(c) Inner membrane
(d) DNA of mitochondria

21. Squamous epithelial cells are found in the inner lining of
(a) Oesophagus
(b) Small intestine
(c) Ducts of salivary gland
(d) Kidney

22. Transformation of meristematic cells into specific permanent tissues occurs by the process of
(a) Cell differentiation
(b) Cell division
(c) Cell multiplication
(d) Cell regeneration

23. The gaseous product of a process in plants is a requirement for another vital process that releases energy. Given below are four combinations of the process and product. Identify the correct answer.
(a) Respiration and Nitric oxide
(b) Transpiration and Water vapour
(c) Photosynthesis and Oxygen
(d) Germination and Carbon dioxide

24. In a dicot pot herb, vaseline/vegetable oil was applied on the upper surface of one leaf (Experimental leaf 1) and on the lower surface of another leaf (Experimental leaf 2). Vaseline/ Vegetable oil was not applied on the control leaf. The plant was deliberately not watered for several days. Which leaf will dry up last?
(a) Experimental leaf 1
(b) Experimental leaf 2
(c) Control leaf
(d) All the leaves will dry up simultaneously.

25. Which one of the following statements is **not** correct for light rays?
(a) Light travels at different speeds in different media.
(b) Light travels at almost 300 million metres per second in air.
(c) Light speeds down as it leaves a water surface and enters the air.
(d) Light speeds up as it leaves a glass surface and enters the air.

26. A glass prism splits white light into different colours. This phenomenon is called dispersion of light by prism. Which one of the following statements is correct?
(a) Red light will deviate the most and it is because of the reflection of light.
(b) Violet light will deviate the most and it is because of the refraction of light.
(c) Red light will deviate the most and it is because of the refraction of light.
(d) Violet light will deviate the most and it is because of the reflection of light.

27. A current of 1.0 A is drawn by a filament of an electric bulb for 10 minutes. The amount of electric charge that flows through the circuit is
(a) 0.1 C **(b)** 10 C
(c) 600 C **(d)** 800 C

28. Which one of the following formulas does **not** represent electrical power?
(a) $I^2 R$ **(b)** IR^2
(c) VI **(d)** V^2/R

29. The sound created in a big hall persists because of the repeated reflections. The phenomenon is called
(a) Reverberation. **(b)** Dispersion.
(c) Refraction. **(d)** Diffraction.

30. When light is scattered by a molecule and the frequency of the scattered light is changed, this phenomenon is called
(a) Rayleigh scattering.
(b) Raman effect.
(c) Photoelectric effect.
(d) Rutherford scattering.

31. Which one of the following statements about the cleansing action of soap is **not** true?
(a) The oil and dirt gets collected in the centre of the micelle.
(b) Soap micelles scatter light.
(c) Soaps are ammonium salts of long chain carboxylic acids.
(d) Soap forms insoluble precipitates with the calcium and magnesium ions in hard water.

32. Hydrogenation of vegetable oils using nickel catalyst is an example of
(a) Substitution reaction.
(b) Elimination reaction.
(c) Addition reaction.
(d) Free-radical polymerization.

33. Which one of the following materials is **not** an allotrope of carbon?
(a) Diamond **(b)** Graphite
(c) Fly ash **(d)** Fullerene

34. Which one of the following reactions does **not** result in the evolution of hydrogen gas?
(a) Reaction of zinc metal with dilute sulphuric acid solution
(b) Mixing water to Plaster of Paris
(c) Heating zinc metal with sodium hydroxide solution
(d) Reaction of potassium metal with water

35. Which one of the following acids is predominantly found in tomatoes?
(a) Acetic acid **(b)** Tartaric acid
(c) Oxalic acid **(d)** Lactic acid

36. Which one of the following conclusions could **not** be derived from Rutherford's α-particle scattering experiment?
(a) Most of the space in the atom is empty.
(b) The radius of the atom is about 10^5 times the radius of the nucleus.
(c) Electrons move in a circular path of fixed energy called orbits.
(d) Nearly all the mass of the atom resides in the nucleus.

37. Reaction of quick lime (CaO) with water to produce slaked lime ($Ca(OH)_2$) is an example of
(a) Displacement reaction.
(b) Endothermic reaction.
(c) Decomposition reaction.
(d) Exothermic reaction.

38. Which one of the following is **not** a bio-mass energy source?
(a) Wood **(b)** Nuclear reactor
(c) Gobar gas **(d)** Coal

39. Twinkling of stars is due to
(a) particular frequencies of the starlight.
(b) reflection of starlight from the oceanic surface.
(c) atmospheric refraction of starlight.
(d) magnetic field of Earth.

40. Which one of the following **cannot** be the unit of frequency of a sound wave?
(a) dB **(b)** s^{-1}
(c) Hz **(d)** min^{-1}

41. 'Beats' is a phenomenon that occurs when frequencies of two harmonic waves are
(a) equal.
(b) far apart.
(c) multiples of each other.
(d) nearly same.

42. Light waves are incident on an air-glass boundary. Some of the light waves are reflected and some are refracted in the glass. Which one of the following properties is the same for the incident wave and the refracted wave?
(a) Speed **(b)** Direction
(c) Brightness **(d)** Frequency

43. Which one of the following statements is true for a simple harmonic oscillator?
(a) Force acting is directly proportional to the displacement from the mean position and is in same direction.
(b) Force acting is directly proportional to the displacement from the mean position and is in opposite direction.
(c) Acceleration of the oscillator is constant.
(d) The velocity of the oscillator is not periodic.

44. During seed germination, the part of the embryo which grows into root is
(a) Radicle **(b)** Plumule
(c) Cotyledon **(d)** Epicotyl

45. In a typical flower, germinating pollen grains pass through several parts of the gynoecium before they reach the ovule. A list of the parts of gynoecium is given below in different combinations. Choose the combination that represents the correct sequence of pollen tube pathway/journey:
(a) Style, Stigma, Ovary
(b) Stigma, Style, Ovary
(c) Pistil, Stigma, Ovary
(d) Ovary, Pistil, Style

46. If human blood is placed in a 2% detergent solution, what will happen to the RBCs?
(a) The RBCs will shrink.
(b) The RBCs will swell and become turgid.
(c) The RBCs will swell and burst.
(d) The RBCs will lyse.

47. The major source of vitamins and minerals for vegetarians is
(a) black gram and wheat.
(b) rice and mustard.
(c) vegetables and fruits.
(d) soya bean and milk.

48. If a ray of light enters from a rarer medium to a denser medium at zero angle of incidence, it would
(a) reflect back.
(b) go straight.
(c) turn towards right.
(d) bend at 45°.

49. Mirage is an illustration of
(a) only dispersion of light.
(b) only reflection of light.
(c) only total internal reflection of light.
(d) both refraction and total internal reflection of light.

50. Common salt (NaCl) is **not** used as a raw material for preparation of which one of the following compounds?
(a) Bleaching powder
(b) Baking soda
(c) Plaster of Paris
(d) Washing soda

51. Which one of the following Harappan sites was a specialised centre for making shell objects?
(a) Lothal **(b)** Balakot
(c) Amri **(d)** Kot Diji

52. Which one of the following was **not** a part of the *dhamma* of King Ashoka ?
(a) Honouring the king
(b) Tolerance of religions other than one's own
(c) Respecting Brahmanas
(d) Promoting the welfare of his subjects

53. Which of the following statements about *Saguna* bhakti traditions is/are correct ?
(1) *Saguna* bhakti traditions focus on the worship of specific deities such as Vishnu or his avatars.
(2) In *Saguna* bhakti traditions, Gods and Goddesses are conceptualised in anthropomorphic forms.
Select the correct answer using the code given below :
(a) 1 only **(b)** 2 only
(c) Both 1 and 2 **(d)** Neither 1 nor 2

54. At which one of the following places was a Shiva temple **not** constructed under the patronage of the Chola rulers ?
(a) Chidambaram
(b) Thanjavur
(c) Gangaikonda Cholapuram
(d) Naneghat

55. Which of the following statements about the Deccan Riots Commission is/are correct ?
(1) The Commission did not hold enquiries in the districts which were not affected.
(2) The Commission did record the statements of ryots, sahukars and eye-witnesses.
Select the correct answer using the code given below :
(a) 1 only **(b)** 2 only
(c) Both 1 and 2 **(d)** Neither 1 nor 2

56. Which one of the following is the correct meaning of *ziyarat* ?
(a) Pilgrimage to the tombs of sufi saints
(b) The practice of revenue farming
(c) The death anniversary of a sufi shaikh
(d) A form of Islamic divorce

57. Keppel Island is completely bleached mainly due to the expansion of
(a) Starfish.
(b) Blue whale.
(c) Octopus.
(d) Sea horse.

58. Which one of the following rivers is **not** a tributary of river Brahmaputra ?
(a) River Manas **(b)** River Kameng
(c) River Mahananda **(d)** River Subansiri

59. Which one of the following is **not** a minor plate ?
(a) Cocos Plate **(b)** Nazca Plate
(c) Caroline Plate **(d)** Antarctic Plate

60. Advantage(s) of tectonic activity in Iceland include(s) :
(1) Source of natural geothermal energy
(2) Creation of new land
(3) Attraction of tourists
Select the correct answer using the code given below :
(a) 1 only **(b)** 2 and 3 only
(c) 1 and 3 only **(d)** 1, 2 and 3

61. The process whereby certain minerals absorb water, expand and change is called as
(a) Hydration. **(b)** Oxidation.
(c) Hydrolysis. **(d)** Carbonation.

62. Which one of the following is the longest Latitude ?
(a) 90 degree Latitude
(b) 23.5 degree Latitude
(c) 0.0 degree Latitude
(d) 66.5 degree Latitude

63. If it is 12·00 Noon in India, on which meridian will it be 7·00 am of the same day ?
(a) 7·5 degree E. Longitude
(b) 7·5 degree W. Longitude
(c) 75 degree E. Longitude
(d) 75 degree W. Longitude

64. Who among the following was considered to be the preceptor of Mirabai ?
(a) Dadu **(b)** Raidas
(c) Ramanand **(d)** Surdas

65. Consider the following statements about the *Mahanavami Dibba* :
(1) It was the name of a giant box of sweets distributed at the Mahanavami festival.
(2) It was the name of a massive platform with a base covered with relief carvings.
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. Which one of the following statements about the *Ain-i-Akbari* is **not** correct?
(a) It was written by Abu'l Fazl.
(b) It is a part of a larger work called *Akbar Nama*.
(c) It describes the Mughal Empire as having a diverse population and a composite culture.
(d) It was later revised by Sadullah Khan on the orders of Shah Jahan.

67. Swami Dayanand Saraswati
(1) was opposed to the worship of idols of Gods and Goddesses.
(2) regarded the Vedas as infallible.
(3) had met and had discussions with Ishwar Chandra Vidyasagar.
Which of the statements given above are correct?
(a) 1, 2 and 3 **(b)** 2 and 3 only
(c) 1 and 3 only **(d)** 1 and 2 only

68. Consider the following statements:
(1) Muhammadan Anglo-Oriental College was founded at Aligarh by Sayyid Ahmad Khan.
(2) Sayyid Ahmad Khan was a great believer in religious toleration, and Hindus, Parsis and Christians had contributed to the funds of his college.
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

69. Basket-of-eggs topography is related to
(a) Drumlins. **(b)** Eskers.
(c) Cirques. **(d)** Moraines.

70. Which one of the following planets has the highest density?
(a) Mercury **(b)** Venus
(c) Jupiter **(d)** Earth

71. Point of Origin of Earthquake Wave is known as
(a) Epicentre. **(b)** Focus.
(c) Photosphere. **(d)** Seismic Zone.

72. The maximum depth of Lithosphere is found in the
(a) Pacific Ocean.
(b) Siberian Plain.
(c) Patagonian Desert.
(d) Himalayan Mountains.

73. A large body of magmatic material that cools in the deeper depth of the Earth's crust and develops in the form of large domes is known as
(a) Batholiths. **(b)** Lacoliths.
(c) Lopoliths. **(d)** Phacoliths.

74. Which one of the following Oil Refineries is **not** located in Assam?
(a) Tatipaka **(b)** Numaligarh
(c) Bongaigaon **(d)** Digboi

75. Where and when did Mahatma Gandhi make his first public appearance in India on coming back from South Africa after two decades?
(a) Champaran in 1917
(b) Lucknow in 1916
(c) Banaras Hindu University in 1916
(d) Ahmedabad in 1918

76. When and where was the demand for "Purna Swaraj" or complete independence made by the Indian National Congress?
(a) Bombay, 1885 **(b)** Lahore, 1929
(c) Kheda, 1917 **(d)** Bombay, 1942

77. Which one of the following provides for the complete equality of men and women in India ?
(a) Articles 14 and 15 of the Constitution of India
(b) Fifth Schedule of the Constitution of India
(c) The Indian Independence Act
(d) Article 20 of the Constitution of India

78. Which of the following statements about the non-permanent members of the Security Council of the United Nations is/are correct?
(1) Their total number is now 10, but was originally only 6.
(2) They are elected for a term of two years only.
Select the correct answer using the code given below:
(a) 1 only **(b)** 2 only
(c) Both 1 and 2 **(d)** Neither 1 nor 2

79. At which of the following was the American Declaration of Independence adopted on 4 July, 1776?
(a) Washington Conference
(b) San Francisco Conference
(c) Second Continental Congress
(d) First Continental Congress

80. Who among the following was the head of the Government that was overthrown by the Bolsheviks in the 1917 Revolution?
(a) Alexander Kerensky
(b) Prince Lvov
(c) Grand Duke Sergei
(d) Tsar Nicholas II

81. Which one of the following is **not** a form of condensation?
(a) Dew **(b)** Fog
(c) Frost **(d)** Sleet

82. Which one of the following clouds is a rain-bearing cloud?
(a) Cumulus cloud **(b)** Stratus cloud
(c) Nimbus cloud **(d)** Cirrus cloud

83. In which one of the following countries is intensive subsistence agriculture **not** predominantly practised?
(a) India **(b)** Japan
(c) Canada **(d)** Indonesia

84. The Headquarters of South-Eastern Railway is located at
(a) Bilaspur. **(b)** Secunderabad.
(c) Kolkata. **(d)** Bhubaneswar.

85. Bharatmala Pariyojana is related to
(a) interlinking of Northern and Southern Indian rivers in a garland shape.
(b) networks of National Highways in India.
(c) interlinking of all cities of India through Railways.
(d) interlinking of all industrial regions of India through pipelines.

86. The natural vegetation which covers the maximum geographical areas of India is
(a) Tropical deciduous forests.
(b) Tropical thorn forests.
(c) Montane forests.
(d) Tropical evergreen forests.

87. River Beas, flowing from Himachal and Punjab, joins the river
(a) Indus. **(b)** Satluj.
(c) Chenab. **(d)** Ravi.

88. With regard to the Constitution of India, which one of the following statements is **not** correct?
(a) The words - Socialist and Secular, were not originally part of the Constitution.
(b) The Preamble states the objects of the Constitution of India.
(c) The Preamble is enforceable in a Court of Law.
(d) A Republic refers to the people as the source of all authority under the Constitution.

89. Which one of the following is **not** a power of the Speaker of the Lok Sabha?
(a) Speaker shall preside over the House of the People.
(b) Speaker will cast vote in the first instance in the House.
(c) Speaker will have power to maintain order within the House of the People.
(d) Speaker can adjourn the House or suspend the meeting till there is a quorum.

90. Which one of the following is included in Article 51A (Part IV A) of the Constitution of India?
(a) Fundamental Duties
(b) Suspension of Fundamental Rights
(c) Special Powers of Governors
(d) Writs

91. As per the data up to November, 2020, released by the Union Finance Ministry, which one of the following countries ranks 1 in terms of ODI (Outward Direct Investment) for the year 2020 - 21?
(a) USA **(b)** Singapore
(c) Mauritius **(d)** United Kingdom

92. 'Exercise Desert Knight - 21' is a bilateral air exercise between the Indian Air Force and the Air Force of which one of the following countries?
(a) USA **(b)** France
(c) Britain **(d)** Israel

93. Tableau of which one of the following States/ Union Territory was adjudged best in the Republic Day Parade, 2021?
(a) Ladakh **(b)** Uttar Pradesh
(c) Tripura **(d)** Uttarakhand

94. In the recently concluded elections in December 2020, Faustin-Archange Touadera has won a second term in office as President of one of the following countries. Identify the country.
(a) Central African Republic
(b) Republic of South Africa
(c) Republic of Ghana
(d) Republic of Mozambique

95. Which one of the following statements is **not** correct in respect of the 'Legion of Merit' award?
- **(a)** This award is conferred by the President of the United States of America.
- **(b)** This award was conferred to the Prime Minister of India in December, 2020.
- **(c)** This was also awarded to the Prime Minister of Australia, Scott Morrison.
- **(d)** It is the highest civilian award of the United States of America.

96. Which one of the following statements is most appropriate about 'Exercise Kavach'?
- **(a)** It is a military exercise of the Indian Army only.
- **(b)** It is a joint military exercise involving the Indian Army and the Indian Navy only.
- **(c)** It is a joint military exercise involving the Indian Army, the Indian Navy and the Indian Air Force only.
- **(d)** It is a joint military exercise involving the Indian Army, the Indian Navy, the Indian Air Force and also the Indian Coast Guard.

97. Recently a state of emergency has been declared in which one of the following countries?
- **(a)** Maldives **(b)** Bhutan
- **(c)** Nepal **(d)** Myanmar

98. Which one of the following teams is the winner of the Syed Mushtaq Ali Trophy, 2021?
- **(a)** Uttar Pradesh **(b)** Punjab
- **(c)** Tamil Nadu **(d)** Baroda

99. Which country has replaced Maldives to host the 2023 Indian Ocean Island Games?
- **(a)** Madagascar **(b)** Sri Lanka
- **(c)** India **(d)** Mauritius

100. Identify the correct reason, out of the following, about Claire Polosak for being in the news:
- **(a)** She has been honoured with the Pulitzer Prize.
- **(b)** She recently won a Grand Slam championship.
- **(c)** She became the first female match official to conduct a men's cricket test match.
- **(d)** She has been conferred with the Gandhi Peace Prize.

Answers

Q No	Answer Key	Topic Name	Chapter Name
1	**(d)**	Units	Units and Measurements
2	**(a)**	Density	Mechanical Properties of Fluids
3	**(d)**	Discovery of Particles	Atoms
4	**(c)**	Optoelectronic Devices	Semiconductors Electronics
5	**(a)**	Friction	Laws of Motion
6	**(b)**	Hypo Acids	Acids, Bases and Salts
7	**(a)**	Composition of Air in Atmosphere	States of Matter
8	**(b)**	Glass	Elements, Compounds and Mixtures
9	**(b)**	Metallurgy	Extraction of Metals
10	**(a)**	Alloys	Elements, Compound and Mixtures
11	**(d)**	Gaseous State	State of Matter
12	**(d)**	Valency	Periodic Classification of Elements
13	**(d)**	Temperature	Some Basic Concepts of Chemistry
14	**(a)**	Temperature	Some Basic Concepts of Chemistry
15	**(c)**	Mirrors	Ray Optics
16	**(d)**	Color Spectrum	Ray Optics
17	**(b)**	Color Spectrum	Ray Optics
18	**(a)**	Lens Formula	Ray Optics
19	**(d)**	Endoplasmic Reticulum	Cell
20	**(c)**	Cellular Respiration	Respiration in Plants
21	**(a)**	Oesophagus	Digestive System
22	**(a)**	Meristematic Tissues	Plant Anatomy
23	**(c)**	Photosynthesis	Growth and Reproduction in Plants and Animals
24	**(b)**	Transpiration	Transportation in Plants
25	**(c)**	Refraction	Ray Optics
26	**(b)**	Dispersion	Ray Optics
27	**(c)**	Electric Current	Current Electricity
28	**(b)**	Electrical Power	Current Electricity
29	**(a)**	Reverberation	Waves
30	**(b)**	Scattering	Ray Optics
31	**(c)**	Soap and Detergents	Some Important Chemical Compounds
32	**(c)**	Reactions of Alkenes	Hydrocarbons
33	**(c)**	Allotropes of Carbons	Carbon and Compounds of Carbon
34	**(b)**	Reactivity of Metals	Metals and Non-Metals
35	**(c)**	Organic Acids and Their Sources	Acid, bases and Salts
36	**(c)**	Electrons	Physical Properties and States of Matter

Q No	Answer Key	Topic Name	Chapter Name
37	**(d)**	Quicklime and Slaked Lime	Some Important Chemical Compounds
38	**(b)**	Biomass Energy	Growth and Reproduction in Plants and Animals
39	**(c)**	Atmospheric Refraction	Ray Optics
40	**(a)**	Units	Units and Measurements
41	**(d)**	Sound	Waves
42	**(d)**	Refraction	Ray Optics
43	**(b)**	Simple Harmonic Motion	Oscillations
44	**(a)**	Seed	Sexual Reproduction
45	**(b)**	Parts of Flower	Sexual Reproduction
46	**(a)**	Blood	Elementary knowledge of Human Body and its important organs
47	**(c)**	Vitamins	Food—Source of Energy for man
48	**(b)**	Refraction	Ray Optics
49	**(d)**	Total Internal Reflection	Ray Optics
50	**(c)**	Common Salt	Physical and Chemical Changes
51	**(b)**	Harrapan Culture	Ancient History
52	**(a)**	Ashoka Dhamma	Ancient History
53	**(c)**	Saguna bhakti	Bhakti Movement
54	**(d)**	Chola Dynasty	Ancient History
55	**(b)**	Deccan riots commison	Concept of one World
56	**(a)**	Ziyarat	Mediuval History
57	**(a)**	Keppel Island	Important Sea ports and main sea, land and air routes of India
58	**(c)**	Rivers	Regional Geography of India
59	**(d)**	Plates	Origin of Earth
60	**(d)**	Techtonic Activites	Origin of Earth
61	**(c)**	Minerals Resources	Regional Geography of India
62	**(c)**	Latitudes	Latitudes and Longitudes
63	**(d)**	Concept of time	Latitudes and Longitudes
64	**(b)**	Mirabai	Bhakti Movement
65	**(c)**	Mahanavami Dibba	A broad survey of Indian History, with emphasis on Culture and Civilisation
66	**(d)**	Akbar	Mughal Dynasty
67	**(b)**	Swami Dayanand Saraswati	Forces shaping the modern world
68	**(c)**	Educational reforms	Forces shaping the modern world
69	**(a)**	Eggs	Constituents of food
70	**(d)**	Planets	The Universe
71	**(a)**	Earthquake	Earthquakes and Volcanoes
72	**(a)**	Lithosphere	The Earth, its shape and size
73	**(a)**	Earth Crust	The Earth, its shape and size

Q No	Answer Key	Topic Name	Chapter Name
74	**(a)**	Important Refinaries	Current Affairs
75	**(c)**	Banaras Hindu University	Basic Teachings of Mahatma Gandhi
76	**(b)**	Purna Swaraj	Indian National Congress
77	**(a)**	Fundamental Rights	Elementary study of Indian Constitution and Administration
78	**(c)**	International Organisations	Current Affairs
79	**(a)**	American Independence	War of American Independence
80	**(a)**	Russian Revolution	Concept of one World
81	**(d)**	Condensation	Condensation and Precipitation
82	**(c)**	Clouds	Types of Climates
83	**(c)**	Agriculture	Major Natural regions of the World
84	**(c)**	Indian Railway	Current Affairs
85	**(b)**	Government Schemes	Current Affairs
86	**(a)**	Natural vegetation	Major Natural regions of the World
87	**(b)**	Rivers	Current Affairs
88	**(c)**	Preamble	Elementary study of Indian Constitution and Administration
89	**(b)**	Lok Sabha	Parliament
90	**(a)**	Fundamental Duties	Elementary study of Indian Constitution and Administration
91	**(b)**	Foreign Direct Investment	Current Affairs
92	**(b)**	Joint Military Exercise	Current Affairs
93	**(b)**	Republic day event	Current Affairs
94	**(a)**	International Politics	Current Affairs
95	**(d)**	Awards	Current Affairs
96	**(c)**	Joint Military Exercise	Current Affairs
97	**(d)**	International Politics	Current Affairs
98	**(c)**	Sports	Current Affairs
99	**(a)**	Sports	Current Affairs
100	**(c)**	Awards	Current Affairs

NDA/NA
National Defence Academy / Naval Academy

GENERAL ABILITY TEST

I

QUESTION PAPER
2021

Answers with Explanation

1. Option (d) is correct.

Explanation:

Light year is a unit of measurement of distance. It is used in astronomy for measuring large distances.

(1 ly = 9.461×10^{15} m)

2. Option (a) is correct.

Explanation:

We know density of water is maximum at 4 °C, having value, 1gm/cm^3 or 1000 kg/m^3

3. Option (d) is correct.

Explanation:

Marie Curie = Radium is the correct option.

James Chadwick discovered neutrons.

Albert Einstein discovered photoelectric effect

4. Option (c) is correct.

Explanation:

LED stands for light emitting diode, is a special pn junction diode which when connected in forwards bias emits light due to recombination of holes and electrons.

5. Option (a) is correct.

Explanation:

Friction is a contact surface phenomenon. It works only when surfaces are in contact with each other.

Magnetic force does not depend upon surface in contact, it works till an object is in the influence of a magnetic field.

6. Option (b) is correct.

Explanation:

Hypobromous acid: HOBr

Here oxidation state of Br = +1

7. Option (a) is correct.

Explanation:

Exosphere, the outermost layer of the atmosphere maily contains He & H_2.

8. Option (d) is correct.

Explanation:

Gypsum is mainly used to form cement, mortar, keere cement etc. It is not used to form glass. Glass are mainly silicates.

9. Option (b) is correct.

Explanation:

Electrolytic refining is mainly used to purify impure metal. Here anode is made up of impure metal while cathode is made of pure metal. Here acidified $CuSO_4$ is mainly used as an electrolyte.

10. Option (c) is correct.

Explanation:

Pb and Sn are mainly used to form solder which is an alloy and it melts at lower temperature.

11. Option (d) is correct.

Explanation:

CO + H_2 mixture is called syngas not NO_2 and H_2.

12. Option (d) is correct.

Explanation:

Mg	12	2	All of them have same valency. i.e. 2 and being to Group II A element
Ca	20	2	
Ba	56	2	

13. Option (d) is correct.

Explanation:

The lowest possible temperature is assigned a value of 0 K. It is called absolute zero, where theoretically all motions are ceased. So, the correct answer is

0 K = –273 °C

14. Option (a) is correct.

Explanation:

At –40° both Celsius and Fahrenheit scales give the same reading.

$$^{\circ}F = \frac{9}{5}{}^{\circ}C + 32$$

$$^{\circ}F - \frac{9}{5}{}^{\circ}F = 32 \qquad (\text{let } ^{\circ}F = {}^{\circ}C)$$

$$-\frac{4}{5}{}^{\circ}F = 32$$

$$^{\circ}F = -40^{\circ}$$

15. Option (c) is correct.

Explanation:

Plane mirrors always form virtual, erect and laterally inverted images with magnification of +1. Since the image produced by a plane mirror is virtual in nature, it cannot be obtained on a screen.

16. Option (d) is correct.

Yellow is a secondary colour, obtained by mixing primary colours, red and green.

17. Option (b) is correct.

Explanation:

Red, Blue and Green are the three primary colours.

18. Option (a) is correct.

Explanation:

Mirror formula is: $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$, it is applicable only for spherical mirrors.

Lens Formula is: $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$, it is applicable only for spherical lenses.

19. Option (d) is correct.

Explanation:

Endoplasmic reticulum is a network of tiny tubular structures scattered in the cytoplasm. It is composed of cisternae, tubules & vesicles. Cisternae is long flattened sac like structure containing ribosome so actively involved in the synthesis of proteins. Tubules are also tube like interconnected structures involved in lipid & sterol synthesis. Both of these, i.e. cisternae and tubules along with vesicles carry out movements of materials throughout the cell.

20. Option (c) is correct.

Explanation:

ATP i.e Adenosine triphosphate is the energy currency of cell. ATP is formed from ADP. Mitochondria is the main organelle involved in the production of ATP during the cellular aerobic respiration. Mitochondria carries out complete oxidation of glucose. During this the electron transport system (ETS) occurs in the inner membrane of mitochondria leading to development of electro proton gradient, which when breaks leads to the formation of ATP. All the carriers of ETS are present on inner membrane of mitochondria.

21. Option (a) is correct.

Explanation:

Oesophagus is the muscular tube of digestive system that connects the pharynx (throat) to the stomach. It moves food from mouth to the stomach. It's inner lining is made up of squamous epithelium which allows the movement of food through it by a mechanism called peristalsis.

22. Option (a) is correct.

Explanation:

Differentiation is the process by which a meristematic cell acquires a proper function by changing its morphology and physiology. Due to physiological and morphological changes, a meristematic cell form a permanent tissue taking up a permanent shape, size and also becomes specialised for performing a specific function.

23. Option (c) is correct.

Explanation:

Photosynthesis is a biochemical process in which carbohydrate is synthesized by using raw materials like CO_2 & H_2O in the presence of sunlight and with the help of chlorophyll. During photosynthesis, water is split on the thylakoid lumen side of the thylakoid membrane, so the protons are released inside the thylakoid and O_2 is released as a by product.

Oxygen is essential for respiration which is necessary for the release of energy during aerobic cellular respiration.

24. Option (b) is correct.

Explanation:

Loss of water through leaf surface in the form of water vapour is called transpiration. Major site of transpiration on leaf is stomata. Dicot leaves are hypostomatic i.e. they contain large number of stomata on their lower surface. So when vaseline or vegetable oil is applied on

it's lower surface, it prevents the transpiration. Thus, experimental leaf 2 will dry up at last.

25. Option (c) is correct.

Explanation:

Speed of light depends upon the medium in which it is traveling. Its speed decreases with the increase in optical density of the medium. As water is denser than air, the speed of light will increase when light moves from water to air.

26. Option (b) is correct.

Explanation:

When white light strikes at the surface of a prism, it gets split into seven colours due to refraction. Red color has the longest wavelength and it deviates least from its path while violet being the shortest in wavelength deviates maximum.

27. Option (c) is correct.

Explanation:

Current (I) = 1.0 A

Time = 10 minutes

Time (t) = $10 \times 60 = 600$ s

$Q = I \times t$

$Q = 1.0 \times 600$

$Q = 600$ C

Charge flowing in a circuit is given by Q = It.

28. Option (b) is correct.

Explanation:

The formula for electric power is

- $P = VI$ …(1)

Where

- P = Electric power
- V = Potential difference in the circuit
- I = Electric current.

From Ohm's law

- $V = IR$ …(2)

Substitute equation (2) in (1) we get

- $P = (IR)I$
- $P = I^2R$ …(3)

From Ohm's law

- $I = \frac{V}{R}$ …(4)

Substituting equation (4) in equation (1), we get

- $P = \frac{V^2}{R}$ …(5)

Equations (1), (3) and (5) represent the electric power, whereas IR^2 does not represent the electric power.

29. Option (a) is correct.

Explanation:

When sound undergoes multiple reflections and it is heard multiple times simultaneously, it is knows as reverberation.

30. Option (b) is correct.

Explanation:

When light enters a molecule and interacts with the electron density, it creates vibration in it and deformation of incident frequency takes place, this effect is known as Raman Effect.

31. Option (c) is correct.

Explanation:

Soap are the sodium or potassium salt of long chain carboxylic acid or fatty acid which contain both polar and non polar part.

32. Option (c) is correct.

Explanation:

Vegetable oil is unsaturated hydrocarbon which contain multiple bond. Here vegetable oil reacts with H_2 in presence of Ni/Pd catalyst to give vegetable ghee & the reaction is addition reaction.

33. Option (c) is correct.

Explanation:

The main allotrope of carbon are crystalline and amorphous. The crystalline allotrope contain Diamond, Fullerene, Graphite here fly ash is not allotrope

34. Option (b) is correct.

Explanation:

Mixing of water into Plaster of Paris does not give H_2 gas. In fact it gives gypsum.

$$\underset{\text{(POP)}}{CaSO_4 \cdot \frac{1}{2} H_2O} \rightarrow \underset{\text{(Gypsum)}}{CaSO_4 \cdot 2H_2O}$$

35. Option (c) is correct.

Explanation:

Oxalic acid is a chemical compound which occurs naturally in many plants. here it is present in Tomatoes, spinach, nuts, seeds etc,

36. Option (c) is correct.

Explanation:

Rutherford did not give the concept of stationary orbit. the concept of fixed energy of an orbit is given by Bohr's.

37. Option (d) is correct.

Explanation:

$CaO + H_2O \rightarrow Ca(OH)_2$

The formation of slaked lime is an exothermic reaction where large amount of heat is released when CaO reacts with water.

38. Option (b) is correct.

Explanation:

- Bio-mass is a source of energy that is derived from organic material which is renewable and sustainable source of energy such as plant and animal waste. So, generally the fuel obtained from organic material is called biomass.
- Nuclear energy which is obtained by fusion and fission of atoms resulting in the tremendous release of energy. In this, both nuclear fusion and fission can be carried out in the absence of sunlight.
- So, the nuclear energy is not a bio-mass source of energy.

39. Option (c) is correct.

Explanation:

Twinkling of stars is an atmospheric phenomenon. Due to varying refractive index of layers of atmosphere, a light ray coming from a star undergoes multiple refractions (bending of light). Hence, stars appear to twinkle.

40. Option (a) is correct.

Explanation:

Frequency = 1/Time period

Hz is the SI unit of frequency. Also $s^{(-1)}$ and $min^{(-1)}$ can be units of frequency of sound.

Loudness of sound is measured in decibels (dB), therefore it cannot be the unit of frequency of sound.

41. Option (d) is correct.

Explanation:

When two harmonic waves of slightly different frequencies overlap in space and time, beats are produced. Number of beats produced per second is called beat frequency.

42. Option (d) is correct.

Explanation:

Refracted light has less intensity than the incident light as some of the intensity is lost in partial reflection. Speed and wavelength of light changes during refraction, but its frequency remains same.

43. Option (b) is correct.

Explanation:

For a SHM,

Force acting on an object is directly proportional to its displacement from the mean position. $\{\vec{F}\} \propto \{\vec{X}\}$ Negative sign indicates that the displacement and the force both are in the opposite direction.

44. Option (a) is correct.

Explanation:

Seed is the product of fertilization. After the process of fertilization, each ovule develops into a seed. A seed generally contain seed coat, embryo and endosperm. Seed coat protects the embryo against various factors. Embryo is the future plant contain an embryonal axis with the embryonic bud (plumule) and the embryonic root (radicle). Endosperm is the reserve food for the development of embryo.

When seed germinate, radicle is the first structure which appears. Radicle further develops into root and then after plumule arises which further develops into shoot.

- Under favourable conditions, the seed absorbs water from the surroundings and swells up, the seed coat ruptures and the embryo emerges out.
- The radical grows downwards into the soil and forms root.

45. Option (b) is correct.

Explanation:

Gynoecium is the female reproductive organ of a flower. It is made up of carpel or pistil, which can be single or multiple in number. A pistil is made up of three parts i.e. stigma, style and ovary. Stigma is the landing platform of pollen grain, style connects the stigma & ovary. Ovary bear the ovule.

So, when the pollen grain germinates on stigma. The pollen tube travels through style and reach to the ovary.

46. Option (a) is correct.

Explanation:

2% detergent solution is hypertonic & water will flow into it & as a result RBC will shrink.

47. Option (c) is correct.

Explanation:

Vegetarian is the practice of eating food which is plant based. So, vegetables and fruits serve as the major source of nutrients for vegetarian people. They contain all the essential nutrients required for proper growth & development of the body.

48. Option (b) is correct.

Explanation:

Zero angle of incidence means, the incident ray and the normal to the surface coincide. In this case, light will go straight (without any deviation) through the denser medium. Some of the light will reflect back and trace the same path as the incident light.

49. Option (d) is correct.

Explanation:

In mirage, light coming from the Sun undergoes refraction and when it strikes the layer of atmosphere closer to the Earth's surface, which is rarer in density as compared to the layers above, at an angle greater than the critical angle it undergoes total internal reflection and we see optical illusion in the form of water. This happens mostly in hot climate area.

50. Option (c) is correct.

Explanation:

Plaster of Paris obtained by heating gypsum at 393 k.

$$CaSO_4 \cdot 2H_2O \xrightarrow{393K} CaSO_4 \cdot \frac{1}{2}H_2O + \frac{3}{2}H_2O.$$

51. Option (b) is correct.

Explanation:

Nageshwar and Balakot are the two settlements which are near the Coast and thus were specialised centres for making shell objects – including bangles, ladles and Inlay. From these two sites these objects were taken to other settlements.

Nageshwar is found in Kutch district of Gujrat and Balakot (also known as Kot Bala) is located at Lasbela District, Balochistan, Pakistan.

52. Option (a) is correct.

Explanation:

Ashoka's dhamma did not involve worship of a god, or performance of a sacrifice. As a father he tries to teach his children, he had a duty to instruct his subjects.

Ashok's Dhamma (Dharma)

- Respect for the Brahmans and Sarmanas is an integral part of his Dhamma.
- Being kind with slaves and servants.
- Respecting one's elders.
- Treating all creatures with compassion
- Giving gifts to brahmins and monks
- Major Rock Edict II of Ashoka dhamma is related to measures of social welfare.

53. Option (c) is correct.

Explanation:

- The Saguna bhakti believed in having a definite form of God.
- They believed in anthropomorphic form of God (which means God or Goddess have human form or have the human qualities)
- This school of thought believed that the god manifests himself in incarnations such as Rama and Krishna. The spirit of God is to be found in the idols and images worshipped at home and in temples.

54. Option (d) is correct.

Explanation:

- The Chola Dynasty was established in the southern state of Tamil Nadu which was one of the longest-ruling dynasties in the world's history
- (The three great Chola temples constructed between 11^{th} and 12^{th} century are listed into UNESCO's World Heritage Sites). These are:

1. The Brihadisvara temples of Thanjavur,
2. Gangaikonda cholisvaram, and
3. The Airatesvara temple at Darasuram.

- (These three temples are built in Dravidian style of temple architecture)

55. Option (b) is correct.

Explanation:

In the nineteenth century, farmers in various parts of India rose in revolt against grain dealers and moneylenders. One such revolt occurred in 1875 in the Deccan.

Deccan Riots Commission

The government of India pressurised the Government of Bombay to set up a commission of enquiry to look into the causes of the riots.

A report was produced by the commission and was presented to the British Parliament in 1878. This report came to known as the Deccan Riots Report.

The commission conducted investigations in the districts affected by the riots, recording testimony from ryots, sahukars, and eyewitnesses.

Also compiled statistical data on revenue rates, prices, and interest rates in various locations, and collating district collectors' reports.

56. Option (a) is correct.

Explanation:

- Ziyarat is an Arabic word which literally means to 'visit'.
- It is used to refer to a form of pilgrimage to sites associated with Muhammad, his family members and descendants, his companions and other venerated figures in Islam such as the prophets, Sufi Saints and Islamic scholars.

57. Option (a) is correct.

Explanation:

Coral bleaching occurs when corals lose their vibrant colors and turn white. It happens due to changes in temperature, light, or nutrients

Great Keppel Island is located in Queensland, Australia.

Generally, a starfish contributes to the reef's biodiversity by eating faster-growing coral species, which in turn allows slower-growing species to thrive.

At outbreak levels, the starfish can consume coral faster than it can reproduce; coral is a type of polyp which builds the limestone reefs on which they live communally.

58. Option (c) is correct.

Explanation:

Brahmaputra is a trans boundary river which flows through Tibet (China), India, and Bangladesh. It is known by various names:

- Yarlung Tsangpo in Tibet
- Siang/Dihang River in Arunachal Pradesh
- Luit in Assamese; and
- Jamuna in Bangladesh

Tributaries of Brahmaputra: Kameng/ Jia Bhoroli, Manas, Beki, Teesta, Subansiri are the tributaries.

The Mahananda River is an important tributary of the Ganges.

59. Option (d) is correct.

Explanation:

Antarctic Plate is a major plate including the continent of Antarctica and extending outward under the surrounding oceans.

List of Minor Plates

- Arabian Plate
- Caribbean Plate
- Cocos Plate
- Juan de Fuca Plate
- Nazca Plate
- Philippine Sea Plate
- Scotia Plate

List of Major Plates

- African Plate
- Antarctic Plate
- Eurasian Plate
- Indo- Australian Plate
- North American Plate
- Pacific Plate
- South American Plate

60. Option (d) is correct.

Explanation:

Benefits of Tectonic activities in Iceland:

- It brings benefits such as geothermal energy and beautiful landscapes (attracts tourists)
- The hot springs are prevalent in Iceland. These springs are created by ground water flowing near magma (underground lava), because of the geological activity.
- People use these warm pools as baths

61. Option (c) is correct.

Explanation:

- The process whereby certain minerals absorb water, expand and change is called hydration. For example, anhydrite is changed to gypsum.
- It is often classified as a type of chemical weathering; mechanical stresses occur as well.

62. Option (c) is correct.

Explanation:

- Lines of latitude are imaginary lines that measure degrees north and south of the equator from the centre of the Earth.

- The longest latitude is 0°latitude which is known as the Equator. It divides the earth into two equal halves, the northern hemisphere and the southern hemisphere.
- The equator is the longest latitude which is also called the largest circle because all other latitudes become smaller as they move north and south from the equator towards the poles. All other circles are small circles.
- The Earth is widest at the equator so it is the longest line of latitude at 24,901.55 miles.

63. Option (d) is correct.

Explanation:

- International date line (IDL) which is an imaginary irregular line that passes through Pacific Ocean and it is 180°east of Prime Meridian.
- So, it refers that IDL and Prime meridian are not the same.
- The rotation of Earth is from west to east. So based on this we assume the day starts (i.e. 12 am) from IDL.

64. Option (b) is correct.

Explanation:

Mirabai (1498-1546)

- The most famous woman of Bhakti cult was Mirabai
- She was born into a royal family of Pali, Rajasthan.
- She was an ardent devotee of Lord Krishna and considered her as to be her lover.
- She composed her bhajans in Braj bhasa and Rajasthani language.
- It is believed that Mirabai was a disciple of Saint Ravidas (Raidas), however, there is no corroborating historical evidence for this.

65. Option (b) is correct.

Explanation:

Mahanavami Dibba is a beautiful stone platform located within the Royal Enclosure of Hampi which was built during the Vijayanagara period by King Krishnadevaraya to commemorate his victory over Udaygiri.

66. Option (d) is correct.

Explanation:

Ain-i-Akbari (Administration of Akbar)

- This document is written by Akbar's court historian, Abu'l Fazl, in the Persian language.
- The document gives the detailed view of Mughal administration during Akbar's reign.
- It was the final part (Volume III) of the much larger document, the Akbarnama (Account of Akbar).
- The *Ain-i-Akbari* document is divided into five books. The fourth book of Ain-i-Akbari contains information on Hindu philosophy, science, social customs and literature.

67. Option (b) is correct.

Explanation:

- Dayananda Saraswati (also known as Mulshankar) was born in the old Morvi state in Gujarat.
- He was the founder of Arya Samaj. He considered Vedas to be 'India's Rocz of Ages' and took inspiration from them.
- According to him, the Vedas were the infallible/flawless and the true original seed of Hinduism.
- The slogan "Back to the Vedas" was given by him.
- He had also met other reformers of the time, like, Keshab Chandra Sen, Ishwar Chandra Vidyasagar, Ranade, Deshmukh, etc.

68. Option (c) is correct.

Explanation:

- Sir Syed Ahmad Khan was an Islamic reformer, philosopher, Islamic pragmatist and educationist in nineteenth-century British India
- In 1875, the Muhammadan Anglo Oriental College Sir was founded by Syed Ahmed Khan in Aligarh which later in 1920 became Aligarh Muslim University.
- Sayyid Ahmad Khan was a firm believer of religious toleration and was the first Muslim scholar who had attempted an Urdu commentary on the Bible.
- The doors of his college were open for all the Indians. Hindus, Parsis, and Christians had contributed freely to the funds of his college.

69. Option (a) is correct.

Explanation:

- The term 'basket of eggs' topography refers to Drumlins which is a depositional landform formed by glaciers.

- These baskets of eggs are basically forms of rounded hummocks resulting from the deposition of glacial till which look like inverted boat or spoon.
- They vary in size from a few metres to 60-100 metres in height and from a few hundred metres to one-two kilometres in length.
- When they occur in a cluster, they look like a basket of eggs.

70. Option (d) is correct.

Explanation:

- Earth which is the fourth smallest among all the planets has the highest density than any planet in the Solar System.
- There are eight planets exists in our Solar System which are not only in terms of size but also in terms of mass and density
- Among Planets there are 4 inner planets such as – Mercury, Venus, Earth, Mars 4 outer planets – Jupiter, Saturn, Uranus, Neptune

71. Option (b) is correct.

Explanation:

(Focus- It is the place or point inside Earth's crust from where an earthquake originates)

- The focus is also known as hypocentre of an earthquake and it generates a series of elastic waves.
- At this point of focus the ground ruptures. **(The epicenter is the point directly above the focus on Earth's surface)**
- As the ground breaks down, the vibrating waves travel away from the focus of the earthquake outwards in all directions.

72. Option (a) is correct.

Explanation:

- The maximum depth of Lithosphere is found in Pacific Ocean.
- The deepest point on the surface of the Earth is in the Marianas Trench which is over 11.5 km below the sea level
- The concept of the lithosphere which is Earth's strong outer layer was described by A.E.H. Love in his 1911 monograph.
- Earth's lithosphere comprises the crust and the uppermost mantle which contains the hard and rigid outer layer of the Earth.

73. Option (a) is correct.

Explanation:

Batholiths are type of igneous rock that are formed when magma rises into the earth's crust, but do not erupt onto its surface

Half Dome, in Yosemite National Park is an example of batholith

74. Option (a) is correct.

Explanation:

Tatipaka Oil Refinery which was set up on 3rd September 2001. It is located in the East Godavari district in Andhra Pradesh.

- A refinery is generally referred which is located near the source of crude oil i.e. either the producing field, a pipeline or a seaport.
- Presently there are 23 refineries. Out of which 18 Government, 2 Joint Ventures and 3 Private Sectors refineries in India.
- Barauni refinery in Bihar is one of the oldest refineries in India
- Basically, through refineries the usable crude oil products are – petrol, diesel, LPG, Kerosene etc

75. Option (c) is correct.

Explanation:

- (Gandhi ji had returned to India on January 9, 1915 with his wife Kasturba Gandhi after his stay of over 21 years in South Africa)
- On 6th Feb 1916, Gandhiji lectured at **Banaras Hindu University** and makes his first appearance in India on coming back from South Africa after two decades.
- On 26th December 1916, Gandhiji met Jawaharlal Nehru for the first time at Lucknow Congress

76. Option (b) is correct.

Explanation:

- The Indian National Congress met in Lahore on 31st December 1929 where the flag of India was hoisted by Jawaharlal Nehru.
- The Congress asked the people of India to observe 26 January as Independence Day. For this the flag of India was hoisted publicly across India by Congress volunteers, nationalists and the public

- On the banks of Ravi in Lahore, under the presidentship of the Nehru, the Congress adopted the resolution on Complete Independence or Purna Swaraj on January 1, 1930, where the pledge was taken by the public on January 26, 1930.
- One option before the Congress was to demand Dominion Status, under which India would have still remained at least nominally under British rule.
- But the Congress rejected this option and instead asked for Purna Swaraj, which means Full Independence

77. Option (a) is correct.

Explanation:

- Article 14 – Equality before law
- Article 15 – Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth
- Fundamental Rights have been described in Article 12 to 25
- Under this there are 6 types of Fundamental Rights
- The Concept of Fundamental Rights have been adopted from USA Constitution
- In Keshwananda Bharti case, the Supreme Court said that Parliament has the right to attend Fundamental Rights but basic features cannot be destroyed.

78. Option (c) is correct.

Explanation:

UN Security Council

The UN Security Council is primary responsible for maintaining International Peace and Security. Prior to 1966, there were six elected members (non-permanent members). Now there are 10 non-permanent members.

While the limit of permanent members has not changed since the creation of the United Nations in 1945

It Consists of 15 members, out of which, 5 Permanent members with Veto power – US, Uk Russia, China and France 10 non-permanent members are elected for two-year terms by the General Assembly.

79. Option (c) is correct.

Explanation:

The United States Declaration of Independence is the pronouncement which was adopted on July 4, 1776 by the Second Continental Congress meeting in Philadelphia, Pennsylvania

80. Option (a) is correct.

Explanation:

The October Revolution (officially known as the Great October Socialist Revolution) is also known as the Bolshevik Revolution.

It was a revolution in Russia led by the Bolshevik Party of Vladimir Lenin.

The revolution was instrumental in the larger Russian Revolution of 1917–1923.

The February Revolution overthrew Tsar Nicholas II (last emperor of Russia) and replaced his government with the Russian Provisional Government.

The October Revolution (25 October 1917) took action against the Provisional Government whose head was Alexander Kerensky. The Provisional government was overthrown by the Military Revolutionary Committee (military organs created by the Bolsheviks)

81. Option (d) is correct.

Explanation:

Condensation is defined as the process of conversion of a vapour or gas liquid.

The following are the forms of Condensation:

Dew, Fog, Frost, Mist.

On the other hand, Sleet is frozen raindrops and refrozen melted snow-water.

82. Option (c) is correct.

Explanation:

- Clouds is a collection of very tiny droplets of water or ice crystals that are so small and light.
- **Nimbus** which is in Latin referred as rain storm. It designates two prominent kinds of rain clouds as it pre fix by the word 'Nim' and followed by 'bus'.
- These clouds tend to appear dark grey because their depth or density of large water droplets obscures sunlight.
- Nimbus clouds may precipitate hail or snow instead of liquid rain that depending on temperature,

83. Option (c) is correct.

Explanation:

Intensive subsistence farming

- Practised in areas of high population pressure on land.

- It is a labour-intensive agricultural method in which high doses of biochemical inputs and irrigation are employed to boost yields.
- This type of farming is prevalent in the regions of south, southwest, and southeast Asia.
- India, China, Vietnam, Indonesia, Cambodia, Mexico and Peru etc. are some of the countries where Intensive subsistence farming is practiced.

84. Option (c) is correct.

Explanation:

The South Eastern Railway (SER) is one of the 18 railway zones in India.

It is headquartered at Garden Reach in Kolkata, West Bengal,

85. Option (b) is correct.

Explanation:

- On 31 July 2015, Bharatmala Pariyojana was launched which is a centrally sponsored project for road and highways.
- Bharatmala Pariyojana is an **umbrella program for the highways sector** envisaged by the **Ministry of Road Transport and Highways.**
- It aims to Improve the quality of roads with Total Road construction in the tenure within a span of five years.
- Its target to **connect 550 districts in the country** through national highway linkages

86. Option (a) is correct.

Explanation:

Tropical Deciduous Forests are also known as Monsoon forests and covers about cover about 65.6% of the total forest area in India.

In India these forests are found in the states of Madhya Pradesh, Uttar Pradesh, Odisha, Some parts of Maharashtra and Chhattisgarh.

87. Option (b) is correct.

Explanation:

- The Beas river which is a north India river originates from the Himalayas in central Himachal Pradesh and flows for some 470 kilometres to the Sutlej River in Punjab.
- Its total length is 470 kilometres and its drainage basin is 20,303 square kilometres large.

88. Option (c) is correct.

Explanation:

- American Constitution was the first to introduce the Preamble. This practice was followed by many countries, including India.
- The term 'Preamble' refers to the introduction or prelude to the Constitution.

  It comprises the essence or summary of the Constitution.
- The words Socialist, Secular and Integrity were not the part of the original constitution, they were added by the 42nd Constitutional Amendment Act (1976).
- The Supreme Court held that Preamble is a part of the Constitution (Kesavananda Bharati case (1973)).
- However, preamble is non-justiciable. Its provisions are not enforceable in courts of law.
- The term Republic in our constitution means vesting of political sovereignty in the people and not in a single individual.

89. Option (b) is correct.

Explanation:

Each House of Parliament has its own presiding officer.

Lok Sabha – There is a Speaker and a Deputy Speaker

Rajya Sabha – Chairman and a Deputy Chairman for

The Speaker is considered as the head of the Lok Sabha and its representative.

The following are the powers and duties of Lok Sabha

- He keeps the House in order and regulates the proceedings by maintaining order and decorum.
- In the lack of a quorum, he adjourns or suspends the meeting.
- He does not vote in the first instance. However, can exercise a casting vote in the case of a tie.

90. Option (a) is correct.

Explanation:

The concept of Fundamental duties is been added under Article 51 A and is been adopted from the Constitution of Russia.

Fundamental duties are those duties shall be abide by every citizen of India. Such as

- To abide by the Constitution and respect its ideals and institutions, the national Flag and the National Anthem
- To cherish and follow the noble ideals which inspired our national struggle for freedom
- To uphold and protect the sovereignty, unity and integrity of India
- To defend the country and render national service when called upon to do so
- To promote harmony and the spirit of common brotherhood amongst all the people of India and to renounce practices derogatory to the dignity of women
- To value and preserve the rich heritage of our composite culture
- To protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures
- To develop the scientific temper, humanism and the spirit of inquiry and reform
- To safeguard public property and to abjure violence
- To strive towards excellence in all spheres of individual and collective activity.

91. Option (b) is correct.

Explanation:

Outward Direct Investment is also known as Overseas Direct Investment. As on November 2020, Singapore stood at the top with 1295.48$ million in Outward Direct Investment

92. Option (b) is correct.

Explanation:

- Exercise Desert Knight-21 is a Joint Miliatary Exercise between Indian Air Force and French Air Force
- The bilateral air exercise was held between 20 to 24 January at Jodhpur Air Force station in Rajasthan, India
- This exercise aims to improve interoperability between the forces while exchanging 'ideas and best practices' gained from operational experience.

93. Option (b) is correct.

Explanation:

Uttar Pradesh won the best tableau award at the Republic Day Parade 2021.

The theme of the tableau of Uttar Pradesh was based on "Ayodhya: Cultural Heritage of Uttar Pradesh".

94. Option (a) is correct.

Explanation:

President Faustin-Archange Touadera won the second term in office by winning the Presidential elections of Central African Republic.

95. Option (d) is correct.

Explanation:

Legion of Merit

- It is a military award of the United States Armed Forces.
- It is also the first U.S. medal to be awarded to citizens of other countries.
- It is given for exceptional service, fidelity, and loyalty in combat or noncombat roles.
- Prime Minister Narendra Modi was awarded the 'Legion of Merit' by U.S. President Donald Trump in 2020 for his role in encouraging the India-U.S. relationship

96. Option (c) is correct.

Explanation:

- *Exercise Kavach is a Joint Military Exercise between* Indian Army, Indian Navy, Indian Air Force and Indian Coast Guard.
- It was conducted in January 2021 in the Andaman Sea and Bay of Bengal.
- It formed a part of the AMPHEX-21 triservice joint amphibious exercise in the Andaman and Nicobar group of islands.
- The need of Such Exercise has come to combat the attacks such as 1993 Bombay Bombings and the 2008 Mumbai Attacks which were happened due to the poorly guarded maritime border.

97. Option (d) is correct.

Explanation:

State of Emergency was declared in Myanmar for a period of one year after State Counsellor

Aung San Suu Kyi and President U Win Myint were detained in early-morning Raid. The emergency was declared by Myanmar military.

98. Option (c) is correct.

Explanation:

2021–22 Syed Mushtaq Ali Trophy

- It was the thirteenth edition of Syed Mushtaq Ali Trophy which took place in India.
- It was started on 4 November 2021. The final match was played between Tamil Nadu and Karnataka on 22 November 2021.
- Tamil Nadu won the match by 4 wickets

99. Option (a) is correct.

Explanation:

- Madagascar will host the 11th edition of the Indian Ocean Islands Games in 2023 after replacing Maldives due to the concerns over the ongoing pandemic
- It was been announced by the President of International Games Council, Seychellois Antonio Gopal.
- The Indian Ocean Island Games is a multisport event held every four years among athletes from Indian Ocean Island nations, namely Mauritius, Seychelles, Comoros, Madagascar, Mayotte, Reunion and the Maldives.

100. Option (c) is correct.

Explanation:

- Australia Claire Polosak becomes the first female umpire at a men's ODI for Border-Gavaskar Trophy